DC – DC

Features

- High efficiency up to 81%
- Reinforced insulation
- Patient leakage current 2μA max.
- I/O isolation test voltage 4.2k VAC or 6k VDC
- Operating ambient temperature: -40℃ to +85℃
- Internal surface mounted design
- Industry standard pin-out
- EN60601-1, ANSI/AAMI ES60601-1 approved

Ideal Power's 36G/HxxxxS-1WR2 1W Encapsulated DC/DC PCB Mount Medical Power Supply (SIP) Series are certified to UKCA, cURus, CE, RoHS & EN 60601-1/IEC 60601-1/ES 60601-1 Standards and comply with the relevant Efficiency Regulations. These are primarily used in Medical, ITE, Audio & Video Industries and customised solutions are available upon request.

Models

Model No	Input Voltage (VDC) Nominal Range	Output Voltage (VDC)	Output Current (mA) Max./Min.	Full Load Efficiency (%) Typ.	Capacitive Load* (μF) Max.
H0305S-1WR2	3.3 (2.97-3.63)	5	200/20	67/71	1000
36G0505S-1WR2	5 (4.5-5.5)	±5	±100/±10	74/78	470
36G0509S-1WR2		±9	±56/±6	76/80	470
36G0512S-1WR2		±12	±42/±5	70/74	220
36G0515S-1WR2		±15	±34/±4	72/76	220
36H0505S-1WR2		3.3	303/31	69/73	1000
36H0512S-1WR2		5	200/20	74/78	1000
36H0515S-1WR2		12	84/9	72/76	470
36G1205S-1WR2	12 (10.8-13.2)	15	67/7	72/76	470
36G1209S-1WR2		±5	±100/±10	73/77	470
36G1212S-1WR2		±9	±56/±6	76/80	470
36G1215S-1WR2		±12	±42/±5	69/73	220
36H1205S-1WR2		±15	±34/±4	71/75	220
36H1212S-1WR2		5	200/20	73/77	1000
36H1215S-1WR2		12	84/9	77/81	470
36G1505S-1WR2	15 (13.5-16.5)	15	67/7	77/81	470
36G2405S-1WR2	24 (21.6-26.4)	±5	±100/±10	71/75	470
36G2409S-1WR2		±9	±56/±6	75/79	470
36G2412S-1WR2		±12	±42/±5	72/76	220
36G2415S-1WR2		±15	±34/±4	72/76	220
36H2405S-1WR2		5	200/20	72/76	1000
36H2412S-1WR2		12	84/9	74/78	470
36H2415S-1WR2		15	67/7	74/78	470

Note: * The specified maximum capacitive load value for positive and negative output is identical.

Input Specifications

	Conditions	Min	Typ	Max	Unit
Input Current	3.3V input	--	45/426	70/--	mA
	5V input	--	35/274	60/--	
	12V input	--	15/114	40/--	
	15V input	--	18/93	40/--	
	24V input	--	10/56	25/--	
Surge Voltage (1sec. max.)	3.3V input	-0.7	--	7	VDC
	5V input	-0.7	--	9	
	12V input	-0.7	--	18	
	15V input	-0.7	--	21	
	24V input	-0.7	--	30	
Reflected Ripple Current		--	0.2	--	A
Input Filter		Capacitance filter			
Hot Plug		Unavailable			

Note: * Please refer to DC-DC Converter Application Note for detailed description of Reflected ripple current testing method.

Output Specifications

	Conditions		Min.	Typ.	Max.	Unit
Voltage Accuracy			See tolerance envelope curve (Fig. 1)			
Line Regulation	Input voltage change: ±1%	3.3V output	--	--	±1.5	--
		Others	--	--	±1.2	
Load Regulation	10%-100% load	3.3V/5V output	--	--	20	%
		Others	--	--	15	
Ripple & Noise *	20MHz bandwidth	3.3V output	--	80	150	mV p-p
		Others	--	70	120	
Temperature Coefficient	100% full load		--	±0.02	--	%/℃
Short-circuit Protection**			--	--	3	s

Note: *Ripple and noise tested with “parallel cable” method, please see DC-DC Converter Application Notes for specific operation methods. **Supply voltage must be discontinued at the end of short circuit duration which less than 3s.

General Specifications

	Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output Electric strength test for 1 minute	4200	--	--	VAC
		6000	--	--	VDC
Patient Leakage Current	250VAC, 50/60Hz	--	--	2	μA
Insulation Resistance	Input-output isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output 1KHz/0.1V	--	5	--	pF
Operating Temperature		-40	--	85	℃
Storage Temperature		-55	--	125	
Case Temperature Rise	Ta=25℃	--	25	--	
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	300	
Storage Humidity	Non-condensing	--	--	95	%RH
Switching Frequency	100% load, nominal input voltage	--	100	--	kHz
MTBF	MIL-HDBK-217F @ 25℃	3500	--	--	k hours
Transformer Creepage & Clearance		5	--	--	mm
PCB Creepage & Clearance		5.5	--	--	

Note:
1. Patient leakage current and reinforced insulation is based on a 250 VAC, 50/60 Hz system input voltage.
2. The UL certification (ANSI/AAMI ES60601-1, File No. E347375) of 36G_S-1WR2 & 36H_S-1WR2 series is approved, 36G_S-1WR2 & 36H_S-1WR2 series meets 1xMOPP/2xMOOP when system input voltage is with 250VAC, 50/60Hz.

DC – DC

Mechanical Specifications

Case Material	Black plastic; flame-retardant and heat-resistant (UL94 V-0)
Dimensions	19.50 x 9.80 x 12.50 mm
Weight	4.2g (Typ.)
Cooling method	Free air convection

Electromagnetic Compatibility (EMC)

Emissions	CE	EN60601-1-2/CISPR	GROUP1 CLASS B (see Fig. 5 for recommended circuit)
	RE	EN60601-1-2/CISPR 11	GROUP1 CLASS B (see Fig. 5 for recommended circuit)
Immunity	ESD	EN60601-1-2/IEC/EN61000-4-2	Contact ±8kV perf.Criteria B

Curves

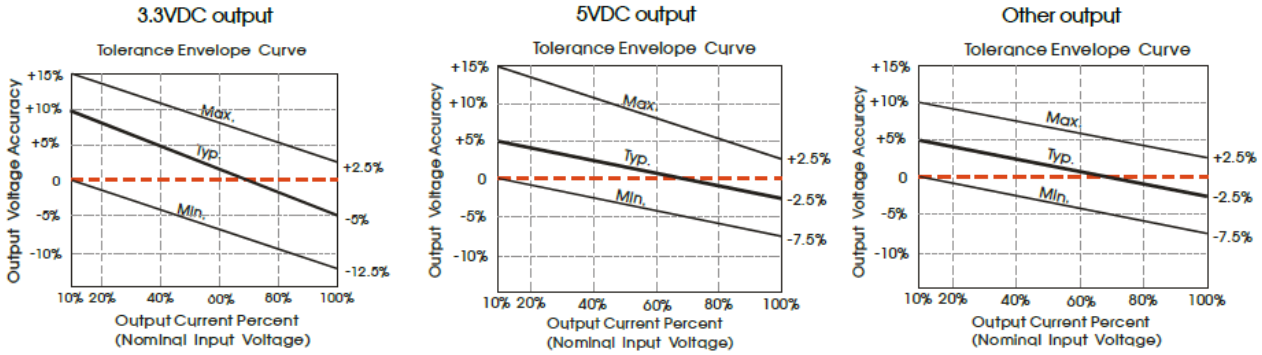


Fig. 1

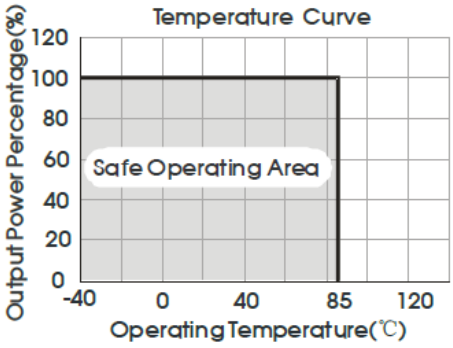
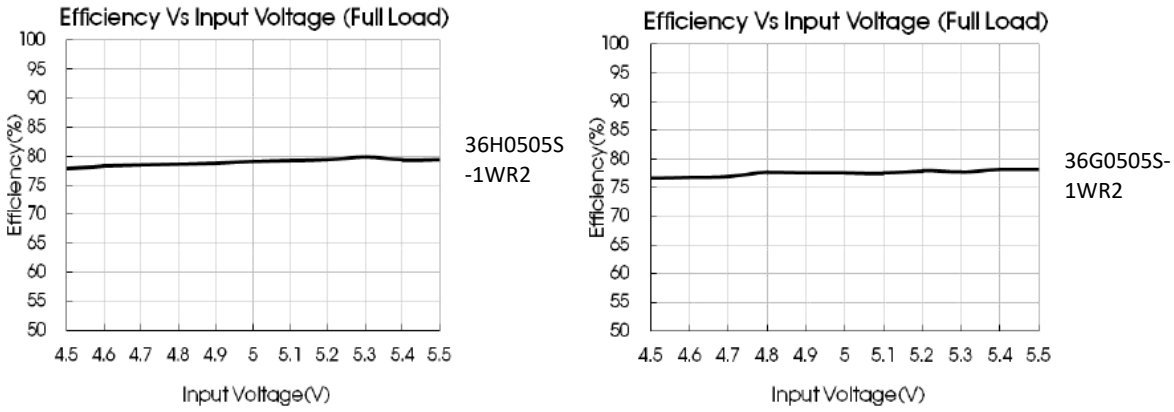
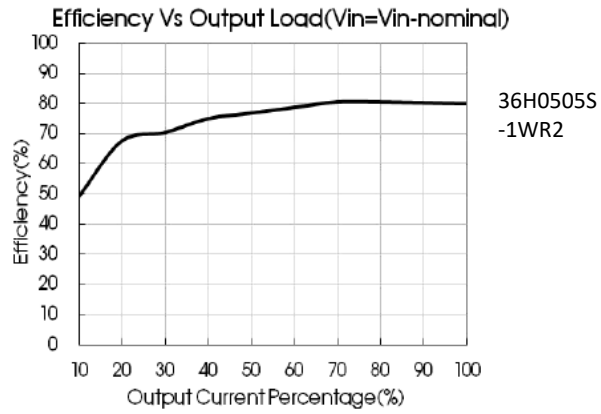


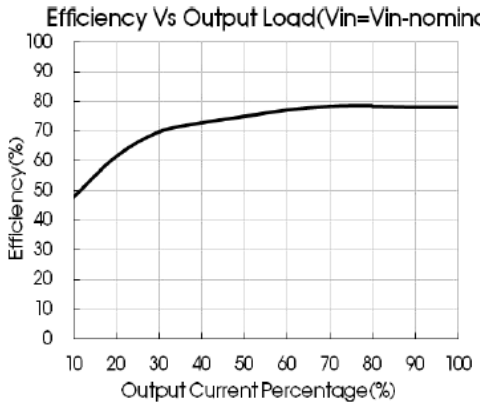
Fig. 2



Curves (continued)



36H0505S-1WR2



36G0505S-1WR2

Design Reference

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 in Fig.3.

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. For recommended input and output capacitor values refer to Table 1.

For a tight output voltage regulation, including overvoltage, overcurrent and over temperature protection, we recommend the use of a linear regulator that is connected in series to the input and/or output terminals as shown in Fig. 4.

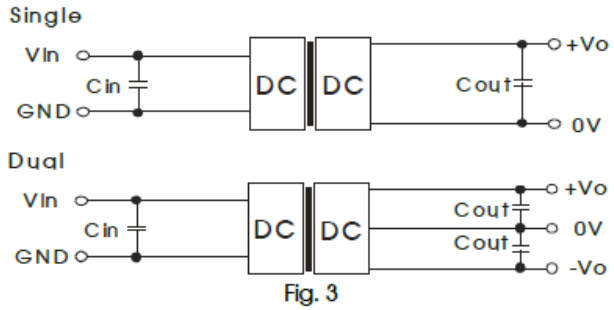


Fig. 3

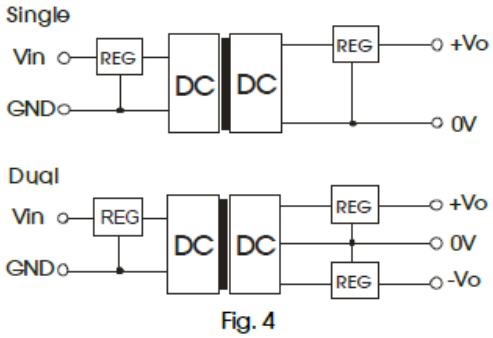


Fig. 4

Recommended capacitive load value table (Table 1)

Vin (VDC)	Cin (μF)	Single Vout (VDC)	Cout (μF)	Dual Vout (VDC)	Cout (μF)
3.3/5	10	3.3/5	10	±5	4.7
12/15	4.7	12	2.2	±9	2.2
24	2.2	15	1	±12/±15	1

Design Reference

EMC (CLASS B) compliance circuit:

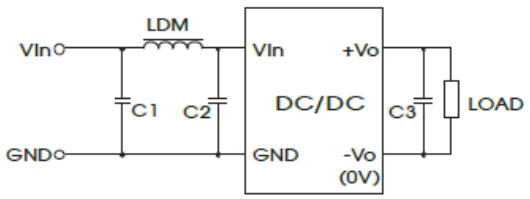


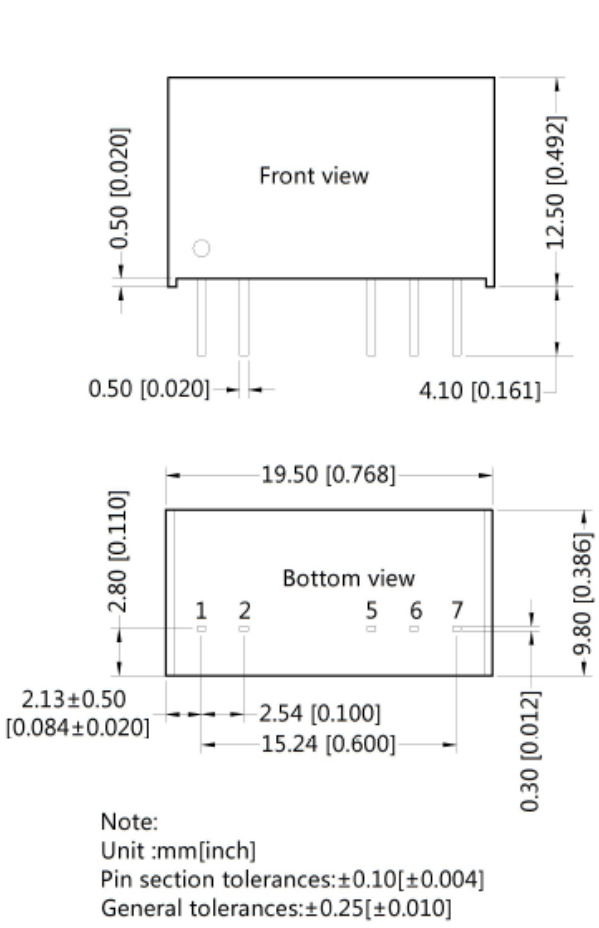
Fig. 5

Recommended typical circuit parameters:

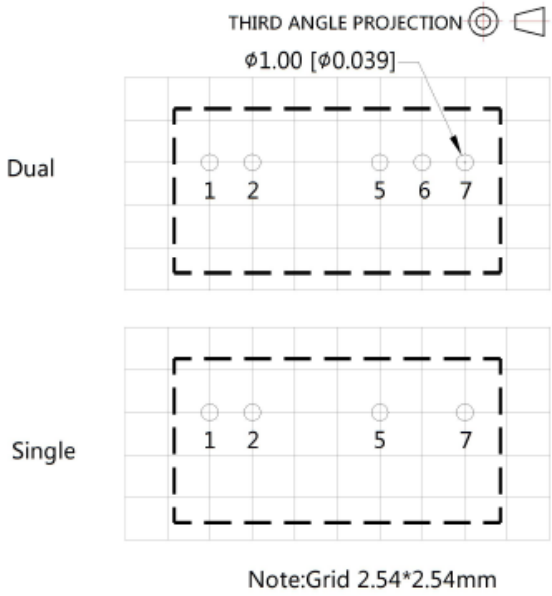
Input voltage (V)		3.3/5/12/15/24
EMI	C1,C2	4.7μF /50V
	C3	Refer to the Cout in Fig.3
	LDM	6.8μH

Output load requirements
For a reliable and efficient operation of the converter, the minimum load should never be less than 10% of the rated output load. If the total required output power is below 10%, a parallel bleeding resistor is required on the output, ensuring that the sum of the power consumption is always maintained at 10% minimum.

Dimensions and Recommended Layout



Note:
Unit :mm[inch]
Pin section tolerances:±0.10[±0.004]
General tolerances:±0.25[±0.010]



Note:Grid 2.54*2.54mm

Pin-Out		
Pin	Single	Dual
1	Vin	Vin
2	GND	GND
5	0V	-Vo
6	No Pin	0V
7	+Vo	+Vo

Notes:

For additional information on Product Packaging please refer to www.Idealpower.co.uk.
Recommend using module with more than 5% load, if not, the ripple of the product may exceed the specification, but does not affect the reliability of the product.
The maximum capacitive load offered were tested at input voltage range and full load.
Unless otherwise specified, parameters in this datasheet were Measured under the conditions of Ta=25℃, humidity<75%RH with nominal input voltage and rated output load.
All index testing methods in this datasheet are based on company corporate standards.
We can provide product customization service, please contact our technicians directly for specific information.
Products are related to laws and regulations: see "Features" and "EMC".
OUR products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.