CUI INC
a bel group

SERIES: VHB50W | DESCRIPTION: DC-DC CONVERTER

FEATURES

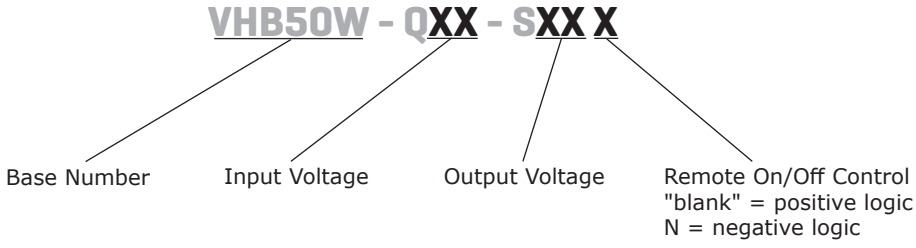
- up to 50 W isolated output
- industry standard half brick package
- 4:1 input range (9~36 V, 18~75 V)
- single output from 3.3~48 V
- 1,500 V isolation
- over current, over temperature, over voltage, and short circuit protections
- remote on/off
- efficiency up to 87%



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 48 V input		9 18	24 48	36 75	Vdc Vdc
under voltage lockout	power up	24 V input 48 V input		8.8 17		Vdc Vdc
	power down	24 V input 48 V input		8 16		Vdc 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 input to case output to case	1,500 1,500 1,500			Vdc Vdc Vdc
isolation resistance		10			MΩ
isolation capacitance			1,000		pF
safety approvals	EN 62368, UL 60950				
RoHS compliant	yes				

ENVIRONMENTAL

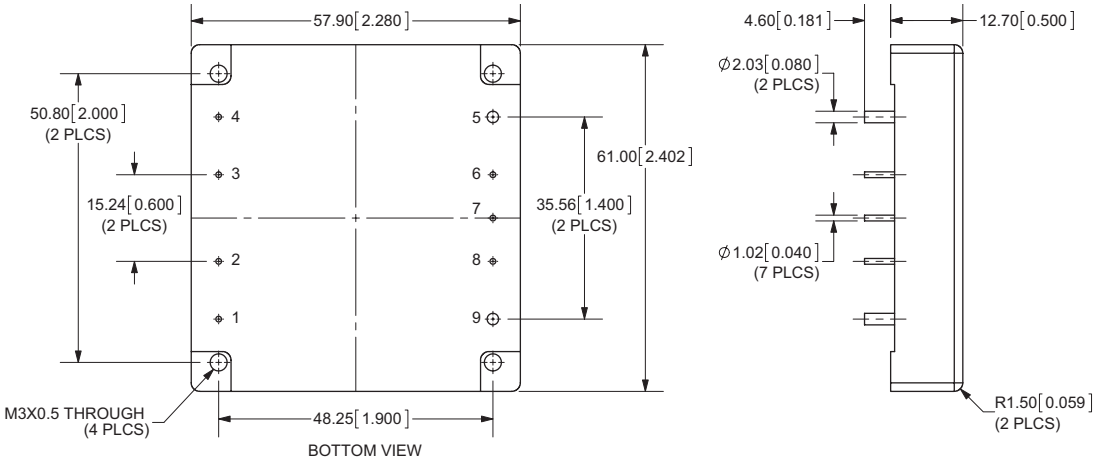
parameter	conditions/description	min	typ	max	units
case operating temperature		-40		100	°C
storage temperature		-55		105	°C
humidity	non-condensing			95	%

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
1.06	company logo updated	02/12/2021
1.07	safety approvals and marks updated	10/05/2022
1.08	company address updated	11/13/2024

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

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CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

CUI reserves the right to make changes to the product at any time without notice. Information provided by CUI is believed to be accurate and reliable. However, no responsibility is assumed by CUI for its use, nor for any infringements of patents or other rights of third parties which may result from its use.

CUI products are not authorized or warranted for use as critical components in equipment that requires an extremely high level of reliability. A critical component is any component of a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or system, or to affect its safety or effectiveness.