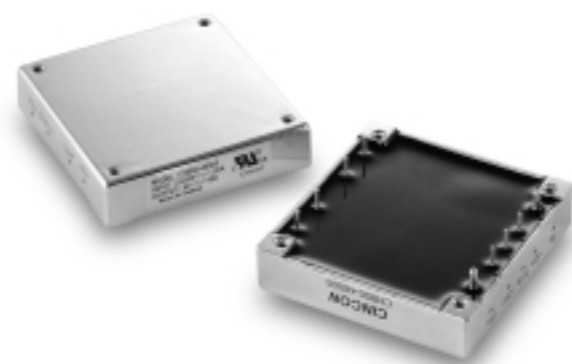


# CHB50

## 25 TO 50 WATT WIDE INPUT DC-DC CONVERTERS SINGLE OUTPUT



Only for Nominal Input Voltage 24 & 48 VDC



### Features

- 25W/50W Isolated Output
- Efficiency to 85%
- 300KHz Switching Frequency
- 2 : 1 Input Range
- Regulated Outputs
- Continuous Short Circuit Protection
- Five-Sided Metal Case
- Industry Standard Half-Brick Package

MODEL NUMBER	INPUT VOLTAGE	OUTPUT VOLTAGE	OUTPUT CURRENT	INPUT CURRENT		%EFF	CASE
				NO LOAD	FULL LOAD		
CHB50-12S25	9-18 VDC	2.5 VDC	10A		2740 mA	76	HB
CHB50-12S33		3.3 VDC	10A		3525 mA	78	
CHB50-12S05		5 VDC	10A	50 mA	5145 mA	81	
CHB50-12S12		12 VDC	4.16A	50 mA	4950 mA	84	
CHB50-12S15		15 VDC	3.33A	50 mA	4950 mA	84	
CHB50-12S24	24 VDC	2.08A		4950 mA	84	HB	
CHB50-24S25	18-36 VDC	2.5 VDC	10A		1353 mA		77
CHB50-24S33		3.3 VDC	10A		1740 mA		79
CHB50-24S05		5 VDC	10A	50 mA	2540 mA		82
CHB50-24S12		12 VDC	4.16A	50 mA	2450 mA		85
CHB50-24S15		15 VDC	3.33A	50 mA	2450 mA	85	
CHB50-24S24	24 VDC	2.08A		2419 mA	86	HB	
CHB50-48S25	36-75 VDC	2.5 VDC	10A		676 mA		77
CHB50-48S33		3.3 VDC	10A		870 mA		79
CHB50-48S05		5 VDC	10A	50 mA	1250 mA		83
CHB50-48S12		12 VDC	4.16A	50 mA	1220 mA		85
CHB50-48S15		15 VDC	3.33A	50 mA	1220 mA	85	
CHB50-48S24	24 VDC	2.08A		1209 mA	86		

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

### Specifications

#### INPUT SPECIFICATIONS:

Input Voltage Range.....	12V.....9-18V
	24V.....18-36V
	48V.....36-75V
Undervoltage 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% max.
Transient Response :25% Step Load Change .....	<500µ sec.
External Trim Adj. Range .....	±10%
Ripple & Noise, 20MHz BW, 2.5V & 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 <sup>1</sup> .....	±0.2% max.
Load Regulation <sup>2</sup> .....	±0.2% max.
Over Voltage Protect trip Range, % Vo nom.....	115-140%
Current Limit .....	110% ~150% Nominal Output

#### GENERAL SPECIFICATIONS:

Efficiency.....	See Table
Isolation Voltage .....	Input/Output..... 1500VDC min.
	Input/Case..... 1500VDC min.
	Output/Case..... 1500VDC min.
Isolation Resistance .....	10 <sup>9</sup> 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.
Dimensions .....	2.28x2.40x0.50 inches
	(57.9x61.0x12.7 mm)
Case Material .....	Aluminum

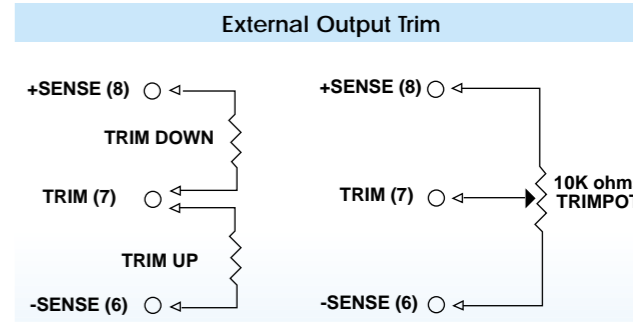
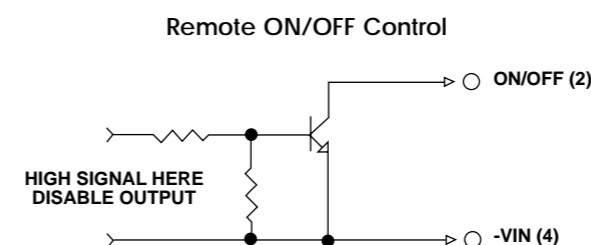
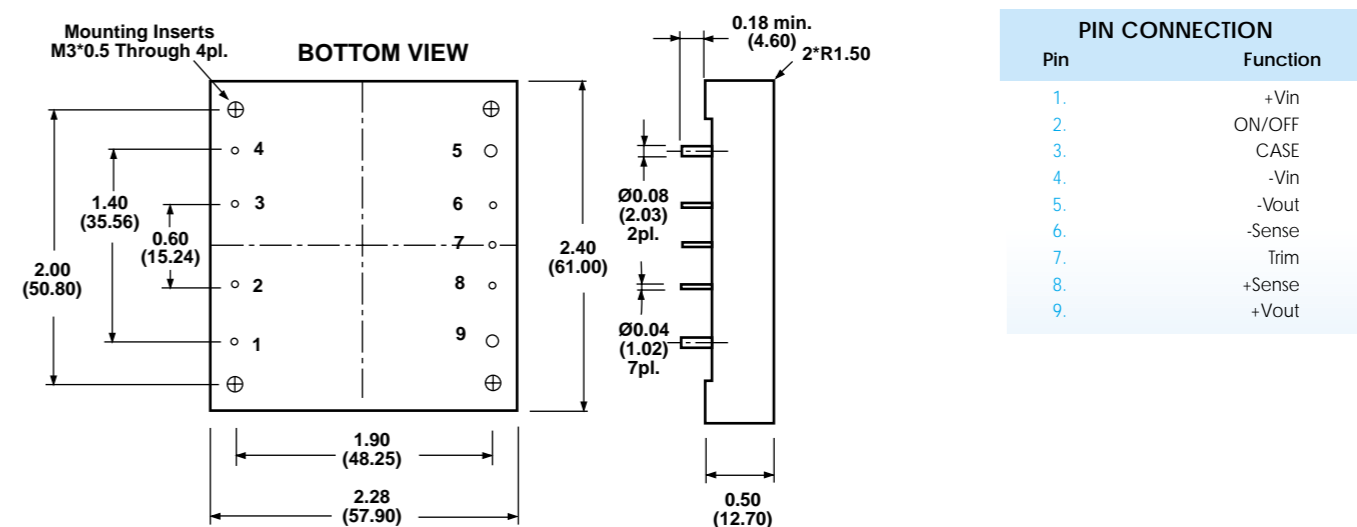
#### NOTE:

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.

### CASE HB

All Dimensions In Inches(mm)

Tolerances	Inches	.XX±.02	.XXX±.01	Pin	±0.02
	Millimeters	.X±.5	.XX±.25		±0.5

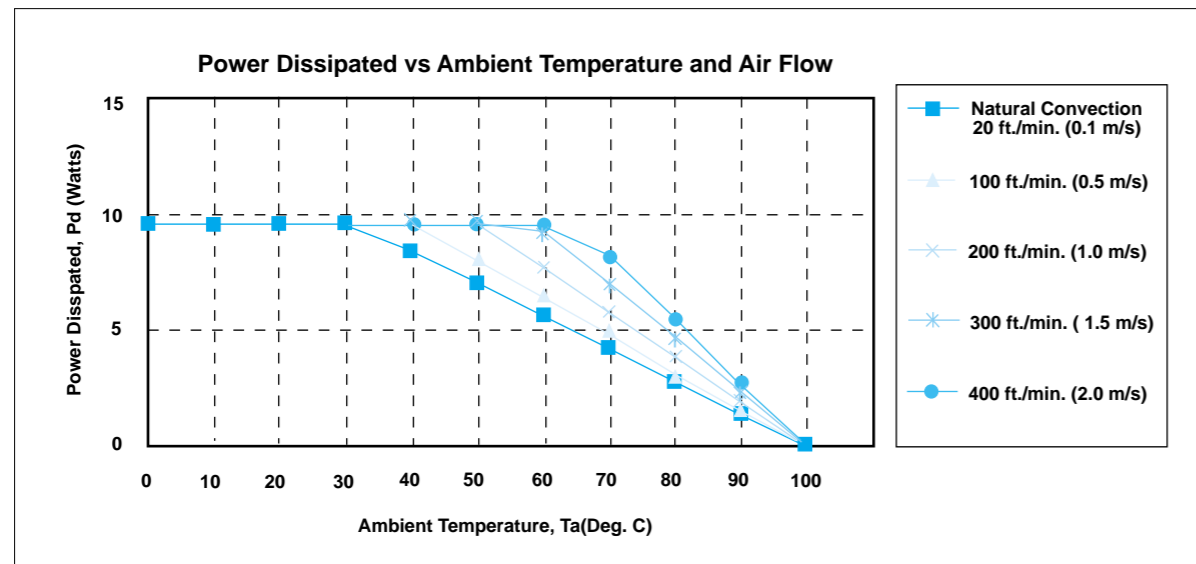


## Application Note

### Derating

The operating case temperature range of the CHB50 series is -40°C to +100°C. When operating the CHB50, proper derating or cooling is needed.

Following is the derating curve of CHB50 without heat sink.



Forced Convection Power Derating with No Heat Sink

Where:

The power dissipation (Pd):

$$Pd = Pi - Po = Po (1 - \eta) / \eta$$

The thermal resistance are list below:

Chart of Thermal Resistance vs Air Flow:

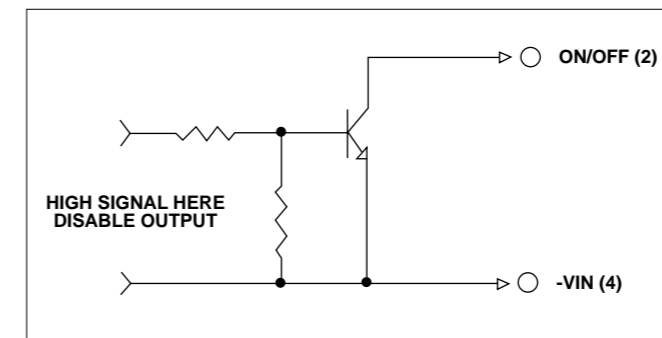
AIR FLOW RATE	TYPICAL Rca
Natural Convection	7.12 °C/W
100 ft./min.	6.21 °C/W
200 ft./min.	5.17 °C/W
300 ft./min.	4.29 °C/W
400 ft./min.	3.64 °C/W

The temperature rise ( $\Delta T$ ):

$$\Delta T = Pd * Rca$$

## Remote ON/OFF Control

The CHB50 series allows the user to switch the module on and off electronically with remote on/off feature. The CHB50 series are available with "positive logic" or "negative logic" (option).

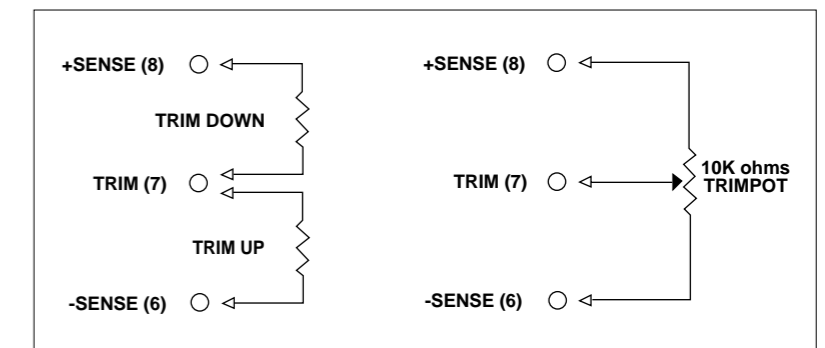


Logic Table

Logic State (PIN 2)	Negative Logic	Positive Logic
Logic Low - Switch Closed	Module on	Module off
Logic High - Switch Open	Module off	Module on

## External Output Trimming

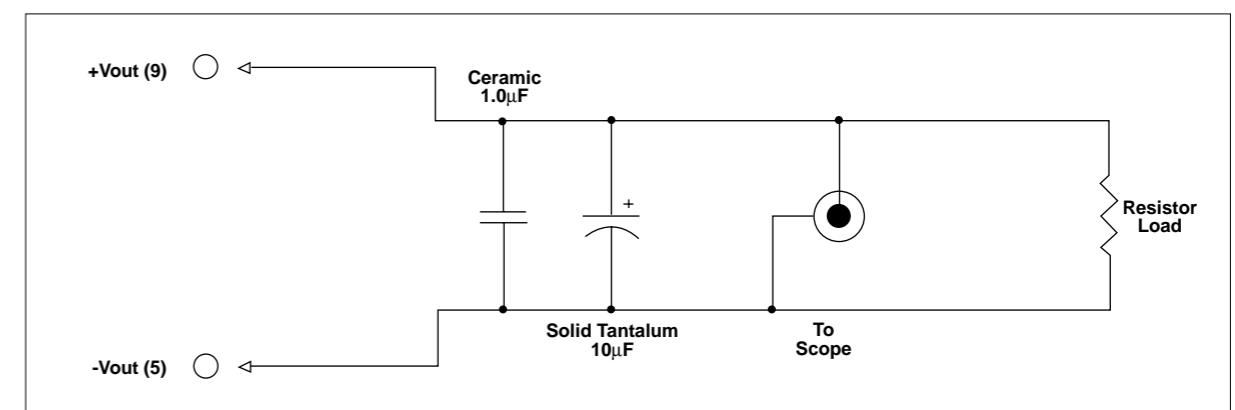
Output may optionally be externally trimmed ( $\pm 10\%$ ) with a fixed resistor or an external trimpot as shown.



External Output

## Output Noise

The output noise is measured with 10 $\mu$ F tantalum capacitor and 1.0 $\mu$ F ceramic capacitor across output.



Output Noise Test Circuit schematic