

Features

- Ultra-wide 7:1 input voltage range
- High efficiency up to 80%
- I/O isolation test voltage 3K VAC
- Input UVP, Output SCP, OCP, OVP
- Creepage distance is 4.5mm, clearance is 4.2mm
- Operating ambient temperature range: -40°C to +105°C
- EMI meets automotive standards EN55025/CISPR 25 standard Class 4
- AEC-Q100 standards approved
- Production process meets IATF16949 system
- EN62368-1 approved



Ideal Power's 36CUWF24-J(Y)T-3WR3 3W Isolated DC/DC Converter (SMD) Series are certified to UKCA, CE, RoHS & EN 62368-1/IEC 62368-1/UL 62368-1/EN 55025 Standards and comply with the relevant Efficiency Regulations. These are primarily used in EV Automotive, ITE, Audio & Video Industries and customised solutions are available upon request.

Models

Model No.	Input Voltage (VDC)		Output Voltage (VDC)	Output Current (mA) Max./Min		Full Load Efficiency ^② (%) Min./Typ.	Capacitive Load (μF)Max.	
	Nominal (Range)	Max. ①		6 ≤ Vin < 9				9 ≤ Vin ≤ 42
				6 ≤ Vin < 9	9 ≤ Vin ≤ 42			9 ≤ Vin ≤ 42
v	24 (6-42)	45	5	480/0	600/0	74/76	1000	
36CUWF2412J(Y)T-3WR3			12	200/0	250/0	76/78	470	
36CUWF2415J(Y)T-3WR3			15	160/0	200/0	76/78	220	
36CUWF2424J(Y)T-3WR3			24	100/0	125/0	78/80	100	

Notes:

1. 36CUWF24_J(Y)T-3WR3 contains 2 types of products, include 36CUWF24_JT-3WR3 (SMD package without shell) and 36CUWF24_JYT-3WR3 (SMD package with shell).
2. Exceeding the maximum input voltage may cause permanent damage.

Input Specifications

Conditions		Min	Typ	Max	Unit
Input Current (full load / no-load)	Nominal input voltage	--	165/8	169/15	mA
Reflected Ripple Current		--	30	--	
Surge Voltage (1sec. max.)		-0.7	--	50	
Start-up Voltage		--	--	6	VDC
Input Under-voltage Protection		3.5	4.5	--	
Start-up Time	Nominal input voltage & constant resistance load	--	10	150	ms
Input Filter		Pi filter			
Hot Plug		Unavailable			

Output Specifications

	Conditions	Min	Typ	Max	Unit
Voltage Accuracy	5%-100% load	--	±1	±2	
Linear Regulation	Input voltage variation from low to high at full load	--	±0.2	±0.5	%
Load Regulation	5%-100% load	--	±0.5	±1	
Transient Recovery Time	25% load step change, nominal input voltage	--	300	500	µs
Transient Response Deviation	25% load step change, input voltage range	5V output	±4	±8	%
		Others	±3	±5	
Temperature Coefficient	Full load	--	--	±0.03	%/°C
Ripple & Noise*	20MHz bandwidth, nominal input voltage, 5%-100% load	--	60	100	mVp-p
Over-voltage Protection		110	--	160	%Vo
Over-current Protection	Input voltage range	110	--	300	%Io
Short-circuit Protection		Continuous, self-recovery			

Note:

- Output voltage accuracy for 0%-5% load is ±3% max.
- Ripple & Noise at < 5% load is 250mV max. The "parallel cable" method is used for Ripple and Noise test, please refer to DC-DC Converter Application Notes for specific information.

General Specifications

	Conditions	Min	Typ	Max	Unit
Isolation	Input-output Electric Strength Test for 1 minute with a leakage current of 5mA max.	3000	--	--	VAC
Insulation Resistance	Input-output resistance at 500VDC	1000	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100KHz/0.1V	--	500	--	pF
Reinforced Isolation	Clearance	4.2	--	--	mm
	Creepage	4.5	--	--	
Operating Temperature	See Fig. 1	-40	--	+105	
Storage Temperature		-55	--	+125	
Storage Humidity	Non-condensing	5	--	95	%RH
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	+300	°C
Vibration	GBT 28046.3-2011 4.1.2.4 Random vibration, passenger car, sprung masses (vehicle body) The r.m.s. acceleration value shall be 27.8 m/s ² . Use a test duration of 8 hours for each plane of the DUT.				
Switching Frequency *	PWM mode	--	270	--	KHz
MTBF	MIL-HDBK-217F@25°C	1000	--	--	K hours
Moisture Sensitivity Level	IPC/JEDEC J-STD-020D.1			Level 1	

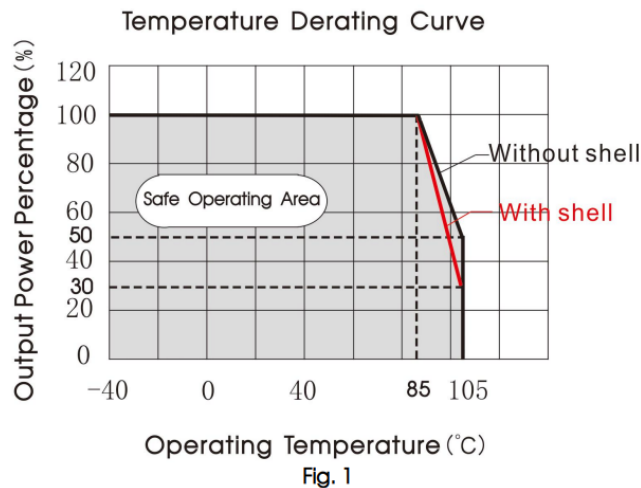
Note: *Switching frequency is measured at full load. The module reduces the switching frequency for light load (below 50%) efficiency improvement.

Mechanical Specifications

Case material	Black epoxy resin; flame-retardant and heat-resistant t (UL94V-0)	
Dimensions	36CUWF24-JT-3WR3	43.68 x 23.0 x 10.00 mm
	36CUWF24-JYT-3WR3	43.68 x 25.0 x 10.64 mm
Weight	36CUWF24-JT-3WR3	7.5g (Typ.)
	36CUWF24-JYT-3WR3	10.4g (Typ.)
Cooling method	Free air convection	

Electromagnetic Compatibility (EMC)

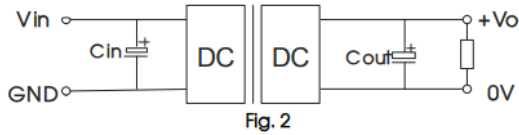
Emissions	CE	CISPR32/EN55025	CLASS 4 (see Fig.3 for recommended circuit)		
		CISPR32/EN55032	CLASS A (without external components)		
	RE	CISPR32/EN55025	CLASS 4 (see Fig.3 for recommended circuit)		
		CISPR32/EN55032	CLASS A (without external components)		
Immunity	ESD	IEC/EN61000-4-2	Contact $\pm 6\text{kV}$	perf. Criteria B	
	RS	IEC/EN61000-4-3	150V/m (see Fig.3 for recommended circuit)	perf. Criteria A	
	BCI	IEC/EN61000-4-4	1MHz-400MHz, 150mA (see Fig.3 for rec circuit)	perf. Criteria B	
		ISO7637-2	LEVEL III		
	Electrical transient conduction along supply lines only	Pulse1	(see Fig.3 for recommended circuit)		perf. Criteria B
		Pulse2a	(see Fig.3 for recommended circuit)		perf. Criteria A
		Pulse2b	(see Fig.3 for recommended circuit)		perf. Criteria B
		Pulse3a	(see Fig.3 for recommended circuit)		perf. Criteria A
Pulse3b		(see Fig.3 for recommended circuit)		perf. Criteria A	

Characteristic Curve


Design Reference (Figure 1)

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.



Vout (VDC)	Cin	Cout
5	100µF/63V	100µF/16V
12/15		100µF/35V
24		47µF/35V

2. EMC compliance circuit

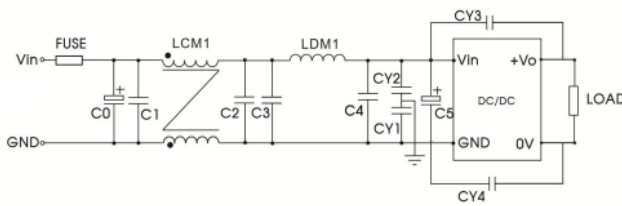


Fig. 3

Parameter description:

Model	Vin:24VDC
FUSE	Choose according to actual input current
C0	680µF/63V
C1/C2/C3/ C4	10µF/100V
LCM1	1mH(FL2D-10-102)
LDM1	4.7µH/3.1A
C5	82µF/100V
CY1/CY2	100pF/400VAC
CY3/CY4	2200pF/400VAC

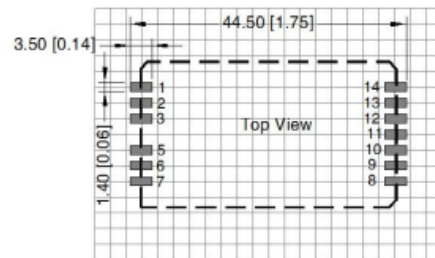
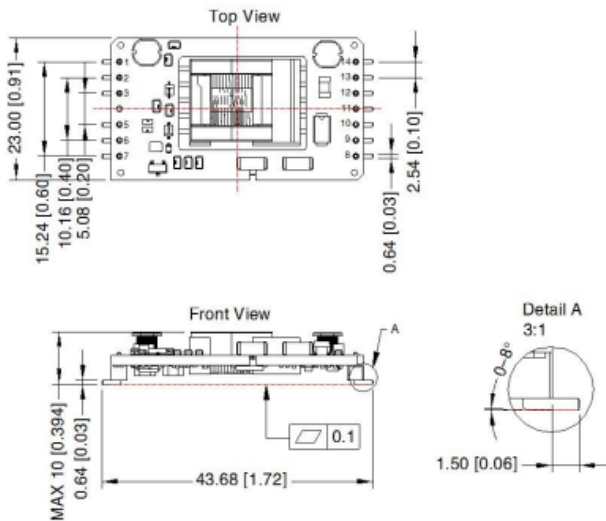
The products do not support parallel connection of their output

DC - DC

Dimensions and Recommended Layout

36CUWF24_JT-3WR3

THIRD ANGLE PROJECTION

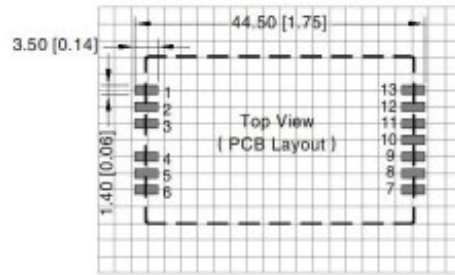
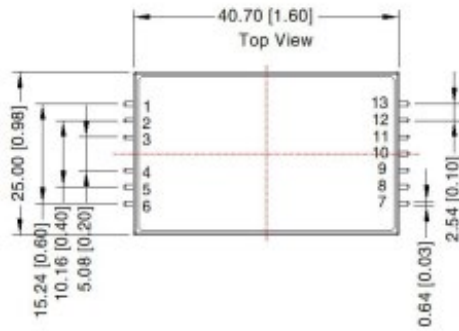


Note: Grid 2.54*2.54mm

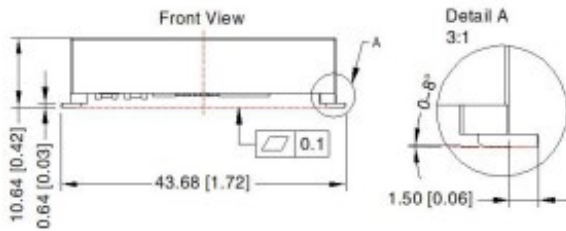
Note:
Unit: mm[inch]
Pin diameter tolerances: $\pm 0.10[\pm 0.004]$
General tolerances: $\pm 0.50[\pm 0.020]$

Pin-Out			
Pin	Mark	Pin	Mark
1	Vin	9	NC
2	Vin	10	-Vo
3	Vin	11	-Vo
5	GND	12	NC
6	GND	13	+Vo
7	GND	14	+Vo
8	NC		

NC: Pin to be isolated circuitry

Dimensions and Recommended Layout
36CUWF24_JYT-3WR3


Note: Grid 2.54*2.54mm



Note:
 Unit: mm[inch]
 Pin diameter tolerances: $\pm 0.10 [\pm 0.004]$
 General tolerances: $\pm 0.50 [\pm 0.020]$

Pin-Out			
Pin	Mark	Pin	Mark
1	Vin	8	NC
2	Vin	9	-Vo
3	Vin	10	-Vo
4	GND	11	NC
5	GND	12	+Vo
6	GND	13	+Vo
7	NC		

NC: Pin to be isolated circuitry

Notes:

 For additional information on Product Packaging please refer to www.idealpower.com.

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 $T_a=25^\circ\text{C}$, 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.