36LD03-23BxxR2 AC-DC Converter Series

Up to 3Watt

Features

- Ultra-wide 85 - 305VAC and 100 - 430VDC input voltage range
- 1 × 1-inch compact size
- Operating ambient temperature range: -40℃ to +85℃
- Up to 78% efficiency
- No-load power consumption 0.1W
- 5000m altitude application
- Plastic case meets UL94V-0 flammability
- EMI performance meets CISPR32/EN55032 CLASS B, EN55014

Ideal Power's 36LD03-23BxxR2 3W AC/DC Power Supply Converter Series are certified to cURus, UKCA, CB, CE, RoHS, REACH & EN 62368-1/IEC 62368-1/UL 62368-1/EN 60335/EN 61558-2-16 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
36LD03-23B03R2	3W	3.3V/900mA	71	4000
36LD03-23B05R2	3W	5V/600mA	75	3000
36LD03-23B09R2	3W	9V/333mA	77	1200
36LD03-23B12R2	3W	12V/250mA	77	1200
36LD03-23B15R2	3W	15V/200mA	78	680
36LD03-23B24R2	3W	24V/125mA	78	220

Note: * Use suffix ”A2S” for chassis and suffix ”A4S” for DIN-Rail mounting.

Input Specifications

	Conditions	Min	Typ	Max	Unit
Input voltage range	AC input DC input	85 100		305 430	VAC VDC
Input frequency		47		63	Hz
Input current	115V AC 230V AC			0.08 0.06	A
Inrush current	115V AC 230V AC		15 25		A
Leakage current	277V AC/50Hz		0.25mA RMS typ.		
Recommended External Input Fuse			1A, slow blow, required (The actual use needs to be selected according to the application environment)		
Hot Plug			Unavailable		

AC – DC

Output Specifications

Parameter	Conditions	Min	Typ	Max	Unit
Output voltage accuracy	3.3V output Others		±3 ±2		%
Line regulation	Full load		±0.5		%
Load regulation	10% - 100% load		±1		%
Ripple and Noise*	20MHz bandwidth (peak to peak value)		50	100	mV
Temperature coefficient			±0.2		%/℃
Stand-by power consumption	230V AC Input		±0.10		W
Short circuit protection		Hiccup, continuous, self-recovery			
Over current protection		150 - 300%Io, self-recovery			
Over voltage protection	3.3/5V DC output		≤7.5V DC		
	95V DC output		≤15V DC		
	12V DC output		≤16V DC		
	15V DC output		≤20V DC		
	24V DC output		≤30V DC		
Minimum load		0			%
Hold up time	115V AC 230V AC		5 50		ms

Note: *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.

General Specifications

Parameter	Conditions		Min	Typ	Max	Unit
Isolation test - Input-Output	Electric Strength Test for 1min, leakage and current <5mA		4000			V AC
Operating Temperature			-40		+85	℃
Storage Temperature			-40		+105	℃
Storage Humidity					+95	%RH
Soldering Temperature	Wave-soldering Manual-welding			260 ± 5℃; time: 5 - 10s 360 ±10℃; time: 3 - 5s		
Switching Frequency				65		kHz
Power Derating	+70℃ ~ +85℃	3.3V Others	2.33 1.33			%/℃
	85V AC – 1000V AC		1.33			
Altitude					5000	m
Safety Standard			IEC62368/UL62368/EN62368			
Safety Certification			IEC62368/UL62368/EN62368			
Safety Class			Class II			
MTBF			MIL-HDBK-217F@25℃≥ 300,000 h			
Designed Life	230V AC	Ta: 25℃ 100% load Ta: 25℃ 100% load	＞150x10 3 h ＞27x10 3 h			

Mechanical Specifications

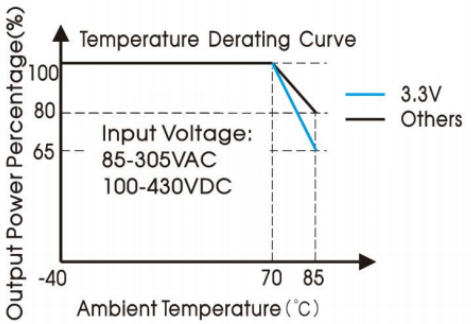
Case material			Black plastic, flame-retardant and heat-resistant (UL94 V-0)
Dimension	Horizontal package		25.40 x 25.40 x 17.60 mm
Weight	Horizontal package	3.3V/5V/9V/12V 15V/24V	18.0g (Typ. 18.5g (Typ.
Cooling method			Free air convection

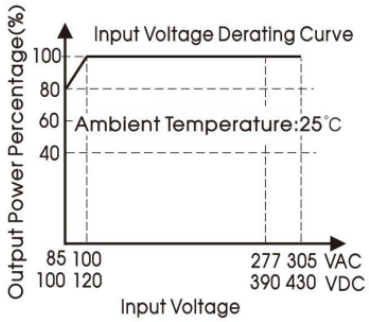
AC – DC

Electromagnetic Compatibility (EMC)

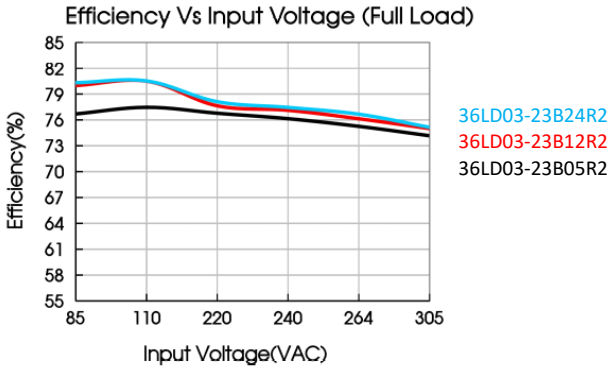
Emissions	CE	CISPR32/EN55032 CLASS B	
		EN55014-1	
	RE	CISPR32/EN55032 CLASS B	
		EN55014-1	
Immunity	ESD	IEC/EN 61000-4-2 Contact ±6KV/Air ±8K	Perf. Criteria B
		EN55014-2	Perf. Criteria B
	RS	IEC/EN 61000-4-3 10V/m	Perf. Criteria A
		EN55014-2	Perf. Criteria A
	EFT	IEC/EN 61000-4-4 10V/m (See Fig. 1 for typical application circuit)	Perf. Criteria B
		IEC/EN 61000-4-4 ±4KV (See Fig. 2 for recommended circuit)	Perf. Criteria B
		EN55014-2	Perf. Criteria B
	Surge	IEC/EN 61000-4-5 line to line ± 1kV (See Fig. 1 for typical application circuit)	Perf. Criteria B
		IEC/EN 61000-4-5 line to line ± 2kV (See Fig. 2 for recommended circuit)	Perf. Criteria B
		EN55014-2	Perf. Criteria B
	CS	IEC/EN61000-4-6 3Vr.m.s	Perf. Criteria A
		EN55014-2	Perf. Criteria A
	Voltage dips, short interruptions and voltage variations immunity	IEC/EN61000-4-11 0%, 70%	Perf. Criteria B
		EN55014-2	Perf. Criteria B

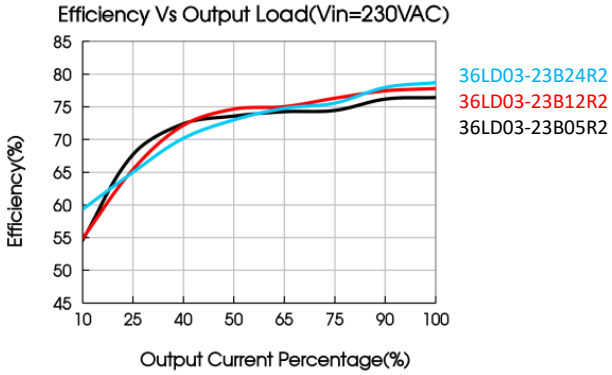
Characteristic Curve





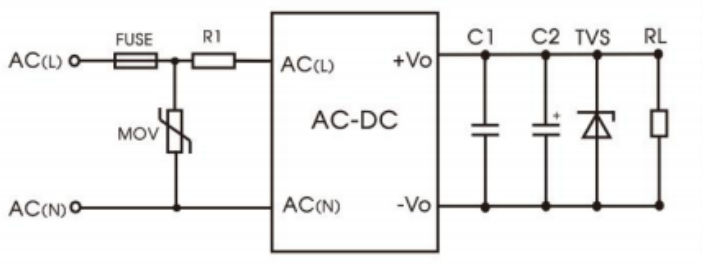
Note: ① With an AC input between 85-100V/ a DC input between 100-120VDC, the output power must be derated as per temperature derating curves;
② This product is suitable for applications using natural air cooling





Design Reference (Figure 1)

1. Typical application



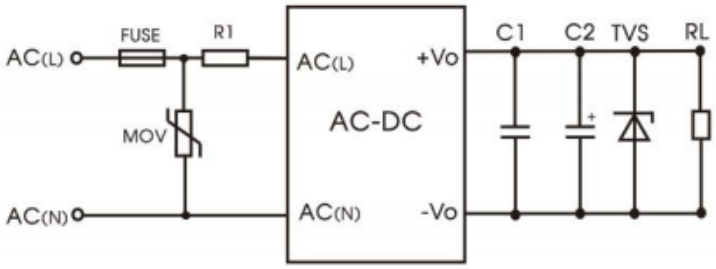
Element Model	MOV1	C1	C2	Fuse	TVS
36LD03-23B03R2	S10K350	1µF	150µF	A/300V, slow blow required	SMBJ7.0A
36LD03-23B05R2	S10K350	1µF	150µF		SMBJ7.0A
36LD03-23B09R2	S10K350	1µF	120µF		SMBJ12A
36LD03-23B12R2	S10K350	1µF	120µF		SMBJ20A
36LD03-23B15R2	S10K350	1µF	120µF		SMBJ20A
36LD03-23B24R2	S10K350	1µF	68µF		SMBJ30A

Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). Choose a capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

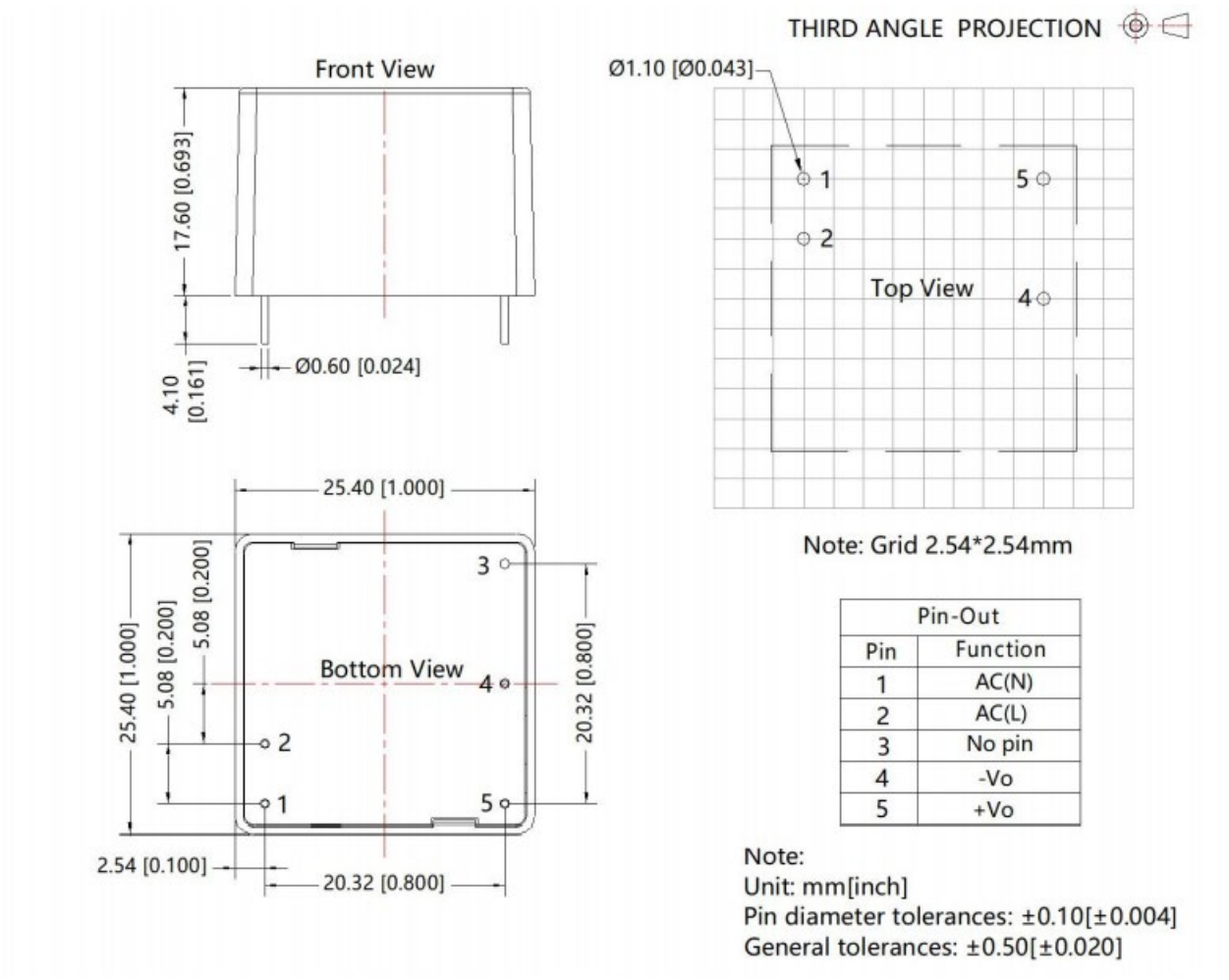
Design Reference (Figure 2)

2. EMC compliance recommended circuit



Element Model	Component Values
MOV	S14K350
R1	33Ω/3W
FUSE	2A/300V, slow blow required.

Dimensions and Recommended Layout



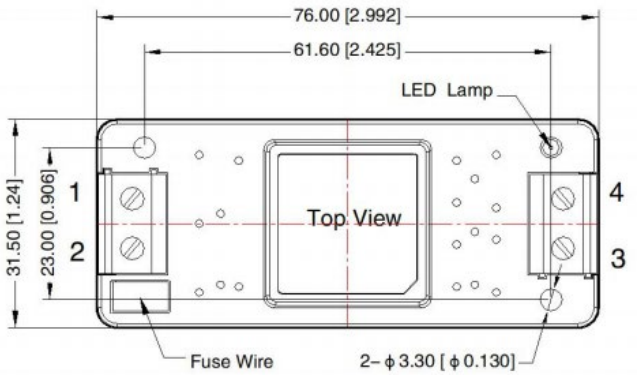
Note: Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	AC(N)
2	AC(L)
3	No pin
4	-Vo
5	+Vo

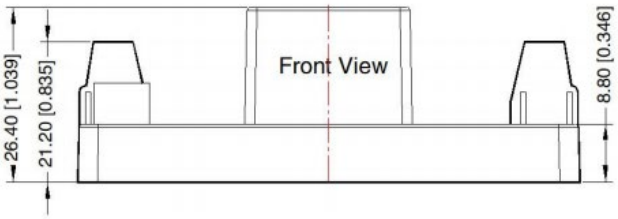
Note:
Unit: mm[inch]
Pin diameter tolerances: ±0.10[±0.004]
General tolerances: ±0.50[±0.020]

A2S Dimensions

THIRD ANGLE PROJECTION



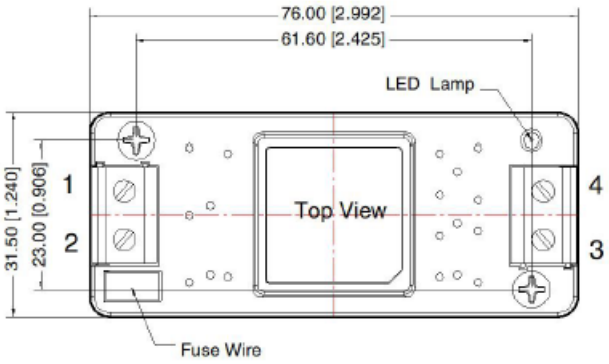
Pin–Out	
Pin	Function
1	AC(N)
2	AC(L)
3	–Vo
4	+Vo



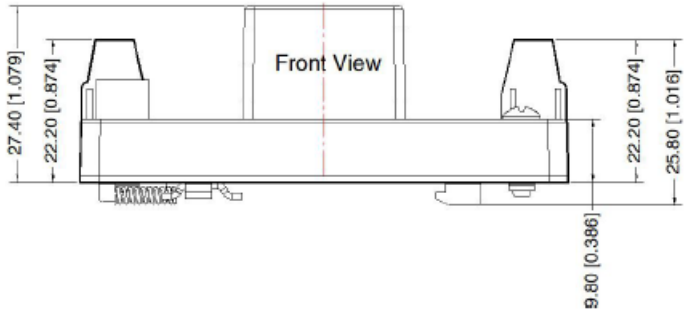
Note:
Unit: mm[inch]
Wire range: 24–12 AWG
Tightening torque: Max 0.4 N·m
General tolerances: ± 1.00[± 0.039]

A4S Dimensions

THIRD ANGLE PROJECTION



Pin–Out	
Pin	Function
1	AC(N)
2	AC(L)
3	–Vo
4	+Vo



Note:
Unit: mm[inch]
Wire range: 24–12 AWG
Tightening torque: Max 0.4 N·m
Mounting rail: TS35, rail needs to connect safety ground
General tolerances: ± 1.00[± 0.039]

Notes:

1. For additional information on Product Packaging please refer to www.Idealpower.co.uk. Packaging bag number: 58220003(DIP package); 58220022 (A2S/A4S package).
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 Ta=25℃, humidity <75% with nominal input voltage.
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.