1W isolated DC-DC converter
Fixed input voltage, unregulated single output

HanRun®
Electronics Company Limited

HR837002

Features :

- Continuous short-circuit protection
- No-load input current as low as 6mA
- Operating ambient temperature range: -40℃ to +115℃
- High efficiency
- High power density
- I/O isolation test voltage 1.5kVDC
- Industry standard pin-out
- RoHS Compliant (Pb Free)

Description :

The module is low cost 1W DC/DC converters in a standard SIP4 footprint. This makes it suitable for price sensitive industrial, test and measurement and high volume applications.The converter is pin-compatible with Industry standard, offering a simple way to upgrade a 0.6W high isolation supply to 1W.

It is designed for use in distributed power supply systems and especially suitable in applications such as pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits, where:

- The voltage of the input power supply is relatively stable with a variation of ±10%Vin or less;
- A high input to output isolation voltage of ≤1500VDC is necessary;
- The requirement for a tight output regulation and low ripple & noise is not as strict.

Electrical Specification

Input Specifacations					
Item	Opeaeture Conditions	Min.	Typ.	Max.	Unit
Input Voltage	DC Input	4.50	5	5.50	VDC
Input Current (full load / no-load)	Nominal input voltage	-	235/6	-	mA
Reflected Ripple Current		-	15	-	mA
Surge Voltage (1sec. max.)	Input voltage 5.5VDC	-0.7	-	9	VDC
Input Filter		Capcitance filter			
Hot Plug		Unavailable			

Output Specifacations					
Item	Opeaeture Conditions	Min.	Typ.	Max.	Unit
Output Current	Nominal input voltage	0.02	-	0.2	ADC
Output Voltage	Nominal input voltage	-	5	-	VDC
Ouput Voltage Accuracy	Nominal input voltage	See output regulation curve			
Line Regulation	Input voltage change : ±1%	-	-	±1.2	
Load Regulation	10%-100% load	-	8	12	%
RIpple & Noise	20MHz bandwidth	-	26	50	mVp-p
Temperature Coefficient	Full load	-	±0.03	-	%/℃
Short circuit Protection		Continuous, self-recovery			
Capacitive Load	At nominal input and resistive load	-	-	2400	μF

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General Specifacations					
Item	Opeaeture Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage (Input to output)	1mA Max and 1 minute	1500	–	–	VDC
Insulation Resistance	Input to output, At 500VDC	1000	–	–	Mohm
Operating Temperature	Refer to "Derating Graph"	−40		+115	℃
Storage Temperature	Only for power module	−55	–	+125	℃
Storage Humidity	Non−condensing	–	–	95%	%RH
Switching Frequency	Full load, nominal input voltage	–	340	–	KHz
Efficiency	Full load, nominal input voltage	82	85	–	%
Isolation Capacitance	Input−output capacitance at 100kHz/0.1V	–	20	–	pF
Welding Temperature	Wave−soldering	260 ± 5℃; time: 5 −10s			
Temperature Rise	Ta=25C°	–	25	–	℃
Vibration		10−150Hz, 5G, 0.75mm. along X, Y and Z			
MTBF	MIL−HDBK−217F @ 25℃	2500	–	–	Khours
Isolation Grade		Functional			

Physical Specifications	
Dimension	10.5*6.5*7.5mm,Horizontal package
Weight	0.5g typ.

Electromagnetic Compatibility (EMC)		
Emission	CE	CISPR32/EN55032 CLASS B
	RE	CISPR32/EN55032 CLASS B
Immunity	ESD	IEC/EN61000−4−2 Air ±4kV, Contact ±4kV perf. Criteria B
Note: Refer to the figure for recommended circuit test		

Note :

- All parameters are specified at normal input, rated load, 25℃ ambient.
- Ripple & noise are measured by using a probe terminated with a 0.1uf & 47uf capacitor
- Please prevent the converter from operating in overload or short circuit condition for more than 30 seconds as possible.
- This part is not designed for parallel operation.
- For repeat Hi−Pot testing, reduce the time and/or the test voltage.
- Specifications may not be met if operation below 10% load.

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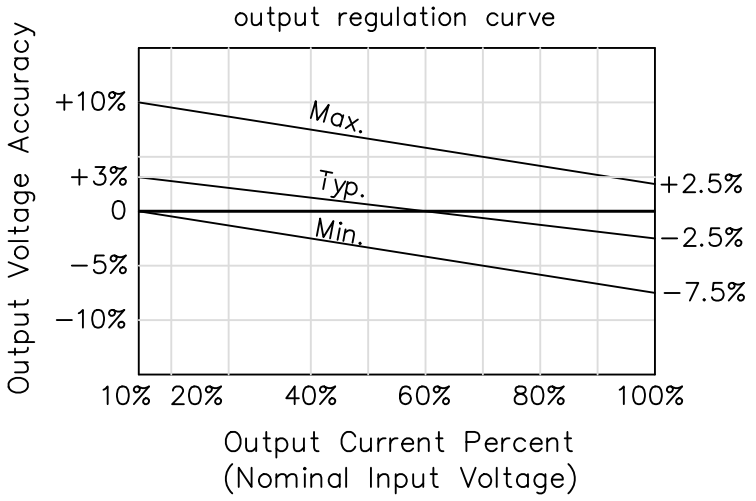
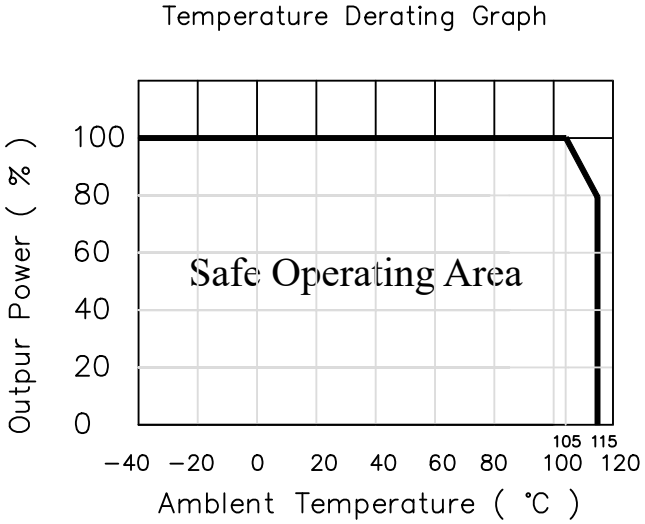
Typical Performance Curves:





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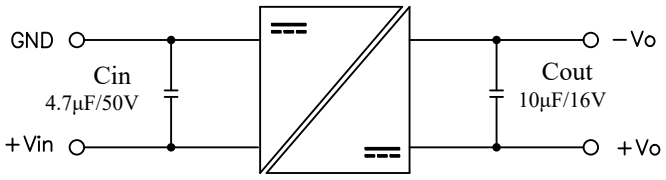
Design Reference:

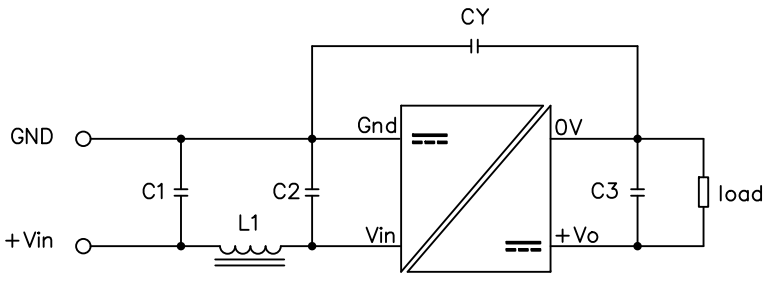
1.Typical application

Input and/or output ripple can be further reduced, by connecting a filter capacitor from the input and/or output terminals to ground as shown .

Choosing suitable filter capacitor values is very important for a smooth operation of the modules, particularly to avoid start-up problems caused by capacitor values that are too high.



2.EMC compliance circuit



C1/C2=4.7μF/50V; C3=10uF/50V ;Cy =270pF/3KV ;L1=6.8uH

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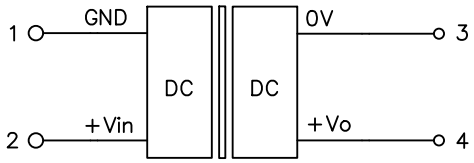
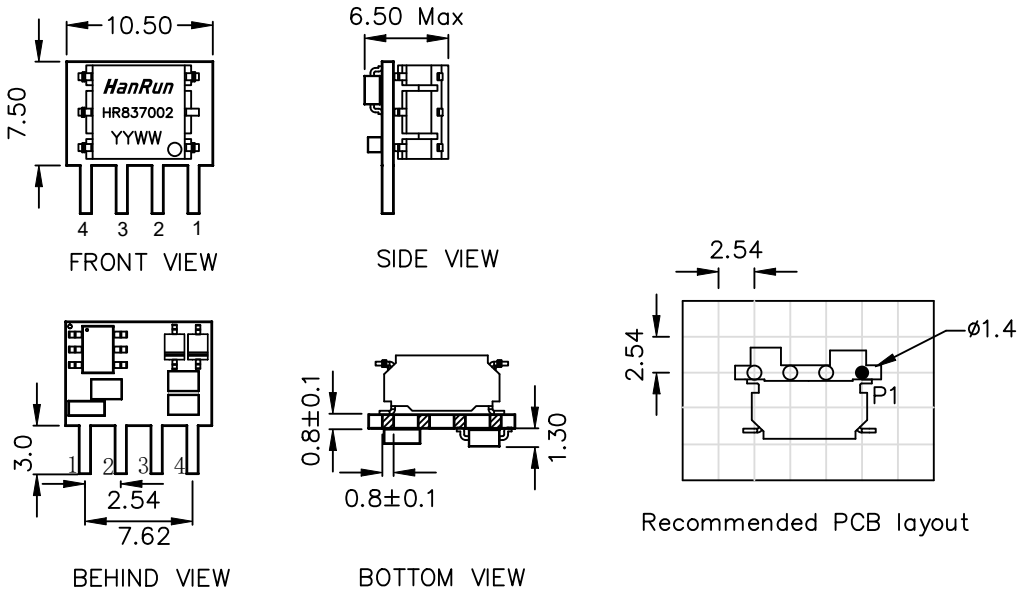
Pin Assignment

Pin	1	2	3	4
Function	GND	+Vin	0V	+Vo

Recommended Test Circuit



Mechanical Dimensions



Unless otherwise specified, Unit in mm
Tol.: .x ± 0.5 (mm), .xx ± 0.25 (mm)

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