

Features

- Ultra-compact SIP package
- Wide input voltage range(2:1)
- I/O isolation test voltage 1.5K VDC
- Short-circuit protection(self-recovery)
- Operating ambient temperature range:
-40°C to +85°C
- EN62368 approved



Ideal Power's 36WRB1505_S-1WR2 1W Isolated DC/DC Converter (SIP) Series are certified to UKCA, CE, RoHS & EN 62368-1/IEC 62368-1/UL 62368-1 Standards and comply with Efficiency Regulations. These are primarily used in ITE, Audio & Video Industries and customised solutions are available upon request.

Models

Part No.	Input Voltage (VDC)		Output		Full Load Efficiency (%) Min./Typ.	Capacitive Load (µF)Max.
	Nominal (Range)	Max. ①	Voltage (VDC)	Current(mA) Max./Min.		
36WRB1505S-1WR2	5 (12-24)	25	5	200/10	75/77	2200
36WRB1505XS-1WR2						

Notes:

- ① Exceeding the maximum input voltage may cause permanent damage.
 ② Efficiency is measured at nominal input voltage and rated output load.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Current (full load/no-load)	15VDC Input	--	87/--	89/--	mA
Reflected Ripple Current	15VDC Input	--	50	--	
Surge Voltage (1sec. max.)	15VDC Input	-0.7	--	30	VDC
Starting Voltage	15VDC Input	--	--	12	
Input Filter		Filter capacitor			
Hot Plug		Unavailable			
Ctrl*	Module on	Ctrl pin open (high resistance)			
	Module off	Ctrl pin pulled high (current 5-10mA typ. into Ctrl.)			

Note: * For use of Ctrl, please refer to the "design reference" in this manual.

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	5%-100% load	--	±1	±3	
No-load Output Voltage Accuracy	Input voltage range	--	±1.5	±5	
Linear Regulation	Input voltage variation from low to high at full load	--	±0.2	±0.5	%
Load Regulation	5%-100% load	--	±0.4	±0.75	
Transient Recovery Time	25% load step change	--	0.5	3	ms
Transient Response Deviation		--	±2.5	±5	%
Temperature Coefficient	Full load	--	±0.02	±0.03	%/°C
Ripple & Noise*	20MHz bandwidth	--	100	150	
Short Circuit Protection	Input voltage range	Continuous, self-recovery			

Note: * The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific

General Specifications

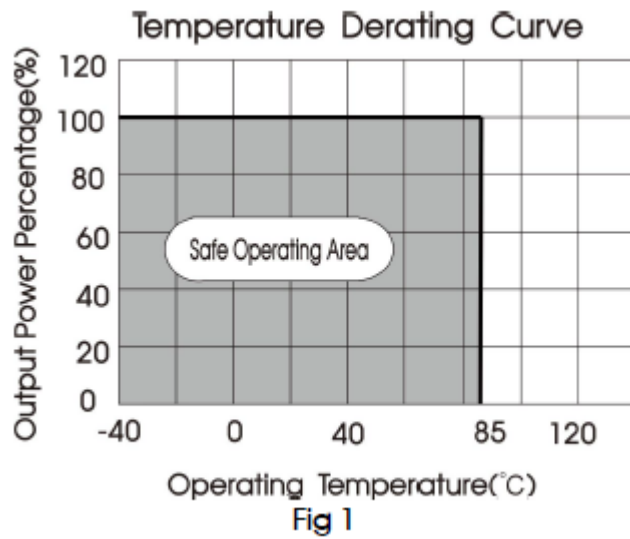
Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output, with the test time of 1 minute and the leak current lower than 1mA	1500	--	--	VDC
Insulation Resistance	Input-output, isolation voltage 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output, 100kHz/0.1V	--	120	--	pF
Operating Temperature	see Fig. 1	-40	--	+85	
Storage Temperature		-55	--	+125	°C
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	+300	
Storage Humidity	Non-condensing	--	--	95	%RH
Switching Frequency (PFM Mode)	Full load, nominal input voltage	--	250	--	kHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	k hours

Mechanical Specifications

Case material	Black flame-retardant and heat-resistant plastic
Dimensions	22.00 x 9.50 x 12.00 mm
Weight	4.48g(Typ.)
Cooling method	Free air convection

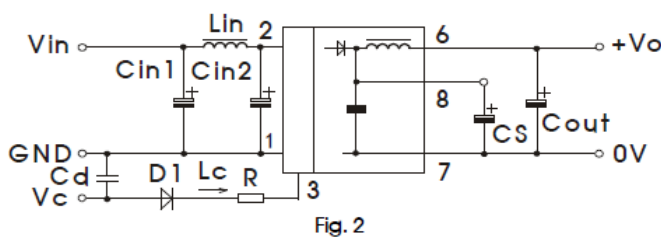
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS B (see Fig. 3-② for recommended circuit)	
	RE	CISPR32/EN55032	CLASS B (see Fig. 3-② for recommended circuit)	
Immunity	ESD	IEC/EN61000-4-2	Contact ±4KV	perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV (see Fig. 3-① for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±2KV (see Fig. 3-① for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	3 Vr.m.s	perf. Criteria A
	Voltage dips, short interruptions, and voltage variations immunity	IEC/EN61000-4-29	0%, 70%	

Characteristic Curve

Design Reference
1 Typical application

All the DC/DC converters of this series are tested before delivery using the recommended circuit shown in Fig. 2.

Input and/or output ripple can be further reduced by appropriately increasing the input & output capacitor values C_{in} and C_{out} and/or by selecting capacitors with a low ESR (equivalent series resistance). Also make sure that the capacitance is not exceeding the specified max. capacitive load value of the product.



V_{in}	15VDC
C_{in1}	100 μ F/50V
C_{in2}	47 μ F/50V
L_{in}	4.7 μ H-12 μ H
C_s	10 μ F/50V-22 μ F/50V
C_{out}	100 μ F/50V(Typ.)
L_{out}	2.2 μ H-10 μ H
C_d	47nF/100V

Design Reference (continued)

2 EMC compliance circuit

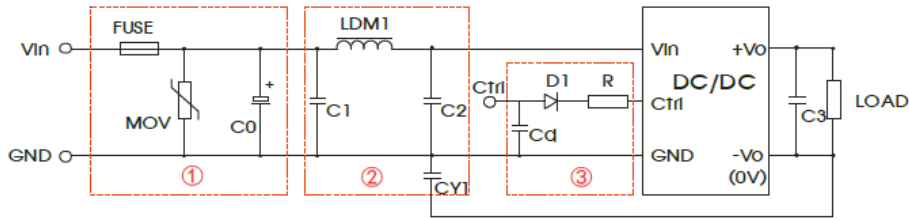


Fig. 3

Model	Vin: 15VDC
FUSE	Slow blown fuses according to the actual input current selections of the clients
MOV	--
LDM1	56μH
TVS	SMCJ48A
C0	330μF/50V
C1	4.7μF/50V
LDM2	12μH
C2	4.7μF/50V
C3	Refer to the Cout in Fig.2
CY1	1nF/2KV
D1	RB160M-60V/1A
R	In accordance with the formula: $R = \frac{V_C - V_D - 1.0}{I_C} - 300$
Cd	47nF/100V

Design Reference (Figure 1)
3. Ctrl end

The modules are of normal output when the Ctrl end is suspended or of high resistance; the modules turn off when connecting with high level (relative to the input grounding); notice that the current flows into the pin shall be 5 - 10mA, the modules will be permanently damaged if the current exceeds its max. value (20mA in general). The value of R can be derived as follows:

$$R = \frac{V_C - V_D - 1.0}{I_C} - 300$$

4 Input current

When the electricity is provided by the unstable power supply, please make sure that the range of the output voltage fluctuation and the ripple voltage of the power supply do not exceed the indicators of the modules. Input current of power supply should afford the flash start-up current of this kind of DC/DC module (see Fig. 5).

Generally:

Vin= 15V series Iave =200mA

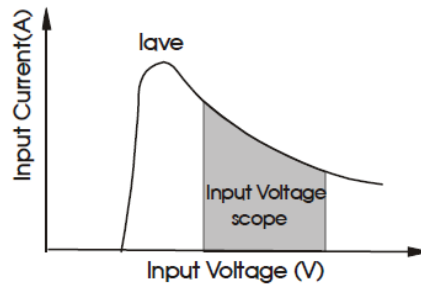
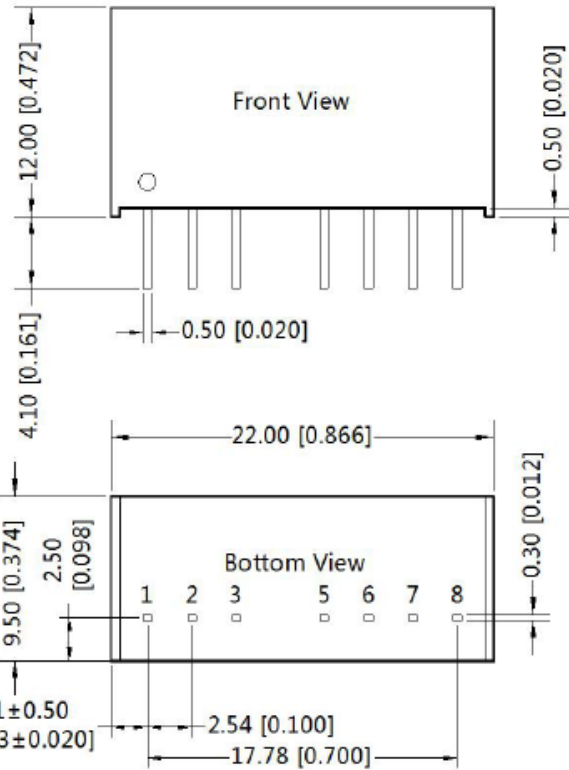


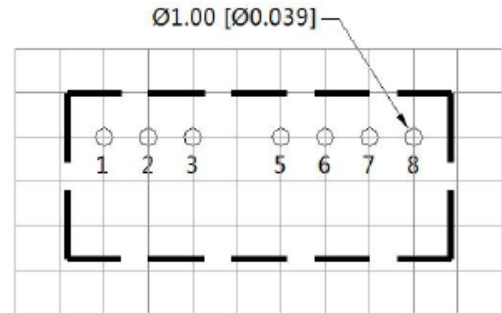
Fig. 5

Dimensions and Recommended Layout



Note:
 Unit: mm[inch]
 Pin section tolerances: $\pm 0.10[\pm 0.004]$
 General tolerances: $\pm 0.25[\pm 0.010]$

THIRD ANGLE PROJECTION



Note : Grid 2.54*2.54mm

Pin-Out	
Pin	Mark
1	GND
2	V _{in}
3	Ctrl
5	NC
6	+V _o
7	0V
8	CS

NC: Not available for electrical connection

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 recommended unbalance degree of the dual output module load is $\leq \pm 5\%$; if the degree exceeds $\pm 5\%$, then the product performance cannot be guaranteed to comply with all parameters in the datasheet. Please contact our technicians directly for specific information.
 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 $T_a=25^\circ\text{C}$, humidity $< 75\% \text{RH}$ 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.
 Specifications are subject to change without prior notice.