



# CHB50 SERIES

## 33 - 50 WATT WIDE INPUT DC-DC CONVERTERS SINGLE OUTPUT



### 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
- \* Safety Meets IEC/EN/UL60950-1
- \* UL60950-1 Approval



| 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     | 10000uF             |
| CHB50-12S05  | 9 -18 VDC     | 5 VDC          | 0 mA           | 10 A   | 50 mA         | 5020 mA   | 83     | 10000uF             |
| CHB50-12S12  | 9 -18 VDC     | 12 VDC         | 0 mA           | 4.16 A | 50 mA         | 4781 mA   | 87     | 4000uF              |
| CHB50-12S15  | 9 -18 VDC     | 15 VDC         | 0 mA           | 3.33 A | 50 mA         | 4781 mA   | 87     | 2000uF              |
| CHB50-12S24  | 9 -18 VDC     | 24 VDC         | 0 mA           | 2.08 A | 50 mA         | 4781 mA   | 87     | 1500uF              |
| CHB50-24S33  | 18-36 VDC     | 3.3 VDC        | 0 mA           | 10 A   | 50 mA         | 1698 mA   | 81     | 10000uF             |
| CHB50-24S05  | 18-36 VDC     | 5 VDC          | 0 mA           | 10 A   | 50 mA         | 2450 mA   | 85     | 10000uF             |
| CHB50-24S12  | 18-36 VDC     | 12 VDC         | 0 mA           | 4.16 A | 50 mA         | 2363 mA   | 88     | 10000uF             |
| CHB50-24S15  | 18-36 VDC     | 15 VDC         | 0 mA           | 3.33 A | 50 mA         | 2363 mA   | 88     | 4000uF              |
| CHB50-24S24  | 18-36 VDC     | 24 VDC         | 0 mA           | 2.08 A | 50 mA         | 2363 mA   | 88     | 2000uF              |
| CHB50-48S33  | 36-75 VDC     | 3.3 VDC        | 0 mA           | 10 A   | 50 mA         | 848 mA    | 81     | 10000uF             |
| CHB50-48S05  | 36-75 VDC     | 5 VDC          | 0 mA           | 10 A   | 50 mA         | 1240 mA   | 84     | 10000uF             |
| CHB50-48S12  | 36-75 VDC     | 12 VDC         | 0 mA           | 4.16 A | 50 mA         | 1181 mA   | 88     | 10000uF             |
| CHB50-48S15  | 36-75 VDC     | 15 VDC         | 0 mA           | 3.33 A | 50 mA         | 1181 mA   | 88     | 4000uF              |
| CHB50-48S24  | 36-75 VDC     | 24 VDC         | 0 mA           | 2.08 A | 50 mA         | 1168 mA   | 89     | 2000uF              |

NOTE: 1. Nominal Input Voltage 12, 24 or 48VDC

# 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 (note3&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 note5)            |                                    |
| 3.3V & 5V .....                                | 20mV RMS max.<br>75mV pk-pk max.   |
| 12V & 15V .....                                | 30mV RMS max.<br>100mV pk-pk max.  |
| 24V .....                                      | 100mV RMS max.<br>240mV pk-pk max. |

|  |                           |
|--|---------------------------|
| Temperature Coefficient .....                      | ±0.03%/°C max.            |
| Short Circuit Protection .....                     | Continuous                |
| Line Regulation (note1) .....                      | ±0.2% max.                |
| Load Regulation (note2) .....                      | ±0.2% max.                |
| Over Voltage Protection Trip Range, % Vo nom. .... | 115-140%                  |
| Current Limit .....                                | 110% ~150% Nominal Output |
| Start up Time .....                                | 5ms typ.                  |

### CASE HB

All Dimensions In Inches(mm)

Tolerances Inches: X.XX= ±0.02 , X.XXX= ±0.010

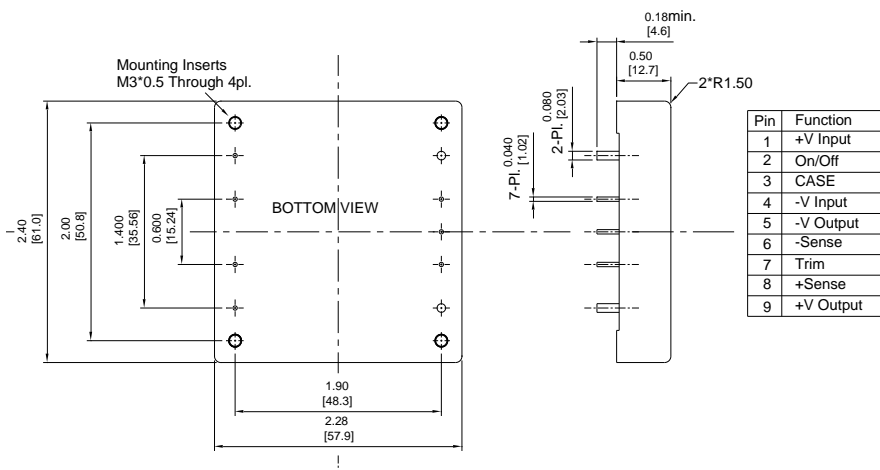
Millimeters: X.X= ±0.5 , X.XX=±0.25

## GENERAL SPECIFICATIONS:

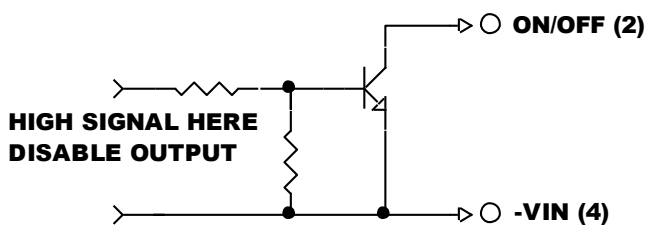
|                                  |   |                  |
|----------------------------------|---|------------------|
| Efficiency .....                 | See Table                                 |                  |
| Isolation Voltage .....          | Input/Output .....                        | 1500VDC min.     |
|                                  | Input/Case .....                          | 1500VDC min.     |
|                                  | Output/Case .....                         | 1500VDC min.     |
| Isolation Capacitance .....      | 1000pF typ.                               |                  |
| Isolation Resistance .....       | 10 <sup>7</sup> ohm min.                  |                  |
|                                  | Switching Frequency .....                 | (12/24)Vin ..... |
| 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-HDBK-217F, GB, 25°C, Full Load .....  | 1000Khrs typ.    |
| Dimensions .....                 | 2.28x2.40x0.50 inches (57.9x61.0x12.7 mm) |                  |
| Case Material .....              | Aluminum                                  |                  |
| Weight .....                     | 88g                                       |                  |

## 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 to < 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.



## REMOTE ON/OFF CONTROL



## EXTERNAL OUTPUT TRIM

