36LDE05-20Bxx-A4S AC-DC Converter Series

Up to 5Watt

Features

- Ultra-wide 85 - 264V AC and 100 - 370V DC input voltage range
- Accepts AC and/or DC input (dual-use of same terminal)
- Operating Temperature Range: -40~+70°c
- Approved to cURus, CE, RoHS
- Safety Standards to IEC/UL/EN62368-1
- Efficiency up to 78%
- EMC Class A & B
- Single output 3.3~24V DC

Ideal Power's 36LDE05-20Bxx-A4S 5W DIN Rail Mount AC/DC Power Supply Converter Series are certified to cRUus, 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
36LDE05-20B03-A4S	5W	3.3V/1000mA	68	5000
36LDE05-20B05-A4S	5W	5V/1000mA	75	5000
36LDE05-20B09-A4S	5W	9V/560mA	77	1200
36LDE05-20B12-A4S	5W	12V/420mA	79	1200
36LDE05-20B15-A4S	5W	15V/330mA	79	1000
36LDE05-20B24-A4S	5W	24V/210mA	81	330

Input Specifications

	Conditions	Min	Typ	Max	Unit
Input voltage range	AC input DC input	85 100		264 370	VAC VDC
Input frequency		47		63	Hz
Input current	115V AC 230V AC			130 70	A
Inrush current	115V AC 230V AC		10 20		A
Leakage current	230V AC/50Hz		0.25mA RMS typ.		
Recommended External Input Fuse			1A/250V, Slow blow, required		
Hot Plug			Unavailable		

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		%/°C
Short circuit protection			Hiccup, continuous, self-recovery		
Over current protection			≥ 120%Io, self-recovery		
Over voltage protection	3.3/5V DC output		≤7.5V DC		
	9V DC output		≤15V DC		
	12/15V DC output		≤20V DC		
	24V DC output		≤30V DC		
Minimum load		0			%
Hold up time	115V AC 230V AC		5 50		ms

Note: * The "parallel cable" method is used for Ripple and noise test, 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 current <5mA)	4000			V AC
Operating Temperature		-40		+70	°C
Storage Temperature		-40		+105	°C
Storage Humidity				95	%RH
Soldering Temperature	Wave-soldering Manual-welding		260 ± 5°C; time: 5 - 10s 360 ±10°C; time: 3 - 5s		
Switching Frequency			100		kHz
Power Derating	-40°C to 0°C +55°C to +70°C	1.13 3.0			°C
	85 – 100V SC	1.0			%/V AC
Safety Standard		IEC/EN/UL62368			
Safety Certification		IEC/EN/UL62368			
Safety Class		Class II			
MTBF		MIL-HDBK-217F@25°C≥ 2602,000 h			

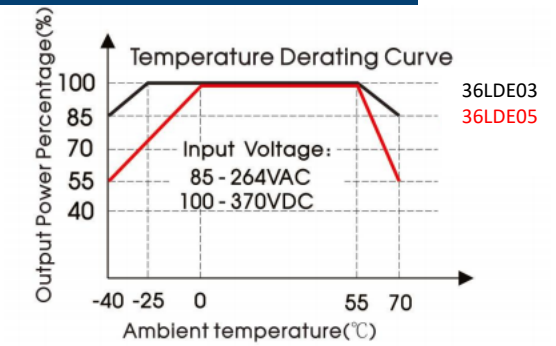
Mechanical Specifications

Case material		Black plastic, flame-retardant and heat-resistant (UL94 V-0)
Dimension	A4S Dip Rail Mounting	76 x 31.5 x 31.4mm
Weight	A4S Dip Rail Mounting	69g (Typ.
Cooling method		Free air convection

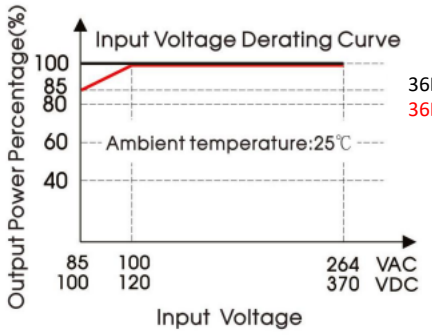
Electromagnetic Compatibility (EMC)

Emissions	CE	CISPR32/EN55032 CLASS A	
		CISPR32/EN55032 CLASS B (See Fig. 2 for recommended circuit)	
	RE	CISPR32/EN55032 CLASS A	
		CISPR32/EN55032 CLASS B (See Fig. 2 for recommended circuit)	
Immunity	ESD	IEC/EN 61000-4-2 Contact ±6KV/Air ±8K	Perf. Criteria B
	RS	IEC/EN 61000-4-3 10V/m	Perf. Criteria A
	EFT	IEC/EN 61000-4-4 ±2KV (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
	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 / line to ground ±4 KV (See Fig. 2 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

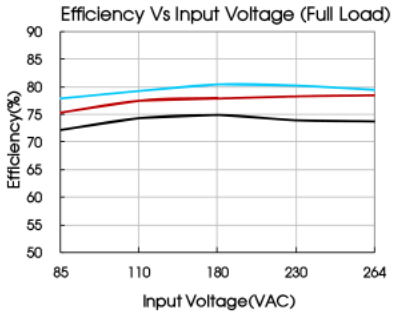


36LDE03
36LDE05



36LDE03
36LDE05

Note:① With an AC input between 85-100VAC and 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;



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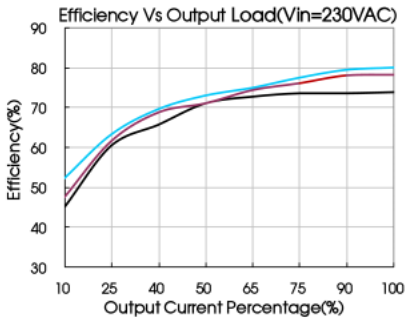
36LD05-23B12R2
36LD05-23B05R2



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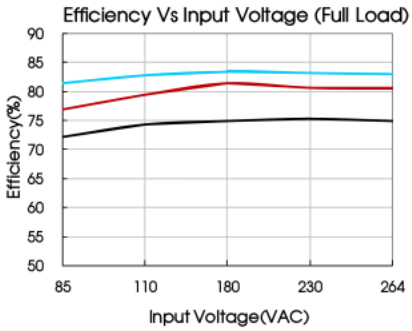

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36LD05-23B12R2
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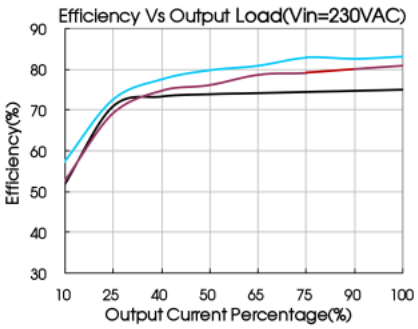
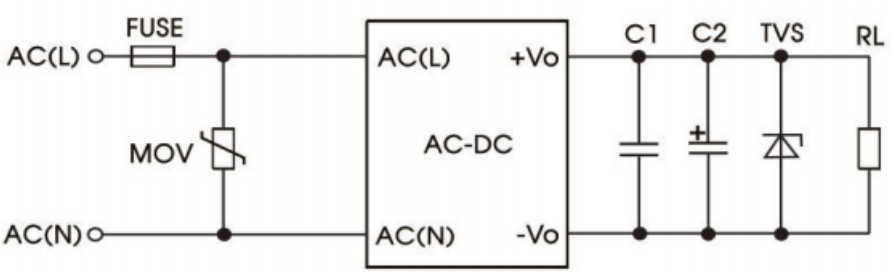


36LD05-23B24R2
36LD05-23B12R2
36LD05-23B05R2

Design Reference (Figure 1)

1. Typical application



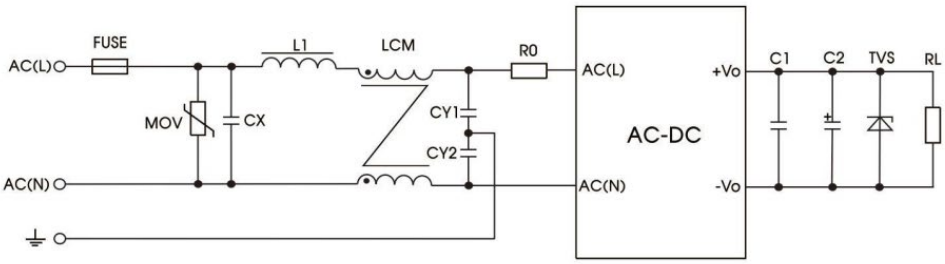
Element Model	MOV1	C1	C2	Fuse	TVS
36LDE05-20B03-A2S	S14K350	1µF	150µF	1A/250V, slow blow required	SMBJ7.0A
36LDE05-20B05-A2S	S14K350	1µF	150µF		SMBJ7.0A
36LDE05-20B09-A2S	S14K350	1µF	120µF		SMBJ12A
36LDE05-20B12-A2S	S14K350	1µF	120µF		SMBJ20A
36LDE05-20B15-A2S	S14K350	1µF	120µF		SMBJ20A
36LDE05-20B24-A2S	S14K350	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.

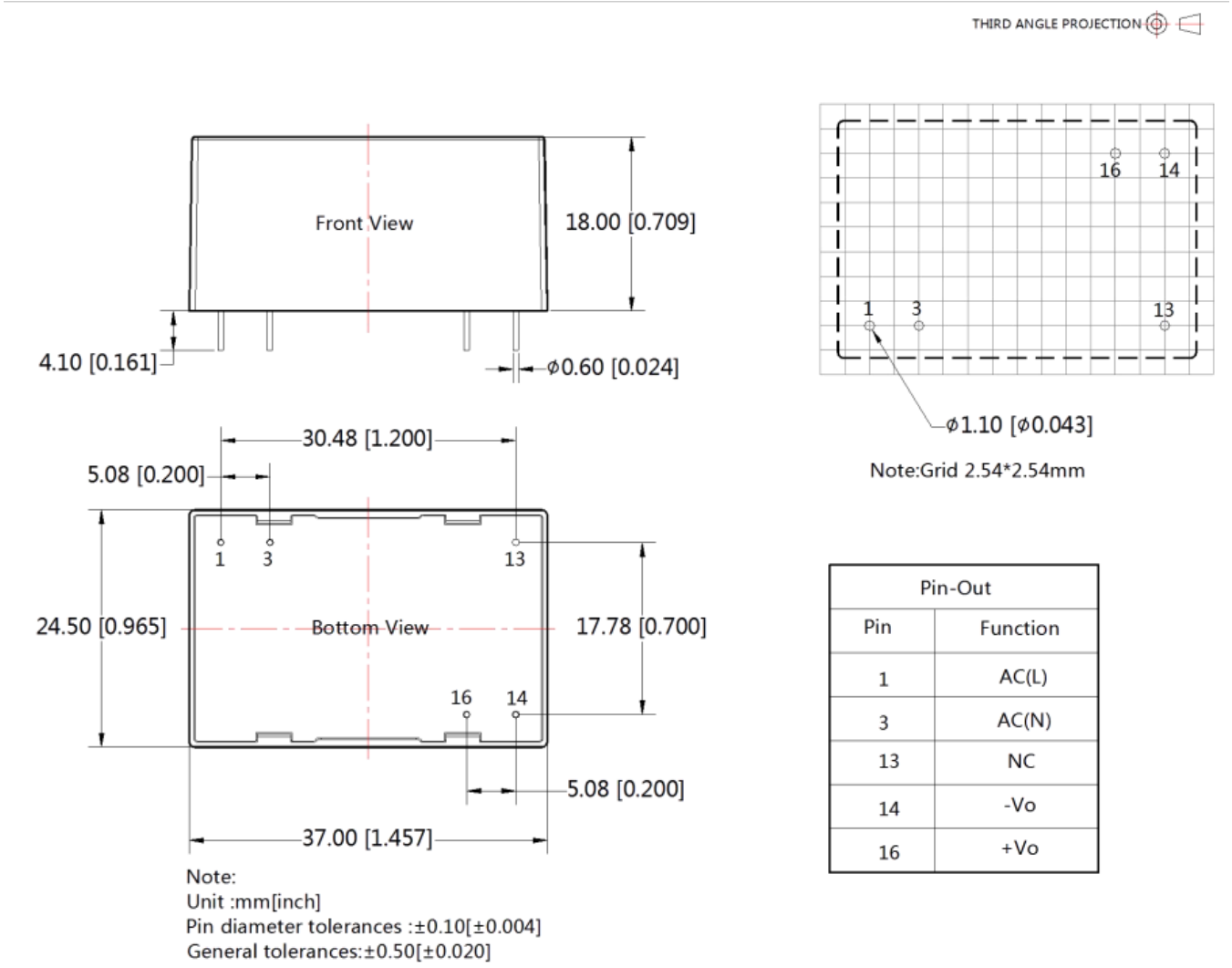
Design Reference (Figure 2)

2. EMC compliance recommended circuit



Element Model	Component Values
MOV	S14K350
CX	0.1µF/275VAC
L1	330uH/2.0A
LCM	10mH - 30mH, recommended to use MORNSUN's FL2D-Z5-103
CY1	1nF/400VAC
CY2	1nF/400VAC
FUSE	2A/250V slow-blow required
R0	33Ω/3W

Dimensions and Recommended Layout

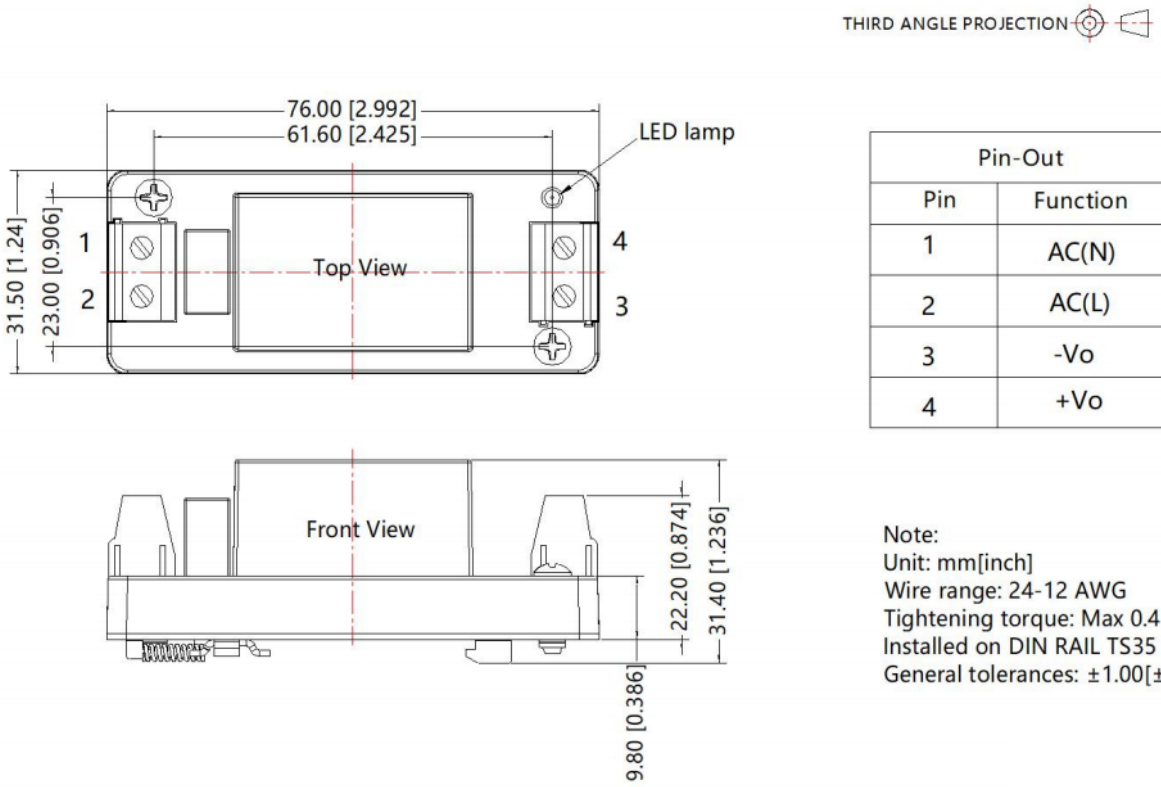


Note:Grid 2.54*2.54mm

Pin-Out	
Pin	Function
1	AC(L)
3	AC(N)
13	NC
14	-Vo
16	+Vo

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

A4S Dimensions



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
Installed on DIN RAIL TS35
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. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25℃, humidity <75% with nominal input voltage.
3. All index testing methods in this datasheet are based on our company corporate standards.
4. We can provide product customization service, please contact our technicians directly for specific information.
5. Products are related to laws and regulations: see "Features" and "EMC".
6. Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.