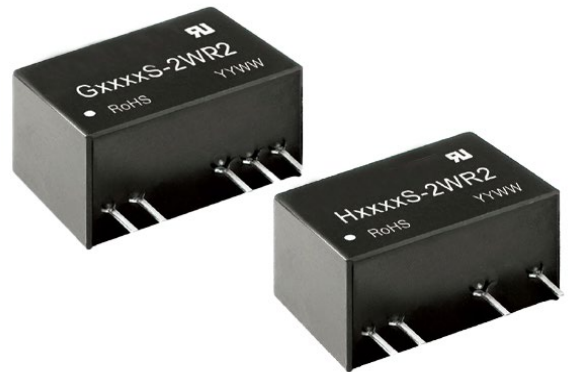


## Features

- High efficiency up to 84%
- Reinforced insulation
- Patient leakage current 2 $\mu$ A max.
- I/O isolation test voltage 4.2k VAC or 6k VDC
- Operating ambient temperature: -40°C to +85°C
- Internal surface mounted design
- Industry standard pin-out
- EN60601-1, ANSI/AAMI ES60601-1 approved



Ideal Power's 36GxxxxS-2WR2 2W 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)		Output		Full Load Efficiency (%) Typ.	Capacitive Load* ( $\mu$ F) Max.
	Nominal Range	Max.	Voltage (VDC)	Current (mA) Max./Min.		
36G0505S-2WR2	5 (4.5-5.5)	$\pm 5$	$\pm 200/\pm 20$	74/78	470	$\pm 5$
36G0509S-2WR2		$\pm 9$	$\pm 111/\pm 12$	74/78	470	$\pm 9$
36G0512S-2WR2		$\pm 12$	$\pm 83/\pm 9$	74/78	220	$\pm 12$
36G0515S-2WR2		$\pm 15$	$\pm 67/\pm 7$	76/80	220	$\pm 15$
36H0505S-2WR2		5	400/40	73/77	1000	5
36H0512S-2WR2		12	167/17	75/79	470	12
36H0515S-2WR2		15	133/14	75/79	470	15
36G1205S-2WR2	12 (10.8-13.2)	$\pm 5$	$\pm 200/\pm 20$	70/74	470	$\pm 5$
36G1209S-2WR2		$\pm 9$	$\pm 111/\pm 12$	76/80	470	$\pm 9$
36G1212S-2WR2		$\pm 12$	$\pm 83/\pm 9$	76/80	220	$\pm 12$
36G1215S-2WR2		$\pm 15$	$\pm 67/\pm 7$	73/77	220	$\pm 15$
36H1205S-2WR2		5	400/40	72/76	1000	5
36H1212S-2WR2		12	167/17	75/79	470	12
36H1215S-2WR2		15	133/14	77/81	470	15
36G1505S-2WR2	15 (13.5-16.5)	$\pm 5$	$\pm 200/\pm 20$	73/77	470	$\pm 5$
36G1509S-2WR2		$\pm 9$	$\pm 111/\pm 12$	76/80	470	$\pm 9$
36G1515S-2WR2		$\pm 15$	$\pm 67/\pm 7$	69/73	220	$\pm 15$
36H1505S-2WR2		5	400/40	73/77	1000	5
36H1515S-2WR2		15	133/14	78/82	470	15
36G2405S-2WR2	24 (21.6-26.4)	$\pm 5$	$\pm 200/\pm 20$	75/79	470	$\pm 5$
36G2409S-2WR2		$\pm 9$	$\pm 111/\pm 12$	77/81	470	$\pm 9$
36G2412S-2WR2		$\pm 12$	$\pm 83/\pm 9$	78/82	220	$\pm 12$
36G2415S-2WR2		$\pm 15$	$\pm 67/\pm 7$	77/81	220	$\pm 15$
36H2405S-2WR2		5	400/40	75/79	1000	5
36H2412S-2WR2		12	167/17	78/82	470	12
36H2415S-2WR2		15	133/14	80/84	470	15

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

**Input Specifications**

		Conditions	Min	Typ	Max	Unit
Input Current		5V input	--	35/520	80/--	mA
		12V input	--	15/217	40/--	
		15V input	--	18/171	40/--	
		24V input	--	10/106	25/--	
Surge Voltage (1sec. max.)		5V input	-0.7	--	9	VDC
		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**

		Operating Conditions	Min.	Typ.	Max.	Unit
Voltage Accuracy <sup>①</sup>	See Typical Characteristic Curves (Fig. 1)					
Linear Regulation	Input voltage change: $\pm 1\%$		--	--	$\pm 1.2$	--
Load Regulation	10%-100% load	5VDC output	--	--	20	%
		9VDC output	--	--	15	
		12VDC output	--	--	15	
		15VDC output	--	--	15	
Ripple & Noise <sup>②</sup>	20MHz bandwidth		--	100	150	mV p-p
Temperature Coefficient	100% full load		--	$\pm 0.02$	--	%/°C
Short-circuit Protection <sup>③</sup>			--	--	3	s

**Note:** ① Output voltage accuracy of 36G1515S-2WR2 with 10% load, Min. -5%. ② The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific information.

③ At the end of the short circuit duration, the supply voltage must be disconnected from the modules.

**General Specifications**

		Operating 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	$\mu$ A
Insulation Resistance	Input-output insulation at 500VDC		1000	--	--	M $\Omega$
Isolation Capacitance	Input-output capacitance at 1KHz/0.1V		--	5	--	pF
Operating Temperature	See Fig. 1		-40	--	85	
Storage Temperature			-55	--	125	
Case Temperature Rise	Ta=25°C		--	25	--	°C
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds		--	--	300	
Storage Humidity	Non-condensing		5	--	95	%RH
Switching Frequency	100% load, nominal input voltage		--	100	--	kHz
MTBF	MIL-HDBK-217F @ 25°C		3500	--	--	k hours
Transformer Creepage & Clearance			5	--	--	mm
PCB Creepage & Clearance			5.5	--	--	

**Note:** Patient leakage current and reinforced insulation is based on a 250 VAC, 50/60 Hz system input voltage.

The UL certification (ANSI/AAMI ES60601-1, File No. E347375) of 36G\_S-2WR2 & 36H\_S-2WR2 series is approved, 36G\_S-2WR2 & 36H\_S-2WR2 series meets 1xMOPP/2xMOOP when system input voltage is 250VAC, 50/60Hz.

**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

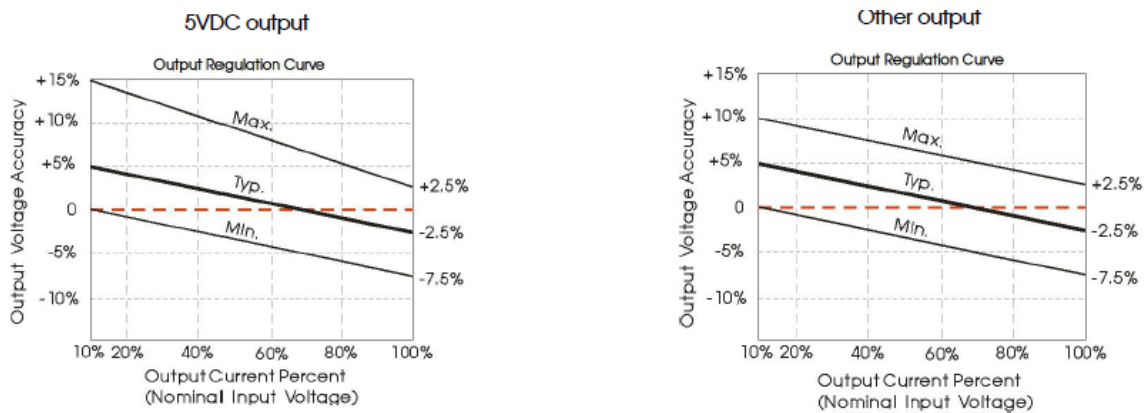
**Curves**


Fig. 1

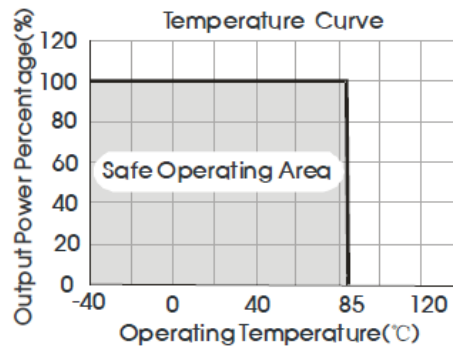
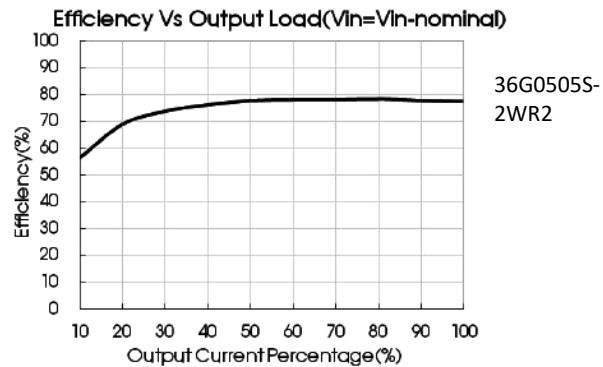
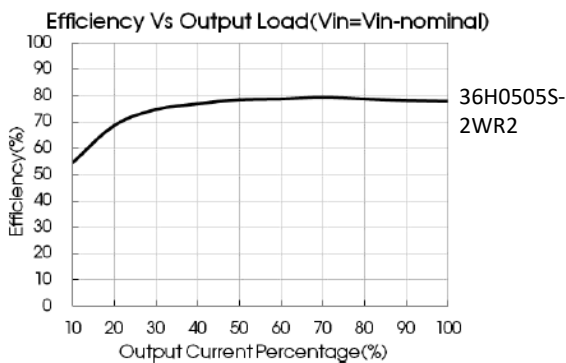
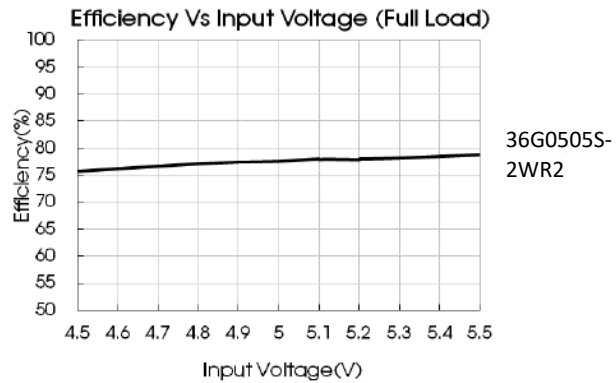
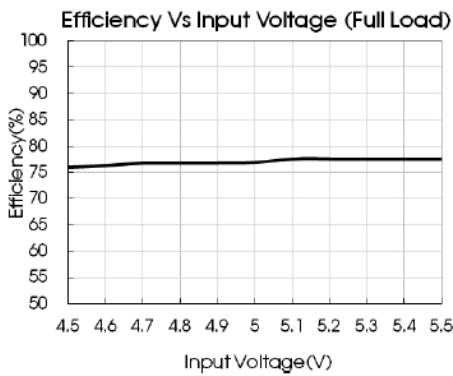


Fig. 2

## Curves (continued)



## 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.

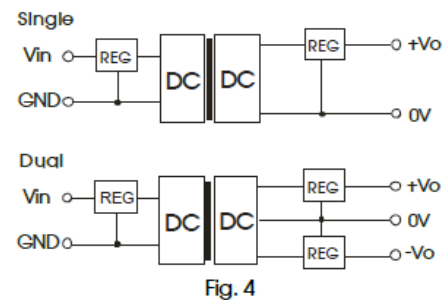
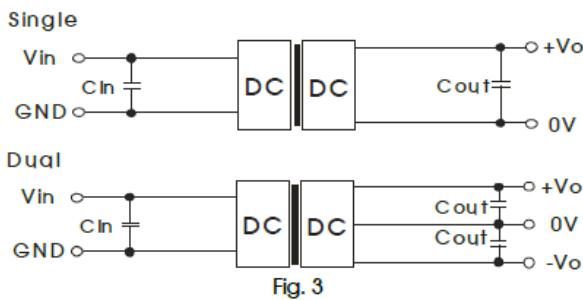


Table 1: Recommended input and output capacitor values

Vin (VDC)	Cin (µF)	Single Vout (VDC)	Cout (µF)	Dual Vout (VDC)	Cout (µF)
5	10	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:

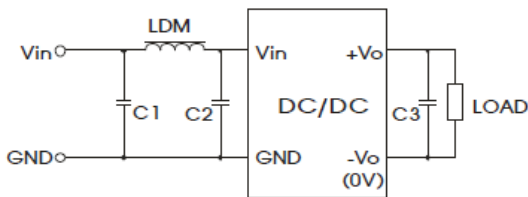


Fig. 5

Table 2: Recommended EMC filter values

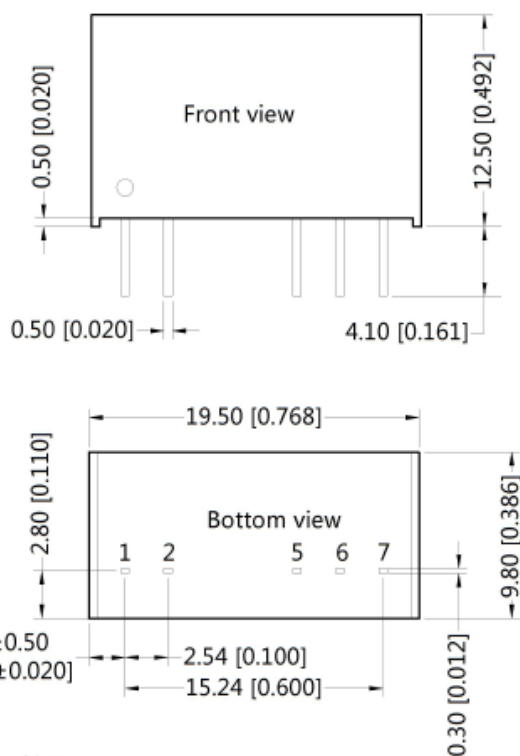
Input voltage (V)		5/12/15	24
EMI	C1, C2	4.7µF /50V	
	C3	Refer to the Cout in Fig.3	
	LDM	6.8µH	15µH

Note: C1 and C2 of G1515S-2WR2 is 10µF/25V, LDM of G1515S-2WR2 is 22µH.

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

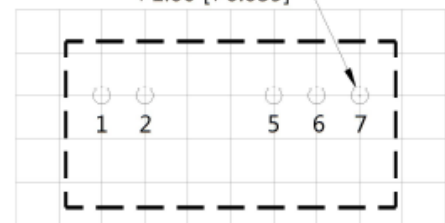


Note:  
Unit :mm[inch]  
Pin section tolerances:±0.10[±0.004]  
General tolerances:±0.25[±0.010]

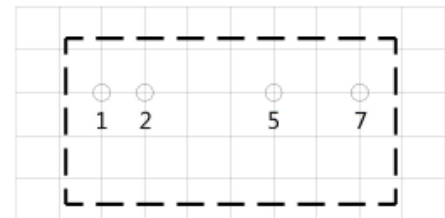
THIRD ANGLE PROJECTION

φ1.00 [φ0.039]

Dual



Single



Note:Grid 2.54\*2.54mm

Pin	Pin-Out	
	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](http://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°C, 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.