

**SERIES:** VIESD1-SIP | **DESCRIPTION:** DC-DC CONVERTER

**FEATURES**

- isolated 1 W output
- regulated
- high efficiency to 73%
- dual voltage output
- small footprint
- SIP package style
- industry standard pinout
- UL94-V0 package
- no heatsink required
- 3,000 Vdc isolation
- temperature range: -40°C~+85°C
- no external component required
- low cost



MODEL	input voltage		output voltage (Vdc)	output current		output power max (W)	ripple max (mVp-p)	noise max (mVp-p)	efficiency typ (%)
	typ (Vdc)	range (Vdc)		min (mA)	max (mA)				
VIESD1-S5-D5-SIP	5	4.75 ~ 5.25	5	±10	±100	1	15	15	69
VIESD1-S5-D9-SIP	5	4.75 ~ 5.25	9	±6	±56	1	15	15	70
VIESD1-S5-D12-SIP	5	4.75 ~ 5.25	12	±5	±42	1	15	15	72
VIESD1-S5-D15-SIP	5	4.75 ~ 5.25	15	±4	±33	1	15	15	72
VIESD1-S12-D5-SIP	12	11.4 ~ 12.6	5	±10	±100	1	15	15	70
VIESD1-S12-D9-SIP	12	11.4 ~ 12.6	9	±6	±56	1	15	15	72
VIESD1-S12-D12-SIP	12	11.4 ~ 12.6	12	±5	±42	1	15	15	73
VIESD1-S12-D15-SIP	12	11.4 ~ 12.6	15	±4	±33	1	15	15	73
VIESD1-S24-D5-SIP	24	22.8 ~ 25.2	5	±10	±100	1	15	15	72
VIESD1-S24-D9-SIP	24	22.8 ~ 25.2	9	±6	±56	1	15	15	72
VIESD1-S24-D12-SIP	24	22.8 ~ 25.2	12	±5	±42	1	15	15	73
VIESD1-S24-D15-SIP	24	22.8 ~ 25.2	15	±4	±33	1	15	15	73

**PART NUMBER KEY**
**VIESD1 - SXX - DXX - SIP**

Base Number

Input Voltage

Output Voltage

**INPUT**

parameter	conditions/description	min	typ	max	units
operating input voltage	5 V model	4.75	5	5.75	Vdc
	12 V model	11.4	12	12.6	Vdc
	24 V model	22.8	24	25.2	Vdc

**OUTPUT**

parameter	conditions/description	min	typ	max	units
line regulation	For Vin change of 1%, full load			0.25	%
load regulation	10% to 100% full load			1	%
voltage accuracy	100% full load			±3	%
switching frequency	100% load, nominal input		100		kHz
temperature coefficient				0.03	%/°C

**PROTECTIONS**

parameter	conditions/description	min	typ	max	units
short circuit protection	continuous, automatic recovery		<1		s

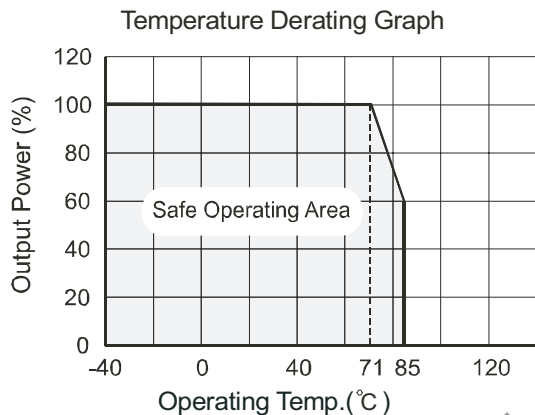
**SAFETY AND COMPLIANCE**

parameter	conditions/description	min	typ	max	units
isolation voltage	tested for 1 minute	3,000			Vdc
isolation resistance	at 500 Vdc	1,000			MΩ
RoHS compliant	yes				
MTBF		3,500,000			hrs

**ENVIRONMENTAL**

parameter	conditions/description	min	typ	max	units
case operating temperature		-40		85	°C
storage temperature		-55		125	°C
storage humidity	non-condensing			<95	%
temperature rise	100% load		15	25	°C
lead temperature	1.5 mm from the case for 10 seconds			300	°C

## DERATING CURVES



## MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	27.5 x 9.5 x 12.0 (1.08 x 0.37 x 0.47 inch)				mm
case material	Plastic (UL94-V0)				
weight			5.2		g

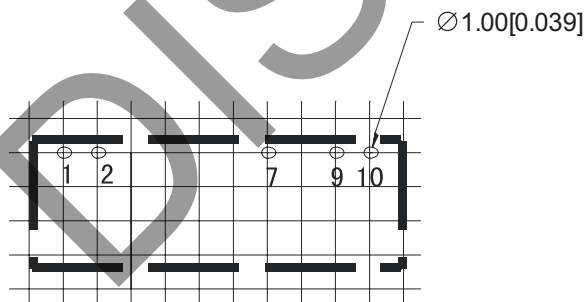
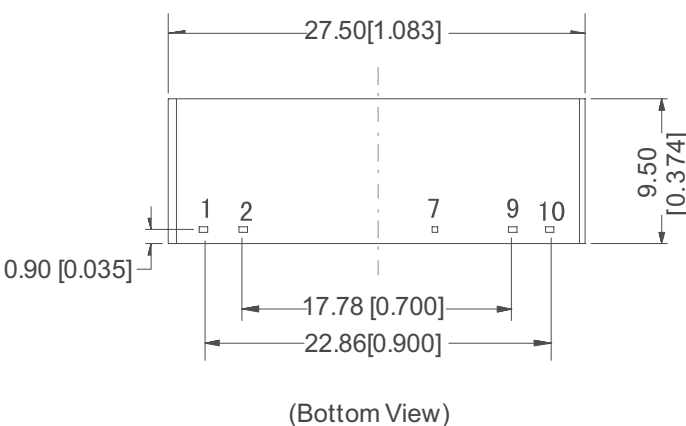
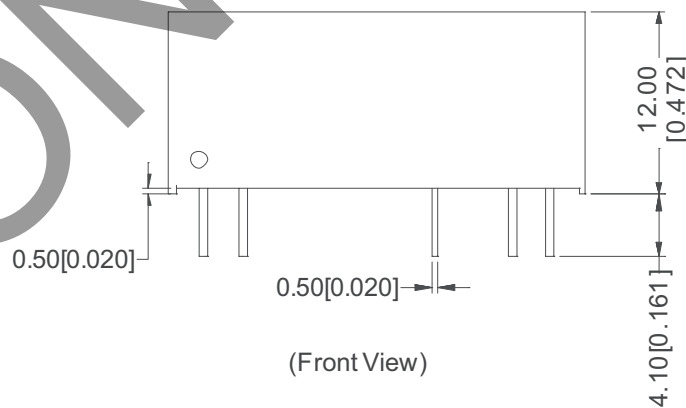
## MECHANICAL DRAWING

units: mm [inches]

tolerance: ±0.25mm [±0.010]

pin section tolerance: ±0.10mm [±0.004]

PIN CONNECTIONS	
Pin	Function
1	Vin
2	GND
7	+Vo
9	-Vo
10	0V



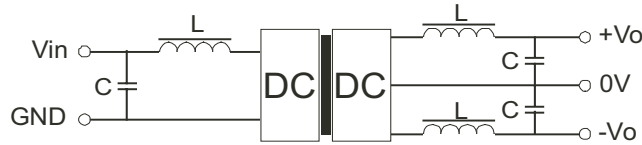
Note: grid 2.54 x 2.54mm

## APPLICATION NOTES

### 1. Filtering

To get an extreme low ripple, an "LC" filtering network may be connected to the input and output ends of the DC/DC converter, which may produce a more significant filtering effect. It should also be noted that the inductance and the frequency of the "LC" filtering network should be staggered with the DC/DC frequency to avoid mutual interference see (see Figure 1).

Figure 1



In some circuits which are sensitive to noise and ripple, a filtering capacitor may be added to the DC/DC output end and input end to reduce the noise and ripple. 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, providing the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor refer to the external capacitor table (see Tables 1 and 2).

Table 1

Input Voltage (Vdc)	External Input Capacitance ( $\mu$ F)
5 V	4.7
12 V	2.2
24 V	1.0

Table 2

Vout (Vdc)	External Output Capacitance ( $\mu$ F)
$\pm 5$ V	4.7
$\pm 9$ V	2.2
$\pm 12$ V	1.0
$\pm 15$ V	0.47

### 2. Overload protection

Under normal operating conditions, the output circuit of these products has no protection against over-current. The simplest method is to connect a self-recovery fuse in series at the input end or add a circuit breaker to the circuit. When the environment temperature is higher than 71°C, the product output power should be less than 60% of the rated power.

### 3. No parallel connection or plug and play

Use dual output simultaneously, forbid opening output pin(0V) to use as single output.

## REVISION HISTORY

rev.	description	date
1.0	initial release	06/27/2007
1.01	new template applied, V-Infinity branding removed	09/10/2012
1.02	updated spec	07/11/2013
1.03	updated drawing images	02/18/2015

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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