

FEATURES

- Universal 85 - 305VAC and 100 - 430VDC
- Industry standard footprint
- Efficiency up to 81.5%
- No Load power consumption < 0.1W
- Operating temperature range - 40°C to +85°C
- 5000m altitude operation
- Over-voltage category OVC 111 (meet EN61558)
- EMI performance meets. CISPR32 / EN55032 CLASS B EN55014
- IEC/EN/UL62368-1/EN60335-1 EN61558-1 safety approval

RS PRO PCB mount Switch Mode Power Supplies

2333520, 2333521, 2333522



RS Professionally Approved Products bring to you professional quality parts across all product categories. Our product range has been tested by engineers and provides a comparable quality to the leading brands without paying a premium price

Product Description

AC-DC PCB mount power supply suitable for a wide range of industrial, consumer and telecom instruments and applications. This compact, high efficiency series provides reinforced insulation and excellent EMC performance. The converters are approved to UL62368, EN62368, IEC62368, EN60335 and EN61558 and perform with the CLASS B limits of CISPR32 / EN55032/ EN55014 without external components.

General Specifications

Model	AC-DC 5W power supply
Mounting Type	PCB mount
Package Type	Black plastic, flame-retardant and heat-resistant (UL94V-0)
MTBF	MIL-HDBK-217F@25°C > 2,602,000 h
Applications	Industrial control systems, instrumentation and electrical equipment

RS Item No.	Input Voltage	Output Voltage	Output Current	Output Wattage	Efficiency (Typ)
2333520	85 to 305V ac 100 to 430V dc	+ 5V DC	1A	5W	77.5%
2333521	85 to 305V ac 100 to 430V dc	+ 12V DC	0.416A	5W	80.5%
2333522	85 to 305V ac 100 to 430V dc	+ 24V DC	0.208A	5W	81.5%

Electrical Specifications

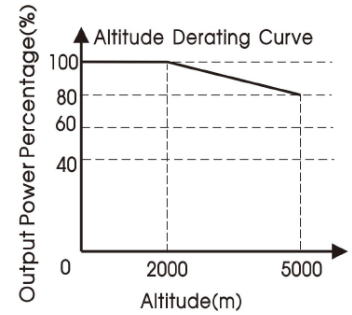
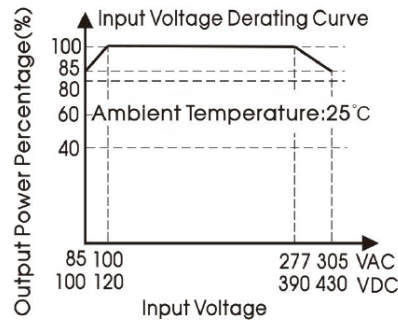
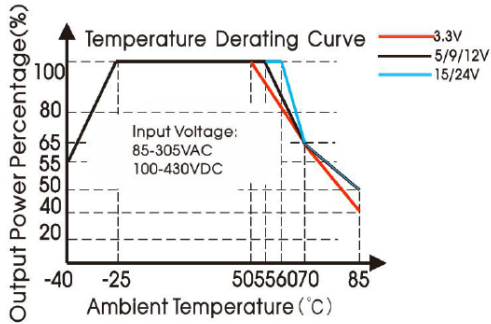
Input Specification	
Voltage Range	85 to 305V ac, 100 to 430V dc
Frequency	47 to 63Hz
AC Current Rating	0.13A/115V ac, 0.07A/230V ac
Inrush Current	15A / 115 ac, 25A / 230V ac
Input Protection	1A/300V, slow-blow, required

Output Specification			
Output voltage	5V	12V	24V
Rated Current	1A	0.416A	0.208A
Ripple & Noise (typ.)	50mVp-p	50mVp-p	50mVp-p
Ripple & Noise (max.)	100mVp-p	100mVp-p	100mVp-p
Rated Power	5W	5W	5W
Max. Capacitive Load	3000uF	1200uF	220uF
Output Voltage Accuracy	±2%	±2%	±2%
Line Regulation typ.	±0.5%	±0.5%	±0.5%
Load Regulation typ.	±1%	±1%	±1%
Minimum Load	0%	0%	0%

Hold Up Time	50ms/230V ac, 5ms/115V ac	
Over Voltage Protection	5VDC	≤7.5VDC (Output voltage clamp or hiccup)
	12VDC	≤16VDC (Output voltage clamp or hiccup)
	24VDC	≤30VDC (Output voltage clamp or hiccup)
Over-current Protection	≥110%Io, self-recovery	
Short Circuit Protection	Hiccup, continuous, self-recovery	
Switching Frequency	65KHz	
Isolation	4KVAC	

Operation Environment Specifications

Storage Humidity	95% RH		
Cooling	Free air convection		
Operating Temperature Range	-40 to 85°C		
Storage Temperature Range	-40 to 105°C		
Power Derating	-40°C to -25°C	3	% / °C
	+55°C to +70°C (5V and 12V)	2.33	
	+60°C to +70°C (24V)	3.5	
	+70°C to +85°C	1	
	85VAC - 100VAC	1	% / VAC
	277VAC - 305VAC	0.54	
	2000m - 5000m	6.7	% / Km



Note: ① With an AC Input between 85-100V/277-305VAC and a DC Input between 100-120V/390-430VDC, the output power must be derated as per temperature derating curves;
 ② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

EMC Specifications

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

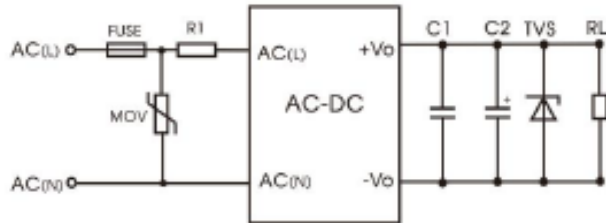


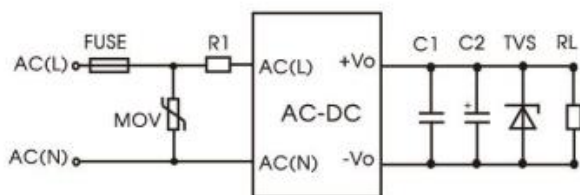
Fig. 1: Typical circuit diagram

RS Item No.	FUSE	MOV	R1	C1(μF)	C2(μF)	TVS
2333520	1A/300V, slow-blow, required	S10K350	12Ω/3W (wire-wound resistor)	1μF/50V	150μF /16V	SMBJ7.0A
2333521					120μF /25V	SMBJ20A
2333522					68μF /35V	SMBJ30A

Output Filter Components:

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.

Fig 2 Recommended circuit compliance IEC/EN61000-4-5 line to line ±2KV



Component	Recommended value
FUSE	2A/300V, slow-blow,
MOV1	S14K350
R1	33Ω/3W (wire-wound resistor)
C1	As above
C2	As above
TVS	As above

Recommended circuit Class I equipment

Fig 3 Recommended circuit for Class I equipment

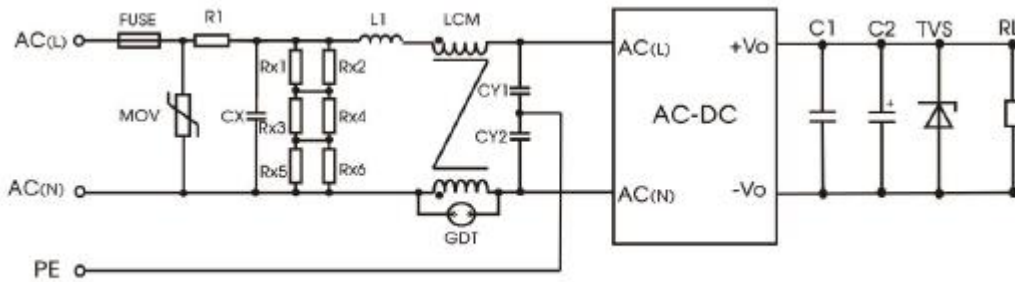


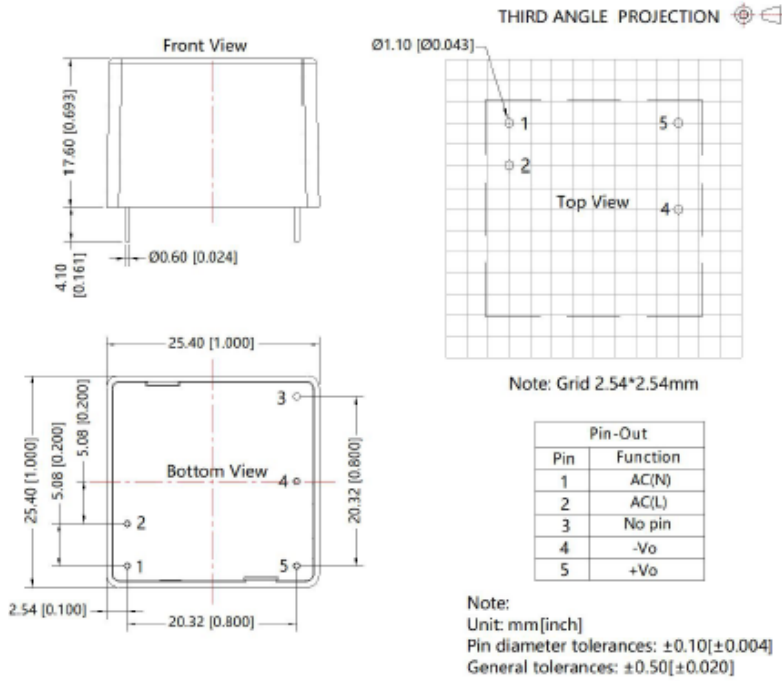
Fig 3: Recommended circuit for class I equipment

Component	Recommended value
FUSE	2A/300V, slow-blow, required
MOV	S14K350
CX	334K/305VAC
R1	33Ω/3W (wire-wound resistor)
L1	1.2mH/0.3A
CY1/CY2	1nF/400VAC
GDT	300V/1KA
LCM	20mH, we recommended using part no. FL2D-10-203 (MORNSUN)
Note: Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleeder resistance of CX, and the recommended resistance value is 1.5MΩ/150VDC	

Mechanical Specifications

Overall Length	25.4mm
Overall Depth	17.6mm
Overall Width	25.4mm
Weight	18g (Typ.)

Dimensions and recommended layout



Approvals

Safety Standard	IEC/EN/UL62368/EN60335/EN61558
Safety Certificate	IEC/EN/UL62368/EN60335/EN61558
Safety Class	CLASS II
Declaration	CE and UKCA

Additional Information

Custom Tariff Number	85044030
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Notes

1. 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.
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75% with nominal input voltage and rated output load.
3. All index testing methods in this datasheet are based on our Company's corporate standards.
4. Products are related to laws and regulations: see "Features" and "EMC".
5. Our products shall be classified according to ISO14001 and related environmental laws and regulations and shall be handled by qualified units.

Connection Diagrams / Assembly Diagrams / Illustrations / Accessories