

**SERIES:** VBSD0.25-DIP | **DESCRIPTION:** DC-DC CONVERTER

**FEATURES**

- 0.25 W isolated output
- industry standard 7 pin DIP package
- single unregulated outputs
- -40~85°C temperature range
- 1,000 Vdc isolation
- no heatsink required


**MODEL**

MODEL	input voltage		output voltage (Vdc)	output current max (mA)	output power max (W)	ripple and noise max (mVp-p)	efficiency typ (%)
	typ (Vdc)	range (Vdc)					
VBSD0.25-S3.3-S5-DIP	3.3	3.0 ~ 3.6	5	50	0.25	100	64
VBSD0.25-S5-S5-DIP	5	4.5 ~ 5.5	5	50	0.25	100	64
VBSD0.25-S5-S9-DIP	5	4.5 ~ 5.5	9	28	0.25	100	65
VBSD0.25-S5-S12-DIP	5	4.5 ~ 5.5	12	21	0.25	100	67
VBSD0.25-S5-S15-DIP	5	4.5 ~ 5.5	15	17	0.25	100	65
VBSD0.25-S12-S3.3-DIP	12	10.8 ~ 13.2	3.3	76	0.25	100	64
VBSD0.25-S12-S5-DIP	12	10.8 ~ 13.2	5	50	0.25	100	65
VBSD0.25-S12-S9-DIP	12	10.8 ~ 13.2	9	28	0.25	100	66
VBSD0.25-S12-S12-DIP	12	10.8 ~ 13.2	12	21	0.25	100	67
VBSD0.25-S12-S15-DIP	12	10.8 ~ 13.2	15	17	0.25	100	66
VBSD0.25-S24-S5-DIP	24	21.6 ~ 26.4	5	50	0.25	100	63
VBSD0.25-S24-S9-DIP	24	21.6 ~ 26.4	9	28	0.25	100	63
VBSD0.25-S24-S12-DIP	24	21.6 ~ 26.4	12	21	0.25	100	65
VBSD0.25-S24-S15-DIP	24	21.6 ~ 26.4	15	17	0.25	100	66
VBSD0.25-S24-S24-DIP	24	21.6 ~ 26.4	24	10.4	0.25	100	66

Notes: 1. All specifications measured at TA=25°C, humidity <75%, nominal input voltage and rated output load unless otherwise specified

**PART NUMBER KEY**
**VBSD0.25-S XX - S XX -DIP**

Base Number

Input Voltage

Output Voltage

**INPUT**

parameter	conditions/description	min	typ	max	units
operating input voltage	3.3 V model	2.97	3.3	3.63	Vdc
	5 V model	4.5	5	5.5	Vdc
	12 V model	10.8	12	13.2	Vdc
	24 V model	21.6	24	26.4	Vdc

**OUTPUT**

parameter	conditions/description	min	typ	max	units
line regulation	for Vin change of 1%				
	3.3 V model			±1.5	%
	all other models			±1.2	%
load regulation	measured from 10% to full load				
	3.3 V model		15	20	%
	5 V model		10.5	15	%
	9 V model		8.3	15	%
	12 V model		6.8	15	%
	15 V model		6.3	15	%
voltage accuracy	see tolerance envelope graph				
switching frequency	100% load, input voltage range		110		kHz
temperature coefficient				±0.03	%/°C

**PROTECTIONS**

parameter	conditions/description	min	typ	max	units
short circuit protection				1	s

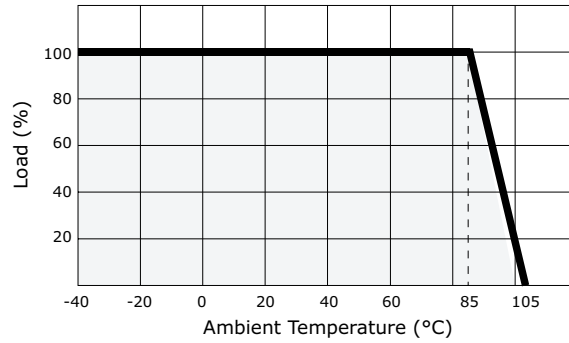
**SAFETY AND COMPLIANCE**

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

**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

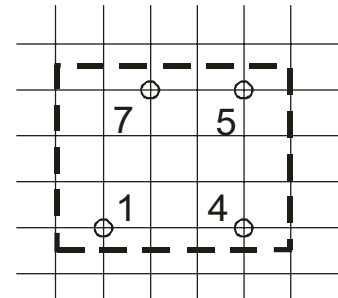
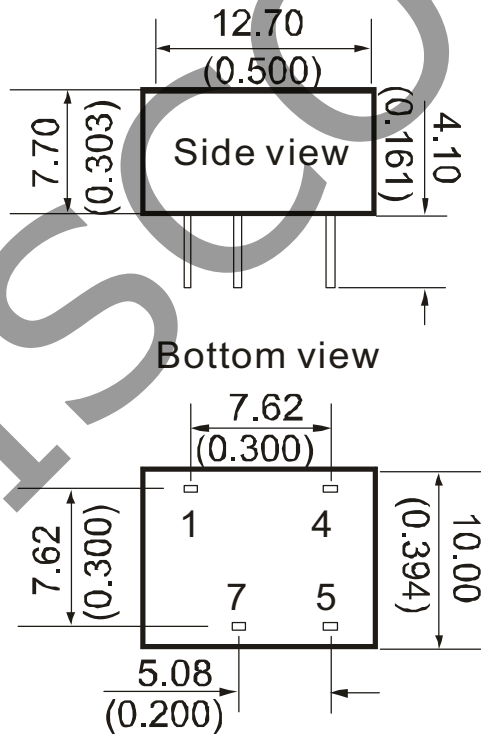


## MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	0.500 x 0.394 x 0.303 (12.70 x 10.00 x 7.70 mm)				inch
case material	plastic UL94-V0				
weight			2.1		g

## MECHANICAL DRAWING

units: mm (inches)  
 tolerance: ±0.25 (±0.010)  
 pin section tolerance: ±0.10 (±0.004)



PIN CONNECTIONS	
1	GND
4	Vin
5	+Vo
7	0V

## APPLICATION NOTES

### 1. Requirement on Output Load

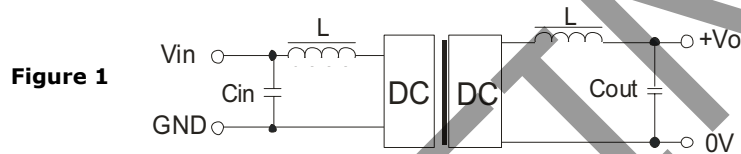
In order to ensure the product operates efficiently and reliably, make sure the specified range of input voltage is not exceeded and the minimum output load is not less than 10% load. If the actual load is less than the specified minimum load, the output ripple may increase sharply while its efficiency and reliability will reduce greatly. If the actual output power is very small, please add an appropriate resistor as extra loading.

### 2. Overload Protection

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

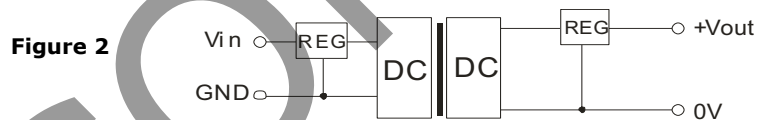
### 3. Filtering

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, provided the safe and reliable operation is ensured, the greatest capacitance of its filter capacitor sees the external capacitor table. To get an extremely 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 (Figure 1).



### 4. Output Voltage Regulation and Over-voltage Protection Circuit

The simplest device for output voltage regulation, over-voltage and over-current protection is a linear voltage regulator with overheat protection that is connected to the input or output end in series (Figure 2).



## REVISION HISTORY

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rev.	description	date
1.0	initial release	04/30/2008
1.01	new template applied, V-Infinity branding removed	08/31/2012
1.02	updated datasheet	09/08/2015

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



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