CINCON ELECTRONICS

GETRONIC
Elektronische Bauelemente und Systeme

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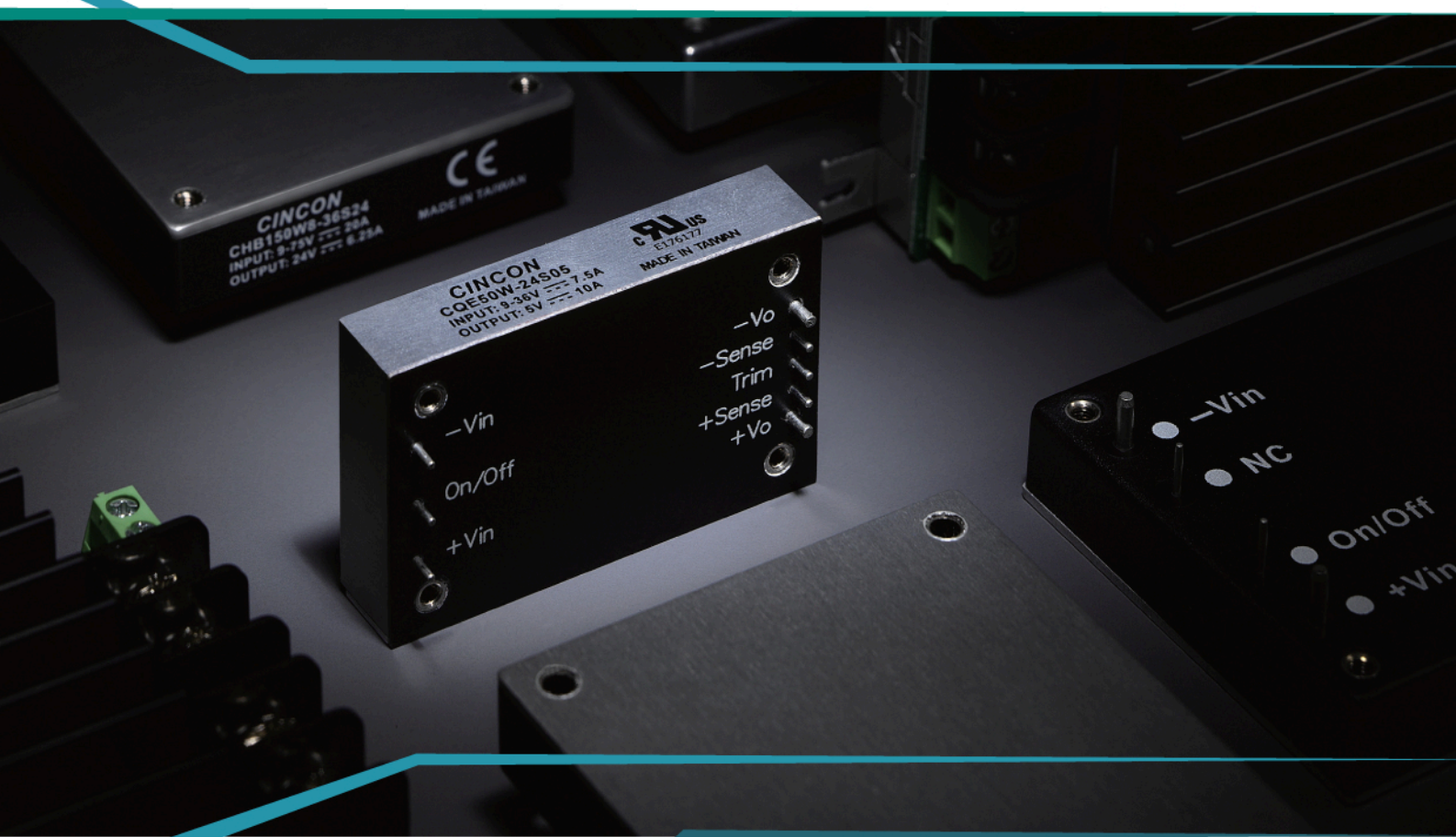
33-700 WATTS BRICK
DC-DC CONVERTER
CATALOG 2016



CINCON

Every day, 365 days a year Cincon makes a difference in people's lives throughout the world.

Design engineers and other power supply specifiers select our AC-DC and DC-DC convertors to power a wide range of products. Cincon power supplies are found in a myriad of applications, from medical equipment used to keep us healthy, to scurity systems working to keep us safe. Name an electronic device in any equipment category and it's likely you'll find a Cincon power supply inside. The communications, test instrumentation, entertainment, lighting, medical, computer, networking, industrial and transportation industries all use Cincon power supplies.

Cincon gives power supply specifiers what they need, speed and specification. Need a power supply fast? Designers can select from one of our 25,000 plus standard model numbers, many available off the shelf from distributors located around the globe. Give us a little more time and we can modify one of our standard products to your requirement. Need a full custom power supply? We do that also.

Using state of the art design tools, our power supplies are engineered with proven technology in one of our two Taiwan design laboratories. We focus heavily on reliability in the early stages of development to ensure a robust final product. Combined with extensive verification testing at the prototype and pilot production stages, Cincon is able to offer power supplies with long operational lives.

Cincon AC-DC and DC-DC power supplies are manufactured in one of our wholly owned, ISO 9001 and ISO 14001 certified, manufacturing facilities in Taiwan and China. Products are built using the latest manufacturing and quality assurance techniques on state of the art equipment; giving our customers not only high quality but also short lead times.

As a global designer and manufacturer of AC-DC and DC-DC power supplies, our products are certified to international safety, efficiency, hazardous substance and EMI standards where required. We also have capability to design and certify to application and country specific standards.

When you require an AC-DC or DC-DC power supply, standard or custom, and have little time, look to us for a solution. Let Cincon power your idea.

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QUICK SELECTION

Input Voltage Range	Package	Output Voltage (V) and Max Power (W)										I/O Isolation	Series	Page
		1.8V	2.5V	3.3V	5V	12V	15V	24V	28V	32V	48V	290V			
12 V (9 – 18 V)	Half Brick			33W	50W	50W	50W	50W					DC 1500V	CHB50	22
	Half Brick			49.5W	75W	75W	75W	75W					DC 1500V	CHB75	26
24 V (18 – 36 V)	Quarter Brick	45W	62.5W	66W	75W								DC 1500V	PKQ75	8
	Half Brick			33W	50W	50W	50W	50W					DC 1500V	CHB50	22
	Half Brick			49.5W	75W	75W	75W	75W					DC 1500V	CHB75	26
	Half Brick			66W	100W	100W	100W	100W					DC 1500V	CHB100	34
	Half Brick							100W					DC 1500V	CHE100	40
	Half Brick			165W	200W	200W		200W			200W		DC 1500V	CHB200	50
	Half Brick			231W	350W	350W		350W	350W		350W		DC 1500V	CHB350	60
	Full Brick					600W		600W	600W	600W	600W		DC 1500V	CFB600	68
24 V (9 – 36 V)	Quarter Brick			33W	50W	50W	50W	50W			50W		DC 1500V	CQE50W	4
	Quarter Brick			39.6W	60W	75W	75W	75W					DC 1500V	CQB75W	10
	Quarter Brick			100W	100W	100W	100W	100W					DC 1500V	CQB100W	12
	Quarter Brick				150W	150W		150W	150W		150W		DC 1500V	CQB150W	16
	Half Brick			33W	50W	50W	50W	50W	50W		50W		DC 1500V	CHB50W	24
	Half Brick			50W	75W	75W	75W	75W	75W		75W		DC 1500V	CHB75W	28
	Half Brick			66W	75W	75W	75W	75W			75W		DC 1500V	CHE75W	30
	Half Brick			66W	100W	100W	100W	100W			100W		DC 1500V	CHB100W	38
	Half Brick			82.5W	100W	100W	100W	100W			100W		DC 1500V	CHE100W	40
	Half Brick			99W	150W	150W	150W	150W	150W		150W		DC 1500V	CHB150W	44
	Half Brick				300W	300W	300W	300W	300W		300W		DC 1500V	CHB300W	54
	Half Brick				400W	400W		400W	400W		400W		DC 1500V	CFB400W	66
24 V (10 – 36 V)	Half Brick			165W	200W	200W	200W	200W			200W		DC 1500V	CHB200W	52
48 V (36 – 75 V)	Quarter Brick	45W	62.5W	66W	75W								DC 1500V	PKQ75	8
	Half Brick			33W	50W	50W	50W	50W					DC1500V	CHB50	22
	Half Brick			49.5W	75W	75W	75W	75W					DC 1500V	CHB75	26
	Half Brick			66W	100W	100W	100W	100W					DC 1500V	CHB100	34
	Half Brick			99W	150W	150W	150W	150W					DC 1500V	CHB150	42
	Half Brick			165W	200W	200W		200W			200W		DC 1500V	CHB200	50
	Half Brick			231W	350W	350W		350W	350W		350W		DC 1500V	CHB350	60
	Full Brick			132W	200W	200W	200W	200W	200W		200W		DC 1500V	CFB200	62
	Full Brick					600W		600W	700W	600W	600W		DC 1500V	CFB600	68

Modified Product Support

Recognizing the requirements for matching standard products to unique applications, Cincon is dedicated to provide support for customers requiring additional features or modification to catalog products.

Input Voltage Range	Package	Output Voltage (V) and Max Power (W)										I/O Isolation	Series	Page
		1.8V	2.5V	3.3V	5V	12V	15V	24V	28V	32V	48V	290V			
24 V & 48 V (18 – 75 V)	Quarter Brick			33W	50W	50W	50W	50W			50W		DC 1500V	CQE50W	4
	Quarter Brick			39.6W	60W	75W	75W	75W					DC 1500V	CQB75W	10
	Quarter Brick			100W	100W	100W	100W	100W					DC 1500V	CQB100W	12
	Quarter Brick				150W	150W		150W	150W		150W		DC 1500V	CQB150W	16
	Half Brick			33W	50W	50W	50W	50W	50W		50W		DC 1500V	CHB50W	24
	Half Brick			50W	75W	75W	75W	75W	75W		75W		DC 1500V	CHB75W	28
	Half Brick			66W	75W	75W	75W	75W			75W		DC 1500V	CHE75W	30
	Half Brick			66W	100W	100W	100W	100W			100W		DC 1500V	CHB100W	38
	Half Brick			82.5W	100W	100W	100W	100W			100W		DC 1500V	CHE100W	40
	Half Brick			99W	150W	150W	150W	150W	150W		150W		DC 1500V	CHB150W	44
	Half Brick			165W	200W	200W	200W	200W	200W		200W		DC 1500V	CHB200W	52
	Half Brick				300W	300W		300W	300W		300W		DC 1500V	CHB300W	54
	Full Brick				400W	400W		400W	400W		400W		DC 1500V	CFB400W	66
24 V, 36 V & 48 V (9 to 75 V)	Half Brick				150W	150W	150W	150W	150W		150W		DC 1500V	CHB150W8	48
72 V & 110 V (43 – 160 V)	Quarter Brick				60W	60W	60W	60W	60W		60W		DC 2250V	CQB60W-110S	6
	Quarter Brick				150W	150W		150W	150W		150W		DC 2250V	CQB150W-110S	18
	Half Brick				300W	300W		300W	300W		300W		DC 2250V	CHB300W-110S	56
110 V (66 – 160 V)	Quarter Brick			82.5W	100W	100W		100W					DC 2250V	CQB100-110S	14
	Half Brick					100W	100W	100W			100W		3KV RMS	CHB100-110S	36
	Half Brick				150W	150W		150W					DC 2250V	CHB150-110S	46
	Full Brick					200W	200W	200W			200W		3KV RMS	CFB200-110S	64
300 V (180 – 425 V)	Quarter Brick			99W	150W	150W	150W	150W	150W		150W		AC 3KV	CQB150-300S	20
	Half Brick				300W	300W		300W	300W		300W		AC 3KV	CHB300-300S	58
	Full Brick					600W		600W			600W		AC 3KV	CFB600-300S	70
85 – 264 VAC	Full Brick											700W	Non-Isolation	PFC700FB	72

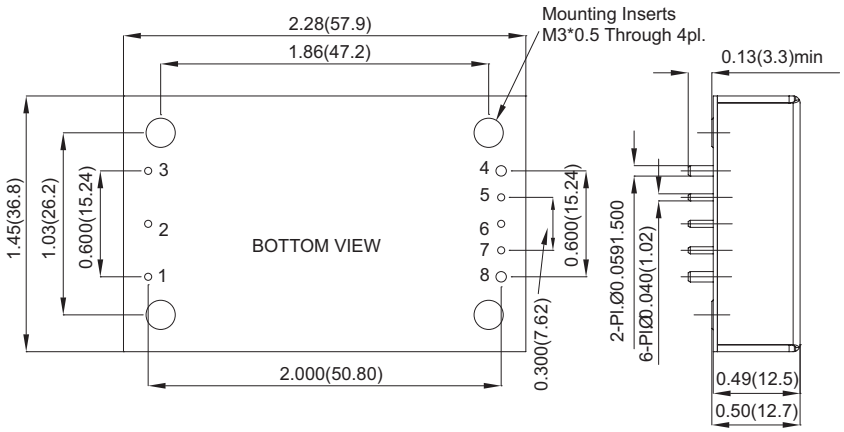
CQE50W SERIES
50 WATT, 4:1 INPUT RANGE

Features

- 50W Isolated Output
- No Tantalum Capacitor Inside
- Quarter-Brick Size, Six-Sided Shield Metal Case
- High Efficiency up to 92%
- 300KHz Switching Frequency
- 4 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Full Load Operation up to 80˚C
  with Heat-Sink M-C421 Natural Convention
- Over Temperature/Voltage/Current Protection
- CE Mark Meets 2004/108/EC
- Safety Meets UL60950-1, EN60950-1, and IEC60950-1

Mechanical Dimensions

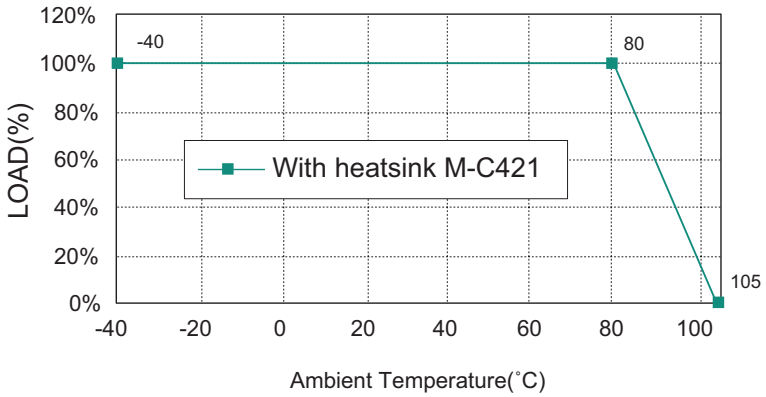
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



PIN CONNECTION	
PIN	Single Output
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CQE50W-24S3V3	9-36 VDC	3.3 VDC	0 mA	10 A	100 mA	1528 mA	90.5	10000µF
CQE50W-24S05	9-36 VDC	5 VDC	0 mA	10 A	100 mA	2277 mA	91.5	10000µF
CQE50W-24S12	9-36 VDC	12 VDC	0 mA	4.16 A	100 mA	2261 mA	91.5	4160µF
CQE50W-24S15	9-36 VDC	15 VDC	0 mA	3.33 A	100 mA	2287 mA	91.5	3330µF
CQE50W-24S24	9-36 VDC	24 VDC	0 mA	2.08 A	60 mA	2311 mA	90	2080µF
CQE50W-24S48	9-36 VDC	48 VDC	0 mA	1.04 A	60 mA	2311 mA	88.5	1040µF
CQE50W-48S3V3	18-75 VDC	3.3 VDC	0 mA	10 A	60 mA	764 mA	90	10000µF
CQE50W-48S05	18-75 VDC	5 VDC	0 mA	10 A	60 mA	1132 mA	92	10000µF
CQE50W-48S12	18-75 VDC	12 VDC	0 mA	4.16 A	60 mA	1130 mA	92	4160µF
CQE50W-48S15	18-75 VDC	15 VDC	0 mA	3.33 A	60 mA	1144 mA	91	3330µF
CQE50W-48S24	18-75 VDC	24 VDC	0 mA	2.08 A	60 mA	1156 mA	90.5	2080µF
CQE50W-48S48	18-75 VDC	48 VDC	0 mA	1.04 A	60 mA	1156 mA	89	1040µF

Derating Curve



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 9-36V
		48V..... 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under voltage lockout	24Vin	power up 8.8V
		power down 8.0V
	48Vin	power up 17V
		power down 16V
Positive Logic Remote On/Off		See note 4 & 5
Input Filter		PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy:	±1.5% max.
Transient Response: 75% to 100% Step Load Change	
Error Band	±5% Vout
Recover Time	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (see note 3)	
3.3V & 5V	40mV RMS, 100mV pk-pk max.
12V & 15V	60mV RMS, 150mV pk-pk max.
24V	100mV RMS, 240mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range, % Vo nom.	115-140%
Current Limit	110%-165% Nominal Output
Start up time	20ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ
Switching Frequency	300KHz typ.
Operating Case Temperature	-40˚C to 105˚C
Storage Temperature	-55˚C to +125˚C
Thermal Shutdown, Case Temp.	110˚C typ.
Humidity	95% RH max. Non condensing
MTBF ... MIL-STD-217F, GB, 25˚C, Full Load	XXS24, XXS48 .... 800Khrs typ.
	Others ..... 600Khrs typ.
Dimensions	1.45 x 2.28 x 0.50 inches
	(36.8 x 57.9 x 12.7 mm)
Case Material	Aluminum with Non-Conducted Base
Weight	63 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF aluminum and 1µF ceramic capacitor across output for 48Vout and with 10µF tantalum and 1µF ceramic capacitor for others.
4. Logic compatibility ..... open collector ref to -Input
   - Module On ..... >3.5VDC to 75VDC or open circuit
   - Module Off ..... < 1.2VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   - Module On ..... < 1.2VDC
   - Module Off ..... >3.5VDC to 75VDC or open circuit

CQB60W-110S SERIES
60 WATT, INPUT RANGE 43-160 VDC

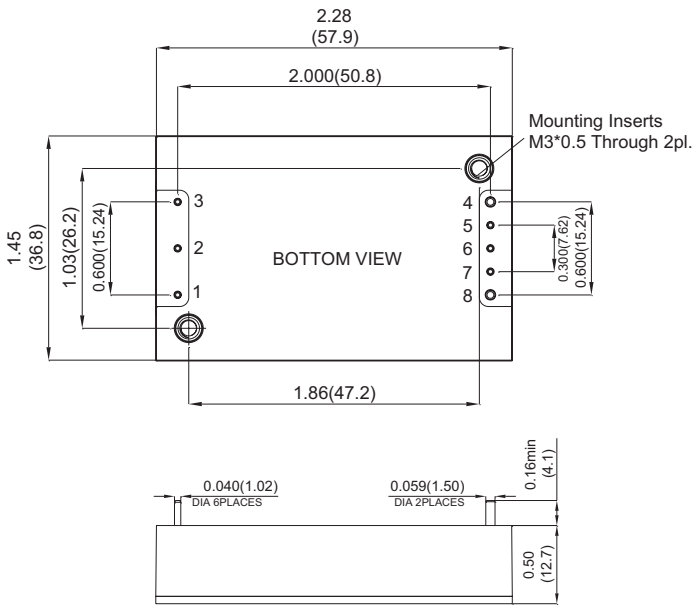
Features

- 60W Isolated Output
- Efficiency to 92%
- Low No Load Power Consumption
- 4 : 1 Input Range
- Regulated Outputs
- Remote On/Off
- Over Temperature/Voltage/Current Protection
- Continuous Short Circuit Protection
- Quarter Brick Size
- Operating Altitude 4000m
- Safety Standard: UL 60950-1 2nd (basic insulation)
- EMC: EN 50155 (EN 50121-3-2), External Filter Required
- Shock & Vibration: EN 50155 (EN 61373)

E176177

Mechanical Dimensions

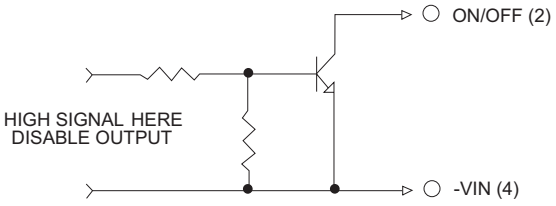
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



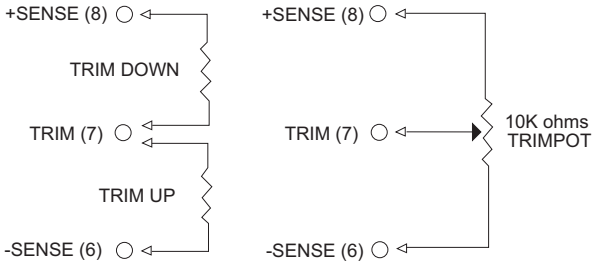
PIN CONNECTION	
PIN	Single Output
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CQB60W-110S05	43-160 VDC	5 VDC	0 mA	12 A	5 mA	600 mA	91	6800µF
CQB60W-110S12	43-160 VDC	12 VDC	0 mA	5 A	5 mA	593 mA	92	3300µF
CQB60W-110S15	43-160 VDC	15 VDC	0 mA	4 A	5 mA	606 mA	90	3300µF
CQB60W-110S24	43-160 VDC	24 VDC	0 mA	2.5 A	5 mA	606 mA	90	1200µF
CQB60W-110S28	43-160 VDC	28 VDC	0 mA	2.14 A	5 mA	606 mA	90	1200µF
CQB60W-110S48	43-160 VDC	48 VDC	0 mA	1.25 A	5 mA	613 mA	89	470µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	43-160V
Input Surge Voltage (100ms max.)	180Vdc max.
Under Voltage Lockout	Power up 42V
	Power down 38V
Positive Logic Remote On/Off	See note 4 & 5
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	< 250µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
5V	40mV RMS, 100mV pk-pk max.
12V/15V	60mV RMS, 150mV pk-pk max.
24V/28V	100mV RMS, 240mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range, % Vo nom	115-140%
Current Limit	110%-165% Nominal Output
Start up time	15ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output .....2250VDC min.
	Input/Case .....2250VDC min.
	Output/Case .....1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	200KHz typ.
Operating Case Temperature	-40˚C to +100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temp	110˚C typ.
Humidity	95% RH max. Non condensing
Operating Altitude	4000m
Safety	UL60950-1 2nd (Basic insulation)
EMI	EN50155 (EN50121-3-2) with external filter
Shock/Vibration	EN50155 (EN61373)
Dimensions	2.28 × 1.45 x 0.50 inches (57.9 x 36.8 × 12.7 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	61.5 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. Logic compatibility ..... open collector ref to -Input
   Module On..... > 3.5VDC to 75VDC or open circuit
   Module Off ..... < 1.2VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... < 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
6. Suffix "-C" to the model number with clear mounting Insert (3.2mm DIA.)
7. An external input capacitor 68µF for all models are recommended to reduce input ripple voltage.
8. Design to meet EN50155 and RIA12 refer to application note.

PKQ75 SERIES
50 - 75 WATT

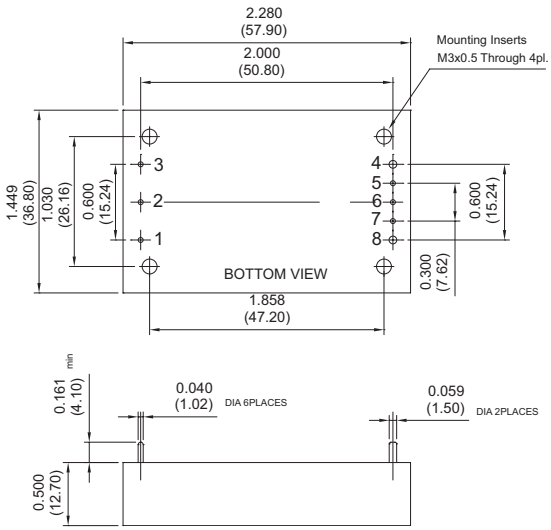
Features

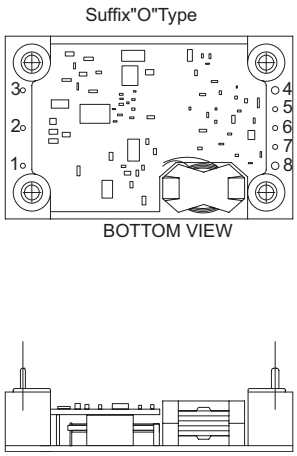
- 50-75W Isolated Output
- Efficiency to 90%
- 300KHz Switching Frequency
- 2 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Quarter-Brick Size Meet Industrial Standard
- Open Frame Type Is Available
- CE Mark Meets 2004/108/EC
- UL60950-1 Approval

c UL us
E176177

Mechanical Dimensions

All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25

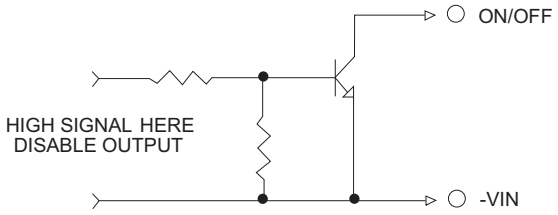




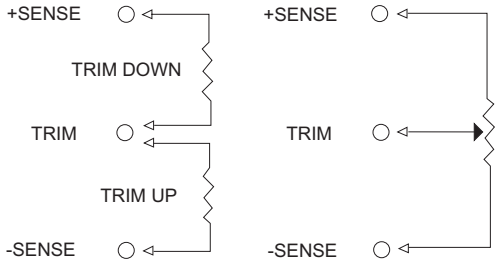
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
PKQ75-24S18	18-36 VDC	1.8 VDC	0.5 A	25 A	60 mA	2259 mA	83	25000µF
PKQ75-24S25	18-36 VDC	2.5 VDC	0.5 A	25 A	60 mA	3064 mA	85	25000µF
PKQ75-24S33	18-36 VDC	3.3 VDC	0.5 A	20 A	70 mA	3125 mA	88	20000µF
PKQ75-24S05	18-36 VDC	5 VDC	0.5 A	15 A	80 mA	3472 mA	90	15000µF
PKQ75-48S18	36-75 VDC	1.8 VDC	0.5 A	25 A	50 mA	1116 mA	84	25000µF
PKQ75-48S25	36-75 VDC	2.5 VDC	0.5 A	25 A	50 mA	1514 mA	86	25000µF
PKQ75-48S33	36-75 VDC	3.3 VDC	0.5 A	20 A	50 mA	1563 mA	88	20000µF
PKQ75-48S05	36-75 VDC	5 VDC	0.5 A	15 A	80 mA	1736 mA	90	15000µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V.....18-36V
		48V 36-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under voltage lockout	24Vin	power up 17V
		power down 15.5V
	48Vin	power up 34V
		power down 32.5V
Positive Logic Remote On/Off		See note 3 & 4
Input Filter		PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1% max.
Transient Response:75% -100% Step Load Change	
Error Band	±5% Vout
Recover Time	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW	40mV RMS, max.
	100mV pk-pk, max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range ,% Vo nom.	115-140%
Current Limit	110%-140% Nominal Output
Start up time	20ms Typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF Typ.
Switching Frequency	300KHz Typ.
Operating Case Temperature	-40˚C to +100˚C
Storage Temperature	-40˚C to +105˚C
Humidity	95% RH max. Non condensing
MTBF ..... MIL-HDBK-217F, GB, 25˚C, Full Load	700 Khrs Typ.
Thermal Shutdown, Case Temp.	100˚C Typ.
Dimensions	1.45 × 2.28 x 0.50 inches
	(36.8 x 57.9 × 12.7 mm)
Case Material (Standard)	Aluminum baseplate with
	plastic case
(Suffix ”O” Type)	Open Frame
Weight	Standard: 61.8 g, Open Frame: 39 g

NOTE

1. Measured from high line to low line.
2. Measured from Io min. to Io max.
3. Logic compatibility ..... open collector ref to -input
   Module On ..... open Circuit
   Module Off ..... < 0.8VDC
4. Suffix "N" to the model number with negative logic remote On/Off
5. Suffix "O" to the model number with open frame type.
6. Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)

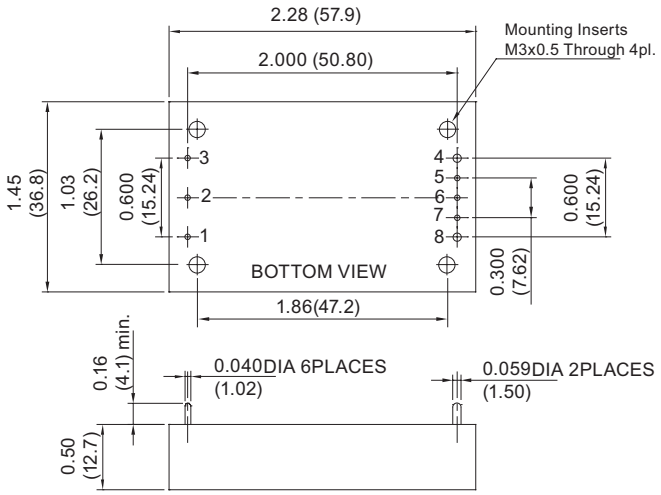
CQB75W SERIES
75 WATT, 4:1 INPUT RANGE

Features

- 75W Isolated Output
- Efficiency up to 87%
- 300KHz Switching Frequency
- 4 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Industry Standard Quarter-Brick Package
- CE Mark Meets 2004/108/EC
- Safety Meets UL60950-1, EN60950-1, and IEC60950-1

Mechanical Dimensions

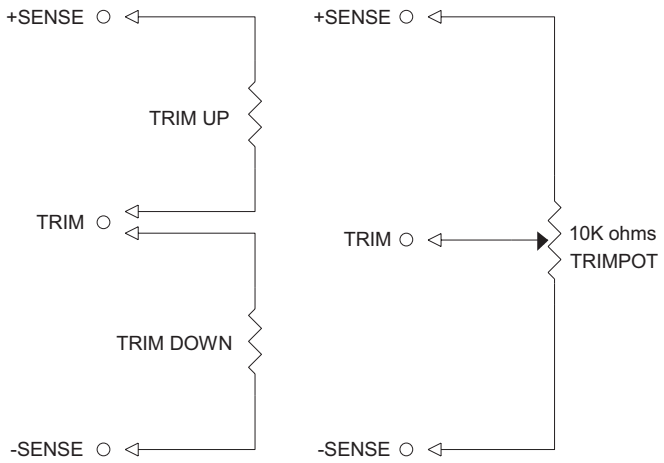
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



PIN CONNECTION	
PIN	Single Output
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CQB75W-24S3V3	9-36 VDC	3.3 VDC	0 mA	12 A	50 mA	2037 mA	81	12000µF
CQB75W-24S05	9-36 VDC	5 VDC	0 mA	12 A	50 mA	2976 mA	84	12000µF
CQB75W-24S12	9-36 VDC	12 VDC	0 mA	6.25 A	50 mA	3634 mA	86	6250µF
CQB75W-24S15	9-36 VDC	15 VDC	0 mA	5 A	50 mA	3634 mA	86	4400µF
CQB75W-24S24	9-36 VDC	24 VDC	0 mA	3.12 A	50 mA	3628 mA	86	1500µF
CQB75W-48S3V3	18-75 VDC	3.3 VDC	0 mA	12 A	30 mA	1006 mA	82	12000µF
CQB75W-48S05	18-75 VDC	5 VDC	0 mA	12 A	30 mA	1471 mA	85	12000µF
CQB75W-48S12	18-75 VDC	12 VDC	0 mA	6.25 A	30 mA	1817 mA	86	6250µF
CQB75W-48S15	18-75 VDC	15 VDC	0 mA	5 A	30 mA	1796 mA	87	4400µF
CQB75W-48S24	18-75 VDC	24 VDC	0 mA	3.12 A	30 mA	1796 mA	87	1500µF

External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V..... 9-36V
		48V..... 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under voltage lockout	24Vin	power up 8.8V
		power down 8.0V
	48Vin	power up 17V
		power down 16V
Positive Logic Remote On/Off		See note 4 & 5
Input Filter		PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy:	±1.5% max.
Transient Response : 75% to 100% Step Load Change	
Error Band	±5% Vout
Recover Time	< 500µs
External Trim Adj. Range	±10%˚C
Ripple & Noise, 20MHz BW (note 3)	
3.3V & 5V	40mV RMS, max.
	100mV pk-pk, max.
12V & 15V	60mV RMS, max.
	150mV pk-pk, max.
24V	100mV RMS, max.
	240mV pk-pk, max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range ,% Vo nom.	115-140%
Current Limit	110%-140% Nominal Output
Start up time	20ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case .....1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF Typ.
Switching Frequency	300KHz, Typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Humidity	95% RH max. Non condensing
Thermal Shutdown, Case Temp.	105˚C Typ.
Dimensions	1.45 x 2.28 x 0.50 inches
	(36.8 x 57.9 x 12.7 mm)
Case Material	Aluminum Base-plate with
	Plastic Case
Weight	63 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. Logic compatibility ..... open collector ref to -Input
   - Module On ..... >3.5VDC to 75VDC or open circuit
   - Module Off ..... < 1.8VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   - Module On ..... < 1.8VDC
   - Module Off ..... >3.5VDC to 75Vdc or open circuit
6. Suffix "-C" to the model number with clear mounting Insert (3.1mm DIA.)

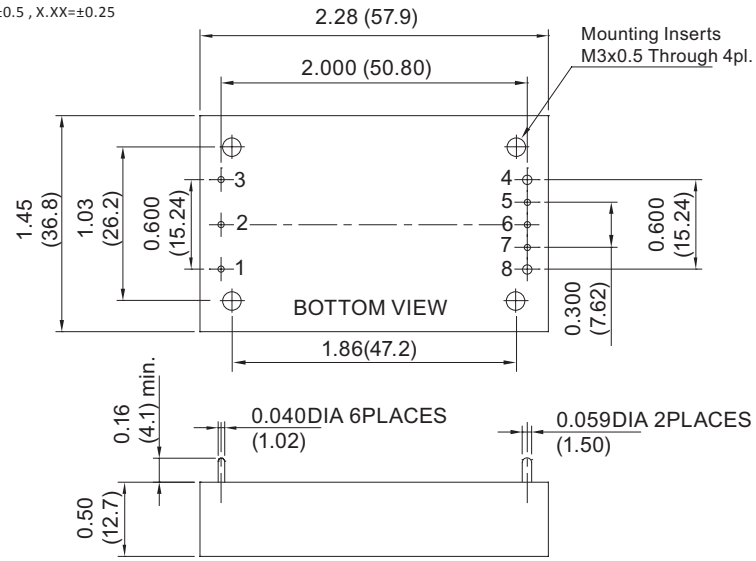
CQB100W SERIES
100 WATT, 4:1 INPUT RANGE

Features

- 100W Isolated Output
- Quarter-Brick Package
- 4 : 1 Input Range
- Efficiency to 88%
- Regulated Output
- Input Under Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off
- 1500VDC Isolation
- Safety Meets UL60950-1

Mechanical Dimensions

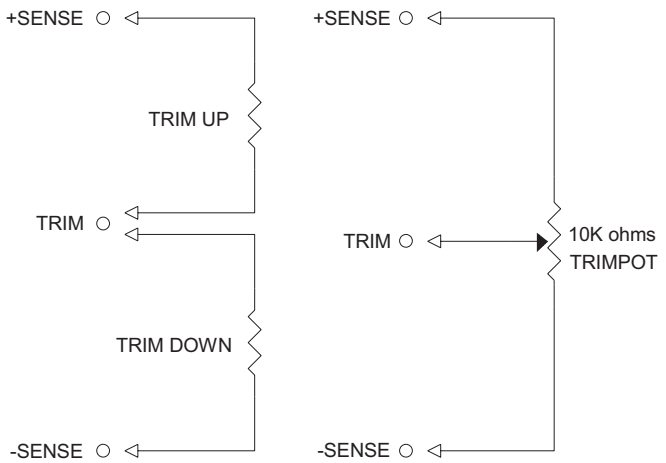
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



PIN CONNECTION	
PIN	Single Output
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CQB100W-24S3V3	9-36 VDC	3.3VDC	0 mA	30 A	120 mA	4797 mA	86	10000µF
CQB100W-24S05	9-36 VDC	5 VDC	0 mA	20 A	120 mA	4817 mA	86.5	10000µF
CQB100W-24S12	9-36 VDC	12 VDC	0 mA	8.3 A	80 mA	4798 mA	86.5	2200µF
CQB100W-24S15	9-36 VDC	15 VDC	0 mA	6.7 A	80 mA	4841 mA	86.5	2200µF
CQB100W-24S24	9-36 VDC	24 VDC	0 mA	4.17 A	80 mA	4793 mA	87	2200µF
CQB100W-48S3V3	18-75 VDC	3.3 VDC	0 mA	30 A	60 mA	2344 mA	88	10000µF
CQB100W-48S05	18-75 VDC	5 VDC	0 mA	20 A	60 mA	2367 mA	88	10000µF
CQB100W-48S12	18-75 VDC	12 VDC	0 mA	8.3 A	30 mA	2358 mA	88	2200µF
CQB100W-48S15	18-75 VDC	15 VDC	0 mA	6.7 A	30 mA	2379 mA	88	2200µF
CQB100W-48S24	18-75 VDC	24 VDC	0 mA	4.17 A	30 mA	2369 mA	88	2200µF

External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 9-36V
		48V..... 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under voltage lockout	24Vin	power up ..... 8.8V typ.
		power down ..... 8V typ.
	48Vin	power up ..... 17V typ.
		power down ..... 16V typ.
Input Filter		Pi Type
Positive Logic Remote On/Off		See note 4 & 5

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 75% to 100% Step Load Change	
Error Band	3.3V±7% Vout, Others±5% Vout
Recover Time	< 500µs
External Trim Adj. Range (note 6)	±10%
Ripple and Noise, 20MHz BW (see note 3).	
3.3V & 5V	40mV RMS, 100mV pk-pk max.
12V & 15V	60mV RMS, 150mV pk-pk max.
24V	100mV RMS, 240mV pk-pk max.
Temperature Coefficient	±0.03%/˚C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, %Vo nom.	115-140%
Current Limit	120ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output.....1500VDC min.
	Input/Case.....1500VDC min.
	Output/Case.....1500VDC min.
Isolation Resistance	10^7 Ohms min.
Isolation Capacitance	1000pF typ.
Switching Frequency	48Vin ..... 250KHz typ.
	24Vin ..... 220KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature Range	-40˚C to +105˚C
Thermal Shutdown, Case Temp.	110˚C typ.
Dimensions	1.45 x 2.28 x 0.50 inches
	(36.8 x 57.9 x 12.7 mm)
Humidity	95% RH max. Non condensing
MTBF .... MIL-STD-217F, GB, 25˚C , Full Load	600Khrs typ.
Case Material	Aluminum Base-plate with
	Plastic Case
Weight	66 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to min. load.
3. The output noise is measured with 10µF tantalum capacitor and 1µF ceramic capacitor across output.
4. Logic compatibility ..... open collector ref to -Input
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off ..... < 1.2VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... < 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or Open Circuit
6. Trim-up ..... connect a resistor between the trim pin and +Sense
   Trim-down ..... connect a resistor between the trim pin and -Sense
7. Suffix "-C" to the model number with clear mounting insert(3.2mm DIA.)
8. An external input capacitor 47µF for 48Vin models and 100µF for 24Vin models are recommended to reduce input ripple voltage.

CQB100-110S SERIES
100 WATT, INPUT RANGE 66-160 VDC

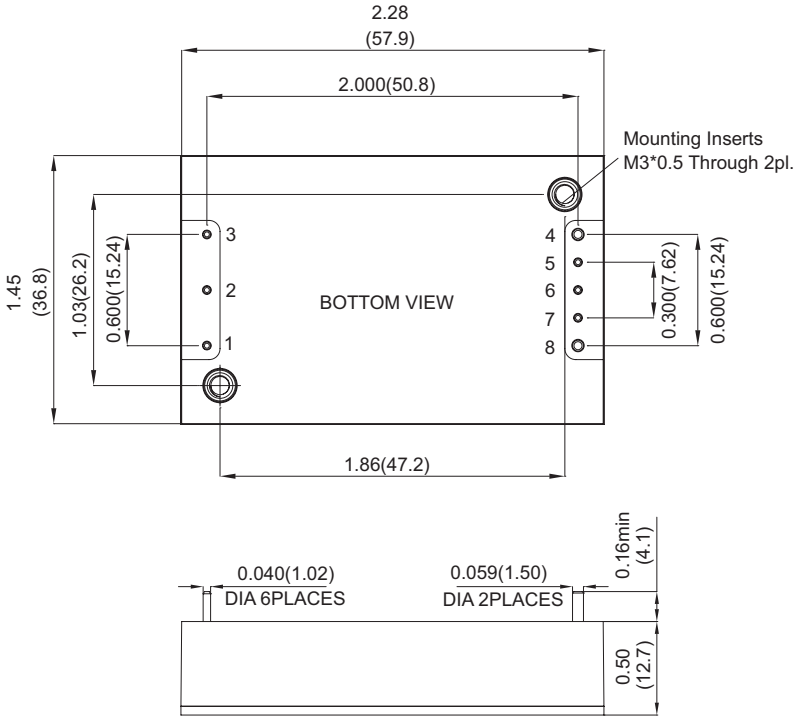
Features

- 100W Isolated Output
- Efficiency to 93%
- 200KHz Switching Frequency
- 3 : 1 Input Range
- Regulated Outputs
- Remote On/Off
- Over Temperature Protection
- Over Voltage/Current Protection
- Continuous Short Circuit Protection
- Quarter Brick Size
- Safety Standard: UL 60950-1 2nd (Except 3.3Vout)
- EMC: EN 50155 (EN 50121-3-2), External Filter Required
- Shock & Vibration: EN 50155 (EN 61373)

E176177

Mechanical Dimensions

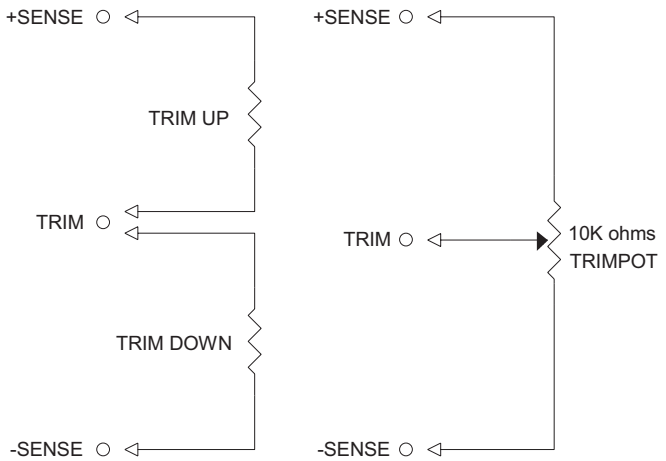
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



PIN CONNECTION	
PIN	Single Output
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CQB100-110S3V3	66-160 VDC	3.3 VDC	0 mA	25 A	40 mA	833 mA	90	10000μF
CQB100-110S05	66-160 VDC	5.0 VDC	0 mA	20 A	30 mA	983 mA	92.5	10000μF
CQB100-110S12	66-160 VDC	12 VDC	0 mA	8.4 A	40 mA	985 mA	93	8800μF
CQB100-110S24	66-160 VDC	24 VDC	0 mA	4.2 A	60 mA	996 mA	92	1500μF

External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	66-160V
Input Surge Voltage (100ms max.)	180Vdc max.
Under Voltage Lockout	power up 62V power down 56V
Positive Logic Remote On/Off:	
Logic Compatibility	Open Collector ref. to -Input
Module On	> 3.5Vdc to 75Vdc or Open Circuit
Module Off	< 1.8Vdc
Input Filter	Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	< 200µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
3.3 & 5V	40mV RMS, 100mV pk-pk max.
12V	60mV RMS, 150mV pk-pk max.
24V	100mV RMS, 240mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-180% Nominal Output
Start up time	45ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 2250VDC min. Input/Case ..... 2250VDC min. Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	200KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp.	105˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-HDBK-217F, GB, 25˚C, Full Load	CQB100-110S05: 240Khrs CQB100-110S3V3: 400Khrs CQB100-110S12: 320Khrs CQB100-110S24: 320Khrs
Safety (Except 3.3 Vout)	UL60950-1 2nd (Basic insulation)
EMC (note 7)	EN50155 (EN50121-3-2) with External Flter
Shock/Vibration	EN50155 (EN61373)
Environmental	EN50155 (EN60068-2-1)
Dimensions	2.28 x 1.45 x 0.50 inches (57.9 x 36.8 x 12.7 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	61.5 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic apacitor across output.
4. Suffix "N" to the model number with negative logic remote On/Off
   Module On < 1.8VDC
   Module Off > 3.5VDC to 75VDC or open circuit
5. Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
6. An external input capacitor 120µF for all models are recommended to reduce input ripple voltage.
7. Design meet EN50155 and RIA12 refer to application note.

CQB150W SERIES
150 WATT, 4:1 INPUT RANGE

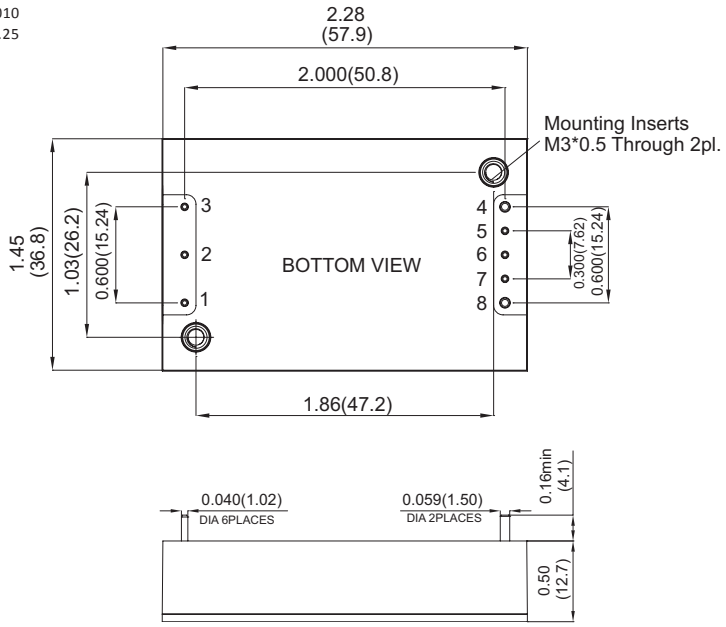
Features

- 150W Isolated Output
- Efficiency to 90%
- Fixed Switching Frequency
- 4 : 1 Input Range
- Regulated Outputs
- Remote On/Off
- Low No Load Power Consumption
- Over Temperature Protection
- Over Voltage/Current Protection
- Continuous Short Circuit Protection
- Quarter Brick Size Meet Industrial Standard
- CE Mark Meets 2004/108/EC
- Safety Meets UL60950-1, EN60950-1, and IEC60950-1

Approval Pending
E176177

Mechanical Dimensions

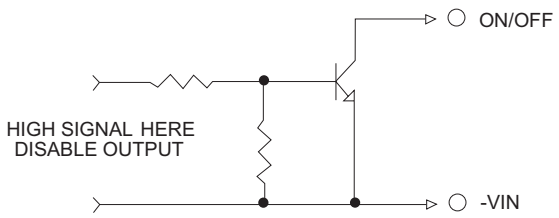
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



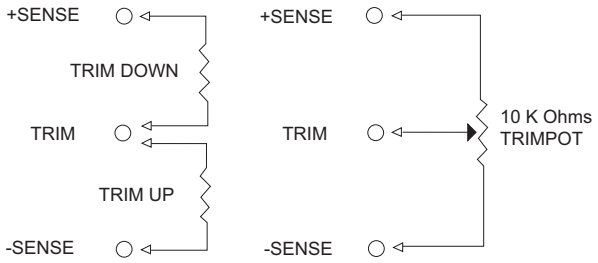
PIN CONNECTION	
PIN	Single Output
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CQB150W-24S05	9-36 VDC	5 VDC	0 mA	30 A	10 mA	7.02 A	89	30000μF
CQB150W-24S12	9-36 VDC	12 VDC	0 mA	12.5 A	10 mA	7.02 A	89	12500μF
CQB150W-24S24	9-36 VDC	24 VDC	0 mA	6.3 A	10 mA	7.08 A	89	6300μF
CQB150W-24S28	9-36 VDC	28 VDC	0 mA	5.4 A	10 mA	7.08 A	89	5400μF
CQB150W-24S48	9-36 VDC	48 VDC	0 mA	3.2 A	10 mA	7.19 A	89	1000μF
CQB150W-48S05	18-75 VDC	5 VDC	0 mA	30 A	10 mA	3.47 A	90	30000μF
CQB150W-48S12	18-75 VDC	12 VDC	0 mA	12.5 A	10 mA	3.47 A	90	12500μF
CQB150W-48S24	18-75 VDC	24 VDC	0 mA	6.3 A	10 mA	3.50 A	90	6300μF
CQB150W-48S28	18-75 VDC	28 VDC	0 mA	5.4 A	10 mA	3.50 A	90	5400μF
CQB150W-48S48	18-75 VDC	48 VDC	0 mA	3.2 A	10 mA	3.56 A	90	1000μF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 9-36V
		48V 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under voltage lockout	24Vin	power up 8.8V
		power down 8.0V
	48Vin	power up 17V
		power down 16V
Positive Logic Remote On/Off		see note 4 & 5
Input Filter		PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy:	±1.5% max
Transient Response:25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW	
5V	40mV RMS, 100mV pk-pk max.
12V	60mV RMS, 150mV pk-pk max.
24V & 28V	100mV RMS, 280mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range ,% Vo nom.	115-140%
Current Limit	110%-160% Nominal Output
Start up time	60ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage :	
CQB150W-24SXX and CQB150W-48SXX:	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1500pF typ.
Switching Frequency	300KHz typ.
Operating Ambient Temperature	-40˚C to +105˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temperature	110˚C typ.
Humidity	95% RH max. Non condensing
Dimensions	2.28 × 1.45 x 0.50 inches (57.9 x 36.8 × 12.7 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	68 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF aluminum and 1µF ceramic capacitor across output for 48Vout and with 10µF tantalum and 1µF ceramic capacitor for others.
4. Logic compatibility ..... open collector ref to -Input
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off .....< 1.2Vdc
5. Suffix "N" to the model number with negative logic remote On/Off
   Module On .....< 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
6. Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
7. An external input capacitor 220µF for all models are recommended to reduce input ripple voltage.

CQB150W-110S SERIES
150 WATT, INPUT RANGE 43-160 VDC

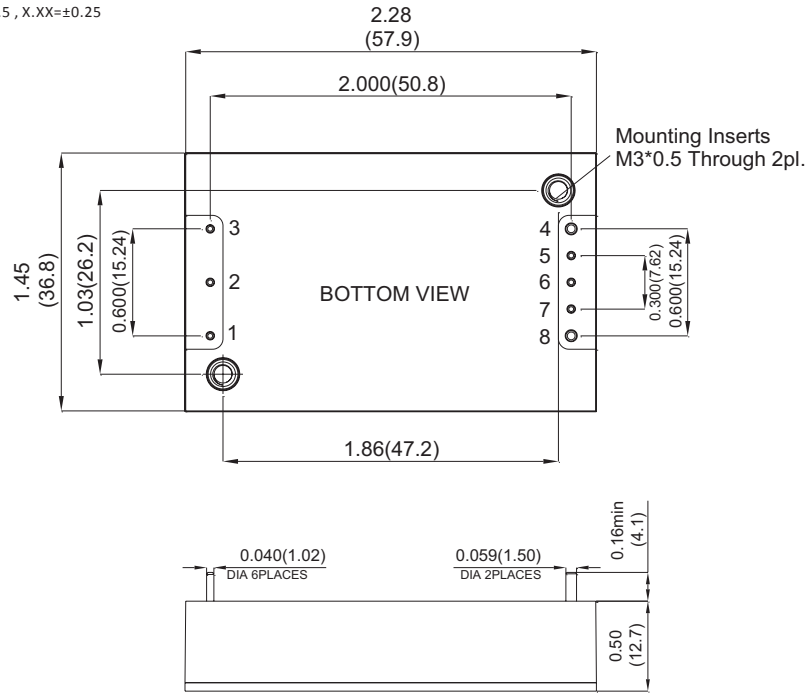
Features

- 150W Isolated Output
- Efficiency to 91%
- Fixed Switching Frequency
- 4 : 1 Input Range
- Regulated Outputs
- Remote On/Off
- Low No Load Power Consumption
- Over Temperature Protection
- Over Voltage/Current Protection
- Continuous Short Circuit Protection
- Quarter Brick Size
- Safety Standard: UL 60950-1 2nd (Basic Insulation)
- EMC: EN 50155 (EN 50121-3-2), External Filter Required
- Shock & Vibration: EN 50155 (EN 61373)

Approval Pending
E176177

Mechanical Dimensions

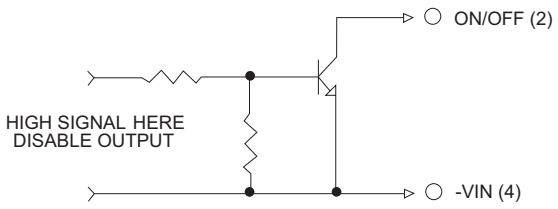
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



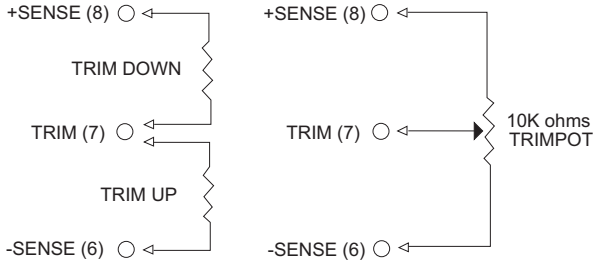
PIN CONNECTION	
PIN	Single Output
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CQB150W-110S05	43-160 VDC	5 VDC	0 mA	30 A	10 mA	1.50 A	91	10000µF
CQB150W-110S12	43-160 VDC	12 VDC	0 mA	12.5 A	10 mA	1.50 A	91	8800µF
CQB150W-110S24	43-160 VDC	24 VDC	0 mA	6.3 A	10 mA	1.51 A	90	2200µF
CQB150W-110S28	43-160 VDC	28 VDC	0 mA	5.4 A	10 mA	1.51 A	91	2200µF
CQB150W-110S48	43-160 VDC	48 VDC	0 mA	3.2 A	10 mA	1.53 A	91	2200µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	43-160V
Input Surge Voltage (100ms max.)	200Vdc max.
Under voltage lockout	power up 42V
	power down 38V
Positive Logic Remote On/Off (see note 4 & 5)	
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy:	±1.5% max.
Transient Response:	
25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW	
5V	40mV RMS, 100mV pk-pk max.
12V	60mV RMS, 150mV pk-pk max.
24V & 28V	100mV RMS, 280mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range, % Vo nom.	115-140%
Current Limit	110%-160% Nominal Output
Start up time	60ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage :	
	Input/Output .....2250VDC min.
	Input/Case ..... 2250VDC min.
	Output/Case ..... 2250VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	300KHz typ.
Operating Ambient Temperature	-40˚C to +105˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temperature	110˚C typ.
Humidity	95% RH max. Non condensing
Dimensions	2.28 × 1.45 x 0.50 inches
	(57.9 x 36.8 × 12.7 mm)
Safety	UL60950-1 2nd (Basic Insulation)
EMC (note 8)	EN50155 (EN50121-3-2)
	with External Filter
Shock/Vibration	EN50155 (EN61373)
Environmental	EN50155 (EN60068-2-1)
Case Material	Aluminum Base Plate with
	Plastic Case
Weight	68 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. Logic compatibility ..... open collector ref to -Input
   Module On >3.5VDC to 75VDC or open circuit
   Module Off < 1.2Vdc
5. Suffix "N" to the Model Number with Negative Logic Remote On/Off
   Module On < 1.2Vdc
   Module Off >3.5Vdc to 75Vdc or Open Circuit
6. Suffix "-C" to the Model Number with Clear Mounting Insert (3.2mm DIA.)
7. An external input capacitor 220uF for all models are recommended to reduce input ripple voltage
8. Design meet EN50155 and RIA12 refer to application note.

CQB150-300S SERIES
150 WATT, INPUT RANGE 180-425 VDC

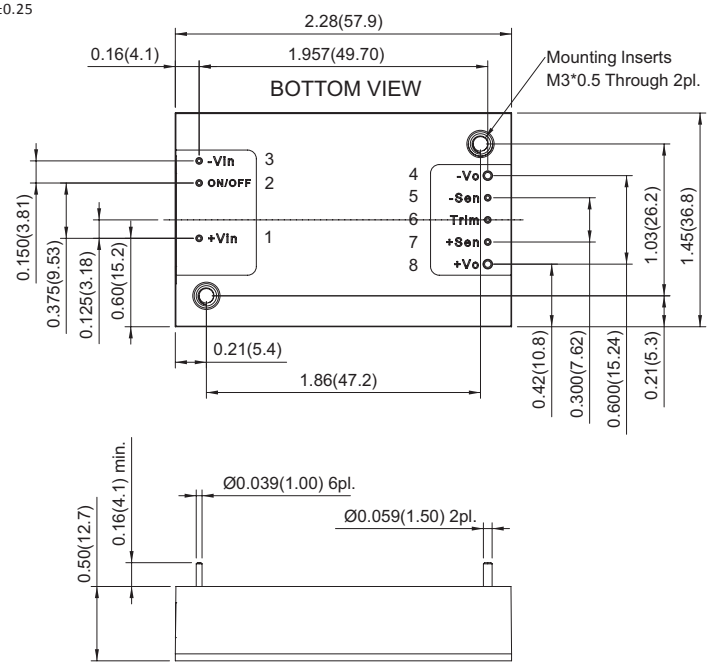
Features

- 150W Isolated Output
- Efficiency to 88%
- Fixed Switching Frequency
- Regulated Outputs
- Remote On/Off
- Low No Load Power Consumption
- Over Temperature Protection
- Over Voltage/Current Protection
- Continuous Short Circuit Protection
- Quarter Brick Size meet Industrial Standard
- CE Mark Meets 2004/108/EC
- UL/C-UL 60950 Certified
- Fully Isolated 3000VAC

Approval Pending
E176177

Mechanical Dimensions

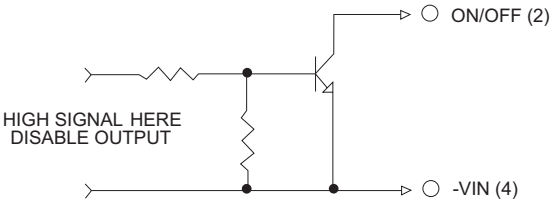
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



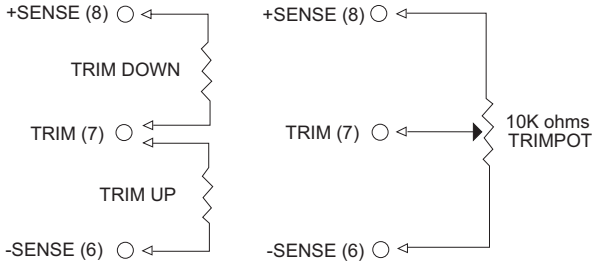
PIN	Function
1	+V Input
2	On/Off
3	-V Input
4	-V Output
5	-Sense
6	Trim
7	+Sense
8	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CQB150-300S3V3	180-425 VDC	3.3 VDC	0 mA	30 A	10 mA	0.4 A	85	10000μF
CQB150-300S05	180-425 VDC	5 VDC	0 mA	30 A	10 mA	0.6 A	85	10000μF
CQB150-300S12	180-425 VDC	12 VDC	0 mA	12.5 A	10 mA	0.6 A	86	8800μF
CQB150-300S15	180-425 VDC	15 VDC	0 mA	10 A	10 mA	0.6 A	86	8800μF
CQB150-300S24	180-425 VDC	24 VDC	0 mA	6.3 A	10 mA	0.6 A	86	8800μF
CQB150-300S28	180-425 VDC	28 VDC	0 mA	5.4 A	10 mA	0.56 A	88	2200μF
CQB150-300S48	180-425 VDC	48 VDC	0 mA	3.2 A	10 mA	0.56 A	88	2200μF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	300V..... 180-425V
Input over voltage protection	Module on.....428V
	Module off.....450V
Under voltage lockout	300Vin power up 175V
	300Vin power down.....160V
Positive Logic Remote On/Off	See note 4 & 5
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy:	±1.5% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW	
3.3V & 5V	100mV pk-pk, max.
12V & 15V	60mV RMS, 150mV pk-pk max.
24V & 28V	100mV RMS, 280mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range ,% Vo nom.	115-140%
Current Limit	110%-160% Nominal Output
Start up time	60ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage :	
Isolation Voltage	Input/Output.....3000VAC min.
	Input/Case.....2500VAC min.
	Output/Case.....500VAC min.
Isolation Resistance	10^7 ohm min.
Switching Frequency	300KHz typ.
Operating Ambient Temperature	-40˚C to +105˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temperature	110˚C typ.
Humidity	95% RH max. Non condensing
Dimensions	2.2 8× 1.45 x 0.50 inches
	(57.9 x 36.8 × 12.7 mm)
Case Material	Aluminum Base Plate with
	Plastic Case
Weight	68 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. Logic compatibility ..... open collector ref to -Input
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off .....< 1.2VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   Module On .....< 1.2VDC
   Module Off ..... >3.5Vdc to 75Vdc or Open Circuit
6. Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
7. An external input capacitor 220µF for all models are recommended to reduce input ripple voltage.

CHB50 SERIES
33-50 WATT

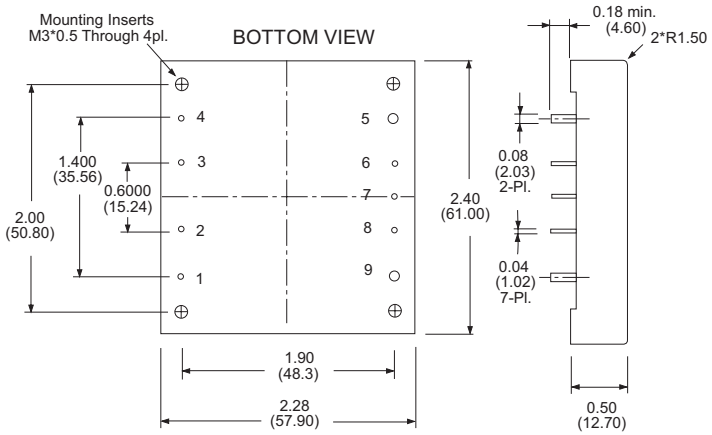
Features

- 33W-50W Isolated Output
- Efficiency to 89%
- 300/400KHz Switching Frequency
- 2 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Five-Sided Metal Case
- Half-Brick Size Meet Industrial Standard
- CE Mark Meets 2006/95/EC, 93/68/EEC, and 89/336/EEC
- Safety UL60950-1, EN60950-1 and IEC60950-1

E176177

Mechanical Dimensions

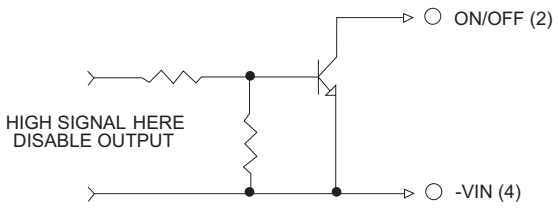
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



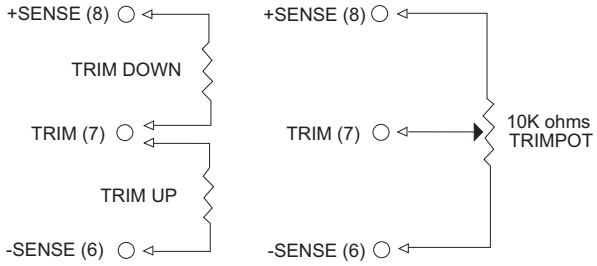
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CHB50-12S33	9 -18 VDC	3.3 VDC	0 mA	10 A	50 mA	3481 mA	79	10000µF
CHB50-12S05	9 -18 VDC	5 VDC	0 mA	10 A	50 mA	5020 mA	83	10000µF
CHB50-12S12	9 -18 VDC	12 VDC	0 mA	4.16 A	50 mA	4781 mA	87	4000µF
CHB50-12S15	9 -18 VDC	15 VDC	0 mA	3.33 A	50 mA	4781 mA	87	2000µF
CHB50-12S24	9 -18 VDC	24 VDC	0 mA	2.08 A	50 mA	4781 mA	87	1500µF
CHB50-24S33	18-36 VDC	3.3 VDC	0 mA	10 A	50 mA	1698 mA	81	10000µF
CHB50-24S05	18-36 VDC	5 VDC	0 mA	10 A	50 mA	2450 mA	85	10000µF
CHB50-24S12	18-36 VDC	12 VDC	0 mA	4.16 A	50 mA	2363 mA	88	10000µF
CHB50-24S15	18-36 VDC	15 VDC	0 mA	3.33 A	50 mA	2363 mA	88	4000µF
CHB50-24S24	18-36 VDC	24 VDC	0 mA	2.08 A	50 mA	2363 mA	88	2000µF
CHB50-48S33	36-75 VDC	3.3 VDC	0 mA	10 A	50 mA	848 mA	81	10000µF
CHB50-48S05	36-75 VDC	5 VDC	0 mA	10 A	50 mA	1240 mA	84	10000µF
CHB50-48S12	36-75 VDC	12 VDC	0 mA	4.16 A	50 mA	1181 mA	88	10000µF
CHB50-48S15	36-75 VDC	15 VDC	0 mA	3.33 A	50 mA	1181 mA	88	4000µF
CHB50-48S24	36-75 VDC	24 VDC	0 mA	2.08 A	50 mA	1168 mA	89	2000µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		12V 9-18V
		24V 18-36V
		48V 36-75V
Input Surge Voltage (100ms max.)		12V ..... 25Vdc max.
		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout:		
	12Vin	power up ..... >8.8V
		power down ..... >8V
	24Vin	power up ..... >17V
		power down ..... >16V
	48Vin	power up ..... >34V
		power down ..... >32.5V
Positive Logic Remote On/Off		See note 3 & 4

OUTPUT SPECIFICATIONS

Voltage Accuracy		±1.0% max.
Transient Response: 25% Step Load Change		< 500µs
External Trim Adj. Range˚C		±10%/˚C
Ripple & Noise, 20MHz BW(see note 5)		
	3.3V & 5V	20mV RMS max.
		75mV pk-pk max.
	12V & 15V	30mV RMS max.
		100mV pk-pk max.
	24V	100mV RMS max.
240mV pk-pk max.		
Temperature Coefficient		±0.03%/°C
Short Circuit Protection		Continuous
Line Regulation (see note 1)		±0.2% max.
Load Regulation (see note 2)		±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.		115-140%
Current Limit		110%-150% Nominal Output
Start up time		5ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Capacitance	1000pF typ.
Isolation Resistance	10^7 ohm min.
Switching Frequency	(12/24)Vin ..... 400KHz typ.
	48Vin ..... 300KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp.	100˚C typ.
Humidity	95% RH max. Non condensing
MTBF .....MIL-STD-217F, GB, 25˚C, Full Load	1000Khrs typ.
Dimensions	2.28 × 2.40 x 0.50 inches
	(57.9 x 61.0 × 12.7 mm)
Case Material	Aluminum
Weight	88 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Logic compatibility ..... open collector ref to –Input
   Module On ..... open circuit
   Module Off ..... < 0.8VDC
4. Suffix "N" to the model number with negative logic remote On/Off.
5. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
6. Suffix "-C" to the model number with clear mounting Insert (3.2mm DIA.)
7. ON/OFF Pin is not directly applied voltage, please refer to remote on / off control circuit.

CHB50W SERIES
33-50 WATT, 4:1 INPUT RANGE

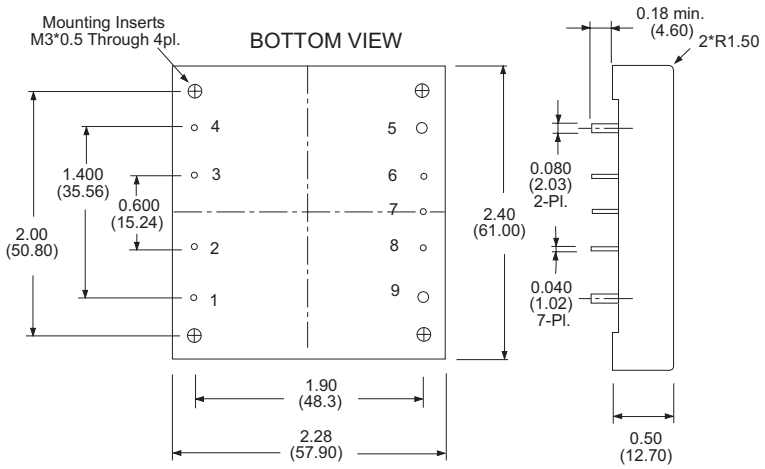
Features

- 33W-50W Isolated Output
- Efficiency to 87%
- 300KHz Switching Frequency
- 4 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Five-Sided Shield Metal Case
- Half-Brick Size Meet Industrial Standard
- CE Mark Meets 2004/108/EC
- UL60950-1 Approval (Except 28 Vout)
- Safety UL60950-1, EN60950-1 and IEC60950-1

E176177

Mechanical Dimensions

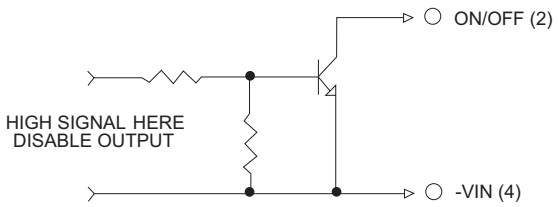
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



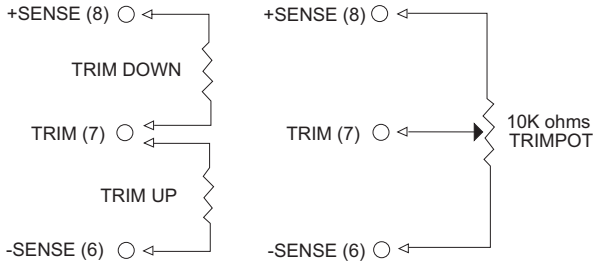
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CHB50W-24S33	9-36 VDC	3.3 VDC	0 mA	10 A	50 mA	1740 mA	79	10000µF
CHB50W-24S05	9-36 VDC	5 VDC	0 mA	10 A	50 mA	2570 mA	81	10000µF
CHB50W-24S12	9-36 VDC	12 VDC	0 mA	4.16 A	50 mA	2510 mA	83	4160µF
CHB50W-24S15	9-36 VDC	15 VDC	0 mA	3.33 A	50 mA	2448 mA	85	3330µF
CHB50W-24S24	9-36 VDC	24 VDC	0 mA	2.08 A	50 mA	2476 mA	84	2080µF
CHB50W-24S28	9-36 VDC	28 VDC	0 mA	1.78 A	50 mA	2510 mA	83	1780µF
CHB50W-24S48	9-36 VDC	48 VDC	0 mA	1.04 A	50 mA	2506 mA	83	1040µF
CHB50W-48S33	18-75 VDC	3.3 VDC	0 mA	10 A	50 mA	848 mA	81	10000µF
CHB50W-48S05	18-75 VDC	5 VDC	0 mA	10 A	50 mA	1255 mA	83	10000µF
CHB50W-48S12	18-75 VDC	12 VDC	0 mA	4.16 A	50 mA	1223 mA	85	4160µF
CHB50W-48S15	18-75 VDC	15 VDC	0 mA	3.33 A	50 mA	1196 mA	87	3330µF
CHB50W-48S24	18-75 VDC	24 VDC	0 mA	2.08 A	50 mA	1209 mA	86	2080µF
CHB50W-48S28	18-75 VDC	28 VDC	0 mA	1.78 A	50 mA	1223 mA	85	1780µF
CHB50W-48S48	18-75 VDC	48 VDC	0 mA	1.04 A	50 mA	1238 mA	84	1040µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 9-36V
		48V 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout:		
	24Vin	power up 8.8V
		power down 8V
	48Vin	power up 17V
		power down 16V
Positive Logic Remote On/Off		See note 3 & 4
Input Filter		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy (note 7)	±1.0% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 5)	
3.3V & 5V	40mV RMS max., 100mV pk-pk max.
12V & 15V	60mV RMS max., 150mV pk-pk max.
24V	100mV RMS max., 240mV pk-pk max.
28V	100mV RMS max., 280mV pk-pk max.
48V	200mV RMS max., 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1 & 7)	±0.2% max.
Load Regulation (note 2 & 7)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110% -160% Nominal Output
Start up time	5ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	nput/Output..... 1500VDC min.
	Input/Case..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	300KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp.	100˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	1000Khrs typ.
Dimensions	2.28 x 2.40 x 0.50 inches (57.9 x 61.0 x 12.7 mm)
Case Material	Aluminum
Weight	94 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Logic compatibility ..... open collector ref to -input
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off ..... < 0.8VDC
4. Suffix "N" to the model number with negative logic remote On/Off.
   Module On ..... < 0.8VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
5. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output. (48V: 1µF ceramic cap. only)
6. Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
7. Require a 47µF aluminum capacitor connected between +Vout and –Vout for 48Vout models.

CHB75 SERIES
49.5-75 WATT

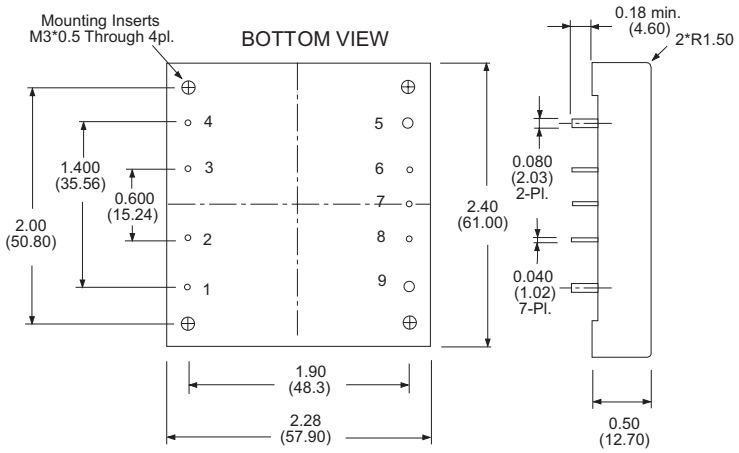
Features

- 49.5W-75W Isolated Output
- Efficiency to 89%
- 300/400KHz Switching Frequency
- 2 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Five-Sided Metal Case
- Half-Brick Size Meet Industrial Standard
- CE Mark Meets 2006/95/EC, 93/68/EEC, and 89/336/EEC
- Safety UL60950-1, EN60950-1 and IEC60950-1

E176177

Mechanical Dimensions

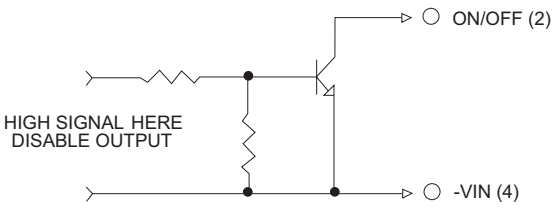
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



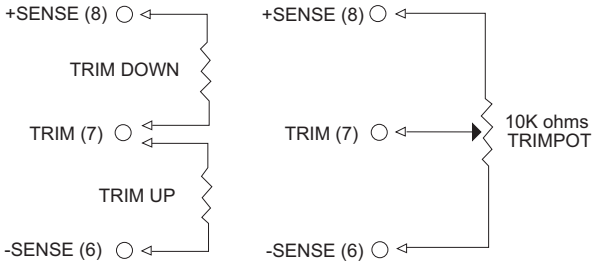
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CHB75-12S33	9 -18 VDC	3.3 VDC	0 mA	15 A	50 mA	5290 mA	78	10000μF
CHB75-12S05	9 -18 VDC	5 VDC	0 mA	15 A	50 mA	7530 mA	83	10000μF
CHB75-12S12	9 -18 VDC	12 VDC	0 mA	6.25 A	50 mA	7183 mA	87	10000μF
CHB75-12S15	9 -18 VDC	15 VDC	0 mA	5 A	50 mA	7267 mA	86	4000μF
CHB75-12S24	9 -18 VDC	24 VDC	0 mA	3.13 A	50 mA	7183 mA	87	2000μF
CHB75-24S33	18-36 VDC	3.3 VDC	0 mA	15 A	50 mA	2578 mA	80	10000μF
CHB75-24S05	18-36 VDC	5 VDC	0 mA	15 A	50 mA	3720 mA	84	10000μF
CHB75-24S12	18-36 VDC	12 VDC	0 mA	6.25 A	50 mA	3551 mA	88	10000μF
CHB75-24S15	18-36 VDC	15 VDC	0 mA	5 A	50 mA	3551 mA	88	4000μF
CHB75-24S24	18-36 VDC	24 VDC	0 mA	3.13 A	50 mA	3551 mA	88	2000μF
CHB75-48S33	36-75 VDC	3.3 VDC	0 mA	15 A	50 mA	1273 mA	81	10000μF
CHB75-48S05	36-75 VDC	5 VDC	0 mA	15 A	50 mA	1860 mA	84	10000μF
CHB75-48S12	36-75 VDC	12 VDC	0 mA	6.25 A	50 mA	1755 mA	89	10000μF
CHB75-48S15	36-75 VDC	15 VDC	0 mA	5 A	50 mA	1775 mA	88	4000μF
CHB75-48S24	36-75 VDC	24 VDC	0 mA	3.13 A	50 mA	1755 mA	89	2000μF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		12V 9-18V
		24V 18-36V
		48V 36-75V
Input Surge Voltage (100ms max.)		12V ..... 25Vdc max.
		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout :		
	12Vin	power up .....>8.8V
		power down ..... >8V
	24Vin	power up ..... >17V
		power down ..... >16V
	48Vin	power up ..... >34V
		power down ..... >32.5V
Positive Logic Remote On/Off		See note 3 & 4
Input Filter		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.0% max.
Transient Response:25% Step Load Change	< 500µs.
External Trim Adj. Range	±10 %
Ripple & Noise, 20MHz BW (see note 5)	
3.3V & 5V	20mV RMS max.
	75mV pk-pk max.
12V & 15V	30mV RMS max.
	100mV pk-pk max.
24V	100mV RMS max.
	240mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (see note1)	±0.2% max.
Load Regulation (see note2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-150% Nominal Output
Start up time	5ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	(12/24)Vin ..... 400KHz typ.
	48Vin ..... 300KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp.	100˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-STD-217F, GB, 25˚C , Full Load	1000Khrs typ.
Dimensions	2.28 × 2.40 x 0.50 inches
	(57.9 x 61.0 × 12.7 mm)
Case Material	Aluminum
Weight	92 g

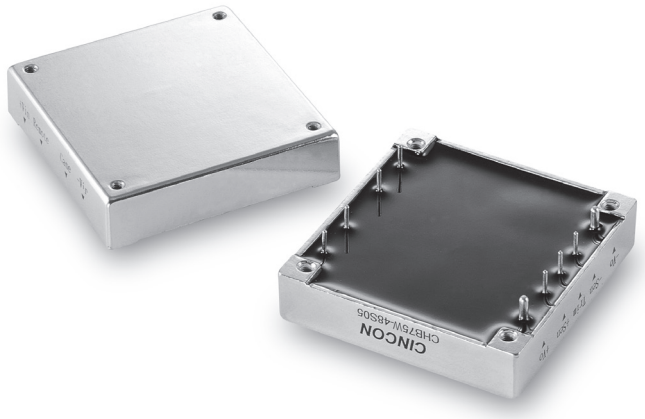
NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Logic compatibility ..... open collector ref to –Input
   Module On ..... open circuit
   Module Off ..... < 0.8VDC
4. Suffix "N" to the model number with negative logic remote on/off.
5. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
6. Suffix "-C" to the model number with clear mounting Insert (3.2mm DIA.)
7. On/Off Pin is not directly applied voltage, please refer to remote On / Off control circuit.

CHB75W SERIES
49.5-75 WATT, 4:1 INPUT RANGE

Features

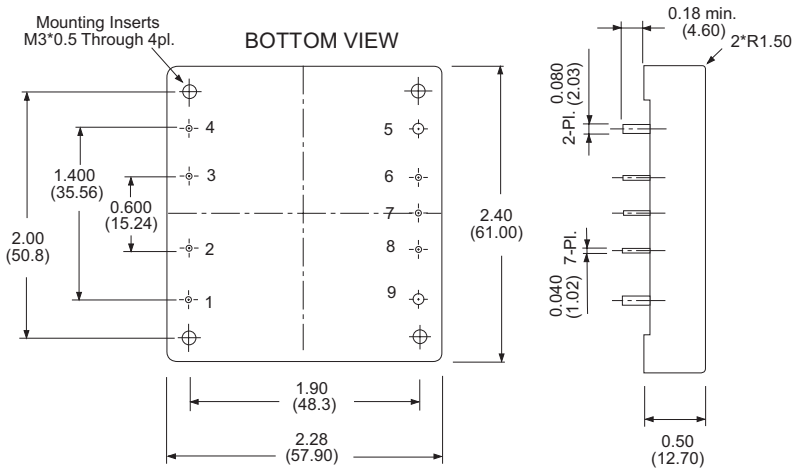
- 49.5W-75W Isolated Output
- Efficiency to 85%
- 300KHz Switching Frequency
- 4 : 1 Wide Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Five-Sided Metal Case
- Half-Brick Size Meet Industrial Standard
- CE Mark Meets 2004/108/EC
- UL60950-1 Approval (Except 28 Vout)
- Safety UL60950-1, EN60950-1, and IEC60950-1



E176177

Mechanical Dimensions

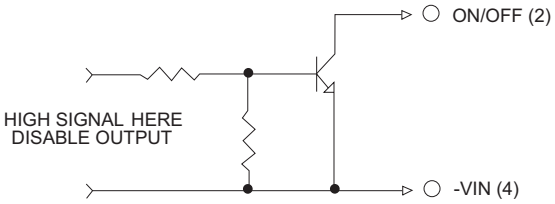
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



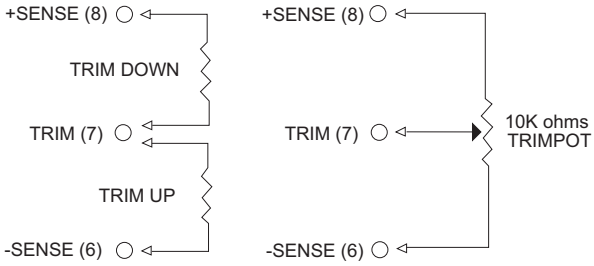
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB75W-24S33	9-36 VDC	3.3 VDC	0 mA	15 A	50 mA	2611 mA	79	15000µF
CHB75W-24S05	9-36 VDC	5 VDC	0 mA	15 A	50 mA	3811 mA	82	15000µF
CHB75W-24S12	9-36 VDC	12 VDC	0 mA	6.25 A	50 mA	3765 mA	83	6250µF
CHB75W-24S15	9-36 VDC	15 VDC	0 mA	5 A	50 mA	3720 mA	84	5000µF
CHB75W-24S24	9-36 VDC	24 VDC	0 mA	3.12 A	50 mA	3720 mA	84	3120µF
CHB75W-24S28	9-36 VDC	28 VDC	0 mA	2.67 A	50 mA	3720 mA	84	2670µF
CHB75W-24S48	9-36 VDC	48 VDC	0 mA	1.56 A	50 mA	3811 mA	82	1560µF
CHB75W-48S33	18-75 VDC	3.3 VDC	0 mA	15 A	50 mA	1289 mA	80	15000µF
CHB75W-48S05	18-75 VDC	5 VDC	0 mA	15 A	50 mA	1883 mA	83	15000µF
CHB75W-48S12	18-75 VDC	12 VDC	0 mA	6.25 A	50 mA	1860 mA	84	6250µF
CHB75W-48S15	18-75 VDC	15 VDC	0 mA	5 A	50 mA	1838 mA	85	5000µF
CHB75W-48S24	18-75 VDC	24 VDC	0 mA	3.12 A	50 mA	1835 mA	85	3120µF
CHB75W-48S28	18-75 VDC	28 VDC	0 mA	2.67 A	50 mA	1835 mA	85	2670µF
CHB75W-48S48	18-75 VDC	48 VDC	0 mA	1.56 A	50 mA	1860 mA	84	1560µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 9-36V
		48V 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout	24Vin	power up 8.8V
		power down 8.0V
	48Vin	power up 17V
		power down 16V
Positive Logic Remote On/Off		See note 3 & 4
Input Filter		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.0% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (see note 5)	
3.3V & 5V	40mV RMS max., 100mV pk-pk max.
12V & 15V	60mV RMS max., 150mV pk-pk max.
24V	100mV RMS max., 240mV pk-pk max.
28V	100mV RMS max., 280mV pk-pk max.
48V	200mV RMS max., 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1& 7)	±0.2% max.
Load Regulation (note 2& 7)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-160% Nominal Output
Start up time	5ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	300KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp.	100˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	1000Khrs typ.
Dimensions	2.28 x 2.40 x 0.50 inches (57.9 x 61.0 x 12.7 mm)
Case Material	Aluminum
Weight	94 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Logic compatibility ..... open collector ref to -input
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off ..... < 0.8VDC
4. Suffix "N" to the model number with negative logic remote on/off
   Module On ..... < 0.8VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
5. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output. (48V: 1µF ceramic cap. only)
6. Suffix "-C" to the model number with clear mounting insert. (3.2mm DIA.)
7. Require a 47µF aluminum capacitor connected between +Vout and -Vout for 48Vout models.

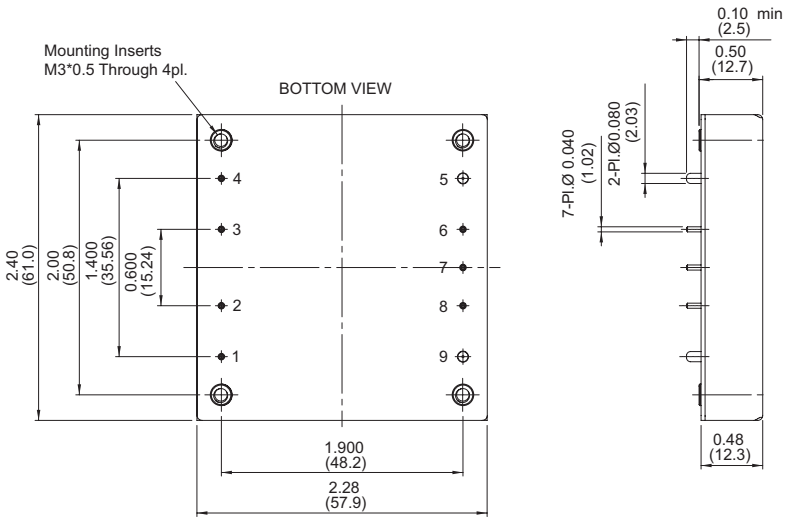
CHE75W SERIES
49.5-75 WATT, 4:1 INPUT RANGE

Features

- 75W Isolated Output
- Half-Brick Size, Six-Sided Shield Metal Case
- High Efficiency up to 92.5%
- Regulated Outputs
- 4 : 1 Input Range
- 250KHz Switching Frequency
- Continuous Short Circuit Protection
- Input Under-Voltage Protection
- Over Temperature/Voltage/Current Protection
- Remote On/Off
- Full Load Operation up to 65˚C
  with Heat-Sink M-C091 Natural Convention
- No Tantalum Capacitor Inside
- CE Mark Meets 2004/108/EC
- Safety Meets UL60950-1, EN60950-1, and IEC60950-1

Mechanical Dimensions

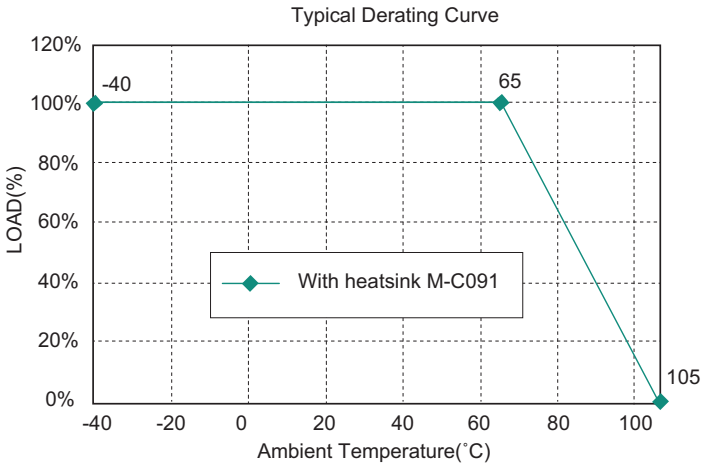
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHE75W-24S3V3	9-36 VDC	3.3 VDC	0 mA	20A	150 mA	3.11 A	88.5	20000µF
CHE75W-24S05	9-36 VDC	5 VDC	0 mA	15 A	150 mA	3.43 A	91	15000µF
CHE75W-24S12	9-36 VDC	12 VDC	0 mA	6.25 A	150 mA	3.41 A	91.5	6250µF
CHE75W-24S15	9-36 VDC	15 VDC	0 mA	5 A	150 mA	3.41 A	91.5	5000µF
CHE75W-24S24	9-36 VDC	24 VDC	0 mA	3.12 A	70 mA	3.47 A	90	3120uF
CHE75W-24S48	9-36 VDC	48 VDC	0 mA	1.56 A	70 mA	3.51 A	89	1560µF
CHE75W-48S3V3	18-75 VDC	3.3 VDC	0 mA	20 A	80 mA	1.54 A	89	20000µF
CHE75W-48S05	18-75 VDC	5 VDC	0 mA	15 A	80 mA	1.70 A	92	15000µF
CHE75W-48S12	18-75 VDC	12 VDC	0 mA	6.25 A	80 mA	1.70 A	92	6250µF
CHE75W-48S15	18-75 VDC	15 VDC	0 mA	5 A	70 mA	1.69 A	92.5	5000uF
CHE75W-48S24	18-75 VDC	24 VDC	0 mA	3.12 A	70 mA	1.73 A	90.5	3120µF
CHE75W-48S48	18-75 VDC	48 VDC	0 mA	1.56 A	70 mA	1.74 A	90	1560µF

Derating Curve



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 9-36V
		48V 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under voltage lockout	24Vin	power up 8.8V
		power down 8.0V
	48Vin	power up 17V
		power down 16V
Positive Logic Remote On/Off		See note 4 & 5
Input Filter		PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy:	±1.5% max.
Transient Response:25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (see note 3)	
3.3V & 5V	40mV RMS, 100Mv pk-pk max.
12V & 15V	60mV RMS, 120mV pk-pk max.
24V	100mV RMS, 240mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range, % Vo nom.	115-140%
Current Limit	110% -140% Nominal Output
Start up time	3.3V & 5V & 48V ... 10ms typ.
	12V & 15V & 24V....15ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	250KHz typ.
Operating Case Temperature	-40˚C to 105˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temp.	110˚C typ.
Humidity	95% RH max. Non condensing
Dimensions	2.28 × 2.40 x 0.50 inches (57.9 x 61.0 × 12.7 mm)
Case Material	Aluminum with Non-Conducted Base
Weight	95 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
   (24V & 48V: 10µF aluminum and 1µF ceramic capacitor across output.)
4. Logic compatibility ..... open collector refer to -Vin
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off ..... < 1.2VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... < 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit

CHB75 Dual SERIES
75 WATT, DUAL OUTPUTS

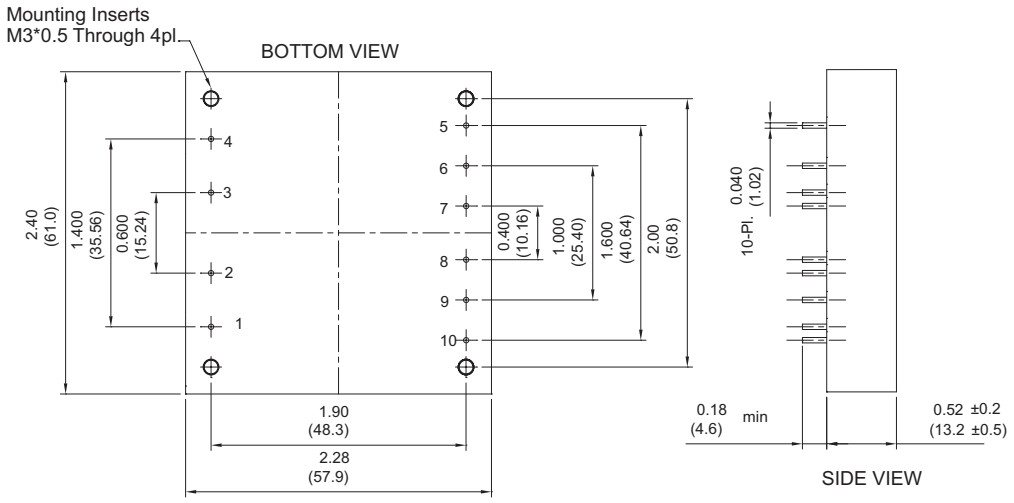
Features

- 75W Isolated Output
- Efficiency to 84%
- 400KHz Switching Frequency
- 2 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Half-Brick Size Meet Industrial Standard
- Total Power 75W with 15A Maximum Per Channel
- CE Mark Meets 2004/108/EC
- UL60950-1 Approval

E176177

Mechanical Dimensions

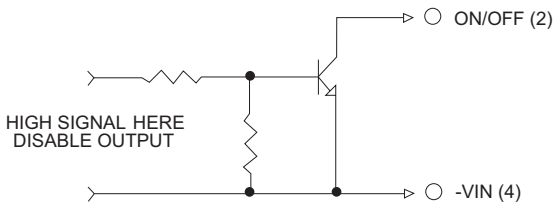
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



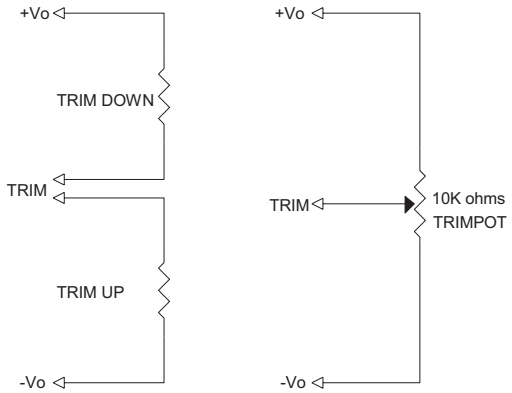
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-Vo2
6	-Vo2
7	-Vo2 Trim
8	+Vo1
9	-Vo1
10	Vo1 Trim

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB75-24D05-3V3	18-36 VDC	VO1= 5 V VO2= 3.3 V	0 A 0 A	15 A 15 A	50 mA	3765 mA	83%	15000µF
CHB75-24D05-2V5	18-36 VDC	VO1= 5 V VO2= 2.5 V	0 A 0 A	15 A 15 A	50 mA	3765 mA	83%	15000µF
CHB75-48D05-3V3	36-75 VDC	VO1= 5 V VO2= 3.3 V	0 A 0 A	15 A 15 A	30 mA	1860 mA	84%	15000µF
CHB75-48D05-2V5	36-75 VDC	VO1= 5 V VO2= 2.5 V	0 A 0 A	15 A 15 A	30 mA	1860 mA	84%	15000µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 18-36V
		48V 36-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout	24Vin	power up 17V
		power down 15.5V
	48Vin	power up 34V
		power down 32.5V
Positive Logic Remote On/Off		See note 4 & 5
Input Filter		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±2% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range, Each Output	±5%
Ripple & Noise, 20MHz BW (note 6)	40mV RMS max.
	100mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit (note 3)	110%-140% Nominal Output
Start up time	20ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output .....1500VDC min.
	Input/Case .....1500VDC min.
	Output/Case .....1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	400KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Humidity	95% RH max. Non condensing
MTBF ..... MIL-HDBK-217F, GB, 25˚C, Full Load	700 Khrs typ.
Thermal Shutdown Range Case Temp.	100˚C typ.
Dimensions	2.28 × 2.40 x 0.52 inches
	(57.9 x 61.0 x 13.2 mm)
Case Material	Aluminum Baseplate with
	Plastic Case
Weight	108 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to min. load.
3. Measured with output current on output1 (Vo1)
4. Logic compatibility ..... open collector refer to –Input
   Module On ..... open circuit
   Module Off ..... < 0.8VDC
5. Suffix "N" to the model number with negative logic remote On/Off.
6. The output noise is measured with 10µF tantalum and 1µF ceramic capacitor across output.
7. Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)

CHB100 SERIES
66-100 WATT

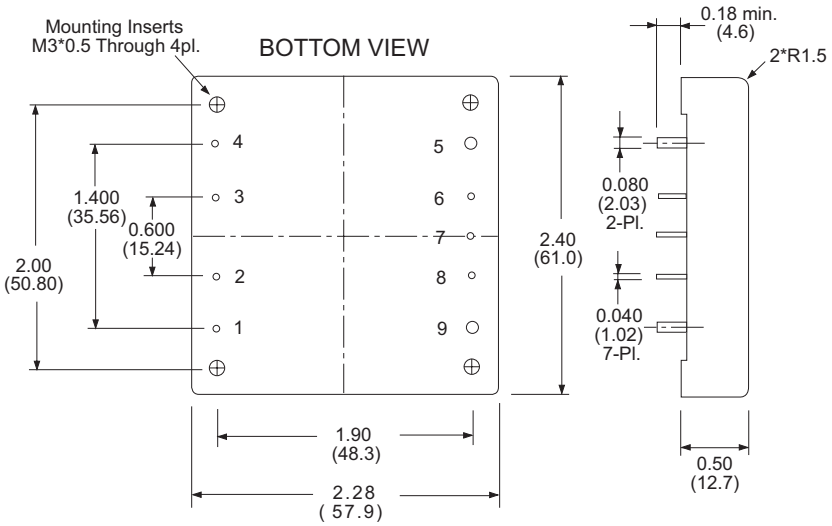
Features

- 66W-100W Isolated Output
- Efficiency to 89%
- 500KHz Switching Frequency
- 2 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Five-Sided Metal Case
- Half-Brick Size Meet Industrial Standard
- CE Mark Meets 2004/108/EC
- UL60950-1 Approval
- Without Tantalum Capacitor Inside (V2.X Only, with TC Label)

E176177

Mechanical Dimensions

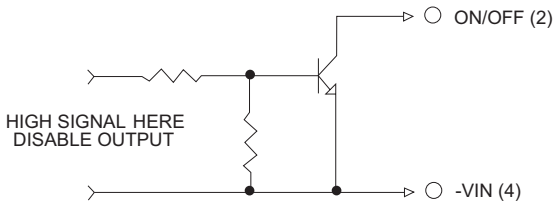
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



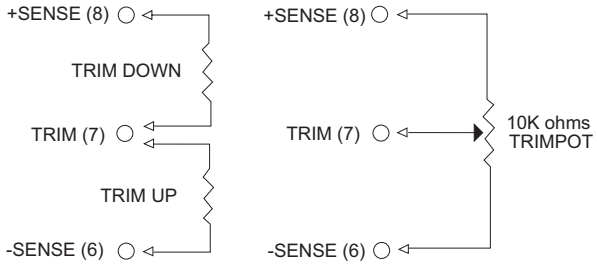
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB100-24S33	18-36 VDC	3.3 VDC	0 mA	20 A	50 mA	3313 mA	83	20000μF
CHB100-24S05	18-36 VDC	5 VDC	0 mA	20 A	50 mA	4960 mA	84	20000μF
CHB100-24S12	18-36 VDC	12 VDC	0 mA	8.3 A	50 mA	4770 mA	87	8300μF
CHB100-24S15	18-36 VDC	15 VDC	0 mA	6.7 A	50 mA	4758 mA	88	6700μF
CHB100-24S24	18-36 VDC	24 VDC	0 mA	4.17 A	50 mA	4793 mA	87	4170μF
CHB100-48S33	36-75 VDC	3.3 VDC	0 mA	20 A	50 mA	1676 mA	82	20000μF
CHB100-48S05	36-75 VDC	5 VDC	0 mA	20 A	50 mA	2422 mA	86	20000μF
CHB100-48S12	36-75 VDC	12 VDC	0 mA	8.3 A	50 mA	2331 mA	89	8300μF
CHB100-48S15	36-75 VDC	15 VDC	0 mA	6.7 A	50 mA	2352 mA	89	6700μF
CHB100-48S24	36-75 VDC	24 VDC	0 mA	4.17 A	50 mA	2369 mA	88	4170μF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V.....18-36V
		48V.....36-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout:		
	24Vin	power up ..... >17V
		power down ..... >16V
	48Vin	power up ..... >34V
		power down ..... >32.5V
Positive Logic Remote On/Off		See note 3 & 4
Input Filter		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.0% max.
Transient Response:25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 5)	
3.3V & 5V	40mV RMS max.
	100mV pk-pk max.
12V & 15V	60mV RMS max.
	150mV pk-pk max.
24V	100mV RMS max.
	240mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range ,% Vo nom.	115-140%
Current Limit	110%-140% Nominal Output
Start up time	5ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	500KHz typ.
Operating Case Temperature	-40˚C to +100˚C
Storage Temperature	-40˚C to +105˚C
Thermal Shutdown Case Temp.	100˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	900Khrs typ.
Dimensions	2.28 × 2.40 x 0.50 inches
	(57.9 x 61.0 ×12.7 mm)
Case Material	Aluminum
Weight	95 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Logic compatibility .... open collector ref to -Input
   Module On ..... open circuit
   Module Off ..... < 0.8VDC
4. Suffix "N" to the model number with negative logic remote On/Off.
5. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
6. Suffix "-C" to the model number with clear mounting insert. (3.2mm DIA.)

CHB100-110S SERIES
100 WATT, INPUT RANGE 66-160 VDC

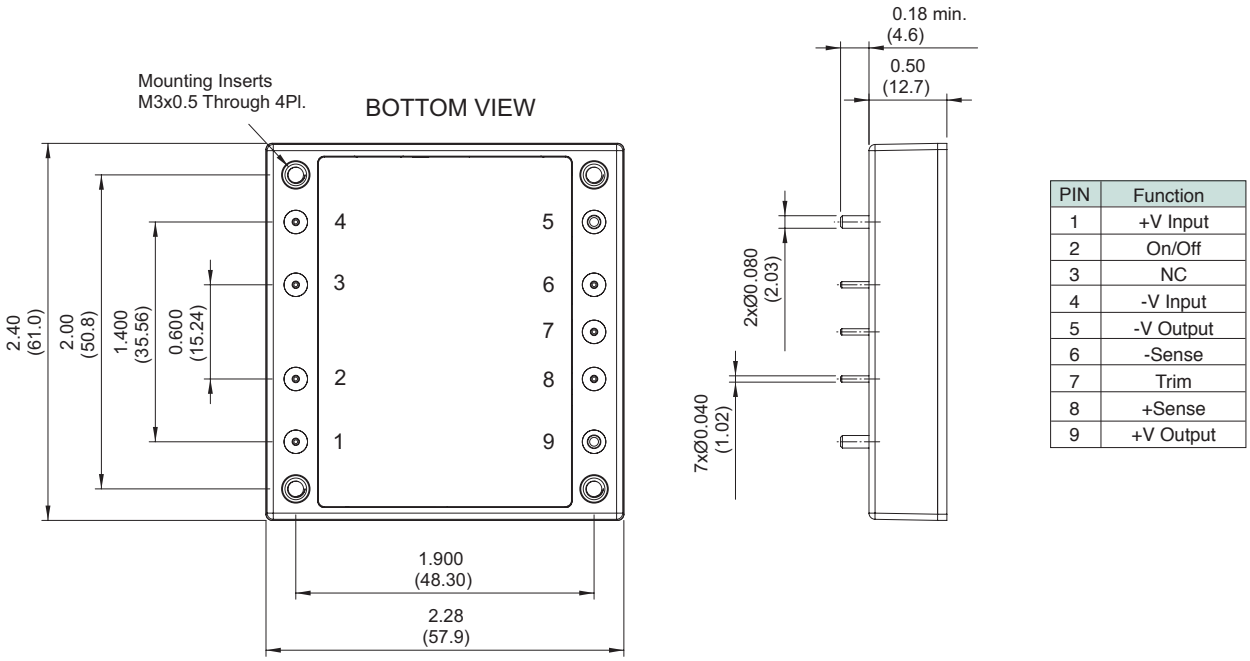
Features

- 100W Isolated Output
- Efficiency to 86%
- Low No Load Input Power
- 2 : 1 Input Range
- Regulated Outputs
- Remote On/Off
- Over Temperature Protection
- Over Voltage/Current Protection
- Continuous Short Circuit Protection
- Half Brick Size
- Safety Standard: UL 60950-1 2nd (Basic Insulation)
- EMC: EN 50155 (EN 50121-3-2), External Filter Required
- Shock & Vibration: EN 50155 (EN 61373)

Approval Pending
E176177

Mechanical Dimensions

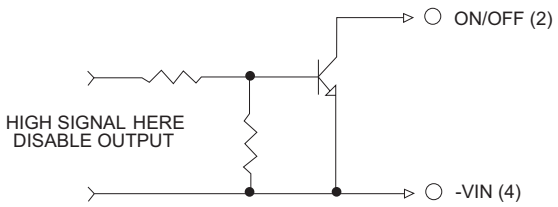
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



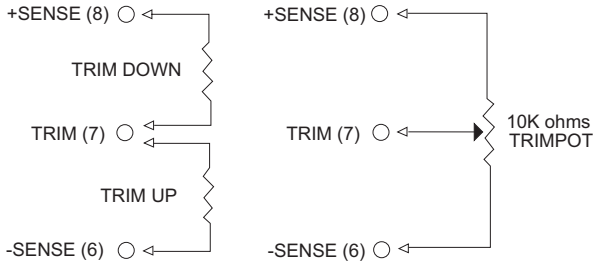
PIN	Function
1	+V Input
2	On/Off
3	NC
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB100-110S12	66-160 VDC	12 VDC	0 mA	8.3 A	5 mA	1060 mA	86	8300µF
CHB100-110S15	66-160 VDC	15 VDC	0 mA	6.7 A	5 mA	1070 mA	85	4170µF
CHB100-110S24	66-160 VDC	24 VDC	0 mA	4.17 A	5 mA	1070 mA	85	4170µF
CHB100-110S48	66-160 VDC	48 VDC	0 mA	2.08 A	5 mA	1070 mA	85	2080µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	66-160V
Input Surge Voltage (100ms max.)	180Vdc max.
Under voltage lockout	power up 62V
	power down 56V
Positive Logic Remote On/Off:	
Logic Compatibility	Open Collector ref to -Input
Module On	Open Circuit
Module Off	< 1.8Vdc
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW(note 3)	
12V, 15V	60mVRMS, 150mVpk-pk max.
24V	100mVRMS, 240mVpk-pk max.
48V	200mVRMS, 480mVpk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range, % Vo nom.	115-140%
Current Limit	110%-150% Nominal Output
Start up time	120ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output .....3000Vrms min.
	Input/Case.....1500Vrms min.
	Output/Case.....500Vrms min.
Isolation Resistance	10^9 ohm min.
Isolation Capacitance	500pF typ.
Switching Frequency	250KHz typ.
Operating Case Temperature	-40°C to 100°C
Storage Temperature	-55°C to +105°C
Thermal Shutdown, Case Temp.	105°C typ.
Humidity	95% RH max. Non condensing
Safety	UL60950-1, EN50155
EMI	EN55022 Class A & Class B with external filter
Shock/Vibration	EN50155 (EN61373)
Environmental	EN50155 (EN60068-2-1)
Dimensions	2.28 × 2.40 x 0.50 inches (57.9 x 61.0 × 12.7 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	90 g

NOTE

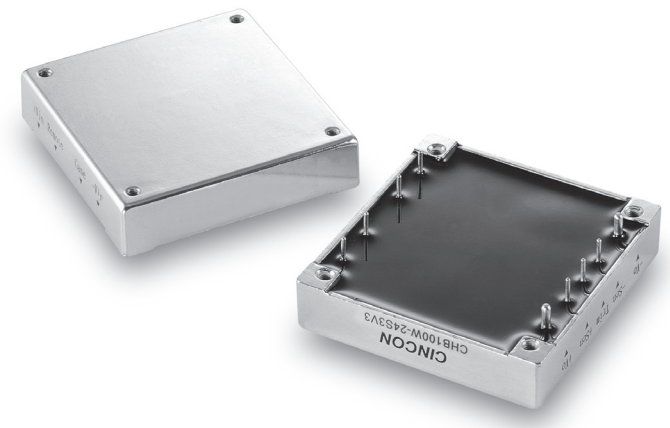
1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output. (48V: 1µF ceramic cap. only).
4. An external input capacitor 47µF for all models are recommended to reduce input ripple voltage.
5. Require a 47µF aluminum capacitor connected between +Vout and –Vout for 48Vout models.

CHB100W SERIES
66 -100 WATT, 4:1 INPUT RANGE

Features

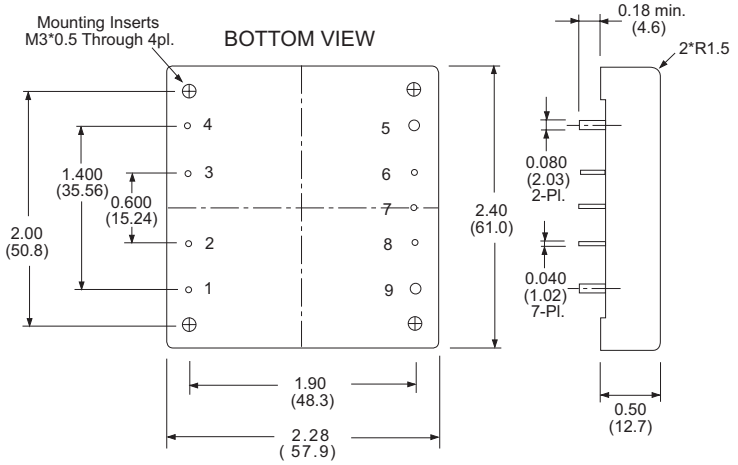
- 66W-100W Isolated Output
- Efficiency to 89%
- 250KHz Switching Frequency
- 4 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Five-Sided Metal Case
- Half-Brick Size Meet Industrial Standard
- CE Mark Meets 2004/108/EC
- UL60950-1 Approval (Except 28 Vout)

E176177



Mechanical Dimensions

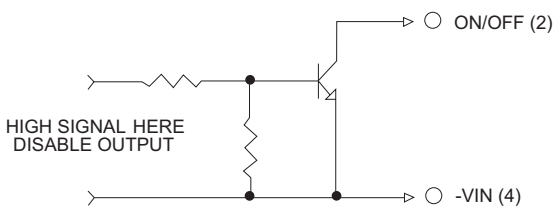
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



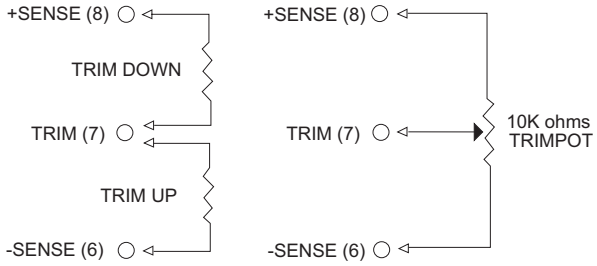
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB100W-24S3V3	9-36 VDC	3.3 VDC	0 mA	20 A	35 mA	3333 mA	82.5	20000µF
CHB100W-24S05	9-36 VDC	5 VDC	0 mA	20 A	35 mA	4931 mA	84.5	20000µF
CHB100W-24S12	9-36 VDC	12 VDC	0 mA	8.3 A	35 mA	4854 mA	85.5	8300µF
CHB100W-24S15	9-36 VDC	15 VDC	0 mA	6.7 A	35 mA	4813 mA	87	6700µF
CHB100W-24S24	9-36 VDC	24 VDC	0 mA	4.17 A	35 mA	4766 mA	87.5	1800µF
CHB100W-24S28	9-36 VDC	28 VDC	0 mA	3.57 A	50 mA	4845 mA	86	2200µF
CHB100W-24S48	9-36 VDC	48 VDC	0 mA	2.08 A	35 mA	5042 mA	82.5	470µF
CHB100W-48S3V3	18-75 VDC	3.3 VDC	0 mA	20 A	30 mA	1667 mA	82.5	20000µF
CHB100W-48S05	18-75 VDC	5 VDC	0 mA	20 A	30 mA	2422 mA	86	20000µF
CHB100W-48S12	18-75 VDC	12 VDC	0 mA	8.3 A	30 mA	2371 mA	87.5	8300µF
CHB100W-48S15	18-75 VDC	15 VDC	0 mA	6.7 A	30 mA	2379 mA	88	6700µF
CHB100W-48S24	18-75 VDC	24 VDC	0 mA	4.17 A	30 mA	2343 mA	89	2200µF
CHB100W-48S28	18-75 VDC	28 VDC	0 mA	3.57 A	50 mA	2422 mA	86	2200µF
CHB100W-48S48	18-75 VDC	48 VDC	0 mA	2.08 A	30 mA	2462 mA	84.5	470µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 9-36V
		48V 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout	24Vin	power up 8.8V
		power down 8.0V
	48Vin	power up 17V
		power down 16V
Positive Logic Remote On/Off		See note 4 & 5
Input Filter		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy (note 7)	±1.5% max.
Voltage Accuracy for 28V Models	±1.0% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note3)	
3.3V & 5V	40mV RMS max., 100mV pk-pk max.
12V & 15V	60mV RMS max., 150mV pk-pk max.
24V	100mV RMS max., 240mV pk-pk max.
28V	100mV RMS max., 280mV pk-pk max.
48V	200mV RMS max., 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range ,% Vo nom.	115-140%
Current Limit	110% -140% Nominal Output
Start up time	25ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output, Input/Case, Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1500pF typ.
Switching Frequency	250KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp.	105˚C typ.
Humidity	95% RH max. Non condensing
MTBF ....MIL-HDBK-217F, GB, 25˚C, Full Load	700Khrs typ.
Dimensions	2.28 x 2.40 x 0.50 inches (57.9 x 61.0 x 12.7 mm)
Case Material	Aluminum
Weight	95 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output. (48V: 0.1µF ceramic cap. only)
4. Logic Compatibility ..... open collector ref to -input
   Module On ..... >3.5VDC or open circuit
   Module Off ..... <1.8VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... <1.8VDC
   Module Off ..... >3.5VDC or open circuit
6. Suffix "-C" to the model number with clear mounting insert. (3.2mm DIA.)
7. Require a 47µF aluminum capacitor connected between +Vout and –Vout for 48Vout models.

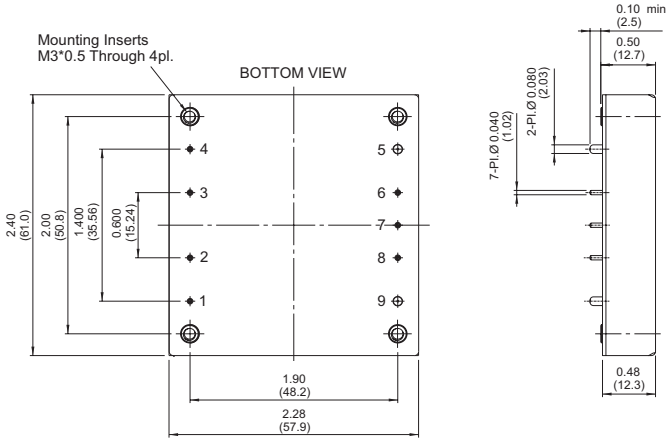
CHE100/CHE100W SERIES
100 WATT, 2:1/4:1 INPUT RANGE

Features

- 100W Isolated Output
- Half-Brick Size, Six-Sided Shield Metal Case
- High Efficiency to 93%
- 2 : 1 / 4 : 1 Input Range
- Regulated Outputs
- 250KHz Switching Frequency
- Continuous Short Circuit Protection
- Input Under-Voltage Protection
- Over Temperature/Voltage/Current Protection
- Remote On/Off
- Full Load Operation up to 60˚C
  with Heat-Sink M-C091 Natural Convention
- No Tantalum Capacitor Inside
- CE Mark Meets 2004/108/EC
- Safety Meets UL60950-1, EN60950-1, and IEC60950-1

Mechanical Dimensions

All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

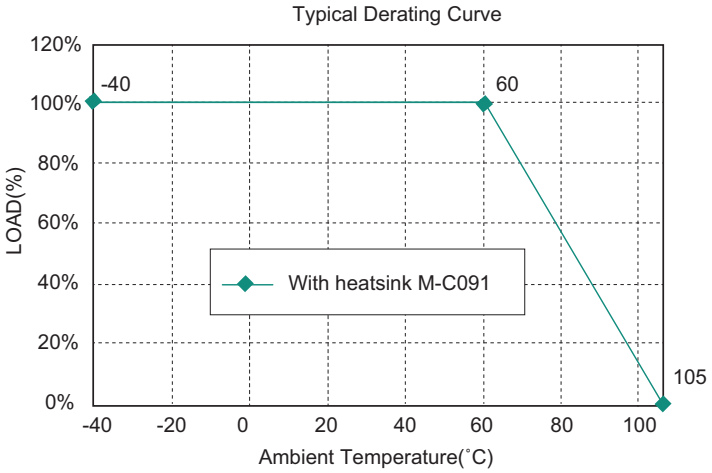
CHE100 Series

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHE100-24S24	18-36VDC	24 VDC	0 mA	4.2 A	100 mA	4.57 A	92	4200µF

CHE100W Series

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHE100W-24S3V3	9-36 VDC	3.3 VDC	0 mA	25 A	200 mA	3.94 A	87	25000µF
CHE100W-24S05	9-36 VDC	5 VDC	0 mA	20 A	150 mA	4.66 A	89.5	20000µF
CHE100W-24S12	9-36 VDC	12 VDC	0 mA	8.4 A	200 mA	4.62 A	90.5	8400µF
CHE100W-24S15	9-36 VDC	15 VDC	0 mA	6.7 A	200 mA	4.62 A	90.5	6700µF
CHE100W-24S24	9-36 VDC	24 VDC	0 mA	4.2 A	100 mA	4.76 A	89	4200µF
CHE100W-24S48	9-36 VDC	48 VDC	0 mA	2.1 A	100 mA	4.76 A	88.5	2100µF
CHE100W-48S3V3	18-75 VDC	3.3 VDC	0 mA	25 A	130 mA	1.96 A	88	25000µF
CHE100W-48S05	18-75 VDC	5 VDC	0 mA	20 A	130 mA	2.28 A	92	20000µF
CHE100W-48S12	18-75 VDC	12 VDC	0 mA	8.4 A	100 mA	2.26 A	93	8400µF
CHE100W-48S15	18-75 VDC	15 VDC	0 mA	6.7 A	100 mA	2.26 A	92.5	6700µF
CHE100W-48S24	18-75 VDC	24 VDC	0 mA	4.2 A	100 mA	2.32 A	91	4200µF
CHE100W-48S48	18-75 VDC	48 VDC	0 mA	2.1 A	100 mA	2.32 A	90.5	2100µF

Derating Curve



Specifications

All Specifications Typical At Nominal Line, Fill Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

IInput Voltage Range .	24V 9-36V
	48V 18-75V
	CHE100-24SXX 18-36V
Input Surge Voltage (100ms max.)	24V ..... 50Vdc max.
	48V.....100Vdc max.
Under voltage lockout 24Vin	power up 8.8V
	power down 8.0V
CHE100-24SXX/48Vin	power up 17V
	power down 16V
Positive Logic Remote On/Off	see note 4 & 5
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW	
3.3V & 5V	40mV RMS, 100mV pk-pk max.
12V & 15V	60mV RMS, 120mV pk-pk max.
24V	100mV RMS, 240mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/˚C
Short Circuit Protection	Continuous
Line Regulation1	±0.2% max.
Load Regulation2	±0.2% max.
Over Voltage Protection trip Range ,% Vo nom.	115-140%
Current Limit	110% -140% Nominal Output
Start up time	10ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output .....1500VDC min.
	Input/Case .....1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	250KHz typ.
Operating Case Temperature	-40˚C to 105˚C.
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temperature	110˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	XXS05: 750Khrs typ.
	Others: 880Khrs typ.
Dimensions	2.28 x 2.40 x 0.50 inches
	(57.9 x 61.0 x 12.7 mm)
Case Material	Aluminum with Non-Conducted Base
Weight	95 g

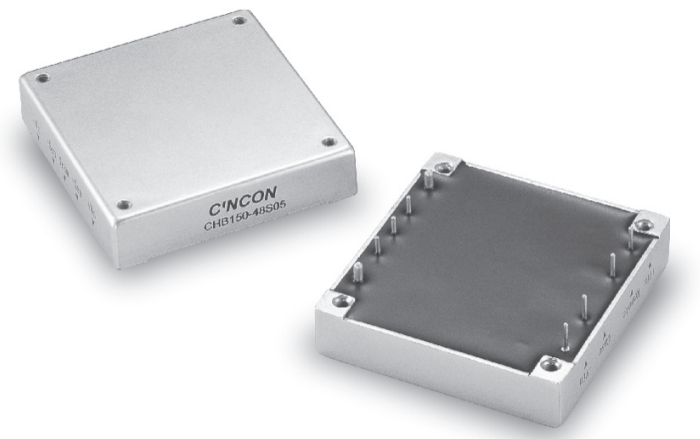
NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
   (24V & 48V:10µF aluminum and 1µF ceramic capacitor across output.)
4. Logic compatibility ..... open collector refer to -Vin
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off ..... < 1.2VDC
5. Suffix "N" to the model number with negative logic remote on/off
   Module On ..... < 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit

CHB150 SERIES
99-150 WATT

Features

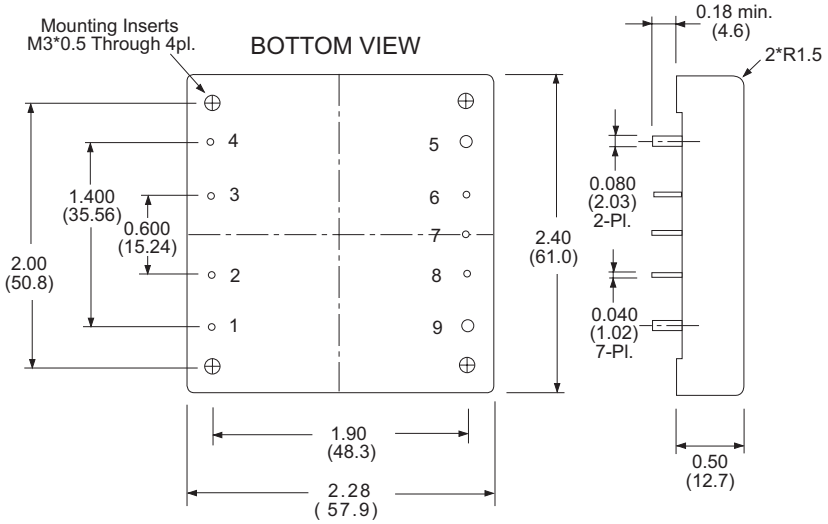
- 99W-150W Isolated Output
- Efficiency to 89%
- 500KHz Switching Frequency
- 2 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Five-Sided Metal Case
- Half-Brick Size Meet Industrial Standard
- CE Mark Meets 2004/108/EC
- UL60950-1 Approval
- Without Tantalum Capacitor Inside (V2.X Only, with (TC) Label)



E176177

Mechanical Dimensions

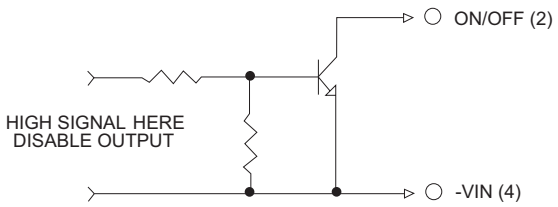
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



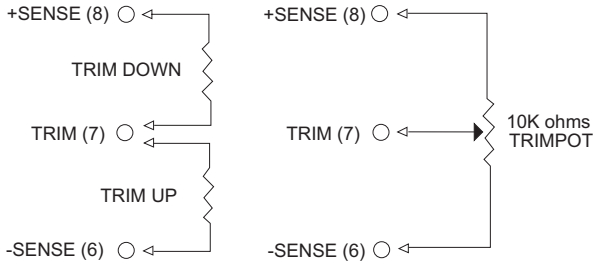
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CHB150-48S33	36-75 VDC	3.3 VDC	0 mA	30 A	25 mA	2.5 A	82	30000μF
CHB150-48S05	36-75 VDC	5 VDC	0 mA	30 A	25 mA	3.6 A	86	30000μF
CHB150-48S12	36-75 VDC	12 VDC	0 mA	12.5 A	25 mA	3.5 A	89	12500μF
CHB150-48S15	36-75 VDC	15 VDC	0 mA	10 A	25 mA	3.5 A	89	10000μF
CHB150-48S24	36-75 VDC	24 VDC	0 mA	6.25 A	25 mA	3.5 A	89	6250μF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	48V..... 36-75V
Input Surge Voltage (100ms max.)	48V ..... 100Vdc max.
Under Voltage Lockout	power up 34V
	power down.....32.5V
Positive Logic Remote On/Off	See note 3 & 4
Input Filter	Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.0% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 5)	
3.3V & 5V	40mV RMS max.
	100mV pk-pk max.
12V & 15V	60mV RMS max.
	150mV pk-pk max.
24V	100mV RMS max.
	240mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-140% Nominal Output
Start up time	5ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	500KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-40˚C to +105˚C
Humidity	95% RH max. Non condensing
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	900Khrs typ.
Thermal Shutdown Case Temp.	100˚C typ.
Dimensions	2.28 x 2.40 x 0.50 inches
	(57.9 x 61.0 x 12.7 mm)
Case Material	Aluminum
Weight	100 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Logic compatibility ..... open collector ref to -Input
   Module On ..... open circuit
   Module Off ..... < 0.8VDC
4. Suffix "N" to the model number with negative logic remote On/Off.
5. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
6. Suffix "-C" to the model number with clear mounting insert. (3.2mm DIA.)

CHB150W SERIES
99-150 WATT, 4:1 INPUT RANGE

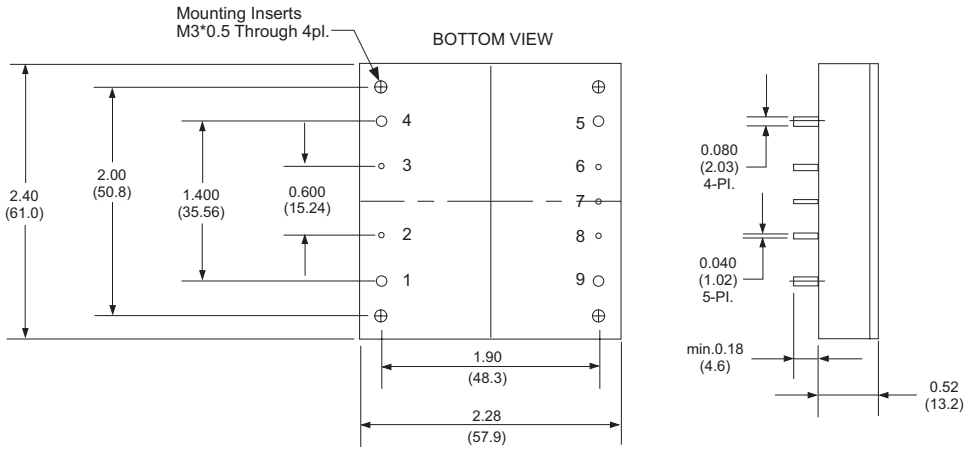
Features

- 99W-150W Isolated Output
- Efficiency to 91%
- 250KHz Switching Frequency
- 4 : 1 Input Range
- Regulated Outputs
- Remote On/Off
- Over Temperature Protection
- Over Voltage/Current Protection
- Continuous Short Circuit Protection
- Half-Brick Size Meet Industrial Standard
- CE Mark Meets 2004/108/EC
- UL60950-1 Approval (Except 28&48 Vout)

E176177

Mechanical Dimensions

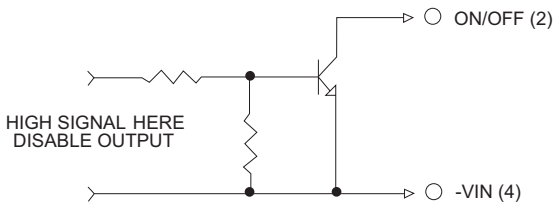
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



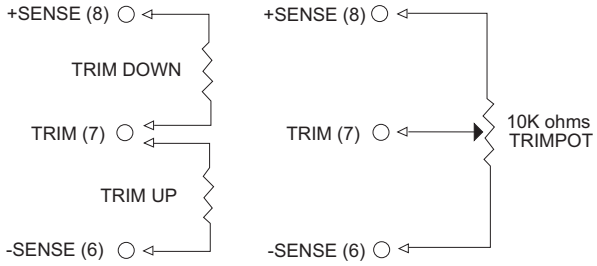
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CHB150W-24S3V3	9-36 VDC	3.3 VDC	0 mA	30 A	200 mA	4741 mA	87	30000μF
CHB150W-24S05	9-36 VDC	5 VDC	0 mA	30 A	200 mA	7184 mA	87	30000μF
CHB150W-24S12	9-36 VDC	12 VDC	0 mA	12.5 A	100 mA	7102 mA	88	12500μF
CHB150W-24S15	9-36 VDC	15 VDC	0 mA	10 A	100 mA	7184 mA	87	10000μF
CHB150W-24S24	9-36 VDC	24 VDC	0 mA	6.5 A	100 mA	7386 mA	88	1800μF
CHB150W-24S28	9-36 VDC	28 VDC	0 mA	5.4 A	100 mA	7325 mA	86	1800μF
CHB150W-24S48	9-36 VDC	48 VDC	0 mA	3.12 A	200 mA	7428 mA	84	1000μF
CHB150W-48S3V3	18-75 VDC	3.3 VDC	0 mA	30 A	100 mA	2344 mA	88	30000μF
CHB150W-48S05	18-75 VDC	5 VDC	0 mA	30 A	100 mA	3472 mA	90	30000μF
CHB150W-48S12	18-75 VDC	12 VDC	0 mA	12.5 A	50 mA	3434 mA	91	12500μF
CHB150W-48S15	18-75 VDC	15 VDC	0 mA	10 A	50 mA	3472 mA	90	10000μF
CHB150W-48S24	18-75 VDC	24 VDC	0 mA	6.5 A	50 mA	3611 mA	90	2200μF
CHB150W-48S28	18-75 VDC	28 VDC	0 mA	5.4 A	50 mA	3580 mA	88	2200μF
CHB150W-48S48	18-75 VDC	48 VDC	0 mA	3.12 A	100 mA	3633 mA	86	1000μF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 9-36V
		48V 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout	24Vin	power up 8.8V
		power down 8.0V
	48Vin	power up 17V
		power down 16V
Positive Logic Remote On/Off		See note 4 & 5
Input Filter		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy (note 7)	±1.5% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
3.3V & 5V	40mV RMS max.,
	100mV pk-pk max.
12V & 15V	60mV RMS max.,
	150mV pk-pk max.
24V	100mV RMS max.,
	240mV pk-pk max.
28V	100mV RMS max.,
	280mV pk-pk max.
48V	200mV RMS max.,
	480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-140% Nominal Output
Start up time	25ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output, Input/Case,
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	250KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp.	110˚C typ.
Humidity	95% RH max. Non condensing
MTBF ... MIL-HDBK-217F, GB, 25˚C, Full Load	400Khrs typ.
Dimensions	2.28 x 2.40 x 0.52 inches
	(57.9 x 61.0 x 13.2 mm)
Case Material	Aluminum Baseplate with
	Plastic Case
Weight	112 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. Logic compatibility ..... open collector ref to -input
   Module On ..... > 3.5VDC or open circuit
   Module Off ..... < 1.8VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... < 1.8VDC
   Module Off ..... > 3.5VDC or open circuit
6. Suffix "-C" to the model number with clear mounting insert. (3.2mm DIA.)
7. Require a 47µF aluminum capacitor connected between +vout and –vout for 48Vout models.

CHB150-110S SERIES
150 WATT, INPUT RANGE 66-160 VDC

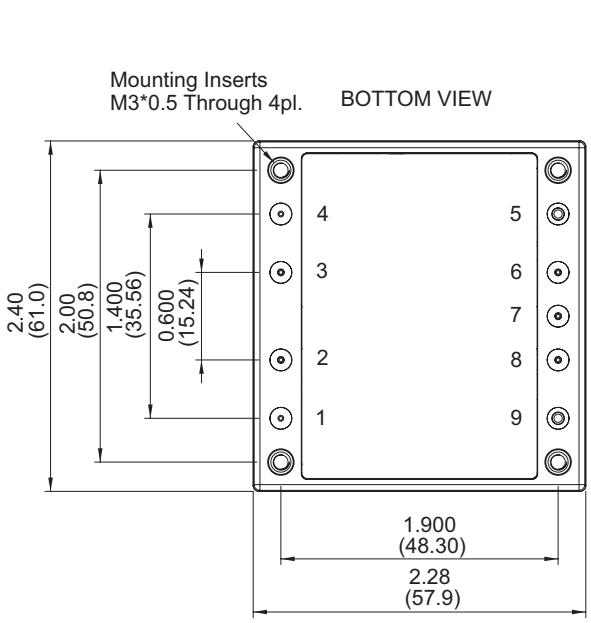
Features

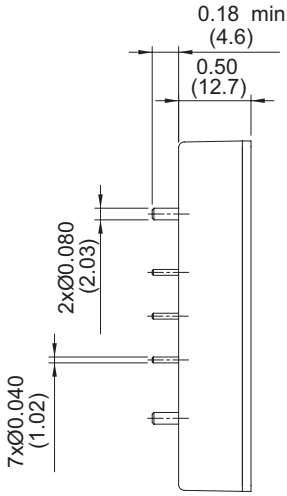
- 150W Isolated Output
- Efficiency to 92.5%
- 200KHz Switching Frequency
- 3 : 1 Input Range
- Regulated Outputs
- Remote On/Off
- Over Temperature Protection
- Over Voltage/Current Protection
- Continuous Short Circuit Protection
- Half-Brick Size
- Safety Standard: UL 60950-1 2nd (Basic Insulation)
- EMC: EN 50155 (EN 50121-3-2), External Filter Required
- Shock & Vibration: EN 50155 (EN 61373)

E176177

Mechanical Dimensions

All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25

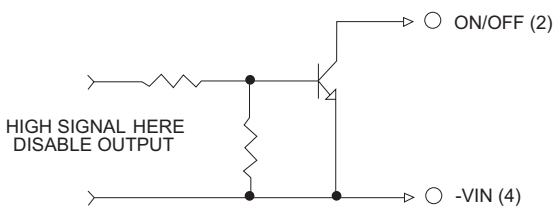




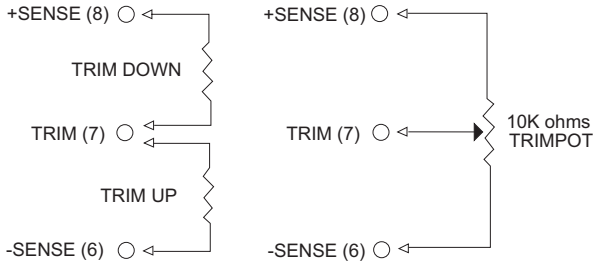
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB150-110S05	66-160 VDC	5 VDC	0 mA	30 A	40 mA	1474 mA	92.5	10000µF
CHB150-110S12	66-160 VDC	12 VDC	0 mA	12.5 A	40 mA	1474 mA	92.5	5600µF
CHB150-110S24	66-160 VDC	24 VDC	0 mA	6.5 A	60 mA	1541 mA	92	2200µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	66-160V
Input Surge Voltage (100ms max.)	180Vdc max.
Under Voltage Lockout	power up 62V power down 56V
Positive Logic Remote On/Off:	
Logic Compatibility	Open Collector ref to -Input
Module On	> 3.5Vdc to 75Vdc or Open Circuit
Module Off	< 1.8Vdc
Input Filter	Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	
Error Band	±5% Vout
Recover Time	< 200µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
5V	40mV RMS, 100mV pk-pk max.
12V	60mV RMS, 150mV pk-pk max.
24V	100mV RMS, 240mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-180% Nominal Output
Start up time	45ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output, Input/Case 2250VDC min. Output/Case 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	200KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp.	105˚C typ.
Humidity	95% RH max. Non condensing
MTBF.....MIL-HDBK-217F, GB, 25˚C, Full Load	CHB150-110S05: 240Khrs CHB150-110S12: 320Khrs CHB150-110S24: 320Khrs
Safety	UL60950-1 2nd (Basic Insulation)
EMC (note 7)	EN50155 (EN50121-3-2) with External Filter
Shock/Vibration	EN50155 (EN61373)
Environmental	EN50155 (EN60068-2-1)
Dimensions	2.28 x 2.40 x 0.50 inches (57.9 x 61.0 x 12.7 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	90 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output Ripple and Noise measured with 10µF tantalum and 1µF ceramic apacitor across output.
4. Suffix "N" to the model number with negative logic remote On/Off
   Module On < 1.8VDC
   Module Off > 3.5VDC to 75VDC or open circuit
5. Suffix "-C" to the model number with clear mounting insert (3.2mm DIA.)
6. An external input capacitor 220µF for all models are recommended to reduce input ripple voltage.
7. Design meet EN50155 and RIA12 refer to application note.

CHB150W8 SERIES
150 WATT, INPUT RANGE 9-75 VDC

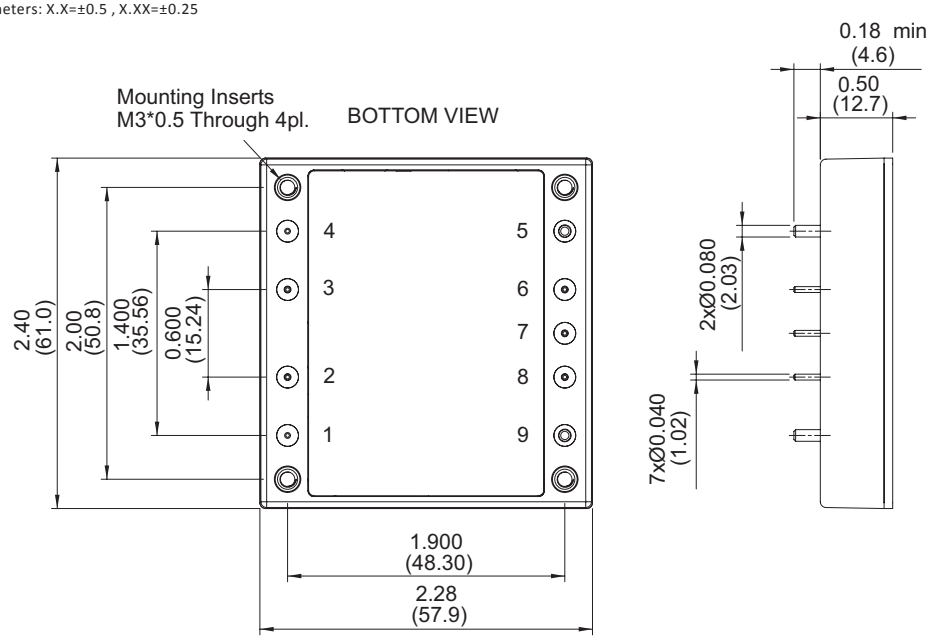
Features

- 150W Isolated Output
- Efficiency to 92.5%
- Fixed Switching Frequency
- Input Under Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off
- Industry Standard Half-Brick Package
- Fully Isolated 1500VDC

E176177

Mechanical Dimensions

All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25

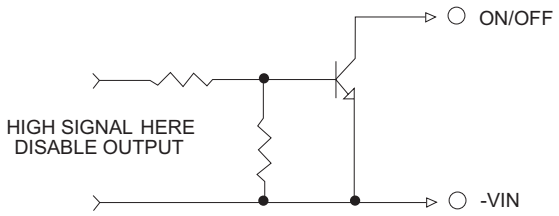


PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

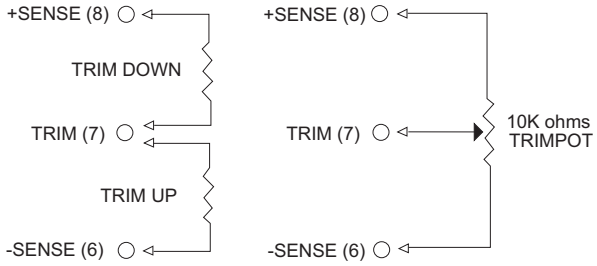
MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF. (2)	% EFF. (1)	% EFF. (3)	CAPACITOR LOAD MAX.
CHB150W8-36S05	9-75 VDC	5 VDC	0 mA	30 A[5]	150 mA	4.71 A	88	88.5	88.5	10000µF
CHB150W8-36S12	9-75 VDC	12 VDC	0 mA	12.5 A	150 mA	4.53 A	92	92	91	5000µF
CHB150W8-36S15	9-75 VDC	15 VDC	0 mA	10 A	150 mA	4.50 A	92	92.5	92.5	5000µF
CHB150W8-36S24	9-75 VDC	24 VDC	0 mA	6.25 A	60 mA	4.66 A	89.5	89.5	89	2000µF[4]
CHB150W8-36S28	9-75 VDC	28 VDC	0 mA	5.35 A	60 mA	4.62 A	90	90	89.5	1500µF[4]
CHB150W8-36S48	9-75 VDC	48 VDC	0 mA	3.13 A	60 mA	4.64 A	90.5	90	89.5	1000µF[4]

NOTE:
1. Nominal Input Voltage 36 VDC
2. Measured at 24Vin
3. Measured at 48Vin
4. The output terminal of 24, 28, 48Vout models required a minimum capacitor 100µF to maintain specified regulation.
5. CHB150W8-36S05 Vin=9-12V, Output Current =0.8*Io max.

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Operating Input Voltage Range	36V 9-75V
Input Surge Voltage (100ms max.)	100Vdc max
Under Voltage Lockout	power up 9.5V
	power down 8.0V
Positive Logic Remote On/Off	See note 4 & 5
Input Filter	LC Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:25% Step Load Change	< 500µs
External Trim Adj. Range (note 6)	±10%
Ripple & Noise, 20MHz BW	
5V	40mV RMS, 100mV pk-pk max.
12V & 15V	60mV RMS, 120mV pk-pk max.
24V & 28V	100mV RMS, 280mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range ,% Vo nom.	115-140%
Current Limit	105%-200% Nominal Output
Start up time	110ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case .....1500VDC min.
	Output/Case .....1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	5V/12V/15V ..... 3500pF typ.
	24V/28V/48V ..... 2500pF typ.
Switching Frequency	200KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temperature	110˚C Typ.
Humidity	95% RH max. Non condensing
Dimensions	2.28 × 2.40 x 0.5 inches
	(57.9 x 61.0 × 12.7 mm)
Case Material	Aluminum Baseplate with
	Plastic Case
Weight	109 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 1µF tantalum (for 48Vout with 10µF aluminum) and 1µF ceramic capacitor across output.
4. Logic compatibility ..... open collector ref. to -input
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off ..... < 1.2VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... < 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
6. The input external capacitor recommend to parallel with 330µF ESR< 0.7Ω to reduce the input ripple voltage.

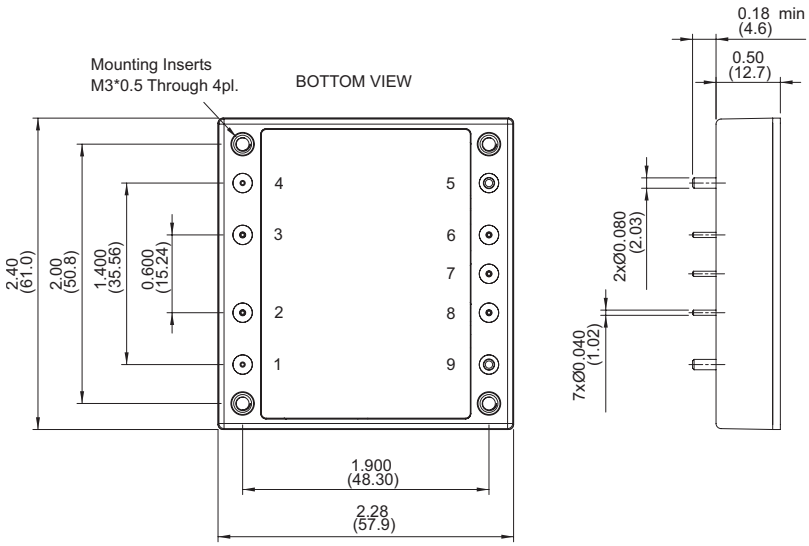
CHB200 SERIES
165-200 WATT

Features

- 165W-200W Isolated Output
- Efficiency to 93%
- Fixed Switching Frequency
- Input Under-Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off
- Industry Standard Half-Brick Package
- Fully Isolated 1500VDC
- No Tantalum Capacitor Inside

Mechanical Dimensions

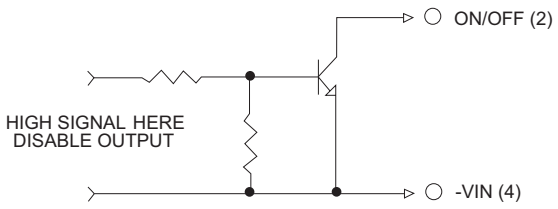
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



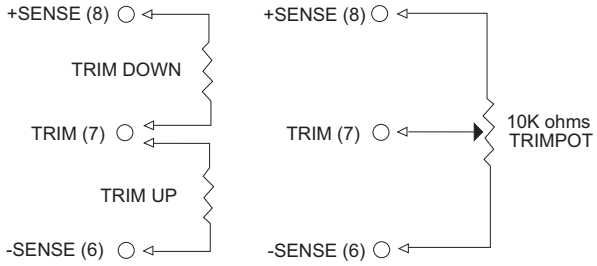
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB200-24S3V3	18-36 VDC	3.3 VDC	0 mA	50 A	140 mA	7.64 A	90	10000µF
CHB200-24S05	18-36 VDC	5 VDC	0 mA	40 A	240 mA	9.16 A	91	10000µF
CHB200-24S12	18-36 VDC	12 VDC	0 mA	16.7 A	230 mA	9.03 A	92.5	10000µF
CHB200-24S24	18-36 VDC	24 VDC	0 mA	8.3 A	40 mA	9.12 A	91	2200µF
CHB200-24S48	18-36 VDC	48 VDC	0 mA	4.2 A	70 mA	9.23 A	91	2000µF
CHB200-48S3V3	36-75 VDC	3.3 VDC	0 mA	50 A	80 mA	3.80 A	90.5	10000µF
CHB200-48S05	36-75 VDC	5 VDC	0 mA	40 A	120 mA	4.55 A	91.5	10000µF
CHB200-48S12	36-75 VDC	12 VDC	0 mA	16.7 A	90 mA	4.49 A	93	10000µF
CHB200-48S24	36-75 VDC	24 VDC	0 mA	8.3 A	50 mA	4.56 A	91	2200µF
CHB200-48S48	36-75 VDC	48 VDC	0 mA	4.2 A	60 mA	4.59 A	91.5	2000µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 18-36V
		48V 36-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under voltage lockout	24Vin	power up 17V
		power down 16V
	48Vin	power up..... 35V
		power down 33V
Positive Logic Remote On/Off:		
Logic Compatibility		Open Collector ref to -Input
Module On		> 3.5Vdc to 75Vdc
		or Open Circuit
Module Off		< 1.2Vdc
Input Filter		PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy:	±1.5% max.
Transient Response:25% Step Load Change	< 500µs
External Trim Adj. Range (note 5)	±10%
Ripple & Noise, 20MHz BW	
3.3V & 5V	40mV RMS, 100mV pk-pk max.,
12V	60mV RMS, 120mV pk-pk max.
24V	100mV RMS, 240mV pk-pk max.
48V	200mV RMS, 480mV pk-pk, max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range, % Vo nom.	115-140%
Current Limit	105% -140% Nominal Output
Start up time	150ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Ouput..... 1500VDC min.
	Input/Case..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	3V3 ..... 200KHz typ.
	5V ..... 300KHz typ.
12V&24V&48V . 330kHz typ.	
Operating Case Temperature	-4˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temp	110˚C typ.
Humidity	95% RH max. Non condensing
Dimensions	2.28 × 2.40 x 0.52 inches
	(57.9 x 61.0 × 13.2 mm)
Case Material	Aluminum Baseplate with
	Plastic Case
Weight	114 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... < 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
5. Trim-up.....connect a resistor between the trim pin and +Sense.
   Trim-down.....connect a resistor between the trim pin and -Sense.
6. The input terminal recommend to parallel with 100µF for 48Vin and 220µF for 24Vin ESR< 0.7Ω to reduce the input ripple voltage.

CHB200W SERIES
132-200 WATT, 4:1 INPUT RANGE

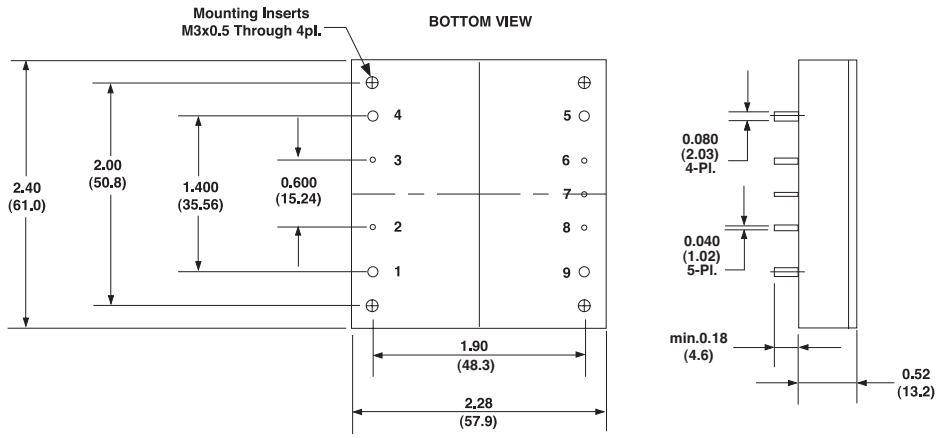
Features

- 132W-200W Isolated Output
- Half Brick Package
- 4 : 1 Input Range
- Regulated Output
- Efficiency to 89%
- Input Under Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off Control
- 1500VDC Isolation
- Continuous Short Circuit Protection
- CE Mark Meets 2004/108/EC
- UL60950-1 Approval (Except 28 Vout)

E176177

Mechanical Dimensions

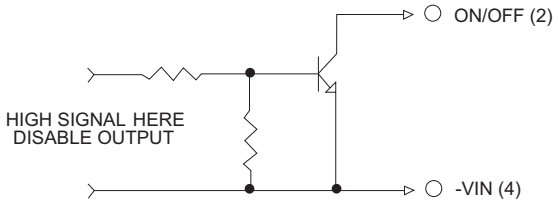
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



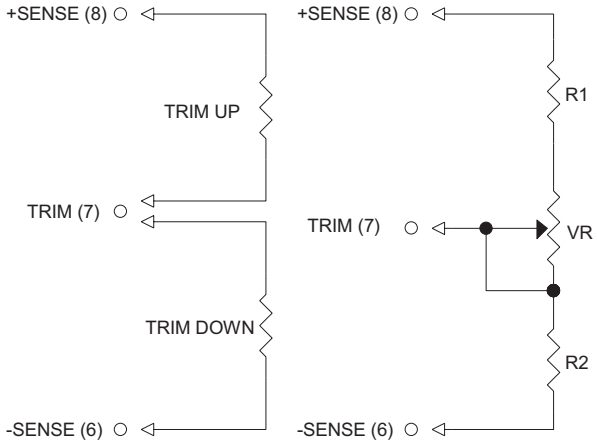
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB200W-24S3V3	10-36 VDC	3.3VDC	0 mA	50 A	130 mA	7.90 A	87	10000µF
CHB200W-24S05	10-36 VDC	5.0VDC	0 mA	40 A	150 mA	9.58 A	87	10000µF
CHB200W-24S12	10-36 VDC	12 VDC	0 mA	16.7 A	50 mA	9.71 A	86	2200µF
CHB200W-24S15	10-36 VDC	15 VDC	0 mA	13.3 A	50 mA	9.56 A	87	2200µF
CHB200W-24S24	10-36 VDC	24 VDC	0 mA	8.3 A	45 mA	9.54 A	87	2200µF
CHB200W-24S28	10-36 VDC	28 VDC	0 mA	7.14 A	55 mA	9.41 A	88.5	2200µF
CHB200W-24S48	10-36 VDC	48 VDC	0 mA	4.2 A	60 mA	9.77 A	86	2200µF
CHB200W-48S3V3	18-75 VDC	3.3VDC	0 mA	40 A	80 mA	3.13 A	88	10000µF
CHB200W-48S05	18-75 VDC	5.0VDC	0 mA	40 A	80 mA	4.68 A	89	10000µF
CHB200W-48S12	18-75 VDC	12 VDC	0 mA	16.7 A	60 mA	4.74 A	88	2200µF
CHB200W-48S15	18-75 VDC	15 VDC	0 mA	13.3 A	60 mA	4.72 A	88	2200µF
CHB200W-48S24	18-75 VDC	24 VDC	0 mA	8.3 A	60 mA	4.72 A	88	2200µF
CHB200W-48S28	18-75 VDC	28 VDC	0 mA	7.14 A	50 mA	4.68 A	89	2200µF
CHB200W-48S48	18-75 VDC	48 VDC	0 mA	4.2 A	50 mA	4.83 A	87	2200µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 10-36V
		48V 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout	24Vin	power up 9.5V
		power down 8.5V
	48Vin	power up 17V
		power down 16V
Positive Logic Remote On/Off		See note 4 & 5
Input Filter		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range (note 6)	±10%
Ripple & Noise, 20MHz BW (note 3)	
3.3V & 5V	40mV RMS max., 100mV pk-pk max.
12V & 15V	60mV RMS max., 150mV pk-pk max.
24V	100mV RMS max., 240mV pk-pk max.
28V	100mV RMS max., 280mV pk-pk max.
48V	150mV RMS max., 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110%-150% Nominal Output
Start up time	120ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output..... 1500VDC min.
	Input/Case..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	2000pF typ.
Switching Frequency	250KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp.	110˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	600Khrs typ.
Dimensions	2.28 x 2.40 x 0.52 inches (57.9 x 61.0 x 13.2 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	114 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output. (48V: 10µF aluminum and 1µF ceramic capacitor across output)
4. Logic compatibility ..... open collector ref to -Input
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off ..... < 1.2VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... < 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
6. Trim-up ..... connect a resistor between the trim pin and +sense
   Trim-down ..... connect a resistor between the trim pin and -sense
7. Suffix "-C" to the model number with clear mounting insert. (3.2mm DIA.)
8. An external input capacitor 470µF for 24Vin or 47µF for 48Vin models are recommended to reduce input ripple voltage.

CHB300W SERIES
300 WATT, 4:1 INPUT RANGE

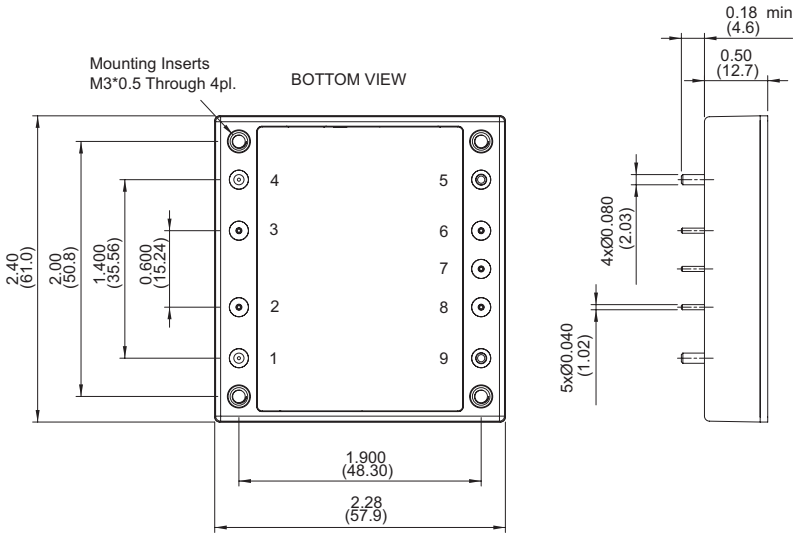
Features

- 300W Isolated Output
- Efficiency to 92%
- Fixed Switching Frequency
- Input Under Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off
- Industry Standard Half-Brick Package
- Fully Isolated 1500VDC
- CE Mark Meets 2004/108/EC
- Safety Meets UL60950-1, EN60950-1 and IEC60950-1

CE

Mechanical Dimensions

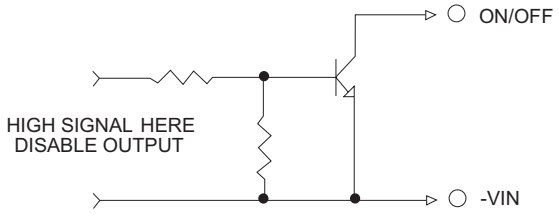
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



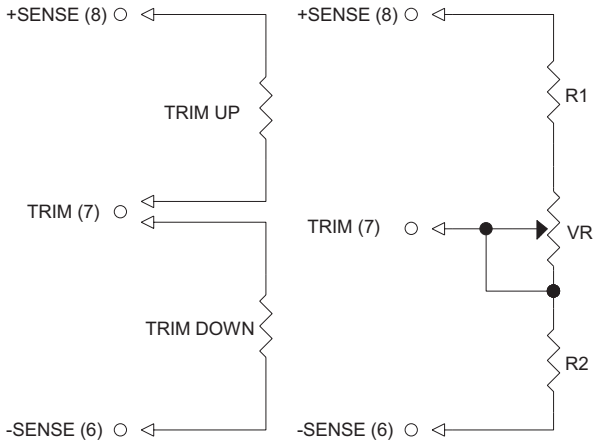
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB300W-24S05	9-36 VDC	5 VDC	0 mA	60 A	200 mA	14.12 A	88.5	470 -10000µF
CHB300W-24S12	9-36 VDC	12 VDC	0 mA	25 A	200 mA	13.74 A	91	330-10000µF
CHB300W-24S15	9-36 VDC	15 VDC	0 mA	20 A	250 mA	13.74 A	91	0-10000µF
CHB300W-24S24	9-36 VDC	24 VDC	0 mA	12.5 A	80 mA	14.20 A	88	220-4700µF
CHB300W-24S28	9-36 VDC	28 VDC	0 mA	10.7 A	80 mA	14.12 A	88.5	220-4700µF
CHB300W-24S48	9-36 VDC	48 VDC	0 mA	6.25 A	100 mA	14.20 A	88	220-2200µF
CHB300W-48S05	18-75 VDC	5 VDC	0 mA	60 A	100 mA	6.94 A	90	0-10000µF
CHB300W-48S12	18-75 VDC	12 VDC	0 mA	25 A	100 mA	6.94 A	90	0-10000µF
CHB300W-48S15	18-75 VDC	15 VDC	0 mA	20 A	130 mA	6.80 A	92	0-10000µF
CHB300W-48S24	18-75 VDC	24 VDC	0 mA	12.5 A	60 mA	6.98 A	89	0-4700µF
CHB300W-48S28	18-75 VDC	28 VDC	0 mA	10.7 A	60 mA	6.94 A	89.5	0-4700µF
CHB300W-48S48	18-75 VDC	48 VDC	0 mA	6.25 A	80 mA	7.02 A	89	220-2200µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		4V 9-36V
		48V 18-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout	24Vin	power up 8.8V
		power down 8.0V
	48Vin	power up 17V
		power down 16V
Positive Logic Remote On/Off		See note 4 & 5
Input Filter		24SXX and 48S15..... LC Type
Other 48SXX		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range (note 6)	±10%
Ripple & Noise, 20MHz BW (note 3)	
5.0V	40mV RMS, 100mV pk-pk max.
12V	60mV RMS, 120mV pk-pk max.
15V	80mV RMS, 200mV pk-pk max.
24V & 28V	100mV RMS, 280mV pk-pk max.
48V	200mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	120%-160% Nominal Output
Start up time	120ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	2000pF typ.
Switching Frequency	220KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temperature	110˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	600Khrs
Dimensions	2.28 x 2.40 x 0.50 inches (57.9 x 61.0 x 12.7 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	114 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. The output ripple and noise measurement with 10µF tantalum (for 24S05 with 330µF tantalum , 24S12 with 100µF tantalum and 48Vout with 10µF aluminum) and 1µF ceramic capacitor across output.
4. Logic compatibility ..... open collector ref. to -input
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off ..... < 1.2VDC
5. Suffix "N" to the model number with negative logic remote On/Off.
   Module On ..... < 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
6. Trim-up.....connect a resistor between the trim pin and +sense.
   Trim-down.....connect a resistor between the trim pin and –sense.
7. The input terminal recommend to parallel with 1000µF for 24Vin, 470µF for 48S15 model and 220µF for other 48Vin models ESR< 0.7Ω to reduce the input ripple voltage.
8. Suffix "-C" to the model number with clear mounting insert. (3.2mm DIA)

CHB300W-110S SERIES
300 WATT, INPUT RANGE 43-160 VDC

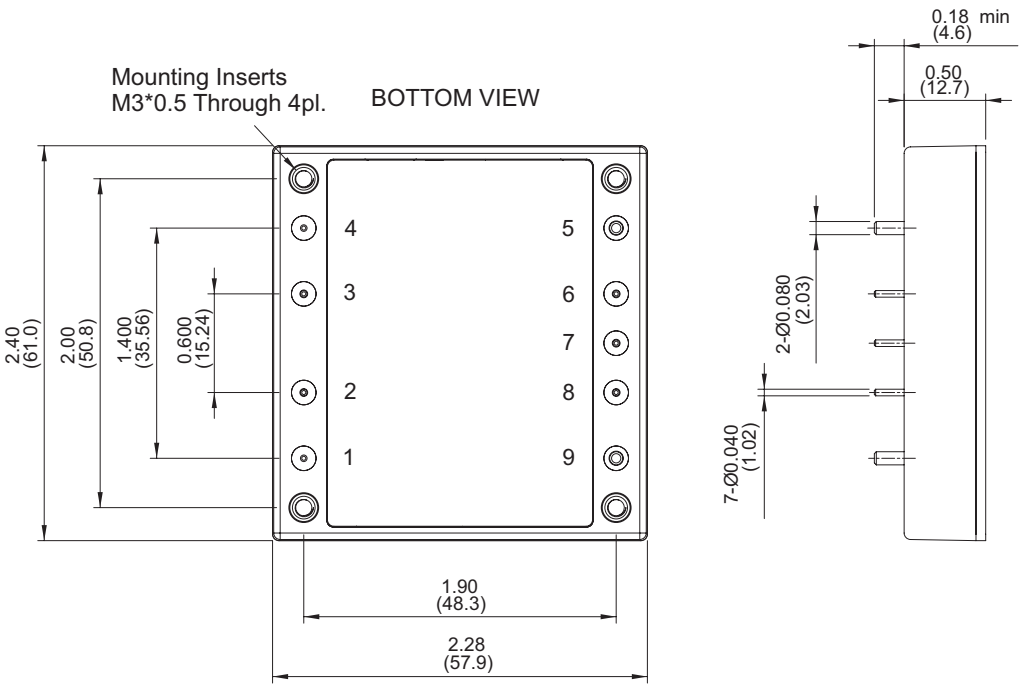
Features

- 300W Isolated Output
- Efficiency to 90%
- Fixed Switching Frequency
- 4 : 1 Input Range
- Regulated Outputs
- Input Under-Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off
- Low No Load Power Consumption
- Half-Brick Size
- Safety Standard: UL 60950-1 2nd (Basic Insulation)
- EMC: EN 50155 (EN 50121-3-2), External Filter Required
- Shock & Vibration: EN 50155 (EN 61373)

Approval Pending
E176177

Mechanical Dimensions

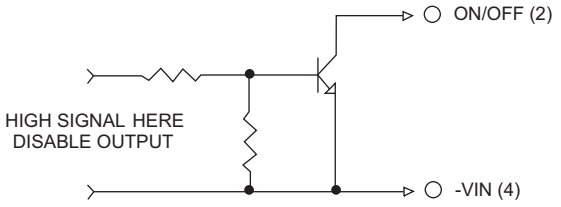
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



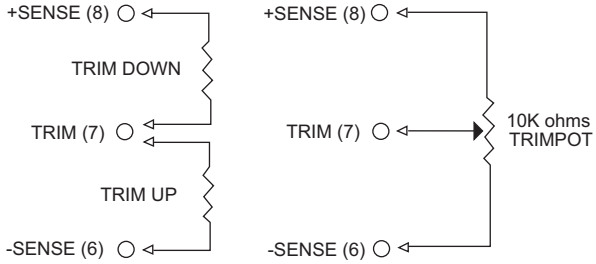
PIN	Function
1	+V Input
2	ON/OFF
3	NC
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB300W-110S05	43-160 VDC	5 VDC	0 mA	60 A	20 mA	3.1 A	89	2200μF
CHB300W-110S12	43-160 VDC	12 VDC	0 mA	25 A	20 mA	3.1 A	90	1000μF
CHB300W-110S24	43-160 VDC	24 VDC	0 mA	12.5 A	20 mA	3.1 A	89	560μF
CHB300W-110S28	43-160 VDC	28 VDC	0 mA	10.7 A	20 mA	3.1 A	89	470μF
CHB300W-110S48	43-160 VDC	48 VDC	0 mA	6.25 A	20 mA	3.1 A	89	220μF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	43-160V
Input Surge Voltage (100ms max.)	200Vdc max.
Under Voltage Lockout	power up 42V power down 38V
Positive Logic Remote On/Off	See note 4 & 5
Logic Compatibility	Open Collector ref to -Input
Module On	> 3.5Vdc to 75Vdc or Open Circuit
Module Off	< 1.8Vdc
Input Filter	Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	
Error Band	±5% Vout
Recover Time	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
5V	60mV RMS, 100mV pk-pk max.
12V	80mV RMS, 150mV pk-pk max.
24V	120mV RMS, 240mV pk-pk max.
28V	140mV RMS, 280mV pk-pk max.
48V	220mV RMS, 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection .	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	105%-40% Nominal Output

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output, Input/Case 2250VDC min. Output/Case 2250VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	1000pF typ.
Switching Frequency	300KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp.	105˚C typ.
Humidity	95% RH max. Non condensing
Safety	UL60950-1 2nd (Basic Insulation)
EMC (note 7)	EN50155 (EN50121-3-2) with External Filter
Shock/Vibration	EN50155 (EN61373)
Environmental	EN50155 (EN60068-2-1)
Dimensions	2.28 × 2.40 x 0.52 inches (57.9 x 61.0 × 13.2 mm)
Case Material	Aluminum Baseplate with Plastic Case

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. Logic compatibility ..... open collector ref to -input
   Module On ..... >3.5VDC to 75VDC or Open Circuit
   Module Off .....< 1.2VDC
5. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... < 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
6. An external input capacitor 220µF for all models are recommended to reduce input ripple voltage.
7. Design meet EN50155 and RIA12 refer to application note.

CHB300-300S SERIES
300 WATT, INPUT RANGE 180-425 VDC

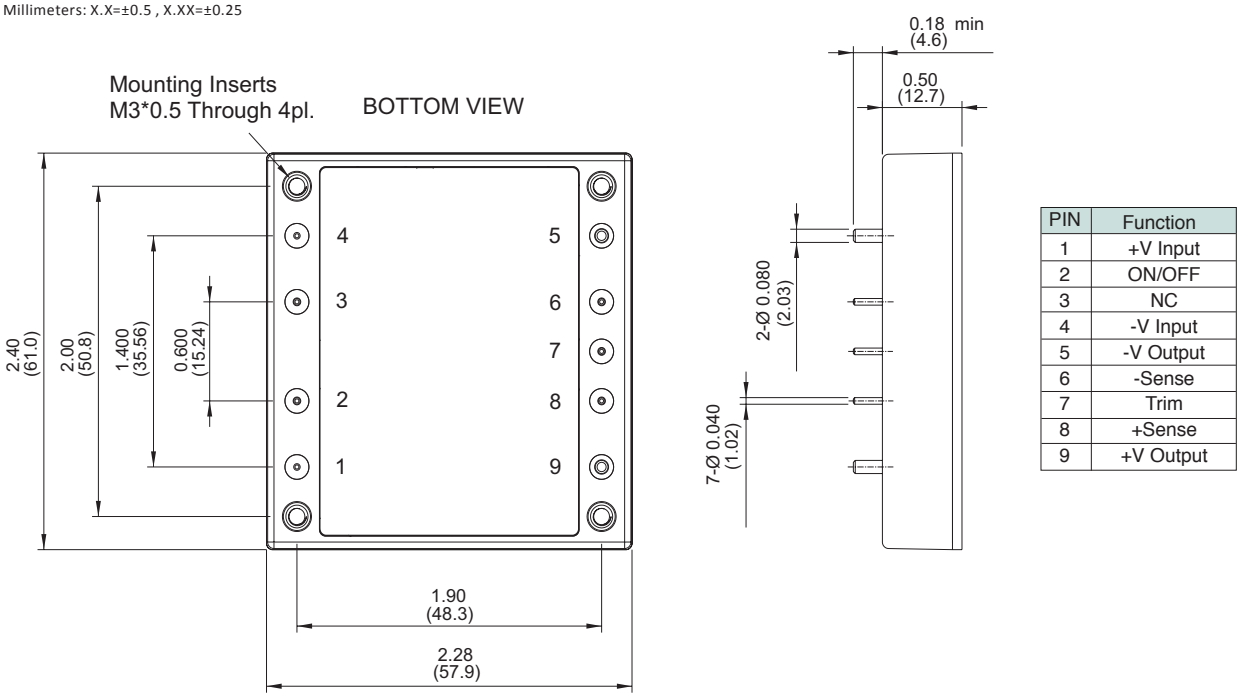
Features

- 300W Isolated Output
- Efficiency to 89%
- Fixed Switching Frequency
- Input Under-Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off
- Half-Brick Size Meet Industrial Standard
- UL/C-UL 60950 Certified
- Fully Isolated 3000VAC
- Off-Line Systems Using PFC Front-Ends

Approval Pending
E176177

Mechanical Dimensions

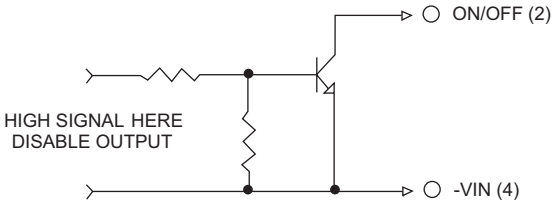
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



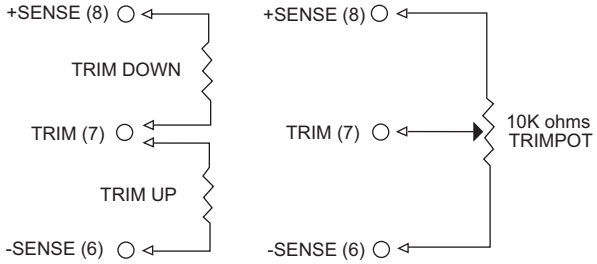
PIN	Function
1	+V Input
2	ON/OFF
3	NC
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT		INPUT CURRENT		% EFF.	CAPACITOR LOAD MAX.
			MIN.	MAX.	NO LOAD	FULL LOAD		
CHB300-300S05	180-425 VDC	5 VDC	0 mA	60 A	100 mA	1.92 A	87	4700µF
CHB300-300S12	180-425 VDC	12 VDC	0 mA	25 A	100 mA	1.92 A	87	4000µF
CHB300-300S24	180-425 VDC	24 VDC	0 mA	12.5 A	100 mA	1.87 A	89	3000µF
CHB300-300S28	180-425 VDC	28 VDC	0 mA	10.7 A	100 mA	1.87A	89	1000µF
CHB300-300S48	180-425 VDC	48 VDC	0 mA	6.25 A	100 mA	1.87 A	89	1000µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range.	300V..... 180-425V
Input over voltage protection	Module on.....440V
	Module off.....450V
Under voltage lockout	300Vin power up 175V
	300Vin power down.....160V
Positive Logic Remote On/Off	See note 5 & 6
Input Filter	Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy :	±1.5% max.
Transient Response:25% Step Load Change	< 500µs
External Trim Adj. Range (4)	±10%/˚C
Load share Accuracy	±10% at 50% to 100%Full Load
Ripple & Noise, 20MHz BW (3)	
5V	75mV RMS max.,
	150mV pk-pk max
12V	120mV RMS max.,
	240mV pk-pk max.
24V	150mV RMS max.,
	470mV pk-pk max.
28V	150mV RMS max.,
	470mV pk-pk max.
48V	200mV RMS max.,
	740mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (1)	±0.2% max.
Load Regulation (2)	±0.5% max.
Over Voltage Protection trip Range ,% Vo nom	115-140%
Current Limit	105%-140% Nominal Output

GENERAL SPECIFICATIONS

Efficiency.	See Table
Isolation Voltage	Input/Output..... 3000VAC min.
	Input/Case.....2500VAC min.
	Output/Case.....500VAC min.
Isolation Resistance	10^7 ohm min.
Switching Frequency	200KHz, Typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temp.	105˚C Typ.
Humidity	95% RH max. Non condensing
Dimensions	2.28 × 2.40 x 0.52 inches
	(57.9 x 61.0 × 13.2 mm)
Case Material	Aluminum Baseplate with
	Plastic Case

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 1µF ceramic capacitor across output
4. Logic compatibility.....open collector refer to -Vin
   Module On.....>3.5VDC to 75VDC or open circuit
   Module On.....>1.2VDC
5. Suffix "N" to the model number with negative logic remote on/off
   Module On.....>1.2VDC
   Module On.....>3.5VDC to 75VDC or open circuit

CHB350 SERIES
231-350 WATT

Features

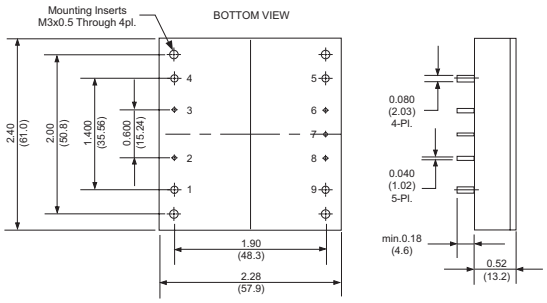
- 231W-350W Isolated Output
- Efficiency to 92.5%
- Fixed Switching Frequency
- Input Under Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off
- Industry Standard Half-Brick Package
- Fully Isolated 1500VDC
- UL60950-1 Approval
- High Power Density 123W/in^3

E176177

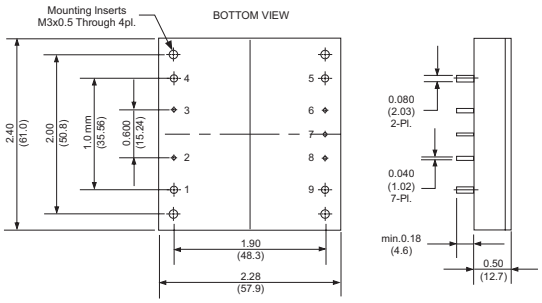
Mechanical Dimensions

All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25

Standard Package



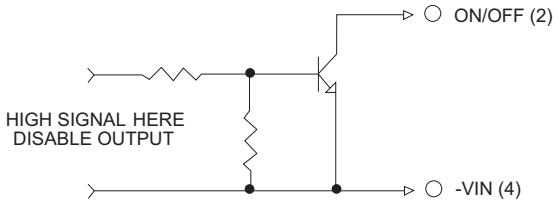
Suffix "-IL" Package



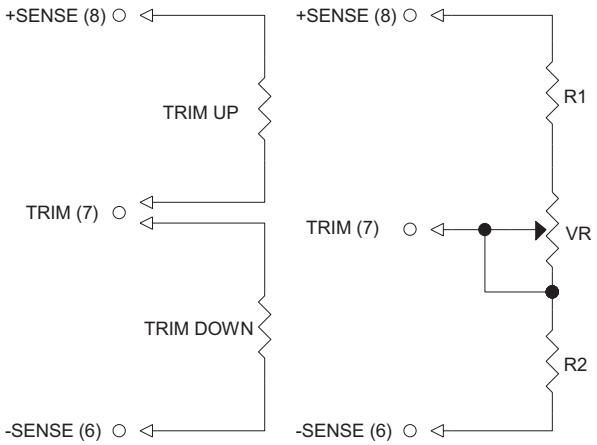
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	Case
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CHB350-24S3V3	18-36 VDC	3.3 VDC	0 mA	70 A	140 mA	10.94 A	88	10000µF
CHB350-24S05	18-36 VDC	5 VDC	0 mA	70 A	260 mA	16.39 A	89	10000µF
CHB350-24S12	18-36 VDC	12 VDC	0 mA	29.2 A	250 mA	16.13 A	90.5	10000µF
CHB350-24S24	18-36 VDC	24 VDC	0 mA	14.6 A	60 mA	16.40 A	89	10000µF
CHB350-24S28	18-36 VDC	28 VDC	0 mA	12.5 A	60 mA	16.11 A	90.5	7000µF
CHB350-24S48	18-36 VDC	48 VDC	0 mA	7.3 A	60 mA	16.22 A	90	2200µF
CHB350-48S3V3	36-75 VDC	3.3 VDC	0 mA	70 A	90 mA	5.41 A	89	10000µF
CHB350-48S05	36-75 VDC	5 VDC	0 mA	70 A	130 mA	8.01 A	91	10000µF
CHB350-48S12	36-75 VDC	12 VDC	0 mA	29.2 A	100 mA	7.89 A	92.5	10000µF
CHB350-48S24	36-75 VDC	24 VDC	0 mA	14.6 A	60 mA	7.98 A	91.5	10000µF
CHB350-48S28	36-75 VDC	28 VDC	0 mA	12.5 A	60 mA	7.93 A	92	7000µF
CHB350-48S48	36-75 VDC	48 VDC	0 mA	7.3 A	60 mA	7.93 A	92	2200µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 18-36V
		48V 36-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under Voltage Lockout	24Vin	power up 17V
		power down 16V
	48Vin	power up 35V
		power down 33V
Positive Logic Remote On/Off		See note 4
Logic Compatibility		Open Collector ref to -Input
Module on		>3.5Vdc to 75Vdc or Open Circuit
Module off		< 1.2Vdc
Input Filter		Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range (note 6)	±10%
Ripple & Noise, 20MHz BW	
3.3V & 5V	40mV RMS max., 100mV pk-pk max.
12V	60mV RMS max., 120mV pk-pk max.
24V & 28V	100mV RMS max., 280mV pk-pk max.
48V	150mV RMS max., 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	105%-40% Nominal Output
Start up time	175ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	2000pF typ.
Switching Frequency	3V3 & 5V ..... 300KHz typ.
	12V & 24V & 28V &
	48V ..... 330KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown Case Temp	110˚C typ.
Humidity	95% RH max. Non condensing
MTBF..... MIL-STD-217F, GB, 25˚C, Full Load	700Khrs typ.
Dimensions .... Standard	2.28 × 2.40 x 0.52 inches
	(57.9 x 61.0 × 13.2 mm)
Suffix "-IL" (note 6)	2.28 x 2.40 x 0.50 inches
	(57.9 x 61.0 x 12.7mm)
Case Material	Aluminum Baseplate with
	Plastic Case
Weight	114 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... < 1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
5. Suffix "-C" to the model number with clear mounting Insert. (3.2mm DIA)
6. Suffix "-IL" to the model number with thin input pin models (pin1 and pin4 =1.0mm) 48Vin models only.
7. Trim-up.....connect a resistor between the trim pin and +sense.
   Trim-down.....connect a resistor between the trim pin and -sense.
8. The input terminal recommend to parallel with 220µF for 48Vin and 470µF for 24Vin ESR< 0.7Ω to reduce the input ripple voltage.

CFB200 SERIES
100-200 WATT

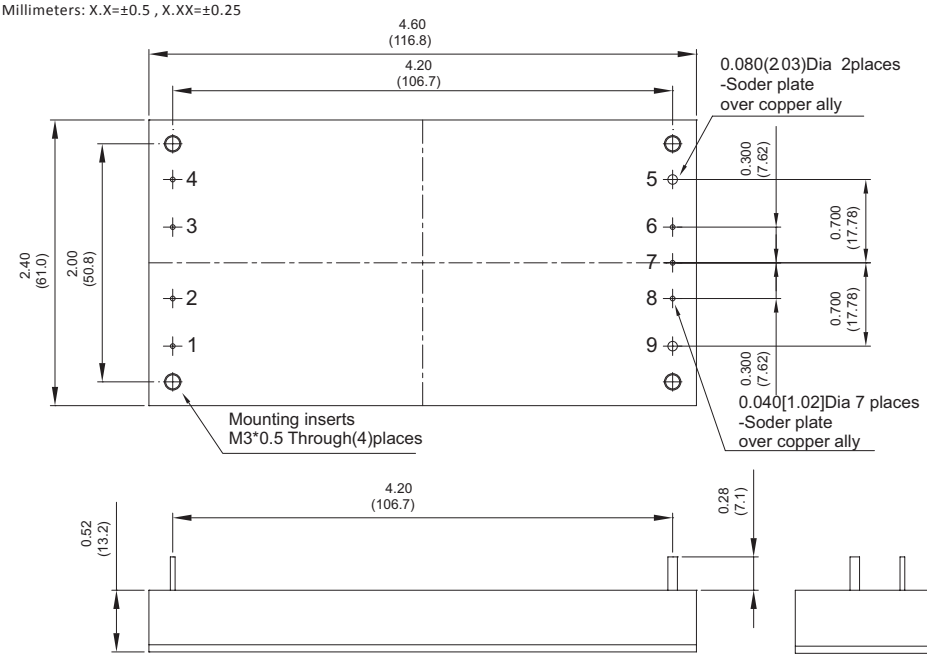
Features

- 100W-200W Isolated Output
- Efficiency to 90%
- 2 : 1 Input Range
- 350KHz Switching Frequency
- Regulated Outputs
- Continuous Short Circuit Protection
- Industry Standard Full-Brick Package
- UL60950-1 and IEC60950-1 Approval

c UL us
E176177

Mechanical Dimensions

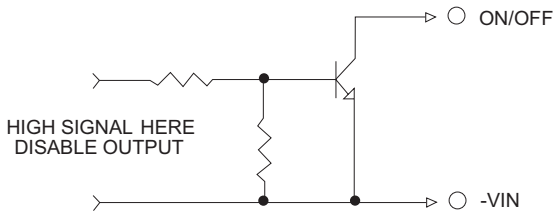
NOTE:Pin Size is 0.02"Inch (0.5mm)DIA
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



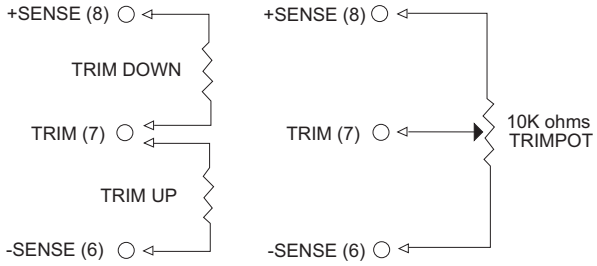
PIN CONNECTION	
PIN	Function
1	+V Input
2	On/Off
3	NC
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT		% EFF.
				NO LOAD	FULL LOAD	
CFB200-48S33	36-75 VDC	3.3 VDC	40 A	25 mA	3.5 A	79
CFB200-48S05	36-75 VDC	5 VDC	40 A	25 mA	5 A	83
CFB200-48S12	36-75 VDC	12 VDC	17 A	25 mA	5 A	85
CFB200-48S15	36-75 VDC	15 VDC	13.3 A	25 mA	5 A	85
CFB200-48S24	36-75 VDC	24 VDC	8.33 A	25 mA	5 A	85
CFB200-48S28	36-75 VDC	28 VDC	7.14 A	25 mA	4.7 A	89
CFB200-48S48	36-75 VDC	48 VDC	4.2 A	25 mA	4.7 A	90

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	48V 36-75V
Undervoltage lockout	power up 34V
	power down 32.5V
Positive Logic Remote On/Off	See note 3, 4
Input Filter	Pi Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.0% max.
Transient Response 25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple and Noise, 20MHz BW, 2.5V & 3.3V & 5V	40mV RMS. max.
	100mV p-p max.
12V & 15V	60mV RMS. max.
	150mV p-p max.
24V & 28V & 48V	100mV/150mV/200mV RMS. max.
	240mV/280mV/480mV p-p max.
Temperature Coefficient	±0.03%/˚C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range, % Vo nom	115-140%
Current Limit	110%-150% Nominal Output

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500 VDC min.
	Input/Case ..... 1500 VDC min.
	Output/Case .....1500 VDC min.
Isolation Resistance	10^7 ohms min.
Switching Frequency	350KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-40˚C to +105˚C
Thermal Shutdown, Case Temp.	100˚C Typ.
Dimensions	4.60 × 2.40 × 0.52 inches
	(116.8 × 61.0 × 13.2 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	193 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Logic compatibility ..... open collector Ref. to -Input
   Module On ..... Open Circuit
   Module Off ..... <0.8VDC
4. Suffix "N" to the model number with negative logic remote On/Off.

CFB200-110S SERIES
200 WATT, INPUT RANGE 66-160 VDC

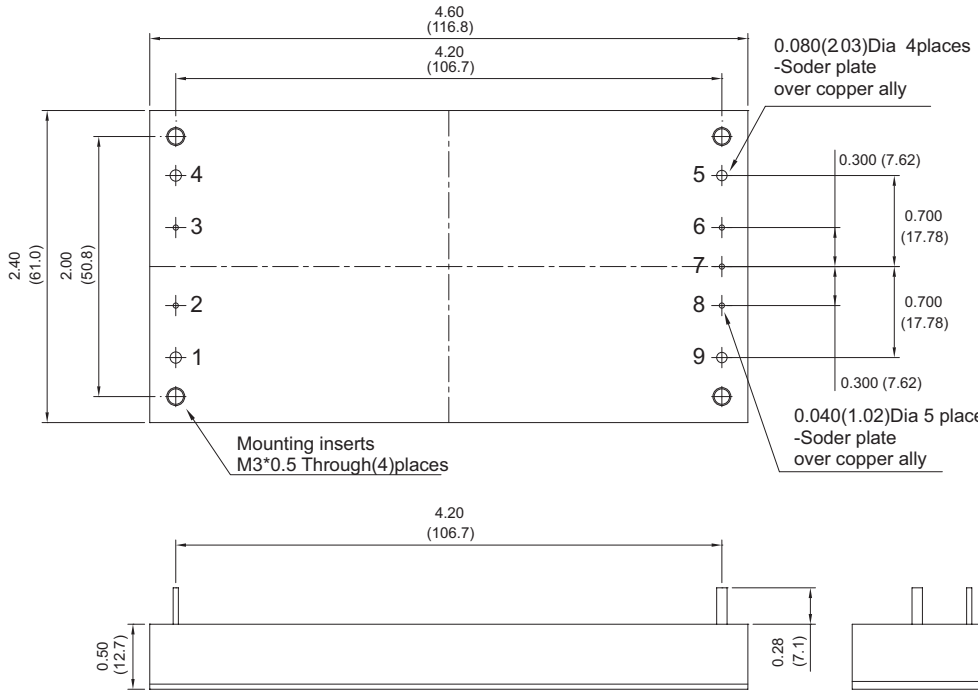
Features

- 200W Isolated Output
- Efficiency to 86%
- Low No Load Input Power
- 2 : 1 Input Range
- Regulated Outputs
- Remote On/Off
- Over Temperature Protection
- Over Voltage/Current Protection
- Continuous Short Circuit Protection
- Full Brick Size
- Safety Standard: UL 60950-1 2nd (Basic Insulation)
- EMC: EN 50155 (EN 50121-3-2), External Filter Required
- Shock & Vibration: EN 50155 (EN 61373)

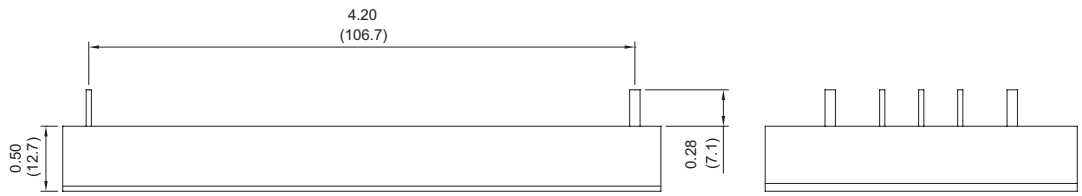
Approval Pending
E176177

Mechanical Dimensions

All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25

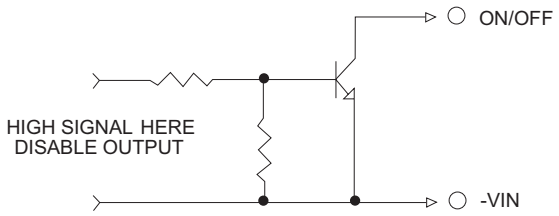


PIN	Function
1	+V Input
2	On/Off
3	NC
4	-V Input
5	-V Output
6	-Sense
7	Trim
8	+Sense
9	+V Output

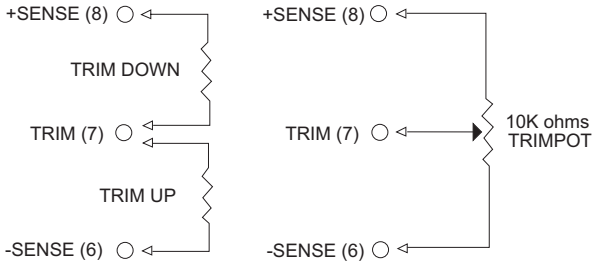


MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CFB200-110S12	66-160 VDC	12 VDC	0 mA	16.6 A	25 mA	2140 mA	85	10000µF
CFB200-110S15	66-160 VDC	15 VDC	0 mA	13.3 A	25 mA	2114 mA	86	4700µF
CFB200-110S24	66-160 VDC	24 VDC	0 mA	8.3 A	25 mA	2114 mA	86	4700µF
CFB200-110S48	66-160 VDC	48 VDC	0 mA	4.16 A	25 mA	2114 mA	86	2200µF

Remote On/Off Control



External Output Trim



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	66-160V
Input Surge Voltage (100ms max.)	180Vdc max.
Under voltage lockout	power up 62V
	power down 56V
Positive Logic Remote On/Off:	
Logic Compatibility	Open Collector ref to -Input
Module On	Open Circuit
Module Off	< 1.8Vdc
Input Filter	PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:	
25% Step Load Change	< 500µs
External Trim Adj. Range	±10%
Ripple & Noise, 20MHz BW (note 3)	
12V, 15V	60mV RMS, 150mVpk-pk max.
24V	100mV RMS, 240mVpk-pk max.
48V	200mV RMS, 480mVpk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.2% max.
Over Voltage Protection trip Range,% Vo nom.	115-140%
Current Limit	110%-150% Nominal Output
Start up time	120ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	input/output 3000Vrms min.
input/case	1500Vrms min.
output/case	500Vrms min.
Isolation Resistance	10^9 ohm min.
Isolation Capacitance	500pF typ.
Switching Frequency	250KHz typ.
Operating Case Temperature	-40°C to 100°C
Storage Temperature	-55°C to +105°C
Thermal Shutdown, Case Temp.	105°C typ.
Humidity	95% RH max. Non condensing
Safety	UL60950-1, EN50155
EMI	with external filter to meet EN55022 Class A & Class B
Shock/Vibration	EN50155 (EN61373)
Environmental	EN50155 (EN60068-2-1)
Dimensions	4.60 × 2.40 x 0.52 inches (116.8 x 61.0 × 13.2 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	220 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. An external input capacitor 68µF for all models are recommended to reduce input ripple voltage.

CFB400W SERIES
400 WATT, 4:1 INPUT RANGE

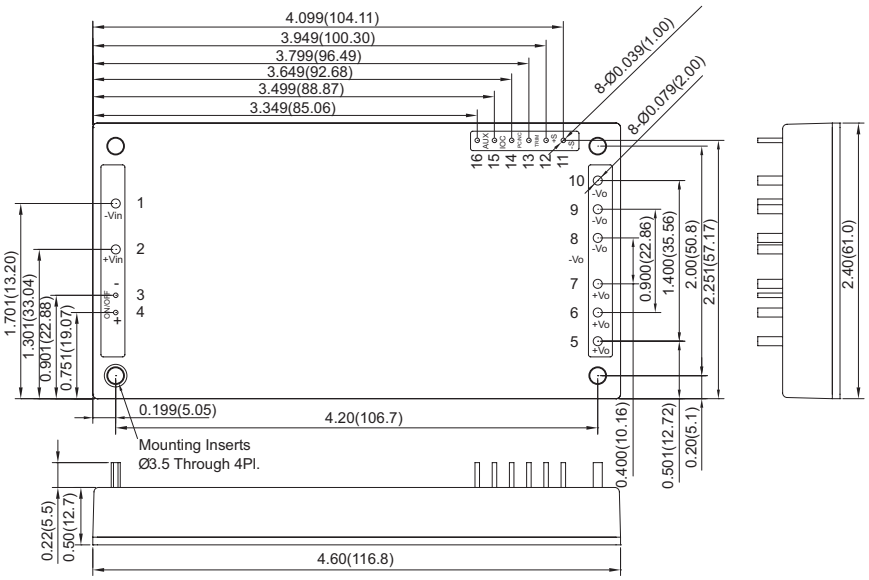
Features

- 400W Isolated Output
- Efficiency to 90%
- Fixed Switching Frequency
- Input Under Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off
- Full-Brick Size
- Fully Isolated 1500VDC
- Without Tantalum Capacitor Inside
- CE Mark Meets 2004/108/EC
- UL60950-1 Approval

E176177

Mechanical Dimensions

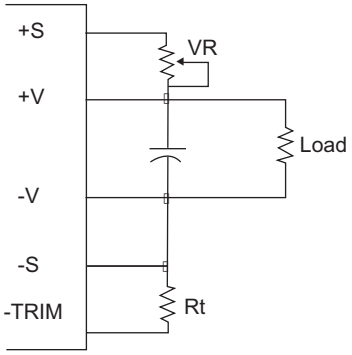
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



PIN CONNECTION	
PIN	Function
1	-V Input
2	+V Input
3	-On/Off
4	+On/Off
5-7	+V Output
8-10	-V Output
11	-Sense
12	+Sense
13	Trim
14	PC/NC
15	IOG
16	AUX

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR
CFB400W-24S05	9-36 VDC	5 VDC	0 mA	80 A	600 mA	19.05 A	87.5	10000µF
CFB400W-24S12	9-36 VDC	12 VDC	0 mA	33.3 A	120 mA	19.36 A	86	10000µF
CFB400W-24S24	9-36 VDC	24 VDC	0 mA	16.7 A	120 mA	19.19 A	87	4700µF
CFB400W-24S28	9-36 VDC	28 VDC	0 mA	14.3 A	120 mA	19.18 A	87	4700µF
CFB400W-24S48	9-36 VDC	48 VDC	0 mA	8.3 A	120 mA	19.19 A	86.5	2200µF
CFB400W-48S05	18-75 VDC	5 VDC	0 mA	80 A	300 mA	9.36 A	89	10000µF
CFB400W-48S12	18-75 VDC	12 VDC	0 mA	33.3 A	60 mA	9.41 A	88.5	10000µF
CFB400W-48S24	18-75 VDC	24 VDC	0 mA	16.7 A	60 mA	9.28 A	90	4700µF
CFB400W-48S28	18-75 VDC	28 VDC	0 mA	14.3A	60 mA	9.27 A	90	4700µF
CFB400W-48S48	18-75 VDC	48 VDC	0 mA	8.3 A	60 mA	9.27 A	89.5	2200µF

Fig.1 The schematic of output voltage adjusted by using external resistor and/or variable resistor.



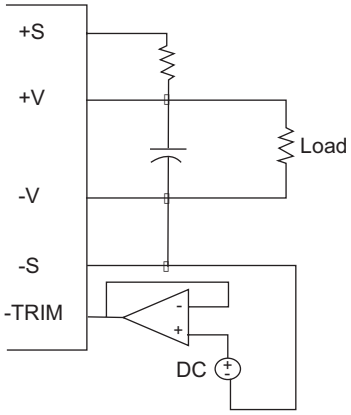
The output voltage can be determined by below equations:

$$Vf = \frac{1.24 \times (\frac{Rt \times 33}{Rt + 33})}{7.68 + \frac{Rt \times 33}{Rt + 33}}$$

$$Vout = (Vo + VR) \times Vf$$

Unit: KΩ
Vo: Nominal Output Voltage
Rt=6.8KΩ

Fig.2 The schematic of output voltage adjusted by using external DC voltage.



Output Voltage = TRIM Terminal Voltage * Nominal Output Voltage

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 9-36V
		48V 18-75V
Under Voltage Lockout	24Vin	power up 8.5V
		power down 7.5V
	48Vin	power up 17V
		power down 15V
Input Over Voltage Protection	24Vin	Turn off 42V
		Turn on 40V
	48Vin	Turn off 83V
		Turn on 80V
Opto Isolated Remote On/Off		See note 6
Input Filter		LC Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 500µs
External Trim Adj. Range	80-110%
Load share Accuracy	±10% at 50% to 100% Full Load
Auxiliary Output Voltage/Current	10±3Vdc/20mA max.
Ripple & Noise, 20MHz BW (note 3)	
5V	40mV RMS max., 100mV pk-pk max.
12V	60mV RMS max., 120mV pk-pk max.
24V	100mV RMS max., 240mV pk-pk max.
28V	100mV RMS max., 280mV pk-pk max.
48V	120mV RMS max., 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
Over Voltage Protection Trip Range, % Vo nom.	115-140%
Current Limit	110% -150% Nominal Output
Start up time	120ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case ..... 1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	4000pF typ.
Switching Frequency	230KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +110˚C
Thermal Shutdown Case Temp.	110˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-HDBK-217F, GB, 25˚C , Full Load	340Khrs typ.
Dimensions	4.60 × 2.40 x 0.50 inches (116.8 x 61.0 × 12.7 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	220 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. The output adjustment circuit and trim equations show as figure1 and figure2.
5. An external input capacitor 1000µF for 24Vin or 330µF for 48Vin models are recommended to reduce input ripple voltage.
6. Standard model is negative logic , suffix "P" to the model number with positive logic. (refer application note)
7. If the remote sense feature is not to be used, the +sense pin should be connected to the +Vout pin and the –sense pin should be connected to the -Vout pin. (refer application note)

CFB600 SERIES
600-700 WATT, 2:1 INPUT RANGE

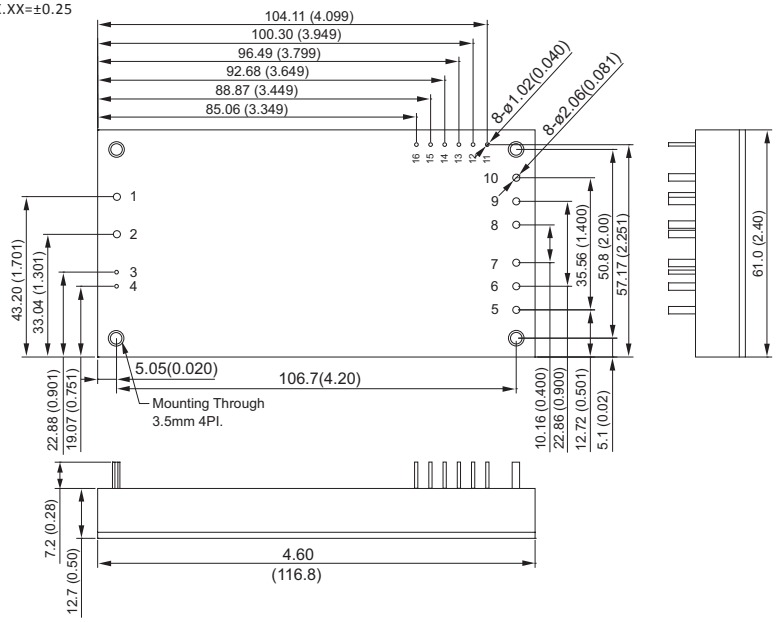
Features

- 600W-700W Isolated Output
- Efficiency to 92%
- Fixed Switching Frequency
- Input Under-Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off
- Industry Full-Brick Package
- Fully Isolated 1500VDC
- UL60950-1 Approval

E176177

Mechanical Dimensions

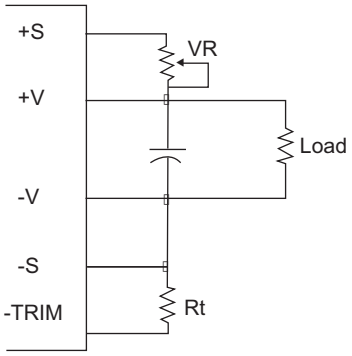
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



PIN CONNECTION	
PIN	Function
1	-V Input
2	+V Input
3	-On/Off
4	+On/Off
5-7	+V Output
8-10	-V Output
11	-Sense
12	+Sense
13	Trim
14	PC/NC
15	IOG
16	AUX

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CFB600-24S12	18-36 VDC	12 VDC	0 mA	50 A	150 mA	28.09 A	88	10000µF
CFB600-24S24	18-36 VDC	24 VDC	0 mA	25 A	150 mA	27.78 A	89	5000µF
CFB600-24S28	18-36 VDC	28 VDC	0 mA	21.5 A	150 mA	27.87 A	90	5000µF
CFB600-24S32	18-36 VDC	32 VDC	0 mA	19 A	150 mA	27.84 A	91	5000µF
CFB600-24S48	18-36 VDC	48 VDC	0 mA	12.5 A	200 mA	27.47 A	91	5000µF
CFB600-48S12	36-75 VDC	12 VDC	0 mA	50 A	90 mA	13.89 A	90	10000µF
CFB600-48S24	36-75 VDC	24 VDC	0 mA	25 A	100 mA	13.59 A	92	5000µF
CFB700-48S28	36-75 VDC	28 VDC	0 mA	25 A	105 mA	16.03 A	91	5000µF
CFB600-48S32	36-75 VDC	32 VDC	0 mA	19 A	90 mA	13.77 A	92	5000µF
CFB600-48S48	36-75 VDC	48 VDC	0 mA	12.5 A	130 mA	13.59 A	92	5000µF

Fig.1 The schematic of output voltage adjusted by using external resistor and/or variable resistor.



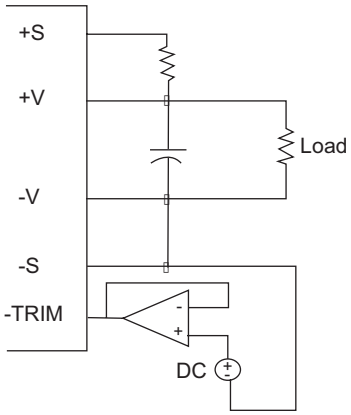
The output voltage can be determined by below equations:

$$Vf = \frac{1.24 \times (\frac{Rt \times 33}{Rt + 33})}{7.68 + \frac{Rt \times 33}{Rt + 33}}$$

$$Vout = (Vo + VR) \times Vf$$

Unit: KΩ
Vo: Nominal Output Voltage
Rt=6.8KΩ

Fig.2 The schematic of output voltage adjusted by using external DC voltage.



Output Voltage = TRIM Terminal Voltage * Nominal Output Voltage

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range		24V 18-36V
		48V 36-75V
Input Surge Voltage (100ms max.)		24V ..... 50Vdc max.
		48V ..... 100Vdc max.
Under voltage lockout	24Vin	power up 17V
		power down 16V
	48Vin	power up 35V
		power down 33V
Input over voltage protection	24Vin	Turn off 40V
		Turn on 38V
	48Vin	Turn off 80V
		Turn on 77V
Opto isolated Remote On/Off		See note 6
Input Filter		PI Type

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:25% Step Load Change	< 500µs
External Trim Adj. Range	60-110%%
Load share Accuracy	±10% at 50% to 100% Full Load
Auxiliary output voltage/current	10±3Vdc/20mA max.
	Ripple & Noise, 20MHz BW
12V	60mV RMS max.,
	120mV pk-pk max.
24V	100mV RMS max.,
	240mV pk-pk max.
28V	100mV RMS max.,
	280mV pk-pk max.
32V	120mV RMS max.,
	320mV pk-pk max.
48V	200mV RMS max.,
	480mV pk-pk max
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
Over Voltage Protection trip Range,% Vo nom.	115-140%
Current Limit	110% -150% Nominal Output
Start up time	160ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output ..... 1500VDC min.
	Input/Case .....1500VDC min.
	Output/Case ..... 1500VDC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	4000pF typ.
Switching Frequency	48S12 & 48S28 & 48S32...300KHz typ.
	Others ..... 250KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temp.	110˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	450Khrs typ.
Dimensions	4.60 × 2.40 x 0.50 inches
	(116.8 x 61.0 × 12.7 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	220 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with 10µF tantalum and 1µF ceramic capacitor across output.
4. The output adjustment circuit and trim equations show as figure1 and figure2.
5. An external input capacitor 220µF for all models are recommended to reduce input ripple voltage.
6. Standard model is negative logic, suffix "P" to the model number with positive logic. (refer application note)
7. If the remote sense feature is not to be used, the +sense pin should be connected to the +Vout pin and the –sense pin should be connected to the -Vout pin. (refer application note Item 6.9)

CFB600-300S SERIES
600 WATT, INPUT RANGE 180-425 VDC

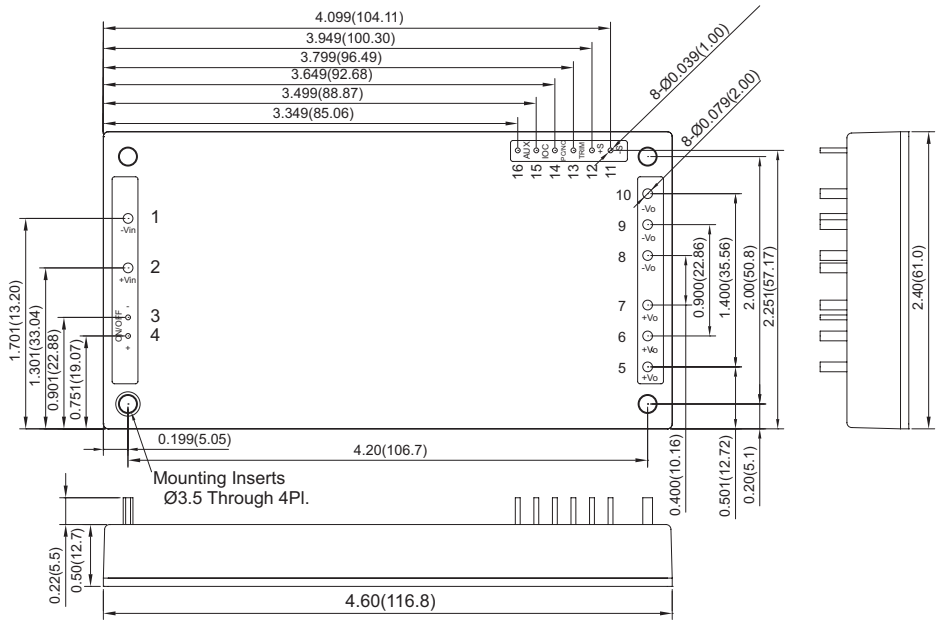
Features

- 600W Isolated Output
- Efficiency to 91%
- Fixed Switching Frequency
- Input Under-Voltage Protection
- Over Temperature Protection
- Over Voltage/Current Protection
- Remote On/Off
- Industry Full-Brick Package
- Safety Meets UL 60950-1
- Fully Isolated 3000VAC
- Off-Line Systems Using PFC Front-Ends

E176177

Mechanical Dimensions

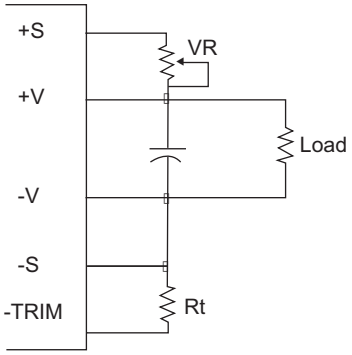
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



PIN CONNECTION	
PIN	Function
1	-V Input
2	+V Input
3	-On/Off
4	+On/Off
5-7	+V Output
8-10	-V Output
11	-Sense
12	+Sense
13	Trim
14	PC/NC
15	IOG
16	AUX

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT MIN.	OUTPUT CURRENT MAX.	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	% EFF.	CAPACITOR LOAD MAX.
CFB600-300S12	180-425 VDC	12 VDC	0 mA	50 A	10 mA	2.24 A	89.5	10000µF
CFB600-300S24	180-425 VDC	24 VDC	0 mA	25 A	10 mA	2.21 A	90.5	10000µF
CFB600-300S48	180-425 VDC	48 VDC	0 mA	12.5 A	10 mA	2.20 A	91	8000µF

Fig.1 The schematic of output voltage adjusted by using external resistor and/or variable resistor.



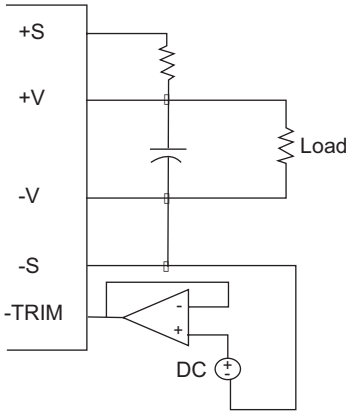
The output voltage can be determined by below equations:

$$Vf = \frac{1.24 \times (\frac{Rt \times 33}{Rt + 33})}{7.68 + \frac{Rt \times 33}{Rt + 33}}$$

$$Vout = (Vo + VR) \times Vf$$

Unit: KΩ
Vo: Nominal Output Voltage
Rt=6.8KΩ

Fig.2 The schematic of output voltage adjusted by using external DC voltage.



Output Voltage = TRIM Terminal Voltage * Nominal Output Voltage

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	300V 180-425V
Input Over Voltage Protection	Module on 480V
	Module off 500V
Under Voltage Lockout	Power Up 170V
	Power Down 160V
Positive Logic Remote On/Off	See note 5 & 6
Input Filter	Capacitive

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response:25% Step Load Change	< 500µs
External Trim Adj. Range (note 4)	60-110%%
Load share Accuracy	±10% at 50% to 100%Full Load
Auxiliary Output Voltage/Current	10±3Vdc/20mA max.
Ripple & Noise, 20MHz BW (note 3)	
12V	75mV RMS max., 150mV pk-pk max.
24V	120mV RMS max., 240mV pk-pk max.
48V	200mV RMS max., 480mV pk-pk max.
Temperature Coefficient	±0.03%/°C
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
Over Voltage Protection Trip Range, % Vo nom	115-140%
Current Limit	105% -125% Nominal Output
Start up time	40ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Input/Output .....3000VAC min.
	Input/Case ..... 2500VAC min.
	Output/Case .....500VAC min.
Isolation Resistance	10^7 ohm min.
Isolation Capacitance	3100pF typ.
Switching Frequency	200KHz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to +105˚C
Thermal Shutdown, Case Temp.	105˚C typ.
Humidity	95% RH max. Non condensing
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	420Khrs typ.
Dimensions	4.60 × 2.40 x 0.50 inches (116.8 x 61.0 x 12.7 mm)
Case Material	Aluminum Baseplate with Plastic Case
Weight	230 g typ.

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. Output ripple and noise measured with min. capacitor 470µF and 1µF ceramic capacitor across output.
4. The output adjustment circuit and trim equations show as figure1 and figure2.
5. Logic compatibility ..... open collector refer to -Vin
   Module On ..... >3.5VDC to 75VDC or open circuit
   Module Off ..... <1.2VDC
6. Suffix "N" to the model number with negative logic remote On/Off
   Module On ..... <1.2VDC
   Module Off ..... >3.5VDC to 75VDC or open circuit
7. An external input capacitor 330µF for all models are recommended to reduce input ripple voltage.

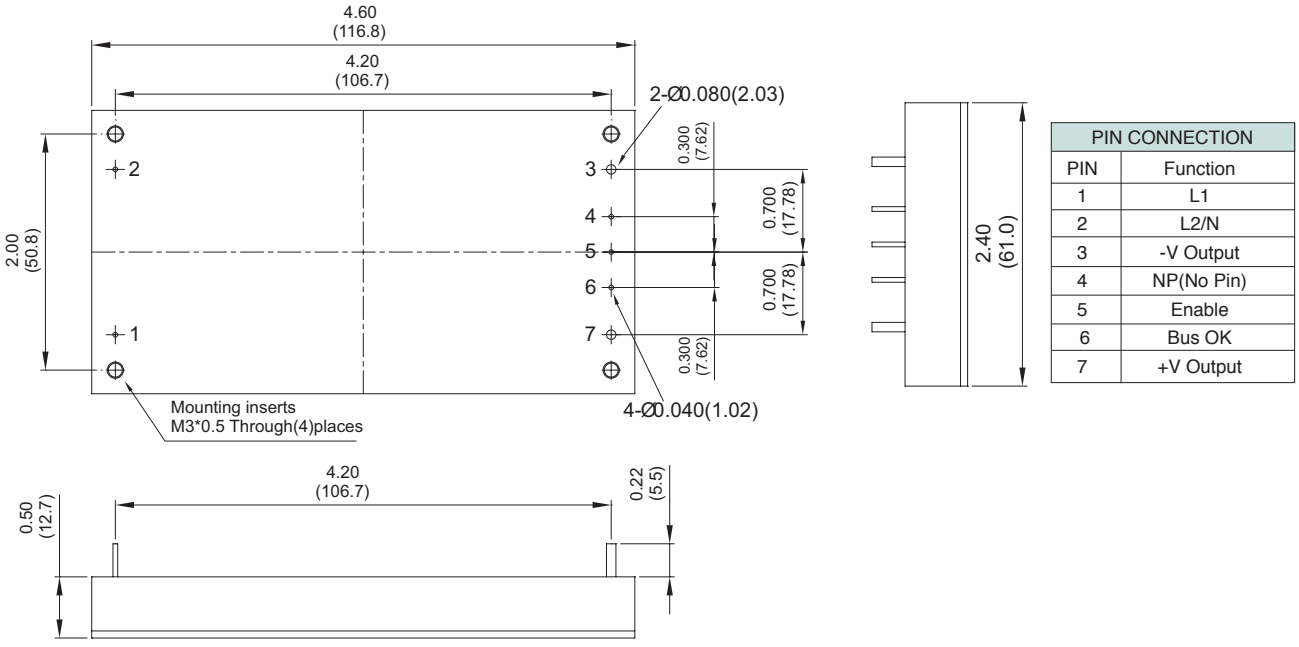
PFC700FB SERIES
700 WATT, POWER FACTOR CORRECTION MODULE

Features

- Unity Power Factor Meet EN61000-3-2
- High Efficiency Up to 96.5%
- Up to 700W Output
- Power Density Up to 120W/in3
- 100˚C Base-Plate Operating Temperature
- Internal Inrush Current Limit
- Short Circuit Protection
- DC-DC Converter Enable
- Bus OK Output
- Standard Full Brick Package

Mechanical Dimensions

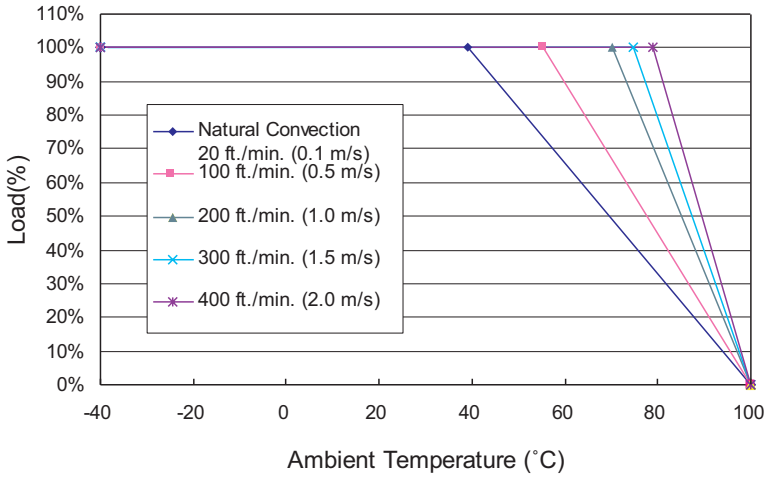
NOTE:Pin Size is 0.02"Inch (0.5mm)DIA
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25



PIN CONNECTION	
PIN	Function
1	L1
2	L2/N
3	-V Output
4	NP(No Pin)
5	Enable
6	Bus OK
7	+V Output

MODEL NUMBER	INPUT VOLTAGE	VOLTAGE VOLTAGE	OUTPUT CURRENT	RIPPLE & NOISE	% EFF.	OUTPUT CAPACITOR
PFC700FB	85-150 VAC	290 VDC	2.42 A	10Vp-p	94.0%	660µF-3000µF
	190-264 VAC	385 VDC	1.82 A	10Vp-p	96.5%	

De-rating Curve With Heatsink M-B012 (Input 230VAC)



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

AC Input Voltage	85~ 264 Vac
Frequency	47 to 63 Hz
Power Factor	> 0.97
Inrush Current	20A @230Vac typ.
Under Voltage Lockout	Power up ..... >=85Vac
Power down	< 75Vac

OUTPUT SPECIFICATIONS

Total Rated output Power	700W
De-rating, under 110Vac	Linearly to 500W Power at 85Vac
Output Voltage Accuracy	±5%
Line Regulation1	±0.2%
Load Regulation2	±0.5%
Ripple & Noise, 20MHz BW3	10Vpk-pk max.
Short Circuit Protection	Continuous
Over Voltage Protection4	410-450Vdc
BUS OK	Open-collector output
DC Enable	Open-collector output

GENERAL SPECIFICATIONS

Isolation Voltage	Input/Output .....Non-isolation
Input and Output/Case	2150Vdc min.
Switching Frequency	100Khz typ.
Operating Case Temperature	-40˚C to 100˚C
Storage Temperature	-55˚C to 105˚C
Thermal Shutdown, Case Temp	105˚C typ.
Humidity	95% RH max. Non condensing

NOTE

1. Measured from high line to low line.
2. Measured from full load to 0.1A load.
3. Add a 0.1μF ceramic capacitor and a 47μF E.L. capacitor to output for ripple & noise measurement and 1000μF bulk capacitor.
4. The PFC function stops.

CQB CHASSIS MOUNT/DIN-RAIL
33-100W, WIDE INPUT RANGE

Features

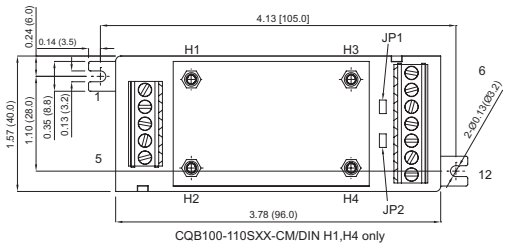
- 33W-100W Isolated Output
- 4 : 1 Wide Input Range
- Chassis Mount/Din Rail Mount
- Input Over Voltage Protection
- Regulated Outputs
- Continuous Short Circuit Protection
- CE Mark Meets 2004/108/EEC
- Safety Meets UL60950-1, EN60950-1, and IEC60950-1
- UL60950-1 Approval for DC Modules

E176177

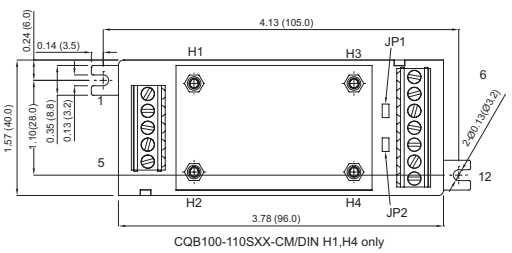
QUARTER BRICK DC-DC CONVERTER WITH HEATSINK

Mechanical Dimensions

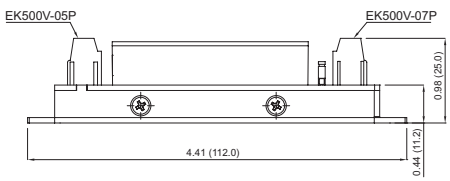
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25

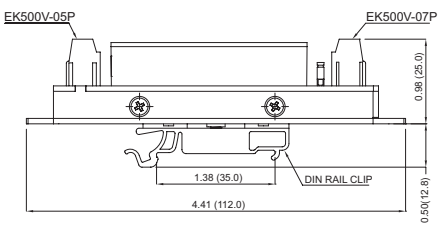


CQB100-110SXX-CM/DIN H1,H4 only



CQB100-110SXX-CM/DIN H1,H4 only



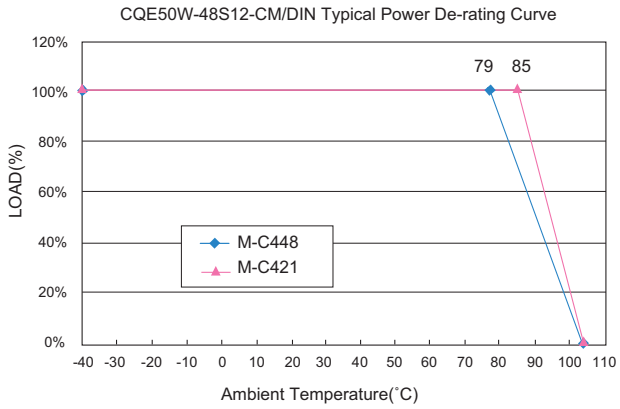


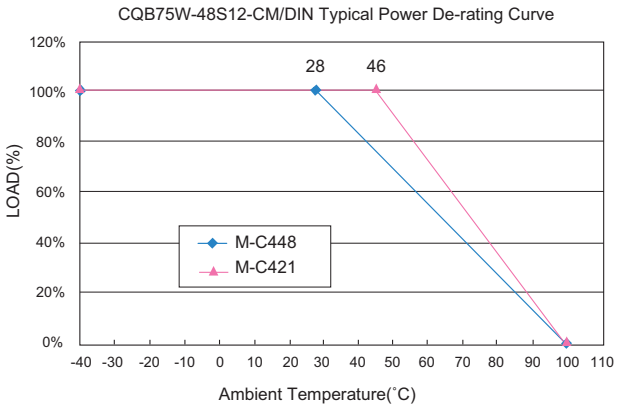
PIN CONNECTION	
PIN	Function
1,2	+V Input
3	-On/Off
4,5	+V Input
6,7	+V Output
8	+Sense
9	Trim
10	-Sense
11,12	-V Output
JP1	Short +S& +V Output
JP1	Short -S& -V Output

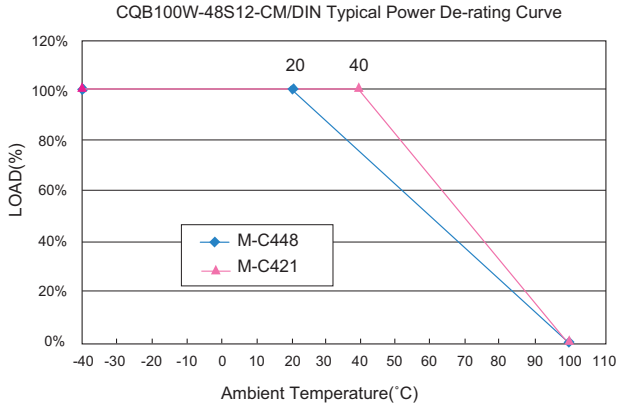
MODEL NUMBER	INPUT
CQE50W-XXSXX-CM/DIN	220µF/100V for 24Vin Models 47µF/100V for 48Vin Models
CQB75W-XXSXX-CM/DIN	220µF/100V for 24Vin Models
CQB100W-XXSXX-CM/DIN	100µF/100V for 24Vin Models 47µF/100V for 48Vin Models
CQB100-110SXX-CM/DIN	120µF/200V

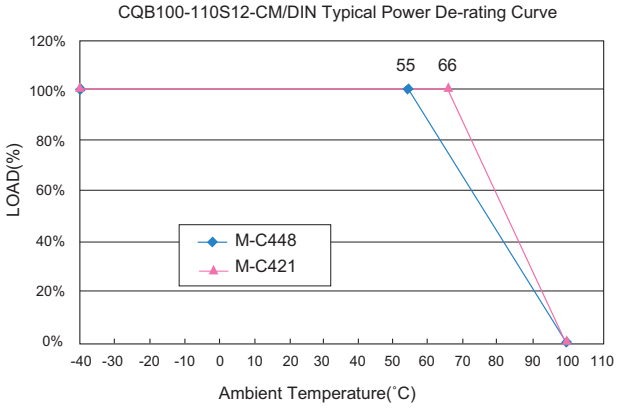
Derating Curve

Typical Derating Curves At Nominal Line, Full Load, and natural convection









Ordering Information

Require input an aluminum capacitor connected in the table below.

Ordering Information

CHB(E)XXX-	XX	S	XX	N	-XXX	+X-XXXX
Model No.	Nominal Input Voltage		Output Voltage	Remote On/Off		Heat Sink Type (Option)
CQE50W CQB75W CQB100W	24 : 24VDC 48 : 48VDC	Single Output	3V3 : 3.3VDC 05 : 5VDC 12 : 12VDC 15 : 15VDC 24 : 24VDC 48 : 48VDC	None: Positive Logic N: Negative Logic	CM: Chassis Mount DIN: Din Rail Mount	M-C448 M-C421
CQE50W			05 : 5VDC			
CQB100	110 : 110VDC		12 : 12VDC 24 : 24VDC			

CHB CHASSIS MOUNT/DIN-RAIL
33-100W, WIDE INPUT RANGE

Features

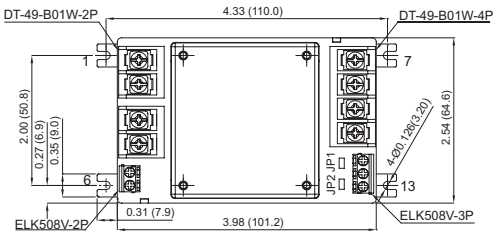
- 33W-100W Isolated Output
- 4 : 1 Wide Input Range
- Chassis Mount/Din Rail Mount
- Input Over Voltage Protection
- Regulated Outputs
- Continuous Short Circuit Protection
- CE Mark Meets 2004/108/EEC
- Safety Meets UL60950-1, EN60950-1, and IEC60950-1
- UL60950-1 Approval for DC Modules
  (Excludes CHE75W, CHE100W and 28Vout)

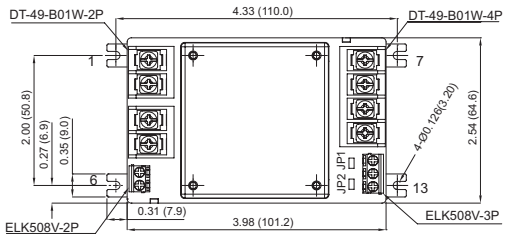
E176177

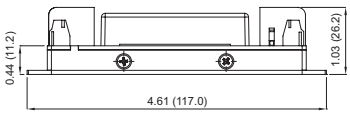
HALF BRICK DC-DC CONVERTER WITH HEATSINK

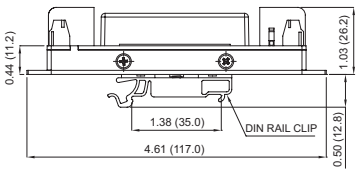
Mechanical Dimensions

All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25







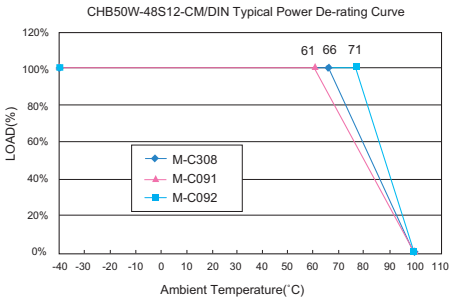


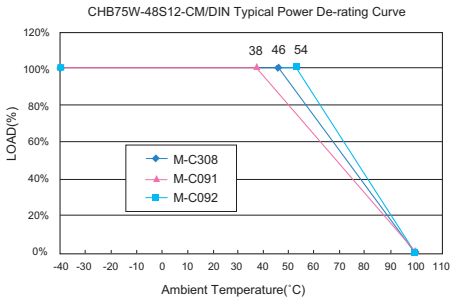
PIN CONNECTION	
PIN	Function
1,2	+V Input
3,4	-V Input
5	On/Off
6	CASE
7,8	+V Output
9,10	-V Output
11	+Sense
12	Trim
13	-Sense
JP1	Short +S& +V Output
JP1	Short -S& -V Output

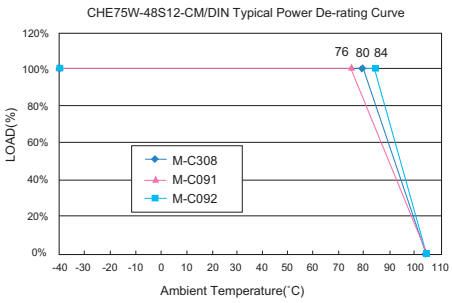
MODEL NUMBER	INPUT	OUTPUT
CHB50W-XXSXX-CM/DIN	NC	47µF/100V for 48Vout Models Only
CHB75W-XXSXX-CM/DIN	47µF/100V for 48Vin Models	47µF/100V for 48Vout Models Only
CHE75W-XXSXX-CM/DIN	100uF/100V	10µF/100V for 48Vout Models Only
CHB100W-XXSXX-CM/DIN	100µF/100V for 24Vin Models 47µF/100V for 48Vout Models Only	47µF/100V for 48Vin Models
CHE100W-XXSXX-CM/DIN	220µF/100V	10µF/100V for 48Vout Models Only

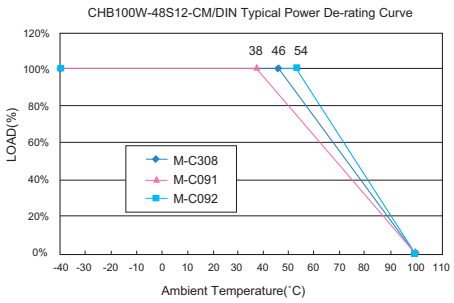
Derating Curve

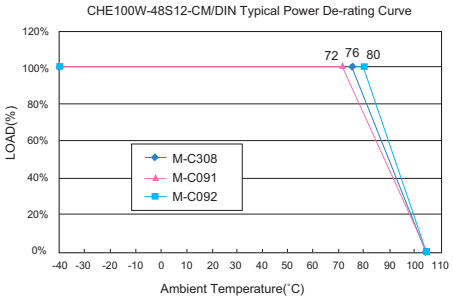
Typical Derating Curves At Nominal Line, Full Load, and natural convection











Ordering Information

Require input an aluminum capacitor connected in the table below.

Ordering Information						
CHB(E)XXX-	XX	S	XX	N	-XXX	+X-XXXX
Model No.	Nominal Input Voltage		Output Voltage	Remote On/Off		Heat Sink Type (Option)
CHB50W CHB75W CHE75W CHB100W CHE100W	24: 24VDC 48: 48VDC	Single Output	3V3 : 3.3VDC 05 : 5VDC 12 : 12VDC 15 : 15VDC 24 : 24VDC 48 : 48VDC	None: Positive Logic N: Negative Logic	CM: Chassis Mount DIN: Din Rail Mount	M-C308 M-C091 M-C092
CHB50W CHB75W CHB100W			28: 28VDC			

FM SERIES
10 AMP & 20 AMP, FILTER MODULE

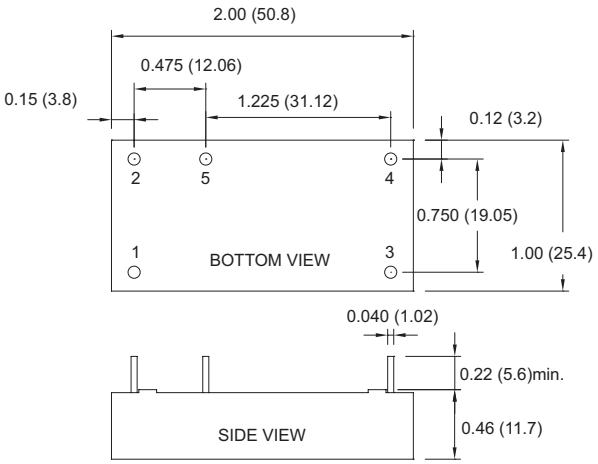
Features

- Compact Size 2" x 1", 2" x 1.6"
- PCB Mount
- 10A and 20A Filter Module
- 75VDC Input Voltage Maximum
- Suitable for Use With Half Brick and Quarter Brick Series

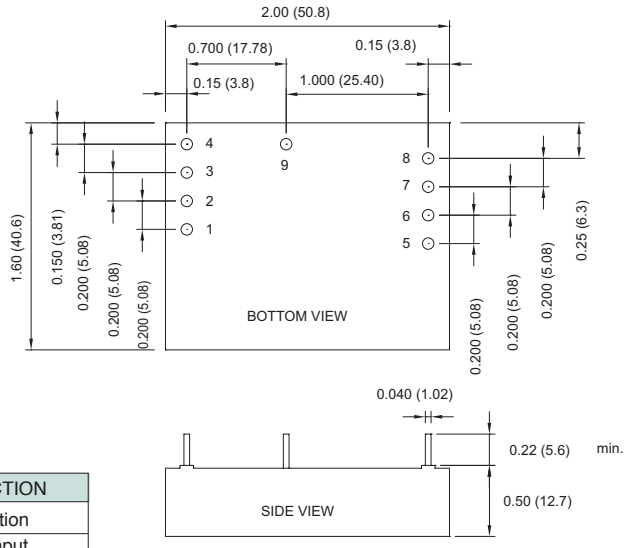
Mechanical Dimensions

NOTE: Pin Size is 0.04 Inch (1.02 mm)DIA
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25

Typical Common-mode and Differential-mode Loss for FM10-100



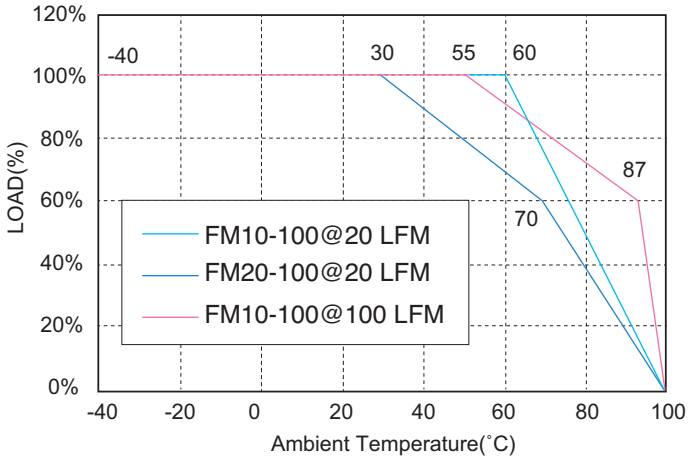
Typical Common-mode and Differential-mode Loss for FM20-100



PIN CONNECTION	
PIN	Function
1,2	+V Input
3,4	-V Input
5,6	+V Output
7,8	-V Output
9	GND

MODEL NUMBER	INPUT VOLTAGE	INPUT SURGE VOLTAGE	OUTPUT RATED CURRENT	DC RESISTANCE (+Vin to +Vo)	DC RESISTANCE (-Vin to -Vo)
FM10-100	75 VDC max.	100 VDC max.	10 A max.	11.5 mΩ typ.	4.5 mΩ typ.
FM20-100	75 VDC max.	100 VDC max.	20 A max.	9.5 mΩ typ.	5.7 mΩ typ.

Derating Curve



Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	75Vdc max.
Input Surge Voltage	100Vdc/100ms
Input Rated Current	See Table

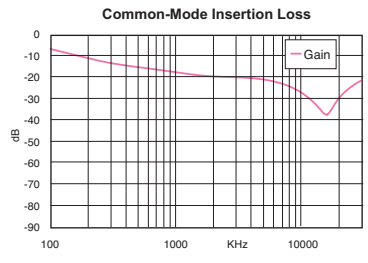
NOTE

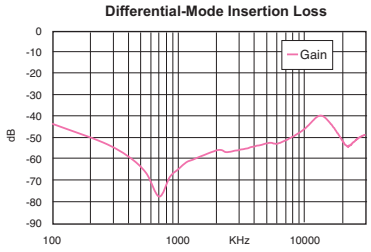
1. Maximum case temperature under any operating condition should not exceed 100˚C.

GENERAL SPECIFICATIONS

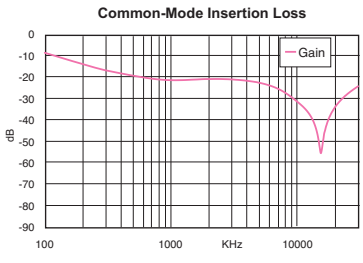
Isolation Voltage	Input/GND..... 1500Vdc min. Output/GND.....500Vdc min.
Isolation Resistance	10^7 ohm min.
DC Resistance	See Table
Operating Case Temperature Range (note 1)	-40˚C to +100˚C
Storage Temperature Range	-55˚C to +105˚C
Dimensions:	FM10: 2.00 x 1.00 x 0.46 inches (50.8 x 25.4 x 11.7 mm) FM20: 2.00 x 1.60 x 0.50 inches (50.8 x 40.6 x 12.7 mm)
Case Materials	Plastic Case with Epoxy Potting
Weight	FM10: 30 g FM20: 55 g

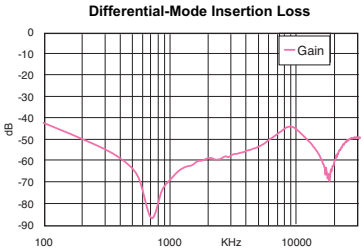
Typical Common-mode and Differential-mode Loss for FM10-100



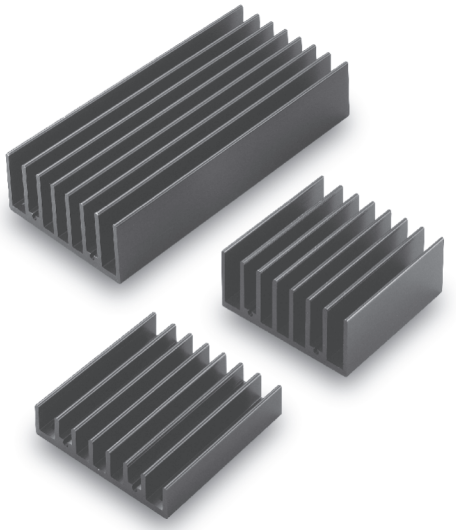


Typical Common-mode and Differential-mode Loss for FM20-100





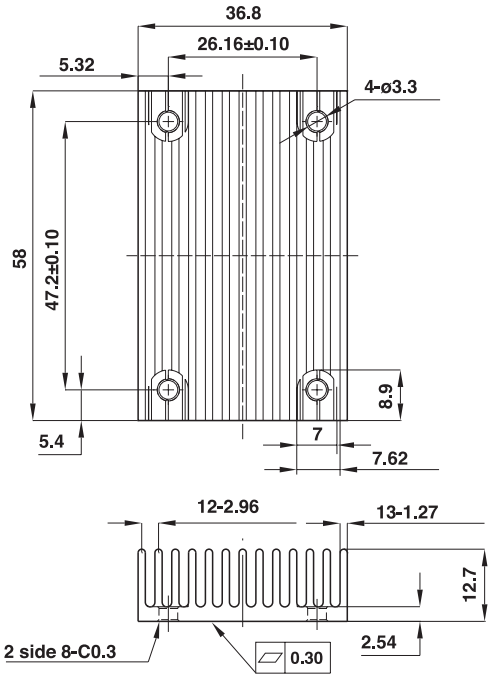
HEATSINK



Quarter Brick Heatsink

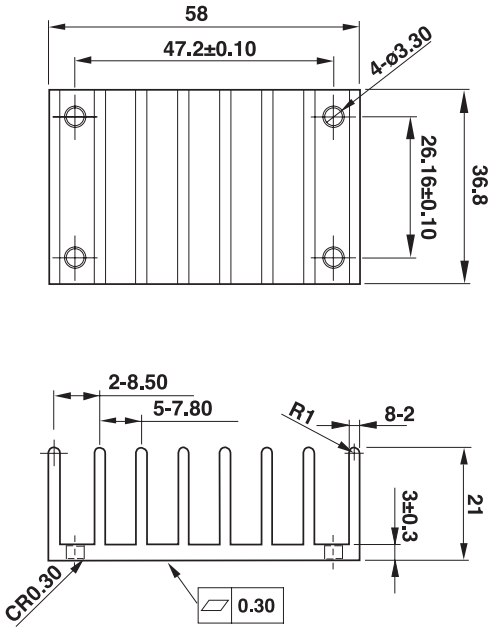
All Dimensions In mm

Longitudinal Fin
Model No. : M-C448
Thermal Pad: SZ56.9x35x0.25mm
Screw: SMP+SW M3x8L



Rca: 5.61°C/W (typ.), At natural convection
4.01°C/W (typ.), At 100LFM
3.39°C/W (typ.), At 200LFM
2.86°C/W (typ.), At 300LFM
2.49°C/W (typ.), At 400LFM

Transverse Fin
Model No. : M-C421
Thermal Pad: SZ56.9x35x0.25mm
Screw: SMP+SW M3x8L

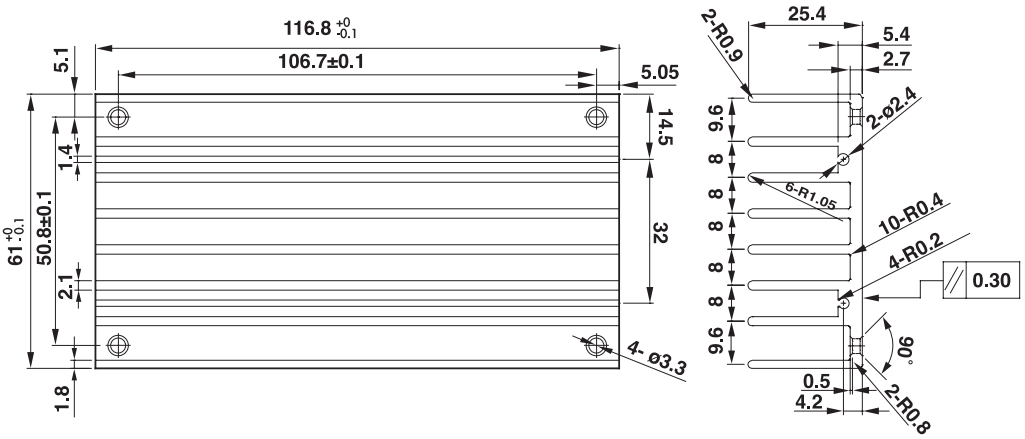


Rca: 4.78°C/W (typ.), At natural convection
2.44°C/W (typ.), At 100LFM
2.06°C/W (typ.), At 200LFM
1.76°C/W (typ.), At 300LFM
1.58°C/W (typ.), At 400LFM

Full Brick Heatsink

All Dimensions In mm

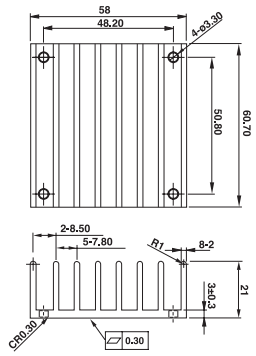
Longitudinal Fin
Model No. : M-B012



Thermal pad:
SR60x115.8x0.23mm
Screw: SMP+SW M3x8L
Thermal Resistance:
2.07˚C/W (typ.), At
natural convection

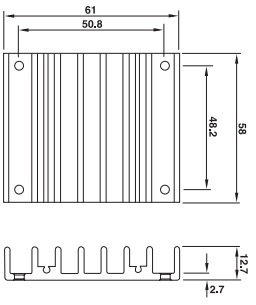
Half Brick Heatsink

All Dimensions In mm



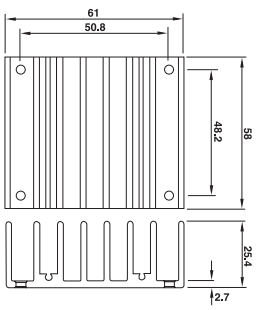
Longitudinal Fin
Model No. : M-C308

Rca:
3.9˚C/W (typ.), At natural convection
1.74˚C/W (typ.), At 100LFM
1.33˚C/W (typ.), At 200LFM
1.12˚C/W (typ.), At 300LFM
0.97˚C/W (typ.), At 400LFM



Transverse Fin
Model No. : M-C091

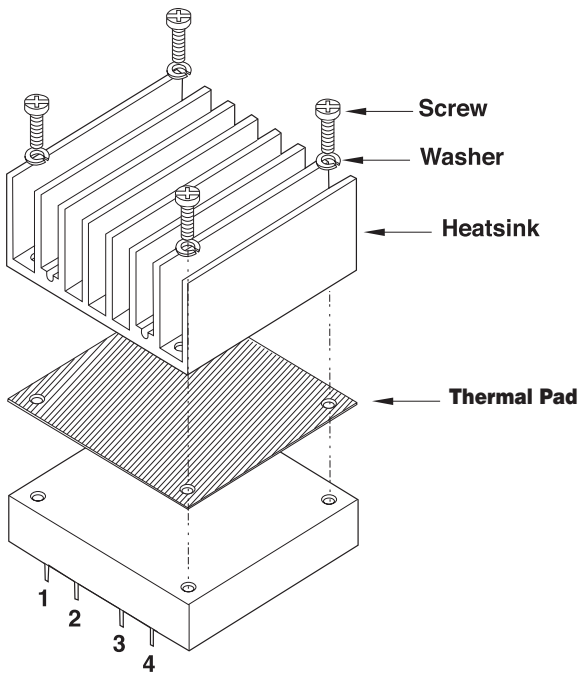
Rca:
4.7˚C/W (typ.), At natural convection
2.89˚C/W (typ.), At 100LFM
2.30˚C/W (typ.), At 200LFM
1.88˚C/W (typ.), At 300LFM
1.59˚C/W (typ.), At 400LFM



Transverse Fin
Model No. : M-C092

Rca:
3˚C/W (typ.), At natural convection
1.44˚C/W (typ.), At 100LFM
1.17˚C/W (typ.), At 200LFM
1.04˚C/W (typ.), At 300LFM
0.95˚C/W (typ.), At 400LFM

Half Brick Heatsink Assemble



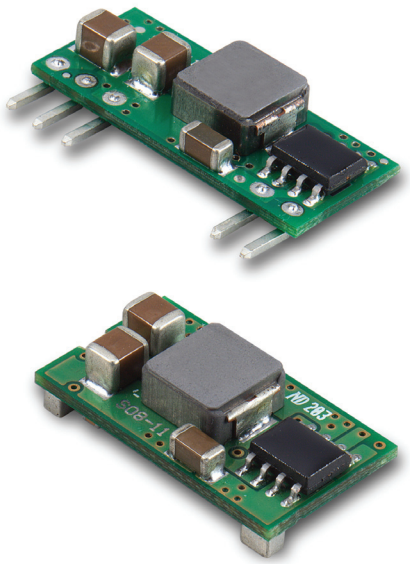
Heat Sink: M-C308
M-C091
M-C092
Thermal Pad: SZ56.9x60x0.25mm
Screw: SMP+SW M3x8L

SIPSMT05-05 SERIES
5 AMP, POL CONVERTERS

Features

- Non-Isolated POL Converter
- SIP / SMT Package
- Output Current 5AMP
- Input Voltage Range 3.0-5.5VDC
- Output Voltage Range 0.75-3.63VDC
- High Efficiency to 94%
- Over Temperature Protection
- Continuous Short Circuit Protection
- Remote On/Off
- UL/C-UL60950 Certified

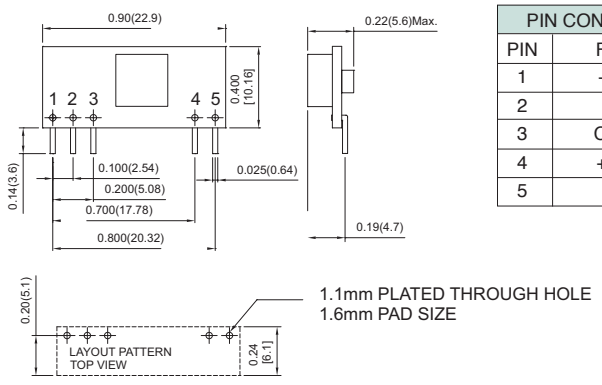
c UL us
E176177



Mechanical Dimensions

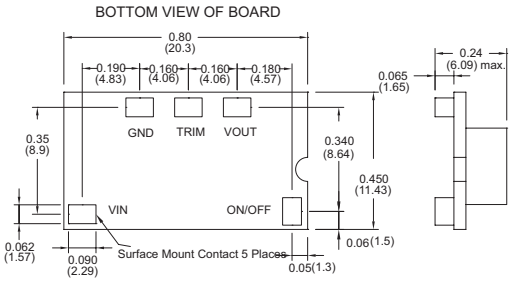
Mechanical Specification
All Dimensions In Inches (mm)
Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010
Millimeters: X.X= ±0.5 , X.XX=±0.25

SIP Packages



PIN CONNECTION	
PIN	Function
1	+Output
2	Trim
3	Common
4	+V Input
5	On/Off

SMT Packages



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	Efficiency (%)
	3.0-5.5 VDC	0.75 VDC	5 A	25 mA	949 mA	79
	3.0-5.5 VDC	1.2 VDC	5 A	30 mA	1412 mA	85
SIP05-05S33A	3.0-5.5 VDC	1.5 VDC	5 A	30 mA	1724 mA	87
	3.0-5.5 VDC	1.8 VDC	5 A	35 mA	2022 mA	89
SMT05-05S33A	3.0-5.5 VDC	2.0 VDC	5 A	35 mA	2222 mA	90
	3.0-5.5 VDC	2.5 VDC	5 A	35 mA	2217 mA	92
	4.5-5.5 VDC	3.3 VDC	5 A	35 mA	3511 mA	94

Derating Curve

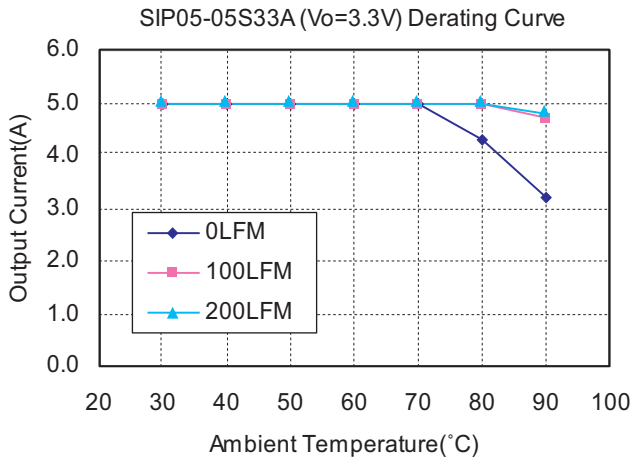


Figure2. Typical Power De-rating for 5V IN 3.3Vout

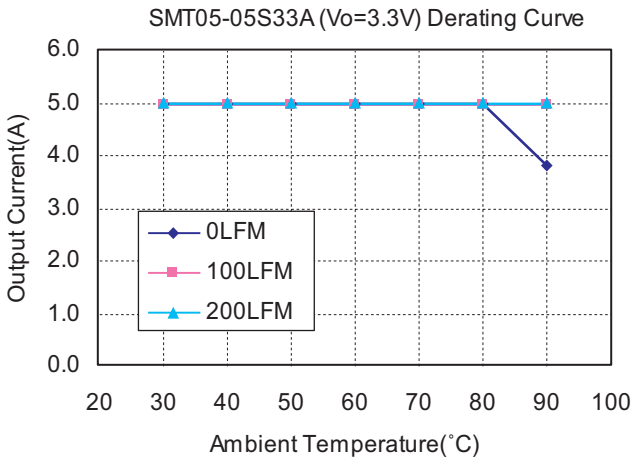


Figure3. Typical Power De-rating for 5V IN 3.3Vout

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	Vo, set ≦ Vin-0.5VDC
	5V ..... 3.0 – 5.5V
Under Voltage Lock-out	Power up ..... 2.0V typ.
Power down	1.9V typ.
Input Filter Type	Capacitive
Positive Remote On/Off Control:	
Module On	Open Circuit or = Vin
Module Off	<0.4Vdc

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 50% Step Load Change	< 200µs
Ripple and Noise, 20MHz BW (note 3)	20mVrms max.
	50mVpk-pk max.
Temperature Coefficient	±0.03%/˚C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.4% max.
Load Regulation (note 2)	±0.5% max.
Capacitive Load Low ESR	3000µF max.
External Trim Adj. Range (see Table 1)	Vo=0.75- 3.63Vdc
Start up time	6.5ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Non-isolation
Switching Frequency	300KHz typ.
Over Temperature Protection	120˚C typ.
Operating Ambient Temperature Range	-40˚C to +85˚C
Power Derating Curve	see Figure2, 3
Storage Temperature Range	-55˚C to +125˚C
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	1.5Mhrs typ.
Dimensions:	SIP Package: 0.90 x 0.400 x 0.22 inches
	(22.9 x 10.16 x 5.6 mm)
SMT Package:	0.80 x 0.450 x 0.24 inches
	(20.3 x 11.43 x 6.09 mm)
Structure	Non-potted With Open Frame Type
Weight	2.3 g

NOTE

1. Measured from high line to low line, Vo, set=1.8VDC.
2. Measured from full load to zero load, Vo, set=3.3VDC.
3. The output noise is measured with 10µf tantalum capacitor and 1µf ceramic capacitor across output.
4. The input terminal recommend to parallel with 100µF capacitor ESR< 100mΩ to reduce the input ripple voltage.
5. Suffix "N" to the model number with negative logic remote On/Off
   Model On ..... open circuit or < 0.4VDC
   Module Off ..... >+2.8VDC to Vin

SIPSMT05-12 SERIES
5 AMP, POL CONVERTERS

Features

- Non-isolated POL Converter
- SIP / SMT Package
- Output Current 5AMP
- Input Voltage Range 8.3-14VDC
- Output Voltage Range 0.75-5VDC
- High Efficiency to 92%
- Over Temperature Protection
- Continuous Short Circuit Protection
- UL/C-UL60950 Certified

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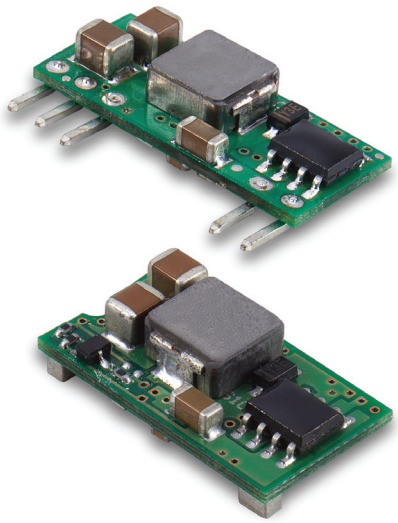
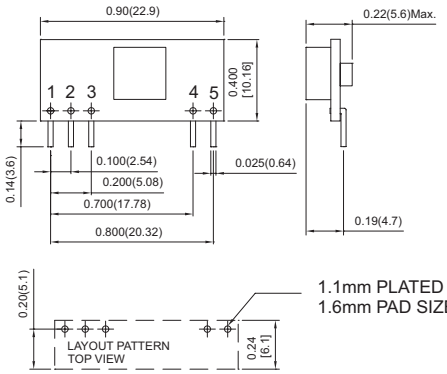


Mechanical Dimensions

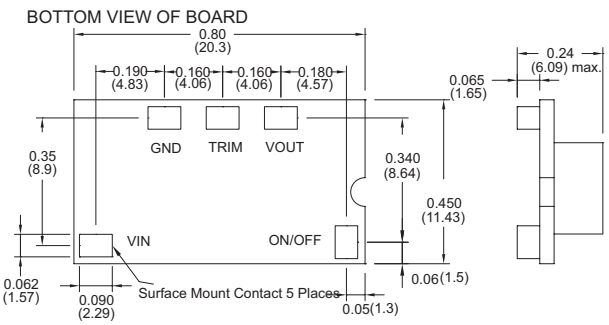
Mechanical Specification
All Dimensions In Inches (mm)
Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010
Millimeters: X.X= ±0.5 , X.XX=±0.25

SIP Packages



PIN CONNECTION	
PIN	Function
1	+Output
2	Trim
3	Common
4	+V Input
5	On/Off

SMT Packages



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	Efficiency (%)
	8.3-14 VDC	0.75 VDC	5 A	20 mA	428 mA	73
	8.3-14 VDC	1.2 VDC	5 A	25 mA	625 mA	80
SIP05-12S05A	8.3-14 VDC	1.5 VDC	5 A	25 mA	762 mA	82
	8.3-14 VDC	1.8 VDC	5 A	30 mA	893 mA	84
SMT05-12S05A	8.3-14 VDC	2.0 VDC	5 A	30 mA	980 mA	85
	8.3-14 VDC	2.5 VDC	5 A	35 mA	1197 mA	87
	8.3-14 VDC	3.3 VDC	5 A	45 mA	1545 mA	89
	8.3-14 VDC	5.0 VDC	5 A	50 mA	2264 mA	92

Derating Curve

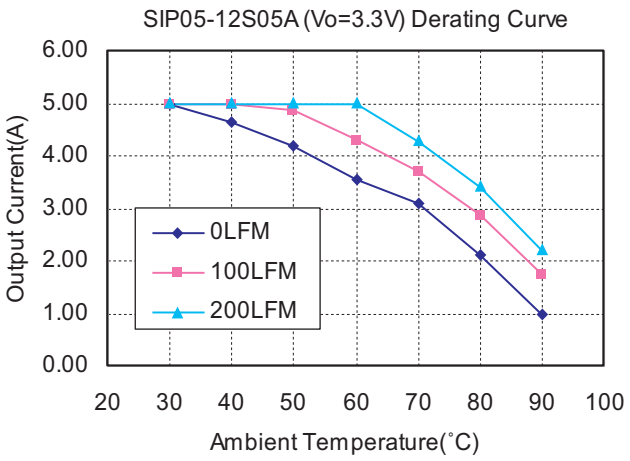


Figure2. Typical Power De-rating for 12V IN 3.3Vout

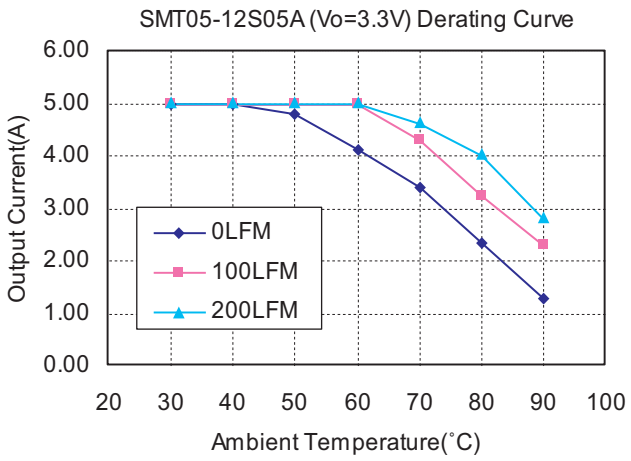


Figure3. Typical Power De-rating for 12V IN 3.3Vout

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	12V 8.3-14V
Under Voltage Lock-out	Power up ..... 8.0V typ.
	Power down ..... 7.9V typ.
Input Filter Type	Capacitive
Positive Remote On/Off Control:	
Module On	Open Circuit or = Vin
Module Off	<0.4Vdc

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 50% Step Load Change	< 200µs
Ripple and Noise, 20MHz BW (note 3)	20mVrms, 50mVpk-pk max.
	Vo=5Vdc 45mVrms,
	75mVpk-pk max.
Temperature Coefficient	±0.03%/˚C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
Capacitive Load Low ESR	3000µF max.
External Trim Adj. Range (see Table1)	Vo=0.75-5.0Vdc
Start up time	7ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Non-isolation
Switching Frequency	300KHz typ.
Over Temperature Protection	120˚C typ.
Operating Ambient Temperature Range	-40˚C to +85˚C
Power De-rating Curve	see Figure2, 3
Storage Temperature Range	-55˚C to +125˚C
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	1.5Mhrs typ.
Dimensions:	SIP Package: 0.90 x 0.400 x 0.22 inches
	(22.9 x 10.16 x 5.6 mm)
SMT Package:	0.80 x 0.450 x 0.24 inches
	(20.3 x 11.43 x 6.09 mm)
Structure	Non-potted With Open Frame Type
Weight	2.3 g

NOTE

1. Measured from high line to low line, Vo, set=1.8VDC.
2. Measured from full load to zero load, Vo, set=3.3VDC.
3. The output noise is measured with 10µf tantalum capacitor and 1µf ceramic capacitor across output.
4. The input terminal recommend to parallel with 100µF capacitor ESR< 100mΩ to reduce the input ripple voltage
5. Suffix "N" to the model number with negative logic remote On/Off
   Model On ..... open circuit or < 0.4VDC
   Module Off ..... >+2.8VDC to Vin

SIPSMT10-05 SERIES
10 AMP, POL CONVERTERS

Features

- Non-isolated POL converter
- SIP / SMT Package
- Output Current 10AMP
- Input Voltage Range 3-5.5VDC
- 300KHz Switching Frequency
- High Efficiency to 95%
- Over Temperature Protection
- Continuous Short Circuit Protection
- Remote On/Off Control
- UL/C-UL60950 Certified

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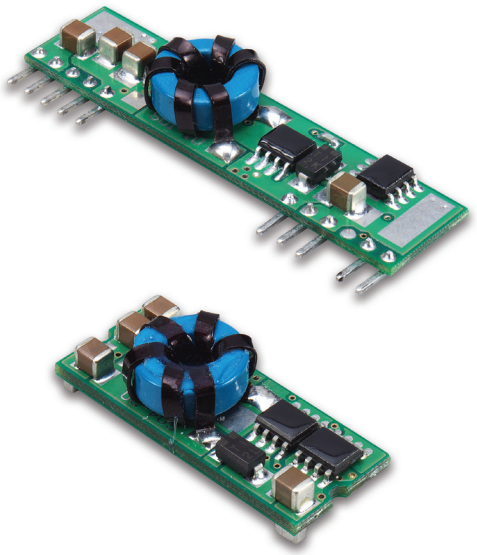
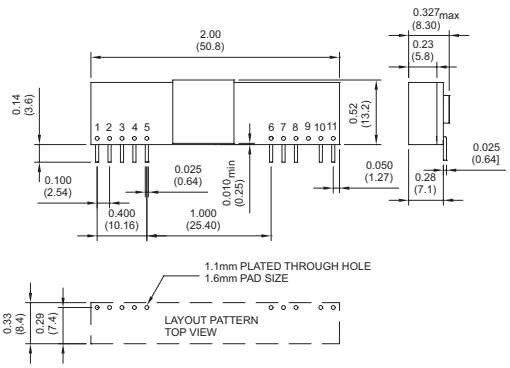


Mechanical Dimensions

Mechanical Specification
All Dimensions In Inches (mm)
Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010
Millimeters: X.X= ±0.5 , X.XX=±0.25

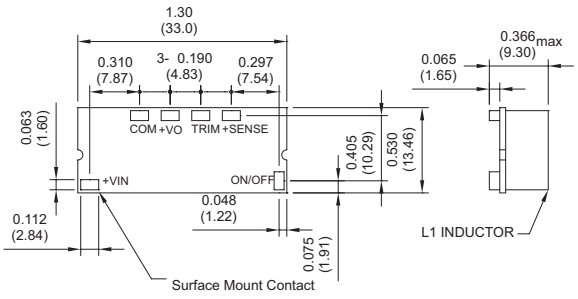
SIP Packages



PIN CONNECTION	
PIN	Function
1	+Output
2	+Output
3	+Sense
4	+Output
5	Common
6	Common
7	+V Input
8	+V Input
9	No Pin
10	Trim
11	On/Off Control

SMT Packages

Bottom View of Board



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT		Efficiency (%)
				NO LOAD	FULL LOAD	
SIP10-05S10	3.0-5.5 VDC	1.0 VDC	10 A	50 mA	2353 mA	85
SMT10-05S10	3.0-5.5 VDC	1.0 VDC	10 A	50 mA	2353 mA	85
SIP10-05S12	3.0-5.5 VDC	1.2 VDC	10 A	50 mA	2791 mA	86
SMT10-05S12	3.0-5.5 VDC	1.2 VDC	10 A	50 mA	2791 mA	86
SIP10-05S15	3.0-5.5 VDC	1.5 VDC	10 A	50 mA	3409 mA	88
SMT10-05S15	3.0-5.5 VDC	1.5 VDC	10 A	50 mA	3409 mA	88
SIP10-05S18	3.0-5.5 VDC	1.8 VDC	10 A	50 mA	4000 mA	90
SMT10-05S18	3.0-5.5 VDC	1.8 VDC	10 A	50 mA	4000 mA	90
SIP10-05S20	3.0-5.5 VDC	2.0 VDC	10 A	60 mA	4396 mA	91
SMT10-05S20	3.0-5.5 VDC	2.0 VDC	10 A	60 mA	4396 mA	91
SIP10-05S25	3.0-5.5 VDC	2.5 VDC	10 A	60 mA	5376 mA	93
SMT10-05S25	3.0-5.5 VDC	2.5 VDC	10 A	60 mA	5376 mA	93
SIP10-05S33	4.5-5.5 VDC	3.3 VDC	10 A	60 mA	6947 mA	95
SMT10-05S33	4.5-5.5 VDC	3.3 VDC	10 A	60 mA	6947 mA	95

Derating Curve

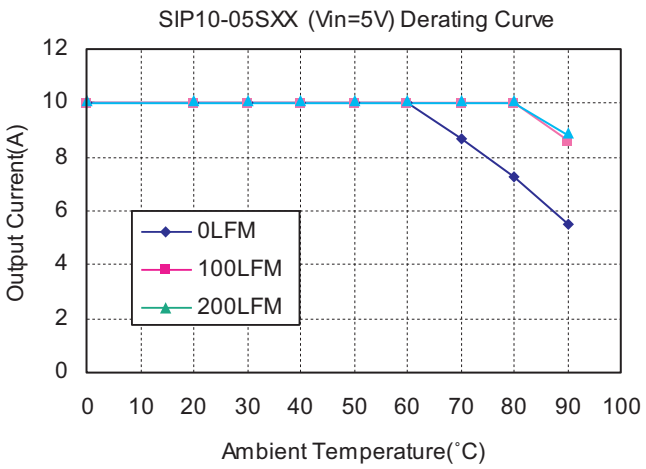


Figure2. Typical Power De-rating for 5Vin

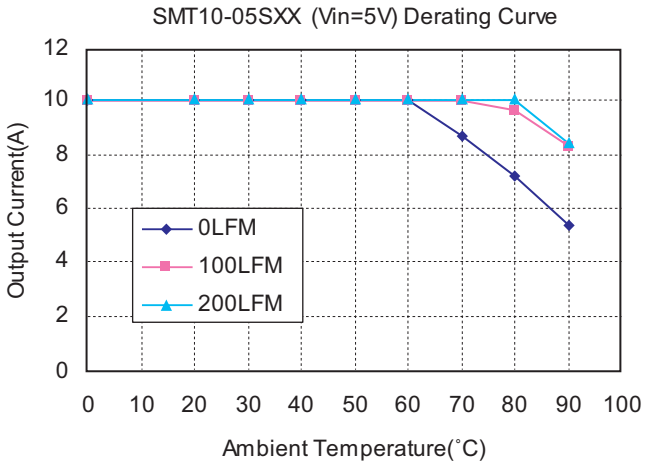


Figure3. Typical Power De-rating for 5Vin

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	5V 3.0- 5.5V
	5V 4.5-5.5V
Under Voltage Lock-out	Power up ..... 2.8V typ.
	Power down .....2.7V typ.
Input Filter Type	Capacitive
Positive Remote On/Off Control:	
Module On	Open Circuit or = Vin
Module Off	< 0.4Vdc

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 200µs
Ripple and Noise, 20MHz BW (note3)	20mVrms max.
	50mVpk-pk max.
Temperature Coefficient	±0.03%/˚C max.
Short Circuit Protection	Continuous
Line Regulation (note1)	±0.2% max.
Load Regulation (note2)	±0.5% max.
Capacitive Load, Low ESR	10000µF max.
External Trim Adj. Range	±10%
Start up time	4.5ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Non-isolation
Switching Frequency	300KHz typ.
Over Temperature Protection	120˚C typ.
Operating Ambient Temperature Range	-40˚C to +85˚C
Power Derating Curve	see Figure2, 3
Storage Temperature Range	-55˚C to +125˚C
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	1.5Mhrs typ.
Dimensions:	SIP Package: 2.00 x 0.327 x 0.52 inches
	(50.8 x 8.3 x 13.2 mm)
SMT Package:	1.30 x 0.530 x 0.366 inches
	(33.0x12.46x9.3 mm)
Structure	Non-potted With Open Frame Type
Weight	6.8 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. The output noise is measured with 10µf tantalum capacitor and 1µf ceramic capacitor across output.
4. The input terminal recommend to parallel with 100µF capacitor ESR< 20mΩ to reduce the input ripple voltage.
5. Suffix "N" to the model number with negative logic remote On/Off
   Model On ..... open circuit or < 0.4VDC
   Module Off ..... >+2.8VDC to Vin

SIPSMT10-12 SERIES
10 AMP, POL CONVERTERS

Features

- Non-Isolated POL Converter
- SIP / SMT Package
- Output Current 10AMP
- Input Voltage Range 9.0-14VDC
- 300KHz Switching Frequency
- High Efficiency to 95%
- Over Temperature Protection
- Continuous Short Circuit Protection
- Remote ON/OFF Control
- UL/C-UL60950 Certified

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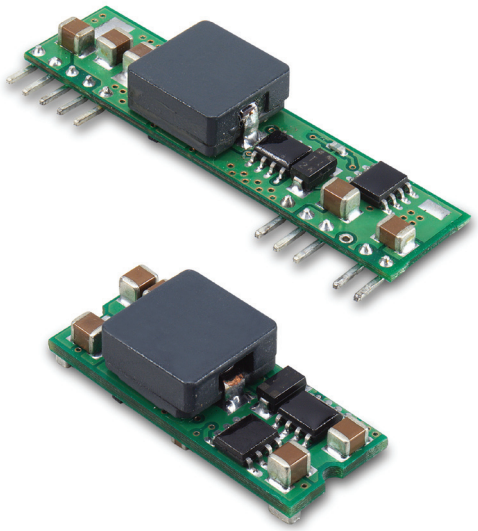
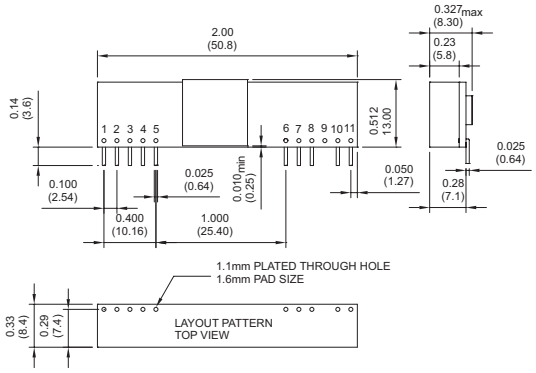


Mechanical Dimensions

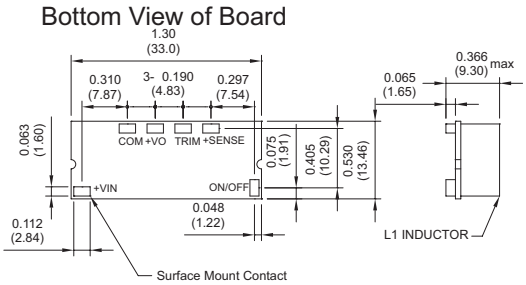
Mechanical Specification
All Dimensions In Inches (mm)
Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010
Millimeters: X.X= ±0.5 , X.XX=±0.25

SIP Packages



PIN CONNECTION	
PIN	Function
1	+Output
2	+Output
3	+Sense
4	+Output
5	Common
6	Common
7	+V Input
8	+V Input
9	No Pin
10	Trim
11	On/Off Control

SMT Packages



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT		Efficiency (%)
				NO LOAD	FULL LOAD	
SIP10-12S10	9.0-14 VDC	1.0 VDC	10 A	50 mA	992 mA	84
SMT10-12S10	9.0-14 VDC	1.0 VDC	10 A	50 mA	992 mA	84
SIP10-12S12	9.0-14 VDC	1.2 VDC	10 A	50 mA	1163 mA	86
SMT10-12S12	9.0-14 VDC	1.2 VDC	10 A	50 mA	1163 mA	86
SIP10-12S15	9.0-14 VDC	1.5 VDC	10 A	50 mA	1404 mA	89
SMT10-12S15	9.0-14 VDC	1.5 VDC	10 A	50 mA	1404 mA	89
SIP10-12S18	9.0-14 VDC	1.8 VDC	10 A	60 mA	1666 mA	90
SMT10-12S18	9.0-14 VDC	1.8 VDC	10 A	60 mA	1666 mA	90
SIP10-12S20	9.0-14 VDC	2.0 VDC	10 A	60 mA	1832 mA	91
SMT10-12S20	9.0-14 VDC	2.0 VDC	10 A	60 mA	1832 mA	91
SIP10-12S25	9.0-14 VDC	2.5 VDC	10 A	60 mA	2264 mA	92
SMT10-12S25	9.0-14 VDC	2.5 VDC	10 A	60 mA	2264 mA	92
SIP10-12S33	9.0-14 VDC	3.3 VDC	10 A	70 mA	2956 mA	93
SMT10-12S33	9.0-14 VDC	3.3 VDC	10 A	70 mA	2956 mA	93
SIP10-12S05	9.0-14 VDC	5.0 VDC	10 A	70 mA	4385 mA	95
SMT10-12S05	9.0-14 VDC	5.0 VDC	10 A	70 mA	4385 mA	95
SIP10-12S05A	8.3-14 VDC	0.75-5 VDC	10 A	70 mA	2956 mA	93%@3.3V
SMT10-12S05A	8.3-14 VDC	0.75-5 VDC	10 A	70 mA	2956 mA	93%@3.3V

Derating Curve

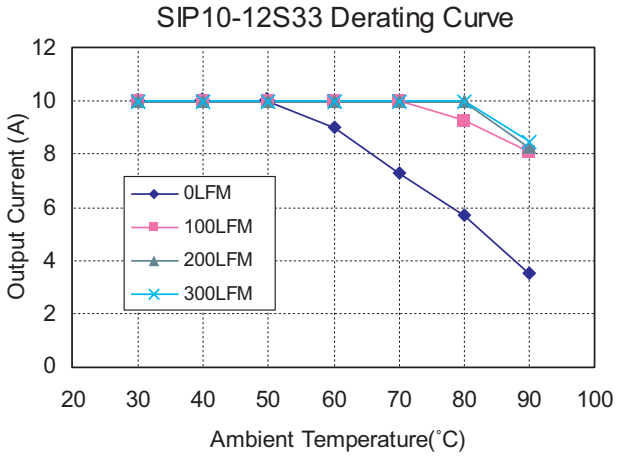


Figure2. Typical Power De-rating for 12Vin

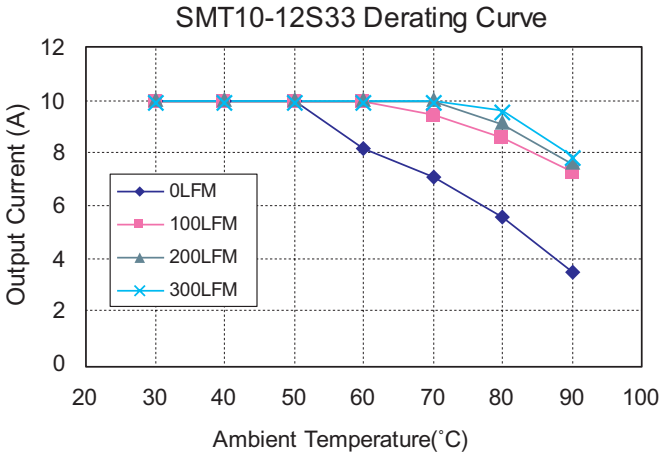


Figure3. Typical Power De-rating for 12Vin

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	12V ..... 9.0 – 14V
	12V ..... 8.3 – 14V
Under Voltage Lock-out	Power up ..... 8.0V typ.
	Power down ..... 7.7V typ.
Input Filter Type	Capacitive
Positive Remote On/Off Control:	
Module On	Open Circuit or =Vin
Module Off	< 0.4Vdc

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 200µs
Ripple and Noise, 20MHz BW (note 3)	20mVrms max.
	50mVpk-pk max.
Temperature Coefficient	±0.03%/˚C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
Capacitive Load Low ESR	8000µF max.
External Trim Adj. Range	±10%
(SIP/SMT10-12S05)	+5%, -10%
(SIP/SMT10-12S05A)	0.75V-5.0V
Start up time	7ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Non-isolation
Switching Frequency	300KHz typ.
Over Temperature Protection	120˚C typ.
Operating Ambient Temperature Range	-40˚C to +85˚C
Power Derating Curve	see Figure2, 3
Storage Temperature Range	-55˚C to +125˚C
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	0.98Mhrs typ.
Dimensions:	SIP Package: 2.00 x 0.512 x 0.327inches
	(50.8 x 13.00 x 8.30 mm)
SMT Package:	1.30 x 0.530 x 0.366 inches
	(33.0 x 13.46 x 9.30 mm)
Structure	Non-potted With Open Frame Type
Weight	10 g

NOTE

1. Measured from high line to low line.
2. Measured from full load to zero load.
3. The output noise is measured with 10µf tantalum capacitor and 1µf ceramic capacitor across output.
4. The input terminal recommend to parallel with 100µF capacitor ESR< 100mΩ to reduce the input ripple voltage.
5. Suffix "N" to the model number with negative logic remote On/Off
   Model On ..... open circuit or < 0.4VDC
   Module Off ..... >+2.8VDC to Vin

SIPSMT10W-12 SERIES
10 AMP, POL CONVERTERS

Features

- Non-Isolated POL Converter
- SIP / SMT Package
- Output Current 10AMP
- Input Voltage Range 6.0-14VDC
- Output Voltage Range 0.7525-5VDC
- 300KHz Switching Frequency
- High Efficiency to 95%
- Over Temperature Protection
- Continuous Short Circuit Protection
- Remote ON/OFF Control
- Output Voltage Sequencing
- Power Good Signal
- UL/C-UL60950 Certified

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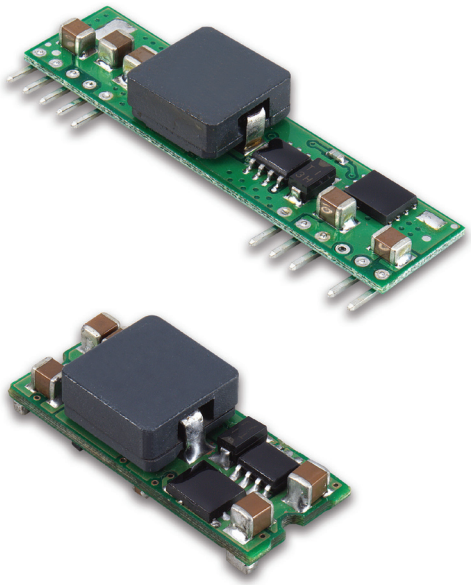
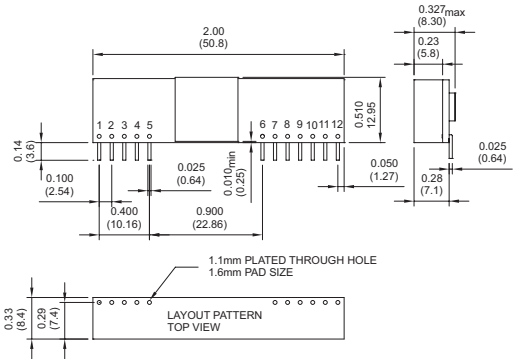


Mechanical Dimensions

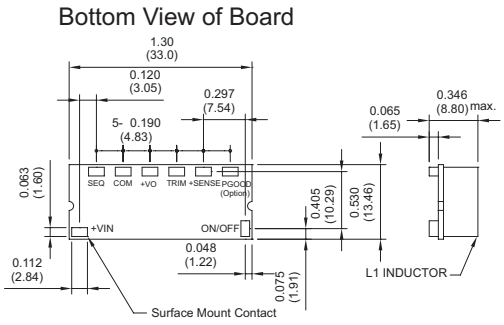
Mechanical Specification
All Dimensions In Inches (mm)
Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010
Millimeters: X.X= ±0.5 , X.XX=±0.25

SIP Packages



PIN CONNECTION	
PIN	Function
1	+Output
2	+Output
3	+Sense
4	+Output
5	Common
6	Common
7	+V Input
8	+V Input
9	No Pin
10	Trim
11	On/Off Control

SMT Packages



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	Efficiency (%)
	6.0-14 VDC	0.7525 VDC	10 A	40 mA	762 mA	82
	6.0-14 VDC	1.2 VDC	10 A	40 mA	1149 mA	87
SIP10W-12S05A	6.0-14 VDC	1.5 VDC	10 A	50 mA	1404 mA	89
	6.0-14 VDC	1.8 VDC	10 A	50 mA	1666 mA	90
SMT10W-12S05A	6.0-14 VDC	2.0 VDC	10 A	60 mA	1832 mA	91
	6.0-14 VDC	2.5 VDC	10 A	65 mA	2264 mA	92
	6.0-14 VDC	3.3 VDC	10 A	75 mA	2956 mA	93
	6.5-14 VDC	5.0 VDC	10 A	95 mA	4386 mA	95

Derating Curve

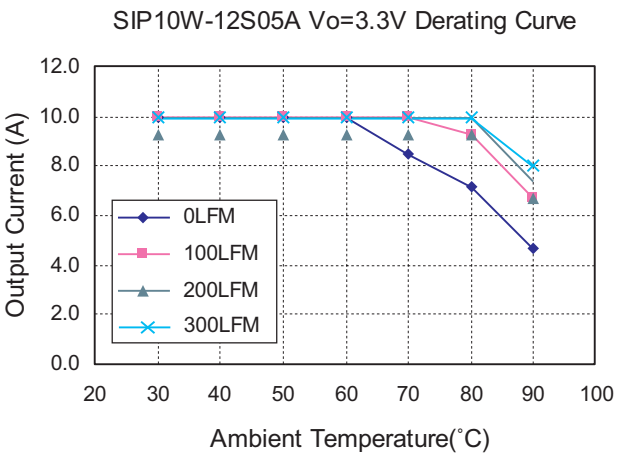


Figure3. Typical Power De-rating for 12Vin

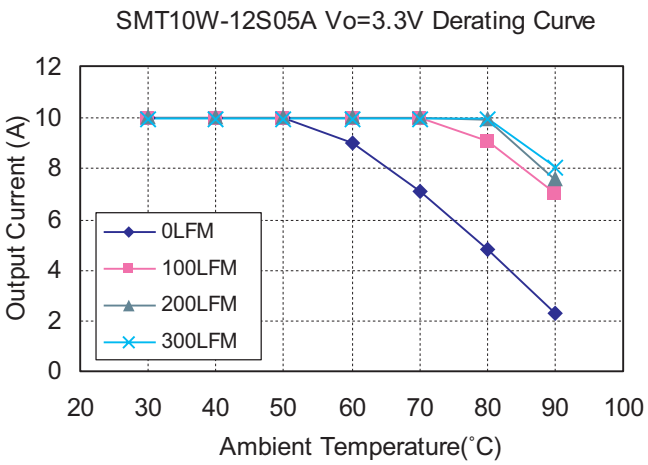


Figure3. Typical Power De-rating for 12Vin

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	12V 6.0-14.0V
	12V 6.5-14.0V
Under Voltage Lock-out	Power up ..... 5.0V typ.
	Power down ..... 4.0V typ.
Input Filter Type	Capacitive
Positive Remote On/Off Control :	
Module On	Open Circuit or = Vin
Module Off	< 0.4 Vdc

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 200µs
Ripple and Noise, 20MHz BW (note 3)	30mV rms max.
75mV pk-pk max.	
Temperature Coefficient	±0.03%/˚C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
External Trim Adj. Range (see Table1)	Vo=0.75-5.0Vdc
Sequencing Slew Rate Capability (dVSEQ/dt)	0.1-1.0V/msec
Sequencing Delay Time	10msec min.
Tracking Accuracy	Power up: 200mV max.,
	Power down: 400mV max.
Capacitive Load Low ESR	8000µF max.
Power Good Signal Asserted Logic High	Vo=90%-110%Vo, nom
Start up time	7ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Non-isolation
Switching Frequency	300KHz typ.
Over Temperature Protection	130˚C typ.
Operating Ambient Temperature Range	-40˚C to +85˚C
Power De-rating Curve	see Figure2, 3
Storage Temperature Range	-55˚C to +125˚C
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	0.92Mhrs typ.
Dimensions:	SIP Package: 2.00 x 0.510 x 0.327 inches
	(50.8 x 12.95 x 8.30 mm)
	SMT Package: 1.30 x 0.530 x 0.346 inches
	(33.0 x 13.46 x 8.80 mm)
Structure	Non-potted With Open Frame Type
Weight	8.5 g

NOTE

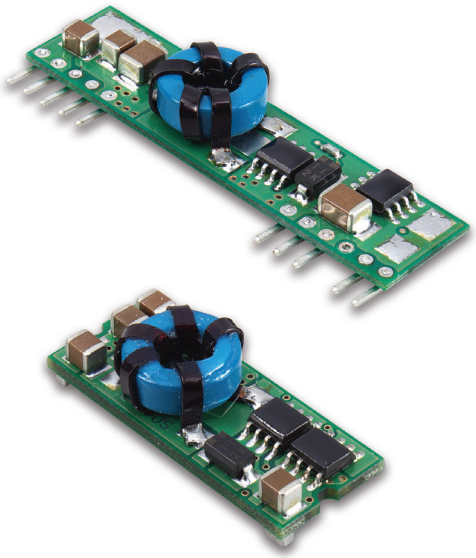
1. Measured from high line to low line, Vo,set=3.3VDC.
2. Measured from full load to zero load, Vo,set=3.3VDC.
3. The output noise is measured with 10µf tantalum capacitor and 1µf ceramic capacitor across output.
4. The input terminal recommend to parallel with 100µF capacitor ESR< 100mΩ to reduce the input ripple voltage.
5. Suffix "N" to the model number with negative logic remote On/Off
   Model On.....open circuit or < 0.4VDC
   Module Off.....>+2.8VDC to Vin
6. Suffix "P" to the model number with power good function.

SIPSMT15-05 SERIES
15 AMP, POL CONVERTERS

Features

- Non-Isolated POL Converter
- SIP / SMT Converter
- Output Current 15AMP
- Input Voltage Range 3-5.5VDC
- Output Voltage Range 0.9-3.63VDC
- 300KHz Switching Frequency
- High Efficiency to 94%
- Over Temperature Protection
- Continuous Short Circuit Protection
- Remote On/Off Control
- UL/C-UL60950 Certified

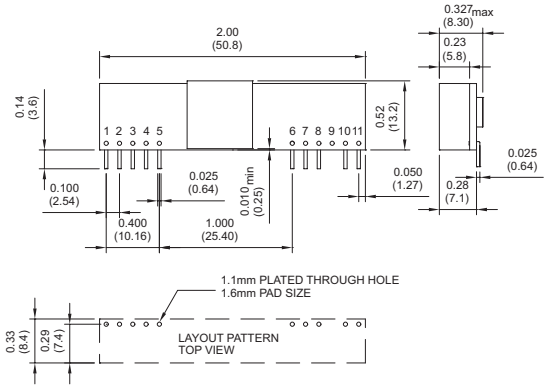
c UL us
E176177



Mechanical Dimensions

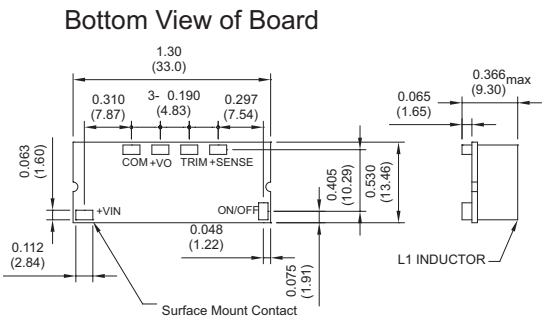
Mechanical Specification
All Dimensions In Inches (mm)
Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010
Millimeters: X.X= ±0.5 , X.XX=±0.25

SIP Packages



PIN CONNECTION	
PIN	Function
1	+Output
2	+Output
3	+Sense
4	+Output
5	Common
6	Common
7	+V Input
8	+V Input
9	No Pin
10	Trim
11	On/Off Control

SMT Packages



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	Efficiency (%)
	3.0-5.5 VDC	0.75 VDC	15 A	60 mA	3.658 A	82
	3.0-5.5 VDC	1.2 VDC	15 A	60 mA	4.286 A	84
SIP15-05S33A	3.0-5.5 VDC	1.5 VDC	15 A	60 mA	5.172 A	87
SMT15-05S33A	3.0-5.5 VDC	1.8 VDC	15 A	70 mA	6.136 A	88
	3.0-5.5 VDC	2.0 VDC	15 A	70 mA	6.742 A	89
	3.0-5.5 VDC	2.5 VDC	15 A	70 mA	8.152 A	92
	4.5-5.5 VDC	3.3 VDC	15 A	70 mA	10.532 A	94

Derating Curve

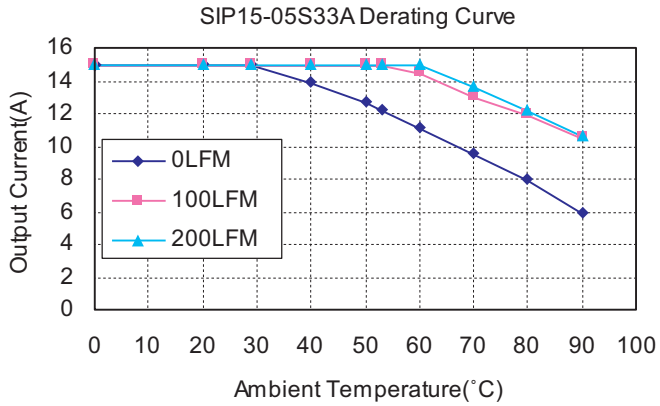


Figure2. Typical Power De-rating for 5Vin

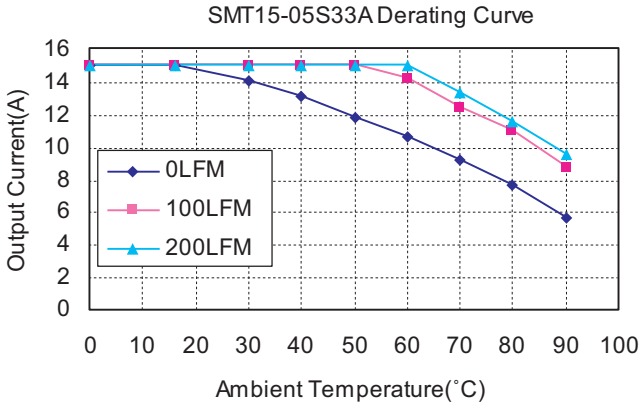


Figure3. Typical Power De-rating for 5Vin

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	Vo, set ≦ Vin-0.5VDC
	5V 3.0-5.5V
Under Voltage Lock-out	Power up ..... 2.8V typ.
	Power down ..... 2.7V typ.
Input Filter Type	Capacitive
Positive Remote On/Off Control:	
Module On	Open Circuit or = Vin
Module Off	< 0.4Vdc

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 200µs
Ripple and Noise, 20MHz BW (note 3)	20mVrms max.
	50mVpk-pk max.
Temperature Coefficient	±0.03%/˚C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	SIP15-05S33A .... ±0.2% max.
	SMT15-05S33A .. ±0.4% max.
Load Regulation (note 2)	±0.5% max.
Capacitive Load Low ESR	10000µF max.
External Trim Adj. Range (see Table1)	Vo=0.9-3.63Vdc
Start up time	4.5ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Non-isolation
Switching Frequency	300KHz typ.
Over Temperature Protection	120˚C typ.
Operating Ambient Temperature Range	-40˚C to +85˚C
Power De-rating Curve	see Figure2, 3
Storage Temperature Range	-55˚C to +125˚C
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	1.5Mhrs typ.
Dimensions:	SIP Package: 2.00 x 0.327 x 0.52 inches (50.8 x 8.3 x 13.2 mm)
	SMT Package: 1.30 x 0.53 x 0.366 inches (33.0 x 13.46 x 9.30 mm)
Structure	Non-potted With Open Frame Type
Weight	6.8 g

NOTE

1. Measured from high line to low line, Vo, set=1.8VDC.
2. Measured from full load to zero load, Vo, set=3.3VDC.
3. The output noise is measured with 10µf tantalum capacitor and 1µf ceramic capacitor across output.
4. The input terminal recommend to parallel with 100µF capacitor ESR< 20mΩ to reduce the input ripple voltage.
5. Suffix "N" to the model number with negative logic remote On/Off
   Model On ..... open circuit or < 0.4VDC
   Module Off ..... >+2.8VDC to Vin

SIPSMT16-12 SERIES
16 AMP, POL CONVERTERS

Features

- Non-Isolated POL Converter
- SIP / SMT Converter
- Output Current 15AMP
- Input Voltage Range 3-5.5VDC
- Output Voltage Range 0.9-3.63VDC
- 300KHz Switching Frequency
- High Efficiency to 94%
- Over Temperature Protection
- Continuous Short Circuit Protection
- Remote On/Off Control
- UL/C-UL60950 Certified

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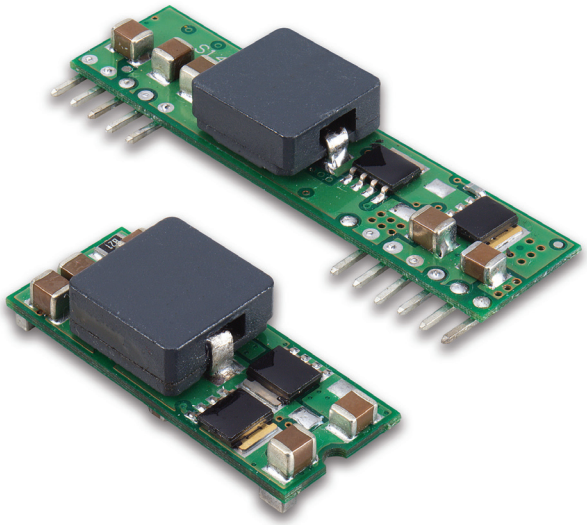
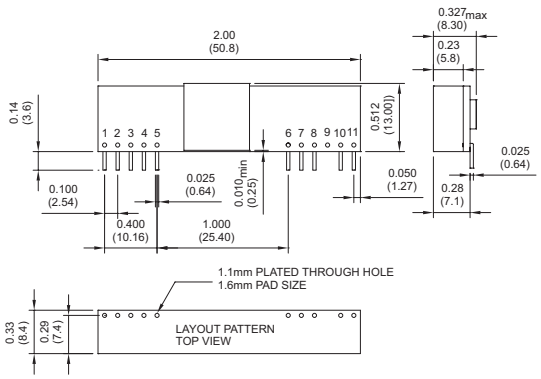
E176177



Mechanical Dimensions

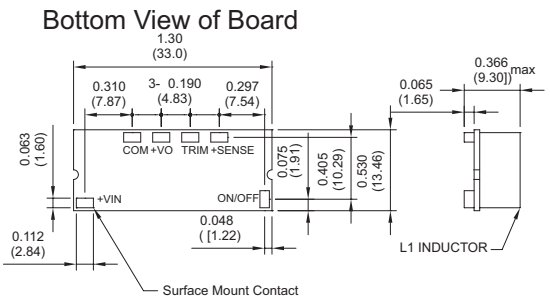
Mechanical Specification
All Dimensions In Inches (mm)
Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010
Millimeters: X.X= ±0.5 , X.XX=±0.25

SIP Packages



PIN CONNECTION	
PIN	Function
1	+Output
2	+Output
3	+Sense
4	+Output
5	Common
6	Common
7	+V Input
8	+V Input
9	No Pin
10	Trim
11	On/Off Control

SMT Packages



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	Efficiency (%)
	9.0-14 VDC	0.75 VDC	16 A	40 mA	1299 mA	77
	9.0-14 VDC	1.2 VDC	16 A	50 mA	1928 mA	83
SIP16-12S05A	9.0-14 VDC	1.5 VDC	16 A	50 mA	2326 mA	86
	9.0-14 VDC	1.8 VDC	16 A	60 mA	2727 mA	88
SMT16-12S05A	9.0-14 VDC	2.0 VDC	16 A	60 mA	2996 mA	89
	9.0-14 VDC	2.5 VDC	16 A	65 mA	3704 mA	90
	9.0-14 VDC	3.3 VDC	16 A	75 mA	4783 mA	92
	9.0-14 VDC	5.0 VDC	16 A	75 mA	7092 mA	94

Derating Curve

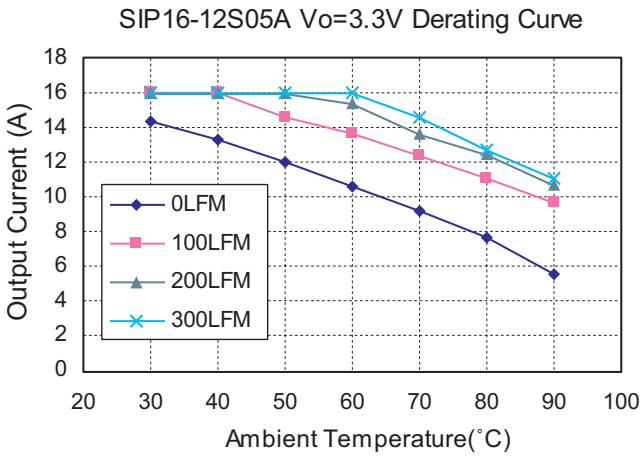


Figure2. Typical Power De-rating for 12Vin

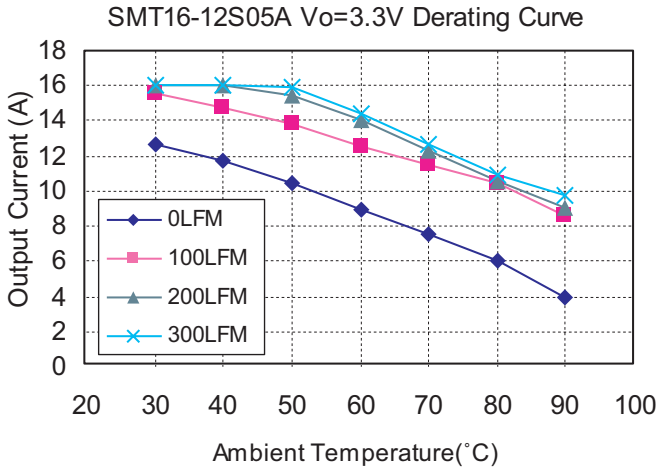


Figure3. Typical Power De-rating for 12Vin

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	12V 9.0-14V
Under Voltage Lock-out	Power up ..... 8.0V typ.
	Power down ..... 7.7V typ.
Input Filter Type	Capacitive
Positive Remote On/Off Control:	
Module On	Open Circuit or =Vin
Module Off	< 0.4Vdc

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 200µs
Ripple and Noise, 20MHz BW (note 3)	30mVrms max.
	75mVpk-pk max.
Temperature Coefficient	±0.03%/˚C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
Capacitive Load Low ESR	8000µF max.
External Trim Adj. Range (see Table1)	Vo=0.75-5.0Vdc
Start up time	7ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Non-isolation
Switching Frequency	300KHz typ.
Over Temperature Protection	130˚C typ.
Operating Ambient Temperature Range	-40˚C to +85˚C
Power Derating Curve	see Figure2, 3
Storage Temperature Range	-55˚C to +125˚C
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	0.98Mhrs typ.
Dimensions:	
SIP Package:	2.00 x 0.512 x 0.327 inches
	(50.8 x 13.00 x 8.30 mm)
SMT Package:	1.30 x 0.530 x 0.366 inches
	(33.0 x 13.46 x 9.30 mm)
Structure	Non-potted With Open Frame Type
Weight	10 g

NOTE

1. Measured from high line to low line, Vo,set=3.3VDC.
2. Measured from full load to zero load, Vo,set=3.3VDC.
3. The output noise is measured with 10µf tantalum capacitor and 1µf ceramic capacitor across output.
4. The input terminal recommend to parallel with 100µF capacitor ESR< 100mΩ to reduce the input ripple voltage.
5. Suffix "N" to the model number with negative logic remote On/Off
   Model On ..... open circuit or < 0.4VDC
   Module Off..... >+2.8VDC to Vin

SIPSMT16W-12 SERIES
16 AMP, POL CONVERTERS

Features

- Non-Isolated POL Converter
- SIP / SMT Package
- Output Current 16AMP
- Input Voltage Range 6.0-14VDC
- Output Voltage Range 0.7525-5.0VDC
- 300KHz Switching Frequency
- High Efficiency to 94%
- Over Temperature Protection
- Continuous Short Circuit Protection
- Remote On/Off Control
- Output Voltage Sequencing
- Power Good Signal
- UL/C-UL60950 Certified

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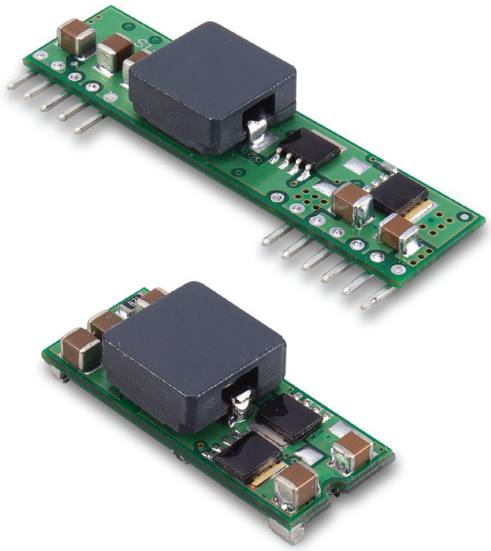
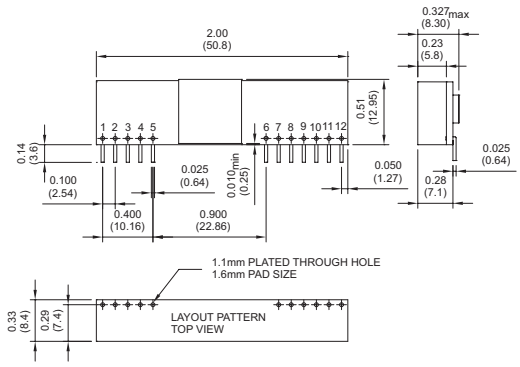
E176177



Mechanical Dimensions

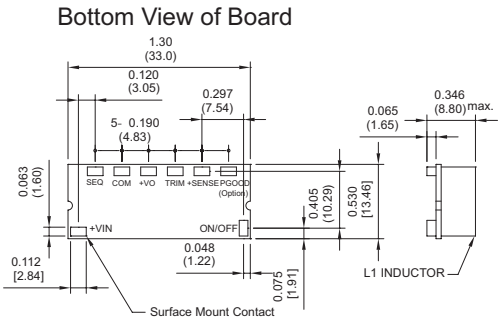
Mechanical Specification
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25

SIP Packages



PIN CONNECTION	
PIN	Function
1	+Output
2	Output
3	+Sense
4	+Output
5	Common
6	No Pin/PGOOD
7	Common
8	+V Input
9	+V Input
10	Sequency
11	Trim
12	On/Off Control

SMT Packages



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT NO LOAD	INPUT CURRENT FULL LOAD	Efficiency (%)
	6.0-14 VDC	0.7525 VDC	16 A	40 mA	1250 mA	80
	6.0-14 VDC	1.2 VDC	16 A	40 mA	1882 mA	85
SIP16W-12S05A	6.0-14 VDC	1.5 VDC	16 A	50 mA	2273 mA	88
	6.0-14 VDC	1.8 VDC	16 A	60 mA	2697 mA	89
SMT16W-12S05A	6.0-14 VDC	2.0 VDC	16 A	60 mA	2963 mA	90
	6.0-14 VDC	2.5 VDC	16 A	65 mA	3663 mA	91
	6.0-14 VDC	3.3 VDC	16 A	75 mA	4731 mA	93
	6.5-14 VDC	5.0 VDC	16 A	95 mA	7092 mA	94

Derating Curve

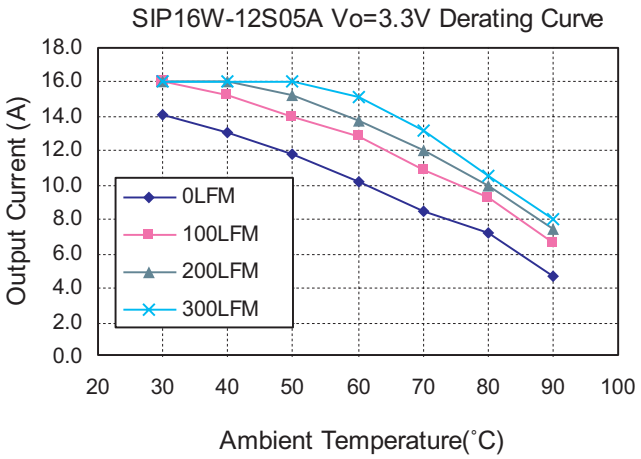


Figure2. Typical Power De-rating for 12Vin

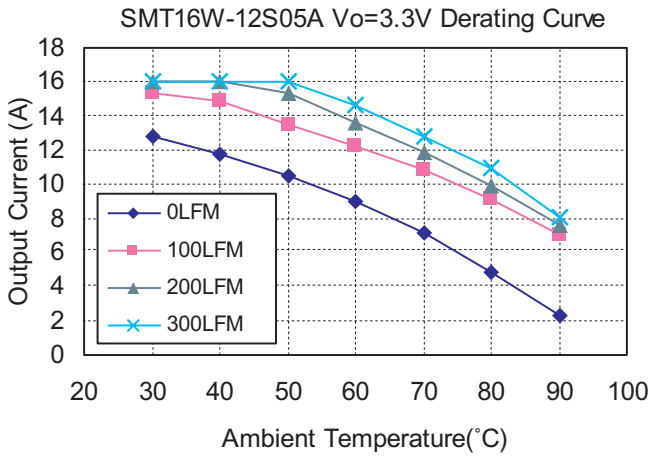


Figure3. Typical Power De-rating for 12Vin

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	12V 6.0-14.0V
	12V 6.5-14.0V
Under Voltage Lock-out	Power up ..... 5.0V typ.
	Power down ..... 4.0V typ.
Input Filter Type	Capacitive
Positive Remote On/Off Control :	
Module On	Open Circuit or = Vin
Module Off	< 0.4 Vdc

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 200µs
Ripple and Noise, 20MHz BW (note 3)	30mV rms max.
	75mV pk-pk max.
Temperature Coefficient	±0.03%/˚C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
External Trim Adj. Range (see Table1)	Vo=0.75-5.0Vdc
Sequencing Slew Rate Capability (dV_{SEQ}/dt)	0.1-1.0V/msec
Sequencing Delay Time	10msec min.
Tracking Accuracy	Power up: 200mV max.,
	Power down: 400mV max.
Capacitive Load Low ESR	8000µF max.
Power Good Signal Asserted Logic High	Vo=90%-110%Vo, nom.
Start up time	7ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Non-isolation
Switching Frequency	300KHz typ.
Over Temperature Protection	130˚C typ.
Operating Ambient Temperature Range	-40˚C to +85˚C
Power Derating Curve	see Figure2, 3
Storage Temperature Range	-55˚C to +125˚C
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	0.92Mhrs typ.
Dimensions:	
SIP Package:	2 x 0.51 x 0.327 inches
	(50.8 x 12.95 x 8.3 mm)
SMT Package:	1.3 x 0.53 x 0.346 inches
	(33.0 x 13.46 x 8.8 mm)
Structure	Non-potted With Open Frame Type
Weight	8.5 g

NOTE

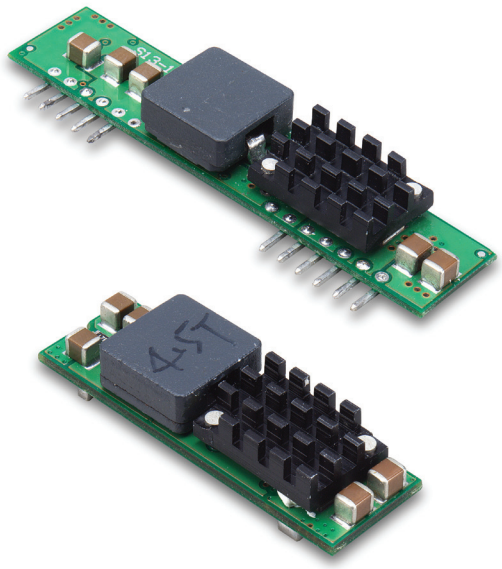
1. Measured from high line to low line, Vo,set=3.3VDC.
2. Measured from full load to zero load, Vo,set=3.3VDC.
3. The output noise is measured with 10µf tantalum capacitor and 1µf ceramic capacitor across output.
4. The input terminal recommend to parallel with 100µF capacitor ESR< 100mΩ to reduce the input ripple voltage.
5. Suffix "N" to the model number with negative logic remote On/Off
   Model On ..... Open Circuit or < 0.4VDC
   Module Off ..... >+2.8VDC to Vin
6. Suffix "P" to the model number with power good function.

SIPSMT20W-12 SERIES
20 AMP, POL CONVERTERS

Features

- Non-Isolated POL Converter
- SIP / SMT Package
- Output Current 20AMP
- Input Voltage Range 6-14VDC
- Output Voltage Range 0.7525-5VDC
- 300KHz Switching Frequency
- High Efficiency to 94%
- Over Temperature Protection
- Continuous Short Circuit Protection
- Remote On/Off Control
- Output Voltage Sequencing
- Power Good Signal
- UL/C-UL60950 Certified

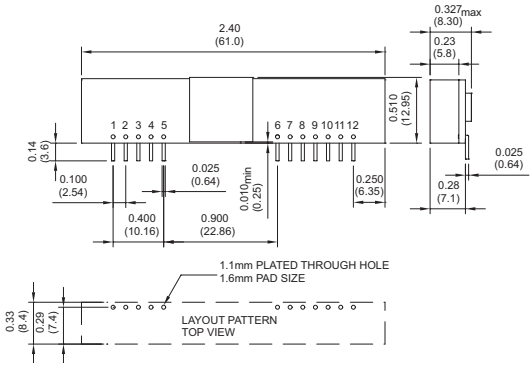
c UL us
E176177



Mechanical Dimensions

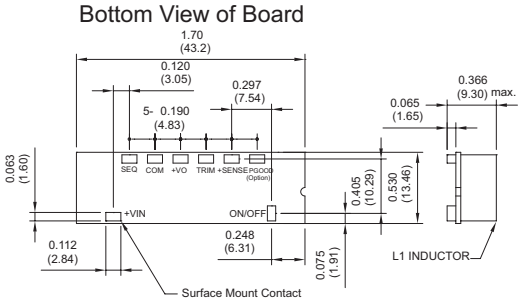
Mechanical Specification
All Dimensions in Inches (mm)
Tolerance Inches: X.XX=±0.02 , X.XXX=±0.010
Millimeters: X.X=±0.5 , X.XX=±0.25

SIP Packages



PIN CONNECTION	
PIN	Function
1	+Output
2	Output
3	+Sense
4	+Output
5	Common
6	No Pin/PGOOD
7	Common
8	+V Input
9	+V Input
10	Sequency
11	Trim
12	On/Off Control

SMT Packages



MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT		Efficiency (%)
				NO LOAD	FULL LOAD	
	6.0-14 VDC	0.7525 VDC	20 A	40 mA	1603 mA	78
	6.0-14 VDC	1.5 VDC	20 A	50 mA	2874 mA	87
SIP20W-12S05A	6.0-14 VDC	1.8 VDC	20 A	50 mA	3409 mA	88
SMT20W-12S05A	6.0-14 VDC	2.0 VDC	20 A	60 mA	3745 mA	89
	6.0-14 VDC	2.5 VDC	20 A	65 mA	4630 mA	90
	6.0-14 VDC	3.3 VDC	20 A	75 mA	5978 mA	92
	6.5-14 VDC	5.0 VDC	20 A	95 mA	8865 mA	94

Derating Curve

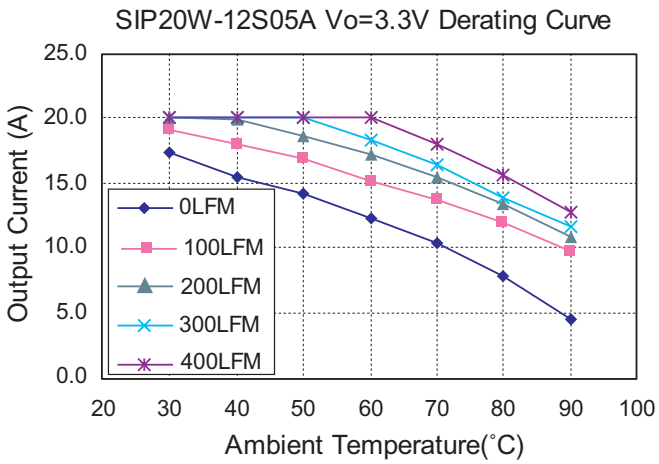


Figure2. Typical Power De-rating for 12Vin

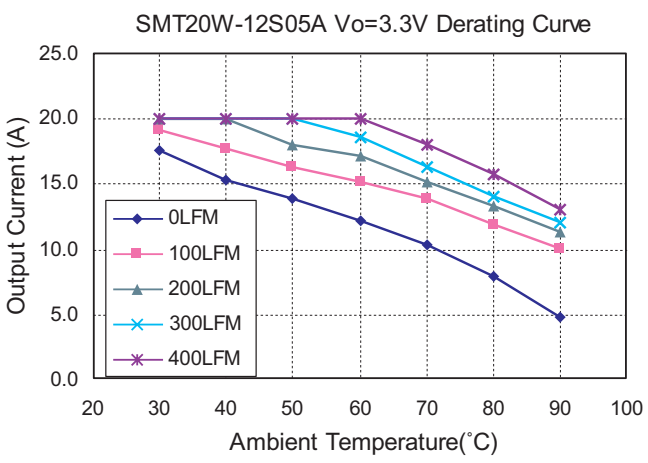


Figure3. Typical Power De-rating for 12Vin

Specifications

All Specifications Typical At Nominal Line, Full Load, and 25˚C Unless Otherwise Noted

INPUT SPECIFICATIONS

Input Voltage Range	12V 6.0-14.0V
	12V 6.5-14.0V
Under Voltage Lock-out	Power up ..... 5.0V typ.
	Power down ..... 4.0V typ.
Input Filter Type	Capacitive
Positive Remote On/Off Control :	
Module On	Open Circuit or = Vin
Module Off	< 0.4 Vdc

OUTPUT SPECIFICATIONS

Voltage Accuracy	±1.5% max.
Transient Response: 25% Step Load Change	< 200µs
Ripple and Noise, 20MHz BW (note 3)	30mV rms max.
	75mV pk-pk max.
Temperature Coefficient	±0.03%/C max.
Short Circuit Protection	Continuous
Line Regulation (note 1)	±0.2% max.
Load Regulation (note 2)	±0.5% max.
External Trim Adj. Range (see Table1)	Vo=0.75-5.0Vdc
Sequencing Slew Rate Capability (dV_{SEQ}/dt)	0.1-1.0V/msec
Sequencing Delay Time	10msec min.
Tracking Accuracy	Power up: 200mV max.,
	Power down: 400mV max.
Capacitive Load Low ESR	8000µF max.
Power Good Signal Asserted Logic High	Vo=90%-110%Vo, nom.
Start up time	7ms typ.

GENERAL SPECIFICATIONS

Efficiency	See Table
Isolation Voltage	Non-isolation
Switching Frequency	300KHz typ.
Over Temperature Protection	130˚C typ.
Operating Ambient Temperature Range	-40˚C to +85˚C
Power Derating Curve	see Figure2, 3
Storage Temperature Range	-55˚C to +125˚C
MTBF ..... MIL-STD-217F, GB, 25˚C, Full Load	0.9Mhrs typ.
Dimensions:	
SIP Package:	2.40 x 0.510 x 0.327 inches
	(61.0 x 12.95 x 8.30 mm)
SMT Package:	1.70 x 0.530 x 0.366 inches
	(43.2 x 13.46 x 9.30 mm)
Structure	Non-potted With Open Frame Type
Weight	11 g

NOTE

1. Measured from high line to low line, Vo,set=3.3VDC.
2. Measured from full load to zero load, Vo,set=3.3VDC.
3. The output noise is measured with 10µf tantalum capacitor and 1µf ceramic capacitor across output.
4. The input terminal recommend to parallel with 200µF capacitor ESR< 25mΩ to reduce the input ripple voltage.
5. Suffix "N" to the model number with negative logic remote On/Off
   Model On ..... Open Circuit or < 0.4VDC
   Module Off ..... >+2.8VDC to Vin
6. Suffix "P" to the model number with power good function.

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Product Type	Application
Output Voltages	Output Currents
Input Voltages	Efficiency
Isolation	Protection

Storage / Operating Temperature Range

Safety Standard	EMC Standard

Mechanical Description

Remarks

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