DC – DC

Features

- Automotive input voltage range
- High efficiency up to 85%
- No-load power consumption as low as 0.06W
- I/O isolation test voltage 1.5k VDC
- Input UVP, Output SCP, OCP, OVP
- Operating ambient temperature range: -40℃ to +105℃
- EMI meets automotive standards EN55025/CISPR 25
- Industry standard pin-out
- Production process meets IATF16949
- EN62368-1 approved

Ideal Power's 36CUWB12-YMD-6WR3 6W Isolated DC/DC Converter (DIP) Series are certified to UKCA, CE, RoHS & EN 62368-1/IEC 62368-1/UL 62368-1 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			Full Load	Capacitive
	Nominal (Range)	Max. ①	Voltage (VDC)	Current (mA) Max./Min.		Efficiency ② (%) Min./Typ.	Load (μF)Max.
36CUWB1203YMD-6WR3	12 (4.5-36)	40	3.3	900/0	1500/0	77/79	1800
36CUWB1205YMD-6WR3			5	720/0	1200/0	81/83	1000
36CUWB1212YMD-6WR3			12	300/0	500/0	83/85	470
36CUWB1215YMD-6WR3			15	240/0	400/0	83/85	220
36CUWB1224YMD-6WR3			24	150/0	250/0	83/85	100

Notes:

1. Absolute maximum stress rating without damage (not recommended).
2. We suggest connecting an external electrolytic capacitor if there is a spike voltage at the input, details please refer to typical application circuit.

Input Specifications

	Conditions		Min	Typ	Max	Unit
Input Current (full load / no-load)	12VDC nominal input series, nominal input voltage	3.3V output	--	522/5	536/12	mA
		5V, 12V, 15V output	--	602/5	617/12	
		24V output	--	588/10	602/15	
Reflected Ripple Current	Nominal input voltage		--	20	--	
Surge Voltage (1sec. max.)	12VDC nominal input series		-0.7	--	50	VDC
Start-up Voltage	12VDC nominal input series		--	--	4.5	
Under-voltage Protection	12VDC nominal input series		3	3.5	--	
Input Filter				Pi filter		
Hot Plug				Unavailable		

Output Specifications

	Conditions		Min	Typ	Max	Unit
Voltage Accuracy	0%-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, nominal input voltage	3.3V / 5V output	--	±5	±8	%
		Others	--	±3	±5	
Temperature Coefficient	Full load		--	--	±0.03	%/℃
Ripple & Noise*	20MHz bandwidth, 5%-100% load		--	60	85	mVp-p
Over-voltage Protection	Input voltage range		110	--	160	%Vo
Over-current Protection	Input voltage range	4.5≤Vin＜24	110	185	260	%Io
		24≤Vin≤36	190	245	300	
Short-circuit Protection	Input voltage range		Continuous, self-recovery			

Note:

1. When testing from 0% -100% load working conditions, load regulation index is ±5%.
2. The “parallel cable” method is used for ripple and noise test, please refer to DC-DC Converter Application Notes for specific information. Ripple & Noise at <5% load is 5%Vo max.
3. Over-current protection all tested at full load with input range of 6V-36V.

General Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Isolation	Input-output Electric Strength Test for 1 minute with a leakage current of 1mA max.	1500	--	--	V DC
	Input-case Electric Strength Test for 1 minute with a leakage current of 1mA max.	1000	--	--	
	Output-case Electric Strength Test for 1 minute with a leakage current of 1mA max.	1000	--	--	
Insulation Resistance	Input-output resistance at 500VDC	100	--	--	MΩ
Isolation Capacitance	Input-output capacitance at 100KHz/0.1V	--	1000	--	pF
Operating Temperature	See Fig. 1	-40	--	+105	
Storage Temperature		5	--	95	
Storage Humidity	Non-condensing	-55	--	+125	%RH
Pin Soldering Resistance Temperature	Soldering spot is 1.5mm away from case for 10 seconds	--	--	+300	℃
Vibration		10-1000Hz, 10G, 1.0mm, 2h			
Switching Frequency *	PWM mode	--	270	--	KHz
MTBF	MIL-HDBK-217F@25℃	1000	--	--	K hours

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	Aluminum alloy
Dimensions	25.40 x 25.40 x 11.70 mm
Weight	14.0g (Typ.)
Cooling method	Free air convection

DC – DC

Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032	CLASS A (without external components)	
		CISPR25/EN55025	CLASS 3 (see Fig.3-② for recommended circuit)	
	RE	CISPR32/EN55032	CLASS A (without external components)	
		CISPR25/EN55025	CLASS 3 (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.3-①for recommended circuit)	perf. Criteria B
	CS	IEC/EN61000-4-6	10 Vr.m.s	perf. Criteria A

Characteristic Curve

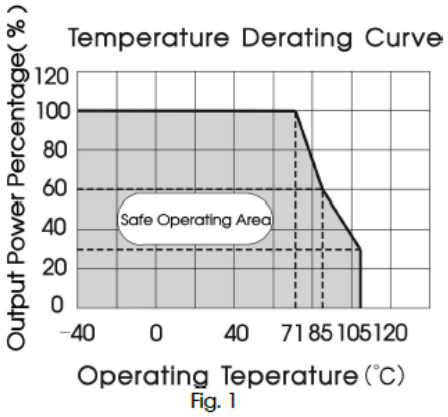
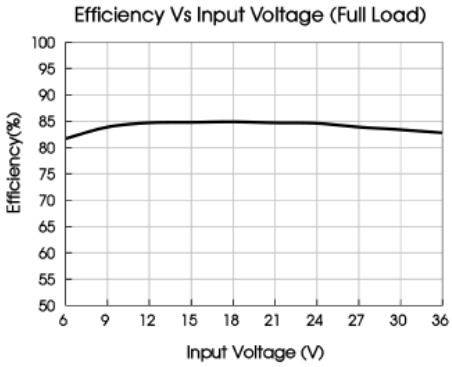
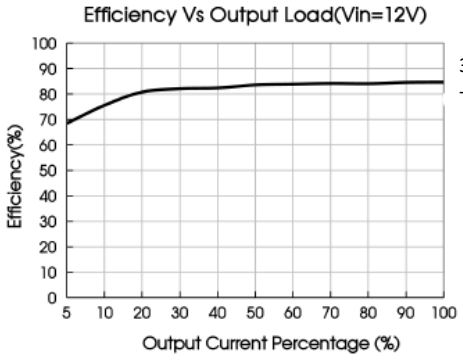


Fig. 1



36CUWB1205YMD -6WR3



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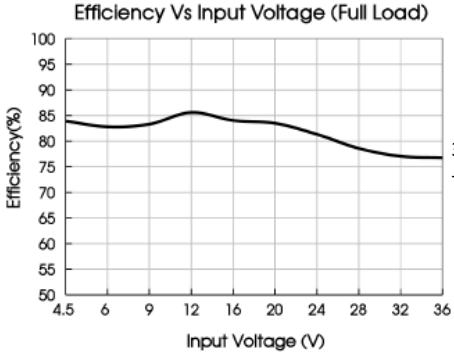

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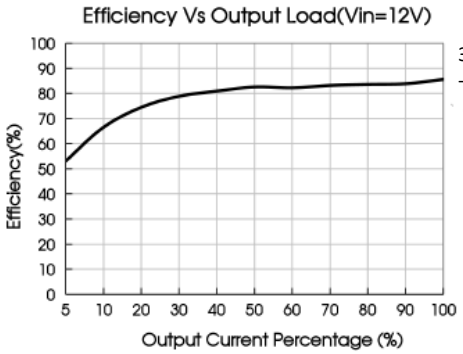


36CUWB1205YMD -6WR3

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 Cin and Cout 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.

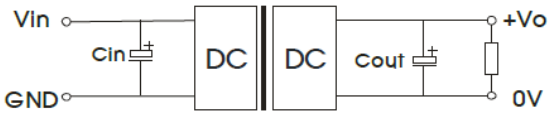


Fig. 2

Vin(VDC)	Cin(μF)	Cout(μF)
12	100	10

2. EMC compliance recommended circuit

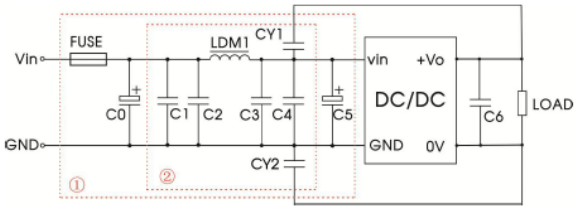


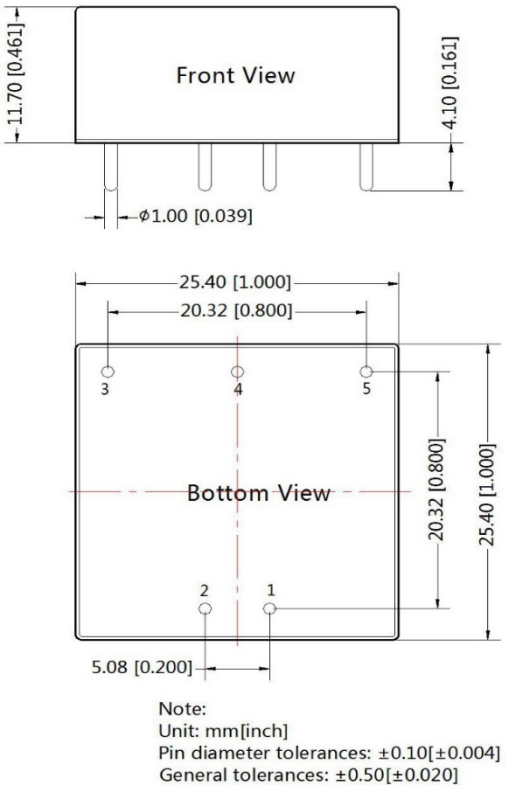
Fig. 3

Note: We use Part ① in Fig. 3 for EMC tests and part ② for emissions test. Selecting based on needs.

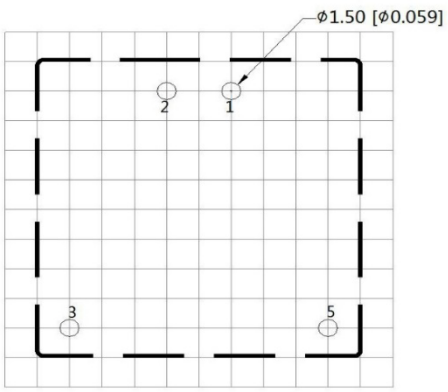
Parameter description:

Model	Vin:12V
FUSE	Select FUSE value according to actual input current
C0, C5	470μF/50V
C1, C2, C3, C4	10μF/50V
C6	Refer to the Cout in Fig.2
LDM1	10μH
CY1, CY2	1nF/2KV

Dimensions and Recommended Layout



Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.50[±0.020]



Note:Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	GND
2	Vin
3	+Vo
4	No Pin
5	0V

1102001014-B0

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.