

1W Isolated DC-DC Converter

Fixed input voltage, unregulated single output



H5027109EA

Features :

I/O isolation test voltage: 1500VDC

HanRun Transformer

Continuous short-circuit protection

Capacitive Load: 1000 μ F Max.

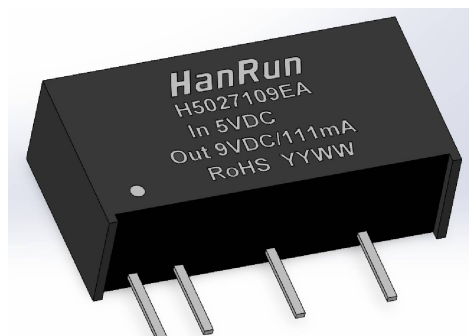
Industry standard pin-out

No-load input current as low as 7mA

Operating temperature range: -40 $^{\circ}$ C to +105 $^{\circ}$ C

Designed to Comply with EN 62368-1, IEC 62368-1

RoHs Compliant



The part is specially designed for applications where an isolated voltage is required in a distributed power supply system. It is suitable for: pure digital circuits, low frequency analog circuits, relay-driven circuits and data switching circuits.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	DC Input	4.5	5	5.5	VDC
Input Current (no load)	nominal Input Voltage, no load	-	7	9	mA
Input Current	nominal Input Voltage, 100% load	-	218	229	mA
Reflected Ripple Current	nominal input voltage, 100% load	-	15	-	mA
Surge Voltage (1sec. max.)	nominal input voltage, 100% load,	-0.3	-	9	V
Input Filter		Capacitance filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage	nominal input voltage, 100% load	-	9	-	VDC
DC Output Current		11	-	111	mA
Output Voltage Accuracy		See output regulation curve			
Line Regulation	Input voltage change: $\pm 1\%$	-	-	1.2	-
Load Regulation	nominal input voltage, 10%~100% load,	-	± 8	± 10	%
Temperature Coefficient	100% load	-	± 0.02	-	%/ $^{\circ}$ C
Ripple & Noise *	20MHz bandwidth (parallel cable method)	-	30	75	mVp-p
Short circuit Protection		Continuous, self-recovery			

Note:* The "parallel cable" method is used for Ripple and Noise test.

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General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input to output, test for 60S with 1 mA Max	1500	-	-	VDC
Insulation Resistance	Input to output, at 500VDC	1000	-	-	MΩ
Isolation capacitance	Input to output, 100KHz 0.1V	-	10	-	pF
Capacitive Load	nominal input voltage, Full load	-	-	1000	uF
Efficiency	nominal input voltage, full load,	84	88	-	%
Storage Humidity	Non-condensing	5	-	95	%RH
Storage Temperature		-55	-	+125	°C
Case Temperature Rise	Ta=25°C, nominal input voltage, full load	-	25	-	°C
Operating Temperature	Derating when operating temperature ≥ 85°C, (see Fig. 2)	-40	-	+105	°C
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10s seconds	-	-	300	°C
Switching Frequency	nominal input voltage, full load,	-	360	-	KHz
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Safety Standard		IEC 62368-1			
MTBF		3500	-	-	Khours

Physical Specifications

Casing Material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Dimensions	19.5*6.05*10.05mm
Weight	2.0g (typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS B
	RE	CISPR32/EN55032 CLASS B
Immunity	ESD	IEC/EN61000-4-2 Air ±8kV, Contact ±6kV perf. Criteria B

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Typical Characteristic Curve:

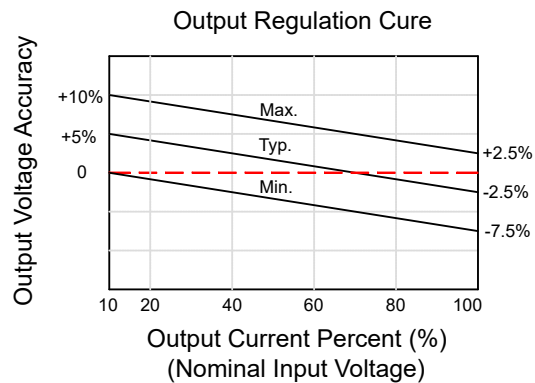


Fig. 1

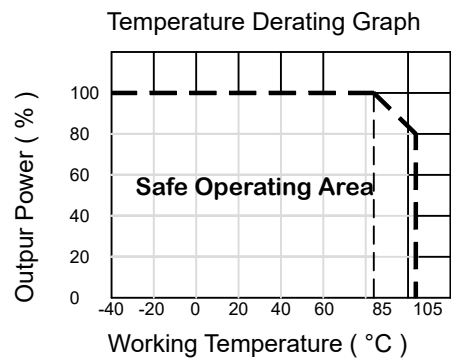
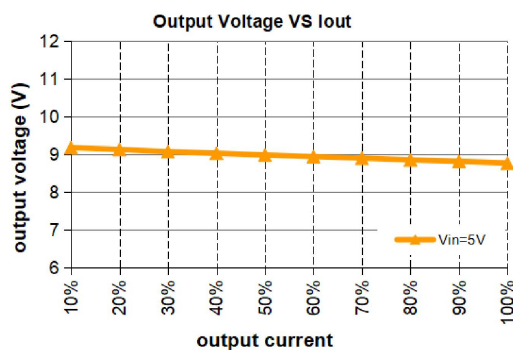
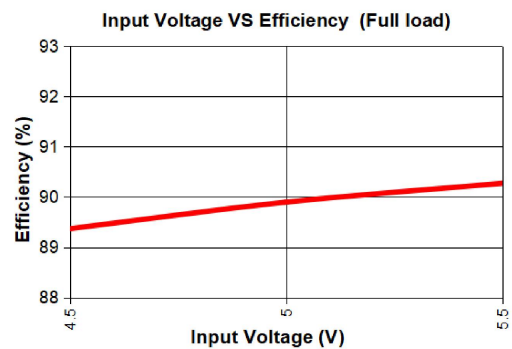
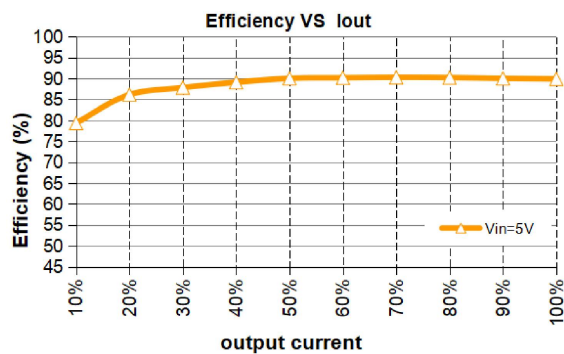


Fig. 2



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Design Reference:

1. 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 .

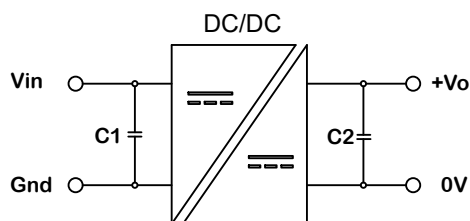


Fig. 03

Item	values	Rated voltage
C1	4.7uF	16V
C2	2.2uF	25V

Table 1: Recommended input and output capacitor values

2. EMC typical recommended circuit

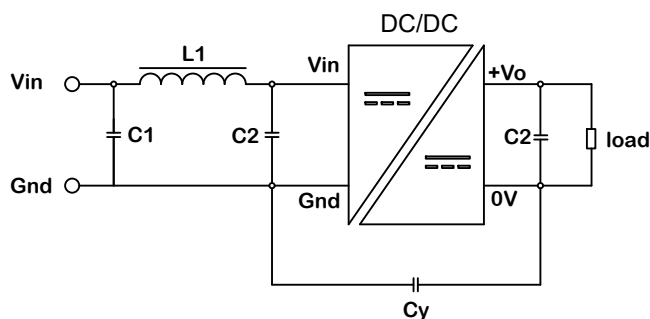


Fig.4

Item	values	Rated voltage
C1/C2	4.7uF	16V
Cy	100pF	2KV
C3	2.2uF	25V
L1	6.8uH	-

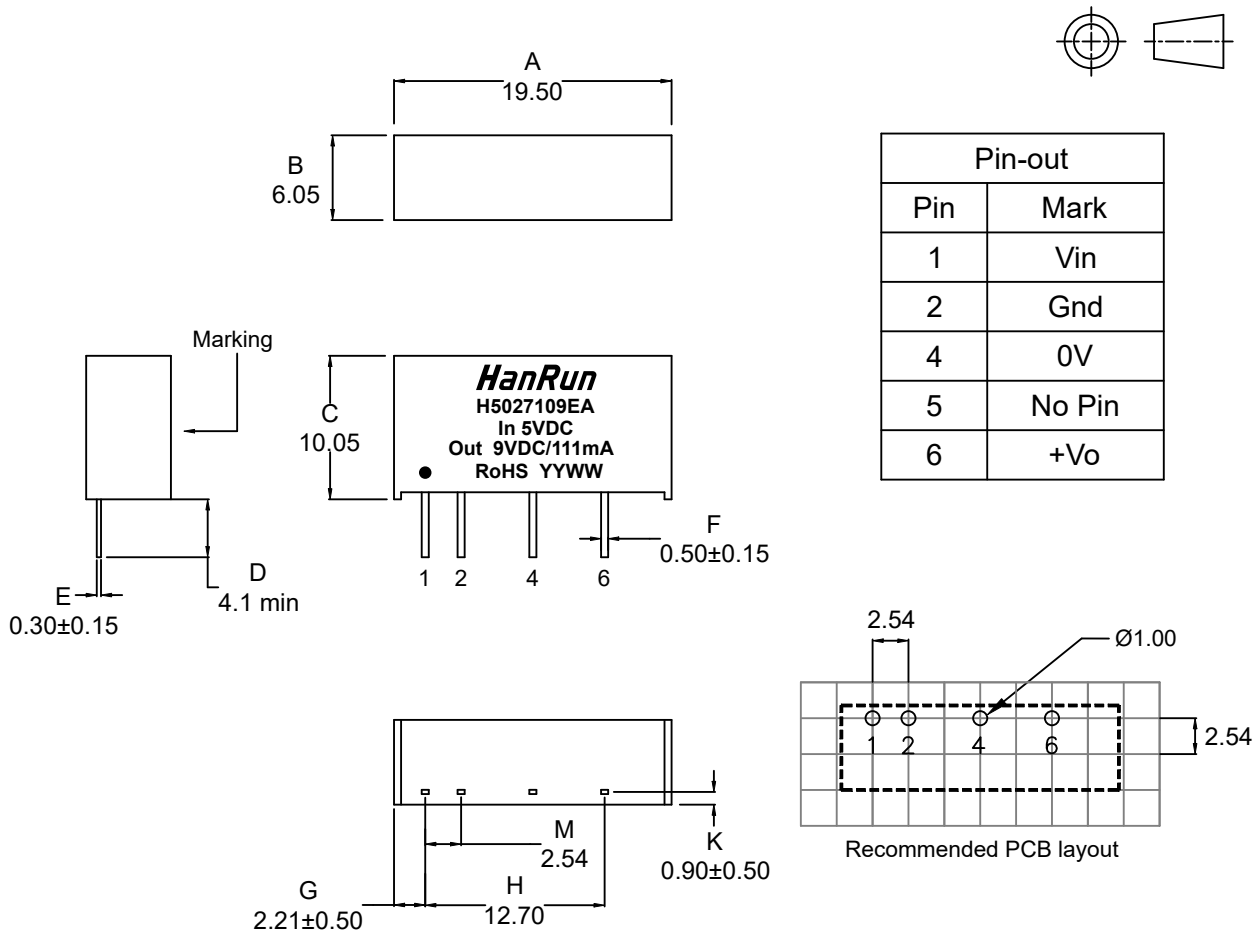
Table 2: Recommended EMC filter values

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Dimensions and Recommended Layout:



Unit : mm
Unless otherwise specified,
Tolerance: .xx $\pm$ 0.25