

SERIES: VHB50W | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

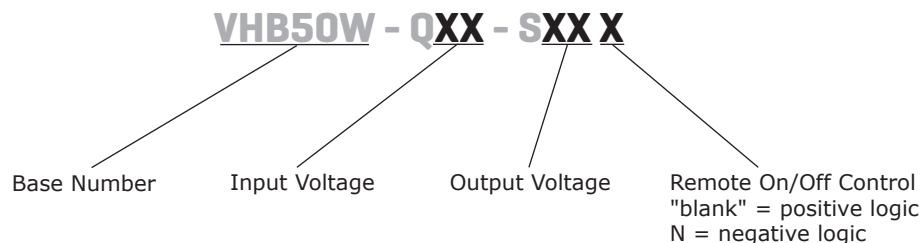
- up to 50 W isolated output
- industry standard half brick package
- 4:1 input range (9~36 V, 18~75 V)
- single output from 3.3~48 V
- 1,500 V isolation
- over current, over temperature, over voltage, and short circuit protections
- remote on/off
- efficiency up to 87%



| MODEL | input voltage range (Vdc) | output voltage (Vdc) | output current max (A) | output power max (W) | ripple and noise ¹ max (mVp-p) | efficiency |
|-----------------|---------------------------|----------------------|------------------------|----------------------|---|------------|
| | | | | | | typ (%) |
| VHB50W-Q24-S3R3 | 9 ~ 36 | 3.3 | 10 | 33 | 100 | 77 |
| VHB50W-Q24-S5 | 9 ~ 36 | 5 | 10 | 50 | 100 | 81 |
| VHB50W-Q24-S12 | 9 ~ 36 | 12 | 4.16 | 50 | 150 | 83 |
| VHB50W-Q24-S15 | 9 ~ 36 | 15 | 3.33 | 50 | 150 | 83 |
| VHB50W-Q24-S24 | 9 ~ 36 | 24 | 2.08 | 50 | 240 | 83 |
| VHB50W-Q24-S28 | 9 ~ 36 | 28 | 1.78 | 50 | 280 | 83 |
| VHB50W-Q24-S48 | 9 ~ 36 | 48 | 1.04 | 50 | 480 | 83 |
| VHB50W-Q48-S3R3 | 18 ~ 75 | 3.3 | 10 | 33 | 100 | 78 |
| VHB50W-Q48-S5 | 18 ~ 75 | 5 | 10 | 50 | 100 | 82 |
| VHB50W-Q48-S12 | 18 ~ 75 | 12 | 4.16 | 50 | 150 | 84 |
| VHB50W-Q48-S15 | 18 ~ 75 | 15 | 3.33 | 50 | 150 | 84 |
| VHB50W-Q48-S24 | 18 ~ 75 | 24 | 2.08 | 50 | 240 | 84 |
| VHB50W-Q48-S28 | 18 ~ 75 | 28 | 1.78 | 50 | 280 | 84 |
| VHB50W-Q48-S48 | 18 ~ 75 | 48 | 1.04 | 50 | 480 | 83 |

Notes: 1. ripple and noise are measured at 20 MHz BW with 10µF tantalum capacitor and 1µF ceramic capacitor across output

PART NUMBER KEY



INPUT

| parameter | conditions/description | min | typ | max | units |
|---|---|------------|-----|-----|-------|
| operating input voltage | 24 V input | 9 | 24 | 36 | Vdc |
| | 48 V input | 18 | 48 | 75 | Vdc |
| under voltage lockout | power up | 24 V input | 8.8 | | Vdc |
| | | 48 V input | 17 | | Vdc |
| | power down | 24 V input | 8 | | Vdc |
| | | 48 V input | 16 | | Vdc |
| positive logic remote on/off ¹ | | | | | |
| filter | PI type | | | | |
| Notes: | 1. logic compatibility, open collector ref to -input Module ON, >3.5 Vdc or open circuit Module OFF, <1.8 Vdc | | | | |

OUTPUT

| parameter | conditions/description | min | typ | max | units |
|----------------------------|---|-----|-------|------|-------|
| line regulation | measured from high line to low line | | | ±0.2 | % |
| load regulation | measured from full load to zero load | | | ±0.2 | % |
| voltage accuracy | | | | ±1 | % |
| transient response | 25% step load change | | | 500 | µs |
| adjustability ² | | | ±10 | | % |
| switching frequency | 100% load, input voltage range | | 300 | | kHz |
| temperature coefficient | | | ±0.03 | | %/°C |
| Notes: | 2. trim-up: connect a resistor between the trim pin and -Sense trim-down: connect a resistor between the trim pin and +Sense | | | | |

PROTECTIONS

| parameter | conditions/description | min | typ | max | units |
|-----------------------------|--------------------------|-----|-----|-----|-------|
| over voltage protection | %Vo | 115 | | 140 | % |
| short circuit protection | continuous | | | | |
| current limit | % nominal output current | 110 | | 160 | % |
| thermal shutdown case temp. | | | 100 | | °C |

SAFETY AND COMPLIANCE

| parameter | conditions/description | min | typ | max | units |
|-----------------------|------------------------|-------|-------|-----|-------|
| isolation voltage | input to output | 1,500 | | | Vdc |
| | input to case | 1,500 | | | Vdc |
| | output to case | 1,500 | | | Vdc |
| isolation resistance | | 10 | | | MΩ |
| isolation capacitance | | | 1,000 | | pF |
| safety approvals | UL 60950-1 | | | | |
| RoHS compliant | yes | | | | |

ENVIRONMENTAL

| parameter | conditions/description | min | typ | max | units |
|----------------------------|------------------------|-----|-----|-----|-------|
| case operating temperature | | -40 | | 100 | °C |
| storage temperature | | -55 | | 105 | °C |
| humidity | non-condensing | | | 95 | % |

MECHANICAL

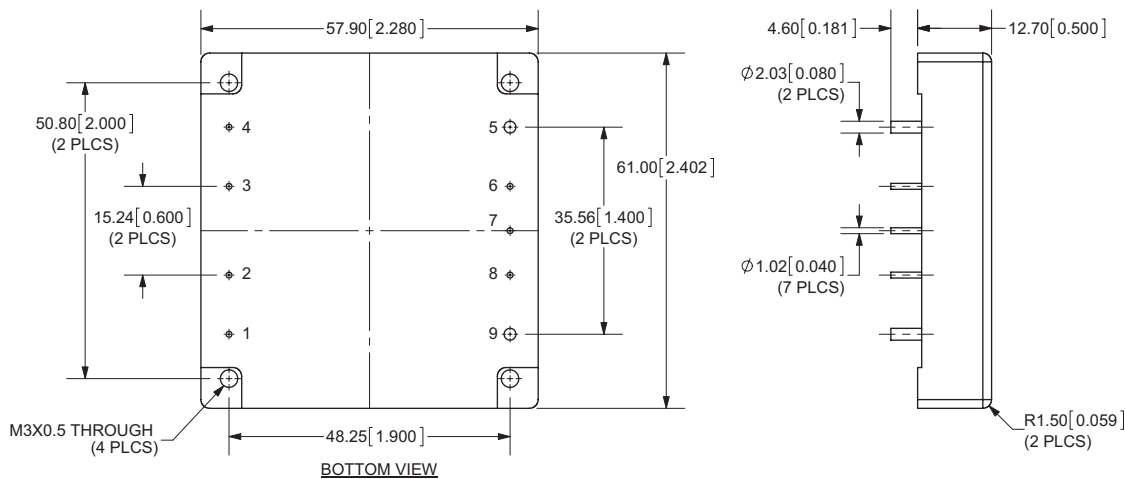
| parameter | conditions/description | min | typ | max | units |
|---------------|---|-----|-----|-----|-------|
| dimensions | 57.9 x 61.0 x 12.7 (2.28 x 2.40 x 0.5 inch) | | | | mm |
| case material | aluminum | | | | |
| weight | | | 94 | | g |

MECHANICAL DRAWING

units: mm [inches]

tolerance: ±0.25mm [±0.01 inches]

pin tolerance: ±0.5mm [±0.02 inches]



| PIN CONNECTIONS | |
|-----------------|----------|
| PIN | FUNCTION |
| 1 | +Vin |
| 2 | On/Off |
| 3 | CASE |
| 4 | -Vin |
| 5 | -Vo |
| 6 | -S |
| 7 | TRIM |
| 8 | +S |
| 9 | +Vo |

Note: All specifications measured at 25°C, nominal input voltage, and full load unless otherwise noted.

REVISION HISTORY

| rev. | description | date |
|------|--|------------|
| 1.0 | initial release | 09/07/2006 |
| 1.01 | new template applied | 08/05/2011 |
| 1.02 | add remote on/off control to the part number key | 11/23/2011 |
| 1.03 | features updated | 12/20/2011 |
| 1.04 | updated trim note, updated pin references | 04/20/2012 |
| 1.05 | updated spec | 04/01/2013 |

The revision history provided is for informational purposes only and is believed to be accurate.



Headquarters
20050 SW 112th Ave.
Tualatin, OR 97062
800.275.4899

Fax 503.612.2383
cui.com
techsupport@cui.com

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