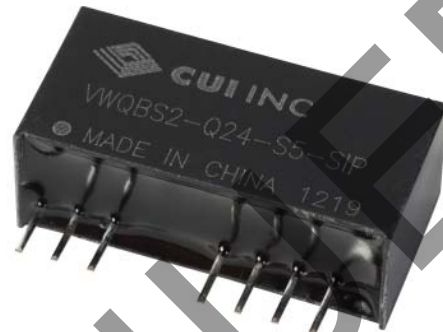


SERIES: VWQBS2-SIP | **DESCRIPTION:** DC-DC CONVERTER

FEATURES

- 2 W isolated output
- wide input (4:1)
- industry standard 9 pin SIP package
- single unregulated outputs
- 1,500 V isolation
- short circuit protection
- wide temperature (-40~85°C)
- efficiency up to 79%


MODEL

MODEL	input voltage		output voltage (Vdc)	output current		output power max (W)	ripple and noise ¹ max (mVp-p)	efficiency typ (%)
	typ (Vdc)	range (Vdc)		min (mA)	max (mA)			
VWQBS2-Q24-S3.3-SIP	24	9.0~36.0	3.3	50	500	2	150	68
VWQBS2-Q24-S5-SIP	24	9.0~36.0	5	40	400	2	150	76
VWQBS2-Q24-S9-SIP	24	9.0~36.0	9	22	222	2	150	78
VWQBS2-Q24-S12-SIP	24	9.0~36.0	12	16	167	2	150	79
VWQBS2-Q24-S15-SIP	24	9.0~36.0	15	13	133	2	150	79
VWQBS2-Q48-S3.3-SIP	48	18.0~72.0	3.3	50	500	2	150	72
VWQBS2-Q48-S5-SIP	48	18.0~72.0	5	40	400	2	150	75
VWQBS2-Q48-S9-SIP	48	18.0~72.0	9	22	222	2	150	76
VWQBS2-Q48-S12-SIP	48	18.0~72.0	12	16	167	2	150	78
VWQBS2-Q48-S15-SIP	48	18.0~72.0	15	13	133	2	150	79

Notes: 1. ripple and noise are measured at 20 MHz BW

PART NUMBER KEY
VWQBS2 - SXX - SXX - SIP

Base Number

Input Voltage

Output Voltage

Packaging Style

INPUT

parameter	conditions/description	min	typ	max	units
operating input voltage	24 V model	9.0	24	36.0	Vdc
	48 V model	18.0	48	72.0	Vdc
surge voltage	1 second max.	24 V model	-0.7	50	Vdc
		48 V model	-0.7	100	Vdc
short circuit input power				1.6	W
input filter	C filter				

OUTPUT

parameter	conditions/description	min	typ	max	units
line regulation	input voltage from low to high		±0.2	±0.75	%
load regulation	measured from 10% load to full load		±0.5	±1.5	%
voltage accuracy	see derating curves				
	positive		±1	±3	%
	negative		±3	±5	%
transient recovery time	25% load step change			25	ms
transient response deviation	25% load step change		±3	±5	%
switching frequency	100% load, input voltage range		300		kHz
temperature coefficient			±0.03		%/°C

PROTECTIONS

parameter	conditions/description	min	typ	max	units
short circuit protection	continuous, automatic recovery				

SAFETY AND COMPLIANCE

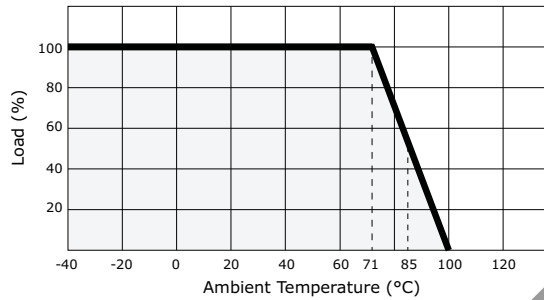
parameter	conditions/description	min	typ	max	units
isolation voltage	for 1 minute at 1 mA max.	1,500			Vdc
isolation resistance	at 500 Vdc	1,000			MΩ
MTBF		1,000,000			hours
RoHS compliant	yes				

ENVIRONMENTAL

parameter	conditions/description	min	typ	max	units
operating temperature		-40		85	°C
storage temperature		-55		125	°C
storage humidity	non-condensing			95	%
temperature rise	at full load		15		°C
lead temperature	1.5 mm from case for 10 seconds			300	°C

DERATING CURVES

1. output power vs. ambient temperature



MECHANICAL

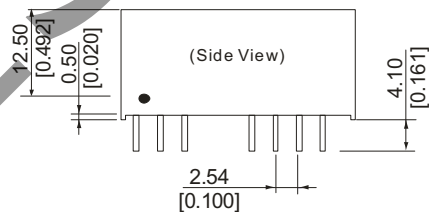
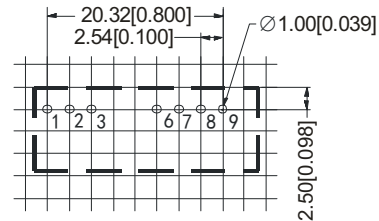
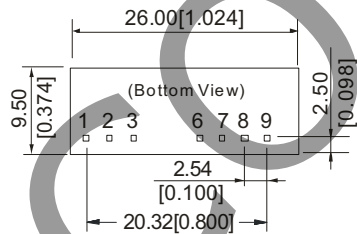
parameter	conditions/description	min	typ	max	units
dimensions	1.024 x 0.374 x 0.492 (26.00 x 9.50 x 12.50 mm)				inch
case material	plastic (UL94-V0)				
weight			5.8		g

MECHANICAL DRAWING

units: mm [inches]

tolerance: ± 0.25 [± 0.010]

pin section tolerance: ± 0.10 mm [± 0.004]



PIN CONNECTIONS	
PIN	FUNCTION
1	GND
2	+Vin
3	CTRL
6	+Vo
7	NC
8	NC
9	0 V

APPLICATION NOTES

1. Requirement on Output Load

To ensure this module can operate efficiently and reliably, During operation, the minimum output load is not less than 10% of the full load, and that this product should never be operated under no load! If the actual output power is very small, please connect a resistor with proper resistance at the output end in parallel to increase the load, or use our company's products with a lower rated output power.

2. Overload Protection

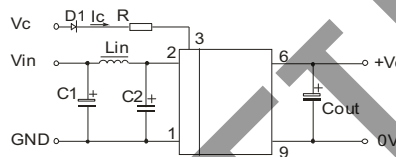
Under normal operating conditions, the output circuit of these products has no protection against overload. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit.

Vin (Vdc)	Fuse (slow-blow type) (mA)
24	250
48	150

3. Recommended Circuit

If you want to further decrease the input/output ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, see (Figure 1).

Figure 1



However, the capacitance of the output filter capacitor must be proper. If the capacitance is too big, a startup problem might arise. For every channel of output, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor see (Table 1).

C1/C2	10 ~ 100 μ F
Lin	4.7 ~ 120 μ H
Cout	100 μ F

4. CTRL Terminal

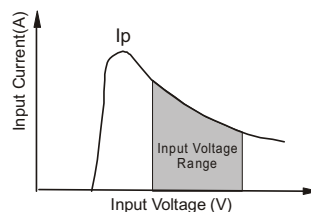
When open or high impedance, the converter work well; When this pin is 'high'; the converter shutdown; It should be note that the input current should between 5~10 mA,exceeding the maximum 20 mA will cause permanence damage to the converter. The value of Vc not limited and desirable 5 Vdc, 12 Vdc, or directly with Vin. The value of R can be derived as follows:

$$R = \frac{V_C - V_D - 1.0}{I_C}$$

5. Input Current

Nominal input voltage range. The input current of the power supply must be sufficient to the startup current (Ip) of the DC-DC module.

General: $I_p \leq 1.4 * I_{in-max}$



6. No parallel connection or plug and play

Table 1

REVISION HISTORY

rev.	description	date
1.0	initial release	07/23/2007
1.01	new template applied	04/17/2012
1.02	V-Infinity branding removed	09/10/2012

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.

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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.