

SERIES: VHD1-DIP | DESCRIPTION: DC-DC CONVERTER

FEATURES

- 1 W isolated output
- industry standard 17 pin DIP package
- single unregulated outputs
- 6,000 V isolation
- short circuit protection
- UL safety approvals
- wide temperature (-40~85°C)
- efficiency up to 75%

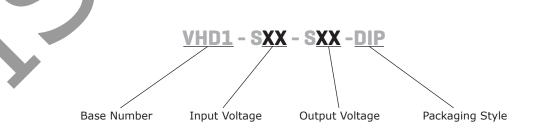


MODEL	input voltage		output voltage	output current		output power	ripple and noise ¹	efficiency
	typ (Vdc)	range (Vdc)	(Vdc)	min (mA)	max (mA)	max (W)	max (mVp-p)	typ (%)
VHD1-S5-S5-DIP	5	4.5~5.5	5	20	200	1	150	68
VHD1-S5-S9-DIP	5	4.5~5.5	9	12	111	1	150	72
VHD1-S5-S12-DIP	5	4.5~5.5	12	9	84	1	150	74
VHD1-S5-S15-DIP	5	4.5~5.5	15	7	67	1	150	74
VHD1-S12-S5-DIP	12	10.8~13.2	5	20	200	1	150	69
VHD1-S12-S9-DIP	12	10.8~13.2	9	12	111	1	150	72
VHD1-S12-S12-DIP	12	10.8~13.2	12	9	84	1	150	74
VHD1-S12-S15-DIP	12	10.8~13.2	15	7	67	1	150	75
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Notes: 1. ripple and noise are measured at 20 MHz BW



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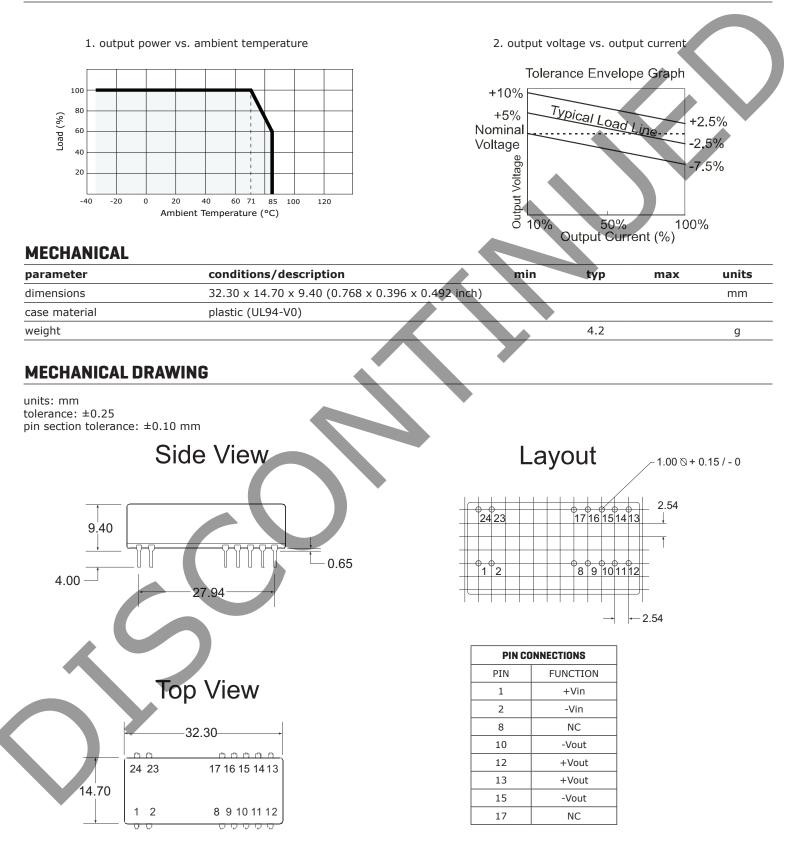


INPUT

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temperature rise at full load 15 25 °C	storage temperature		-55		125	°C
	storage humidity	non-condensing			95	%
lead temperature 1.5 mm from case for 10 seconds 300 °C						
	temperature rise	at full load		15	25	°C

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DERATING CURVES



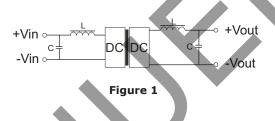
APPLICATION NOTES

1. Input filtering

To reduce the reflected ripple current and minimize EMI, especially when the converter input is more than 2" away from the DC source, it is recommended to connect a low ESR electrolytic capacitor between Vin and Gnd. The values suggested are as shown in Table 1. If additional filtering is required, the capacitance may be increased, or expanded to an LC network as shown in Figure 1.

Table 1

Input Voltage	External Input Capacitance		
5 V	4.7 μF		
12 V	2.2 μF		
24 V	1.0 µF		



2. Output filtering

An output capacitor is needed to meet output ripple requirements as shown in Table 2. Output capacitance may be increased for additional filtering, but should not exeed 10µF or expanded to an LC network as in Figure 1.

	Output Voltage	External Input Capacitance	
	5 V	4.7 μF	-Vin -Vout
2	9 V	2.2 µF	
	12 V	1.0 µF	+Vin - REG +Vout
	15 V	0.47 µF	-VinDC DC
			Figure 2

3. Minimum loading

Table 2

The converter needs a minimum of 10% loading to maintain output regulation. Operation under no-load conditions will not cause immediate damages but may reduce reliability, and cause performance not to meet specifications.

4. Regulation

With a semi-regulated design, the converter's output voltage varies with load current and will change proportionally to the input voltage. If regulated output is needed, an external regulator can be used as shown in Figure 2.

5. Protection

The converter has minimal protection against input over-voltage or output over-load, and may be permanently damaged if exposed to these conditions. An input clamping device can be used for input voltage limiting. An input fuse or an output fuse can also be used to protect against over-loading.

6. Dual outputs used as a single output

The +Vout and -Vout can be used to obtain a single output that is the sum of the two outputs. In this case, the COM pin shouldn't be used.

7. External Regulator

An external 3-terminal regulator can be connected to the output of the converter to achieve full regulation. Make sure the converter's output voltage provides sufficient head room for the regulator. An additional benefit is that the built-in protection features in the regulator, such as OCP, OTP, etc, will protect the converter also. In a complimentory supply, a negative output regulator must be used to achieve the negative regulated output.

REVISION HISTORY

rev.	description	date
1.0	initial release	05/12/2006
1.01	new template applied, V-Infinity branding removed	09/07/2012
1.02	updated spec	01/13/2014

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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