

1W Isolated DC-DC Converter

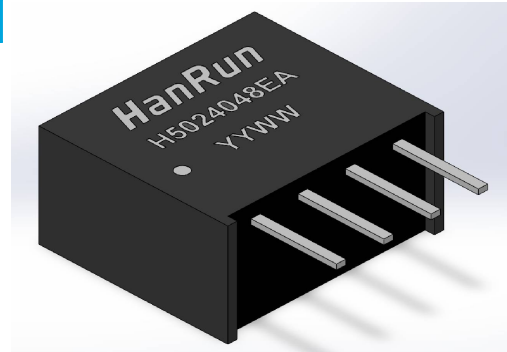
Fixed input voltage, unregulated single output



H5024048EA

Features :

- ◆ I/O isolation test voltage: 1500VDC
- ◆ **HanRun** transformer
- ◆ Continuous short-circuit protection
- ◆ Industry standard pin-out
- ◆ Operating temperature range: -40°C to +105°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	21.6	24	26.4	VDC
Input Current (no load)	nominal Input Voltage , no load	-	4.5	6	mA
Input Current	nominal Input Voltage , 100% load	-	47.5	50	mA
Reflected Ripple Current	nominal input voltage, 100% load	-	15	-	mA
Surge Voltage (1sec. max.)	nominal input voltage, 100% load,	-0.3	-	30	V
Input Filter		Capacitance filter			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage	nominal input voltage, 100% load	-	24	-	V
DC Output Current		5	-	42	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,	-	2	10	%
Temperature Coefficient	100% load	-	± 0.02	-	%/°C
Ripple & Noise *	20MHz bandwidth (parallel cable method)	-	50	100	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-output electric strength test for 60 second with a leakage current of 1mA max.	1500	-	-	VDC
Insulation Resistance	Input to output, at 500VDC	1000	-	-	MΩ
Isolation capacitance	Input to output, 100KHz 0.1V	-	20	-	pF
Capacitive Load	nominal input voltage, Full load	-	-	220	uF
Efficiency	nominal input voltage, full load,	86.7	90.7	-	%
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. 1)	-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,	-	250	-	KHz
Vibration		10-150Hz, 5G, 0.75mm. along X, Y and Z			
Safety Standard		IEC 62368-1			
MTBF	MIL-HDBK-217F @ 25°C	3500	-	-	K hours

Physical Specifications

Casing Materia	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Dimensions	11.6*6.0*10.16mm
Weight	1.3g (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:

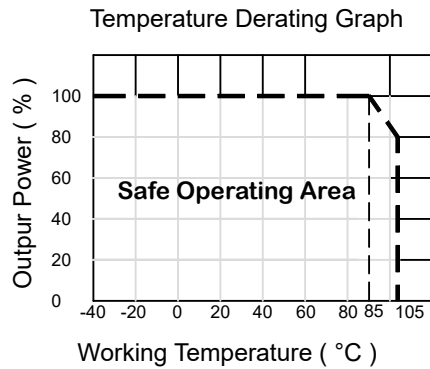


Fig. 1

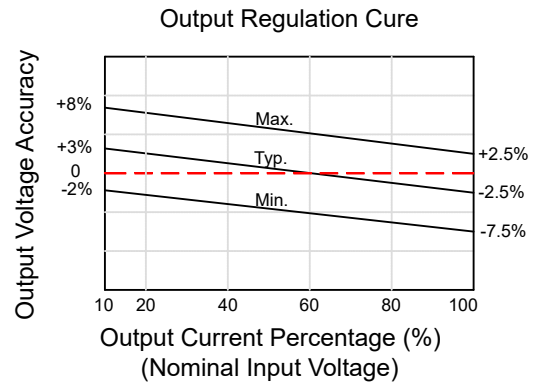
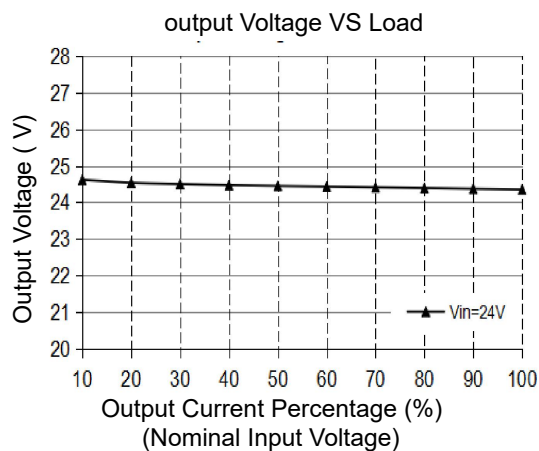
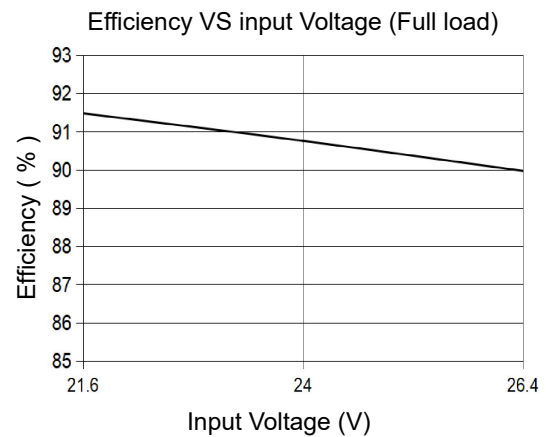
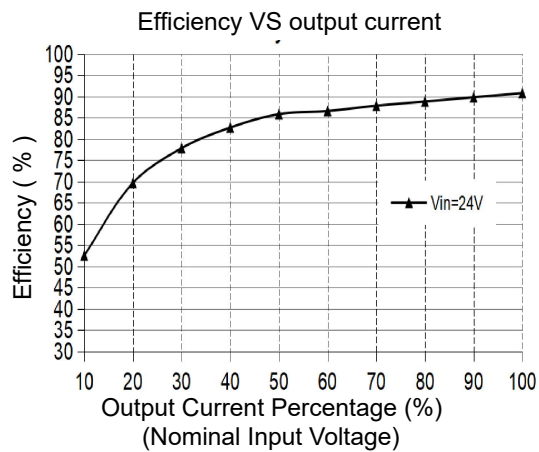


Fig. 2



REV.: A0

3 of 5

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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 .

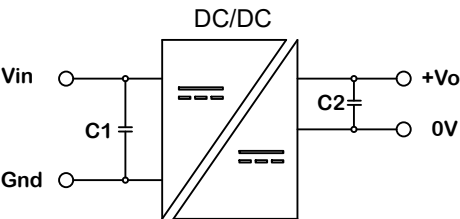


Fig. 3

Item	values	Rated voltage
C1	1uF	50V
C2	1uF	50V

Table 1: Recommended input and output capacitor values

2. EMC typical recommended circuit

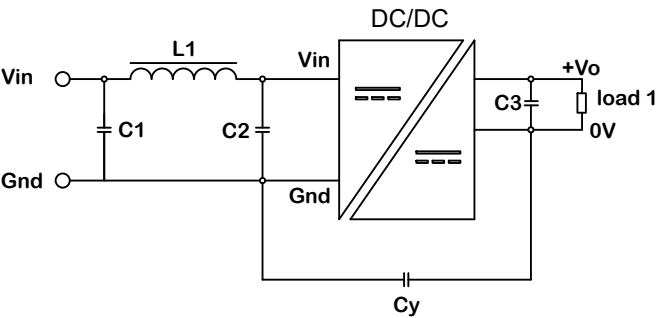


Fig.4

Item	values	Rated voltage
C1/C2	4.7uF	50V
Cy	270pF	2KV
C3	1uF	50V
L1	6.8uH	-

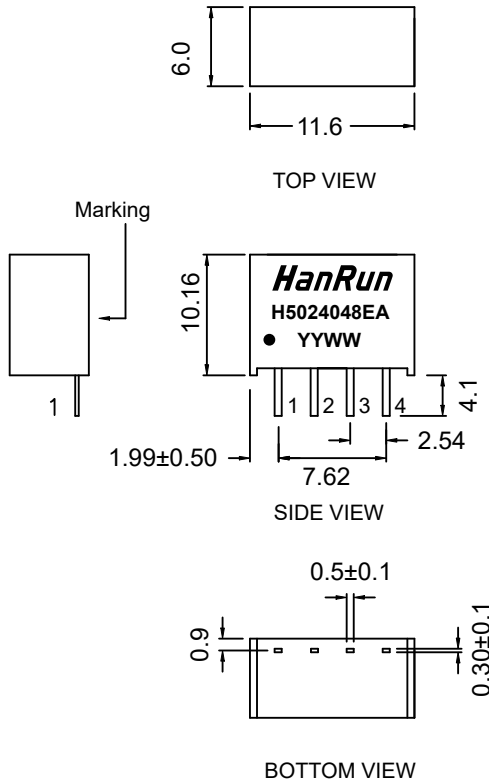
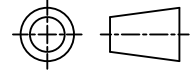
Table 2: Recommended EMC filter values

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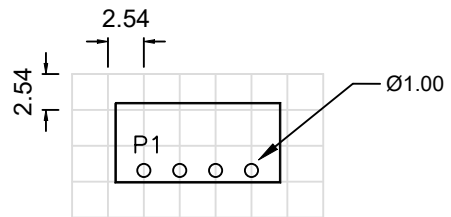


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Dimensions and Recommended Layout:



Pin-out	
Pin	Mark
1	Gnd
2	Vin
3	0V
4	+Vo



Recommended PCB layout

Unit : mm
 Unless otherwise specified,
 Tolerance: .xx ± 0.25

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H5024xxxxx series packing specifications

Packing specifications:

