

## Features

- Ultra-wide 90 - 305V AC or 100 - 430V DC input voltage range
- Accepts AC and/or DC input (Dual-use of same terminal)
- Operating Temperature Range: -40~+85°c
- Approved to CE, RoHS
- Safety Standards to IEC/UL/EN62368-1 IEC/EN60335-1 & IEC/EN61558-1
- Efficiency up to 78%
- EMC Class A & B
- Single output 3.3~24V DC



Ideal Power's 36LD03-23Bxx-R2P 3W Encapsulated PCB Mount AC/DC Power Supply Converter Series are certified to UKCA, CE, RoHS & IEC/EN/UL62368/EN60335/EN61558 Standards and comply with the relevant Efficiency Regulations. These are primarily used in ITE, Audio & Video Industries and customised solutions are available upon request.

## Models

Model Number	Output Power	Output Voltage and Current (Vo/Io) Nominal	Efficiency at 230V AC (%) Typ	Capacitive Load (µF) Max
36LD03-23B03R2P	2W	3.3V/600mA	70	1500
36LD03-23B05R2P	3W	5V/600mA	74	1500
36LD03-23B09R2P	3W	9V/340mA	76	300
36LD03-23B12R2P	3W	12V/250mA	77	300
36LD03-23B15R2P	3W	15V/200mA	78	300
36LD03-23B24R2P	3W	24V/200mA	78	200

## Input Specifications

	Conditions	Min	Typ	Max	Unit
Input voltage range	AC input	85		305	VAC
	DC input	100		430	VDC
Input frequency		47		63	Hz
Input current	115V AC			0.13	A
	230V AC			0.07	
Inrush current	115V AC		15		A
	230V AC		25		
Leakage current	277V AC/50Hz		0.25mA RMS Max		
Recommended External Input Fuse (Special package series include fuse)		1A, slow-blow, required (The actual use needs to be selected according to the application)			
Hot Plug		Unavailable			

**Output Specifications**

Parameter	Conditions	Min	Typ	Max	Unit	
Output voltage accuracy			±5		%	
Line regulation	Full load		±1.5		%	
Load regulation	10% - 100% load		±3		%	
Ripple and Noise*	20MHz bandwidth (peak to peak value)	3.3V/5V/9V/12V	230V AC input		100	mV
	10%-100% load		Others		120	
		15V/24V			200	
Temperature coefficient			±0.15		%/°C	
Stand-by power consumption	230V AC		0.10	0.15		
Short circuit protection		Hiccup, continuous, self-recovery				
Over current protection		≥ 110%Io, self-recovery				
Minimum load		10			%	
Hold up time	230V AC		30		ms	

**Note:** 1. \*The "Tip and barrel method" is used for ripple and noise test, output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor, please refer to AC-DC Converter Application Notes for specific information.

2. The product can work with 0%-10% load and with stable output.

**General Specifications**

Parameter	Conditions	Min	Typ	Max	Unit
Isolation test	Test for 1min Input-Output	3600			V AC
Operating Temperature		-40		+85	°C
Storage Temperature		-40		+105	°C
Storage Humidity				+95	%RH
Soldering Temperature	Wave-soldering	260 ± 5°C; time: 5 - 10s			
	Manual-welding	360 ± 10°C; time: 3 - 5s			
Power Derating	-40°C to -25°C	1.33			% / °C
	+70°C to +85°C	3.3V/5V/9V/12V	4.0		
	+65°C to +75°C	12V/24V	5.0		
	+75°C to +85°C	15V/24V	1.0		
	85V AC – 100V AC	-25°C to +85°C	1.33		
	85V AC – 115V AC	-40°C to -25°C	2.0		% / V AC
	277V AC – 305V AC	0.71			
Safety Standard		IEC/EN/UL62368-1, IEC/EN60335-1, IEC/EN61558-1			
Safety Class		Class II			
MTBF		MIL-HDBK-217F@25°C ≥ 300,000 h			

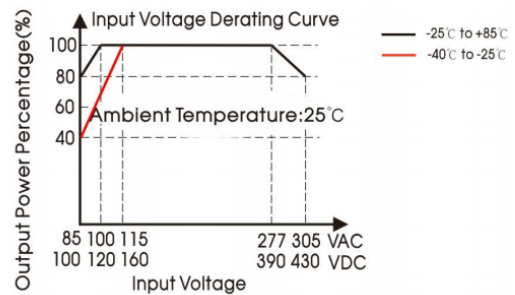
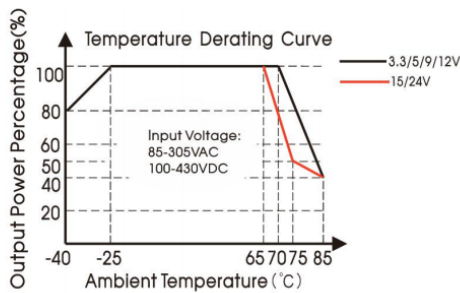
**Mechanical Specifications**

Case material	Black plastic, flame-retardant and heat-resistant (UL94 V-0)
Dimension	37.5 x 18.5 x 13.6mm
Weight	14.5g (Typ.)
Cooling method	Free air convection

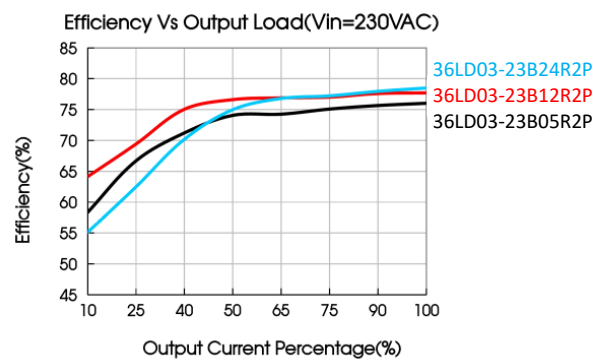
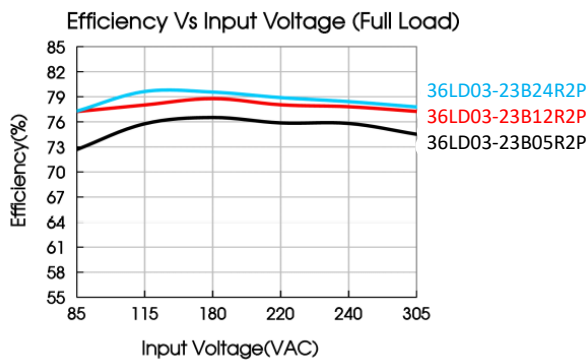
## Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS A	
		CISPR32/EN55032 CLASS B (See Fig. 2 for recommended circuit)	
		CISPR32/EN55032 CLASS A	
	RE	CISPR32/EN55032 CLASS B (See Fig. 2 for recommended circuit)	
Immunity	ESD	IEC/EN 61000-4-2 Contact $\pm 6\text{KV}$ /Air $\pm 8\text{K}$	Perf. Criteria B
	RS	IEC/EN 61000-4-3 10V/m	Perf. Criteria A
	EFT	IEC/EN 61000-4-4 $\pm 2\text{KV}$ (See Fig.1 for typical application circuit)	Perf. Criteria B
		IEC/EN 61000-4-4 $\pm 4\text{KV}$ (See Fig. 2,3 for recommended circuit)	Perf. Criteria B
	Surge	IEC/EN 61000-4-5 line to line $\pm 1\text{kV}$ (See Fig.1 for typical application circuit)	Perf. Criteria B
		IEC/EN 61000-4-5 line to line $\pm 2\text{Kv}$ (See Fig.3 for recommended circuit)	Perf. Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s	Perf. Criteria A
Voltage dips, short interruptions, and voltage variations immunity		IEC/EN61000-4-11 0%, 70%	Perf. Criteria B

## Characteristic Curve

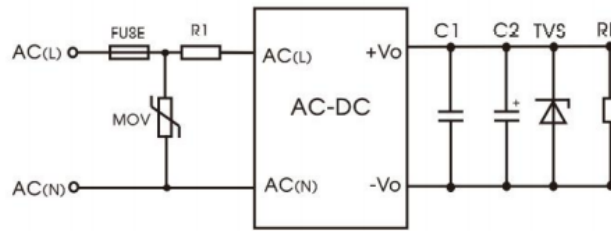


Note: ① With an AC input between 85-100V(115V)/277-305VAC and a DC input between 100-120V(160V)/390-430VDC, the output power must be derated as per temperature derating curves;  
 ② This product is suitable for applications using natural air cooling;



**Design Reference (Figure 1)**

## 1. Typical application circuit

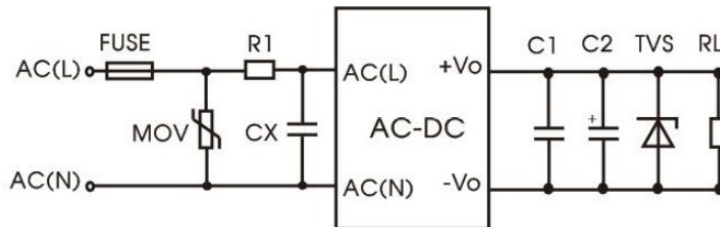


Element Model	MOV1	C1 $\mu\text{F}$	C2 $\mu\text{F}$	Fuse	R1 (Wire-wound resistor required)	TVS
36LD03-23B03R2P	S10K350	1	150	1A/300V, slow blow required	24 $\Omega$ / 5W	SMBJ7.0A
36LD03-23B05R2P	S10K350	1	150			SMBJ7.0A
36LD03-23B09R2P	S10K350	1	120			SMBJ12A
36LD03-23B12R2P	S10K350	1	120			SMBJ20A
36LD03-23B15R2P	S10K350	1	120			SMBJ20A
36LD03-23B24R2P	S10K350	1	68			SMBJ30A

**Note:** Output filtering capacitor C2 is electrolytic capacitor, it is recommended to apply electrolytic capacitor with high frequency and low resistance. For capacitance and current of capacitor please refer to manufacture's datasheet. Capacitor voltage reduced to at least 80%. C1 is ceramic capacitor, which is used to filter high-frequency noise. TVS is a recommended component to protect post-circuits if converter fails.

**Design Reference (Figure 2)**

## 2. EMC compliance recommended circuit

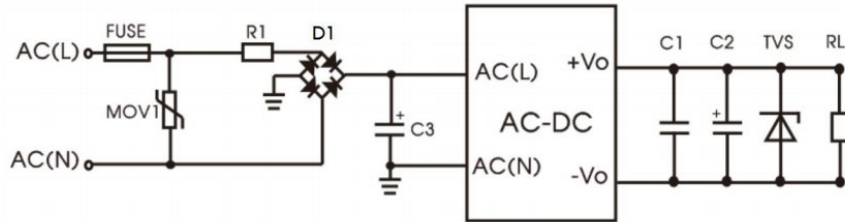


EMC application circuit with higher requirements

Element Model	Component Values
MOV	S10K350
R1 (Wire-wound resistor required)	24 $\Omega$ / 5W
FUSE	2A/300V, slow-blow required.
CX	0.1 $\mu\text{F}$ /400VAC

## Design Reference (Figure 3)

- EMC application circuit with higher requirements

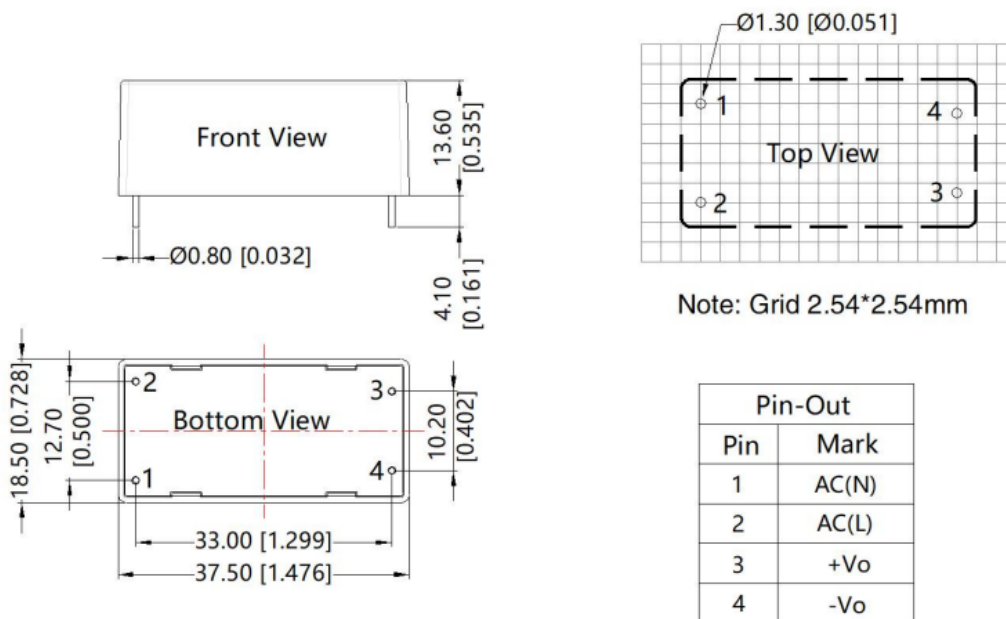


EMC application circuit with higher requirements

Element Model	Component Values
MOV1	S14K350
R1 (Wire-wound resistor required)	24Ω / 5W
FUSE	2A/300V, slow-blow required.
D1	1000V/1A
C3	0.1uF/450VAC

## Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note: Grid 2.54\*2.54mm

Pin-Out	
Pin	Mark
1	AC(N)
2	AC(L)
3	+Vo
4	-Vo

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

**Notes:**

1. For additional information on Product Packaging please refer to [www.Idealpower.co.uk](http://www.Idealpower.co.uk). Packaging bag number: 58200055.
2. If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet.
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , humidity<7% with nominal input voltage and rated output load.
4. All index testing methods in this datasheet are based on our company corporate standards.
5. We can provide product customization service, please contact our technicians directly for specific information.
6. Products are related to laws and regulations: see "Features" and "EMC".
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.