

AC To DC Converter

5W PCB Mount

multicomp^{PRO}

RoHS
Compliant



Applications

These series are Compact in size high efficiency modular power supplies with global adapted input voltage range (both AC and DC available), low ripple, low temperature rise, low standby power consumption, high efficiency, high reliability, safety isolated & good EMC performance. This series of products can be widely used in the fields of electric power, industry, instrument and smart home devices, etc. The additional circuit diagram for EMC is recommended for the application with high EMC requirement.

Features

- Wide input voltage range 85-305V AC/120-430V DC
- No load power consumption $\leq 0.25W$ @220V AC
- Efficiency up to 76%(TYP.)
- Operating Temperature from $-40^{\circ}C$ to $+85^{\circ}C$
- Switching Frequency 65KHz
- Short circuit & over current protections
- Isolation voltage 4000V AC
- Altitude during operation 5000m Max
- Compliant with IEC/EN62368/UL62368
- With TUV/CE, CB & UL Certificates
- PCB DIP Mounting

Typical Product List

Part Number	Output Specifications			Max. Capacitive Load @220V AC	Ripple & Noise @20MHz (Max)	Efficiency @Full load 220V AC (Typ.)
	Power	Voltage	Current			
	P(W)	Vo (V)	Io (m A)			
MPFA5-220S05G2D4	5	5	1000	2000	100	72
MPFA5-220S12G2D4		12	416	800	120	75
MPFA5-220S24G2D4		24	208	300	150	78

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Input Specifications

Item	Operating Condition	Min.	Typ.	Max.	Unit	
Input voltage range	AC Input	85	220	305	V AC	
	DC Input	120	310	430	V DC	
Input frequency range	-	47	50	63	Hz	
No-load power consumption	Input 115V AC	--	--	0.25	W	
	Input 220V AC					
Input current	Input 115V AC			0.12		A
	Input 220V AC					
Surge current	Input 115V AC	15				
	Input 220V AC	20				
Leakage current	--	0.5mA TYP/230V AC/50Hz				
Recommended external fuse		2A/300V AC Time-delay fuse				
Hot plug		Unavailable				
ON/OFF Control		Unavailable				

Output Specifications

Item	Operating Condition	Min	Typ.	Max	Unit	
Voltage accuracy	Full input voltage range, any load	-	±2.0	±3.0	%	
Line regulation	Rated load	-	-	±0.5	%	
Load regulation	Nominal input voltage, 20%~100% load	-	-	±1.0	%	
Minimum load	Single Output	0	-	-	%	
Turn-on delay time	Nominal input voltage, full load	-	50	-	mS	
Power-off Hold up Time	Input 115V AC (full load)	-	50	-	mS	
	Input 220V AC (full load)	-	100	-		
Dynamic Response	Overshoot range	25%~50%~25%		-5.0	+5.0	%
	Recovery time	50%~75%~50%		-	5	mS
Output overshoot	Full input voltage range	≤10%Vo			%	
Short circuit protection		Continuous, self-recovery			Hiccup	
Temperature Drift	-	-	±0.03%	-	%/°C	
Over current protection	Input 220V AC	≥130% Io, self-recovery			Hiccup	
Ripple & Noise	Full input voltage range	-	60	150	mV	

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General Specifications

Item	Operating Condition	Min	Typ.	Max	Unit
Switching frequency	-	-	65	-	KHz
Operating temperature	Refer to the temperature derating graph	-40	-	+85	°C
Storage temperature	-	-40	-	+105	
Soldering temperature	Wave soldering	260±4°C, time 5-10S			
	Manual soldering	360±8°C, time 4-7S			
Relative humidity	-	10	-	90	%RH
Isolation voltage	I/P-O/P Dielectric Test 1min, leakage current ≤5mA	4000	-	-	V AC
Insulation resistance	I/P-O/P @ DC500V	100	-	-	MΩ
Safety standard	-	IEC/EN62368/UL62368			
Vibration	-	10-55Hz, 10G, 30 Min, along X, Y, Z			
Safety Class	-	CLASS II			
Flame Class of Case	-	UL94-V0			
MTBF	-	MIL-HDBK-217F@25°C>2799KH			
Unit Weight	Part No.	Weight (Typ.)			
	MPFA5-220S05G2D4	18g			
	MPFA5-220S12G2D4				
	MPFA5-220S24G2D4				

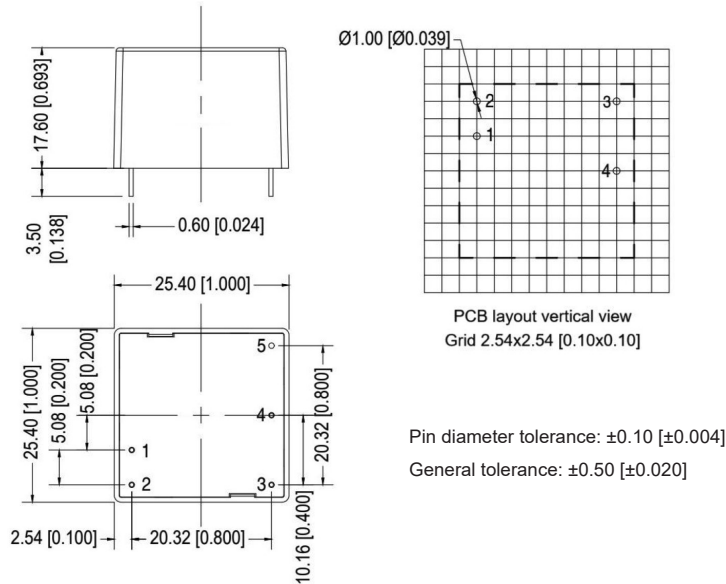
EMC Performance

Total Items	Sub Items	Test Standard	Performance/Class
EMC	EMI	CE	CISPR32/EN55032 CLASS B (with the Recommended Circuit 1)
		RE	CISPR32/EN55032 CLASS B (with the Recommended Circuit 1)
	EMS	RS	IEC/EN61000-4-3 10V/m Perf.Criteria B (with the Recommended Circuit 1)
		CS	IEC/EN61000-4-6 3Vr.m.s Perf.Criteria B (with the Recommended Circuit 1)
		ESD	IEC/EN61000-4-2 Contact ±6KV / Air ±8KV Perf.Criteria B
		Surge	IEC/EN61000-4-5 Line to line ±2KV / line to ground ±4KV Perf.Criteria B (with the Recommended Circuit 1)
		EFT	IEC/EN61000-4-4 ±2KV Perf.Criteria B
		Voltage dips and interruptions	IEC/EN61000-4-11 0%~70% Perf.Criteria B

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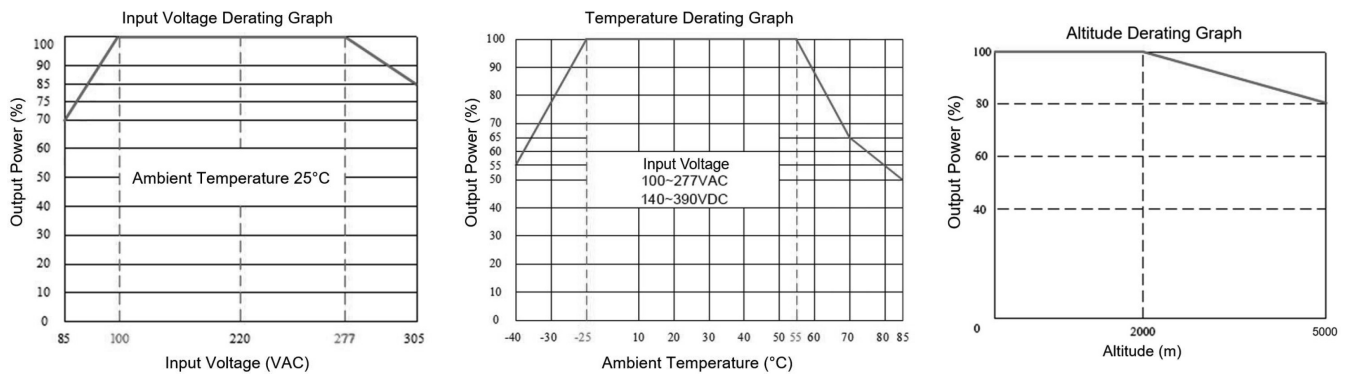
Product Characteristics Graphs



Dimensions : Millimetres (Inches)

Dimensions L x W x H	
25.4 × 25.4 × 17.6mm	1.000 × 1.000 × 0.693 inch

Product Performance Curves



Note 1: The output power should be derated based on the input voltage derating graph at 85~100V AC/ 277~305V AC & 120~140V DC/ 390~430V DC.

Note 2: This product should operate at a natural air condition, please contact us if it need be used at a closed space.

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Recommended Circuits for Application

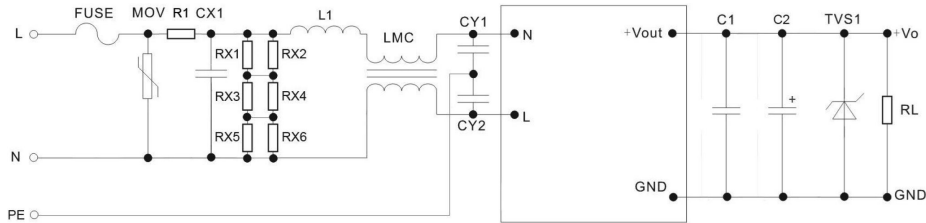


Figure – Circuit 1

Part Number	FUSE (*)	MOV	R1 (*)	CX1	RX1,RX2 RX3,RX4 RX5,RX6	L1	LMC	CY1 CY2	C1	C2	TVS1
MPFA5-220S05G2D4	2A/ 300V Time delay fuse	14D561K 4500A	33Ω/ 3W Wirewound resistor	X2/ 334K/ 305VAC	1206/1.5M 1/4W	1.2mH/ 0.3A	20mH/ 0.3A	Y1/ 102M/ 400VAC	1uF/50V	100uF 16V	SMBJ7.0A
MPFA5-220S12G2D4										68uF 16V	SMBJ20A
MPFA5-220S24G2D4										47uF 35V	SMBJ30A

Note: The * marked components are necessary, not optional.

Part Number Table

Description	Part Number
AC to DC Converter, 5W, Vin 220V AC, Vout 5V DC	MPFA5-220S05G2D4
AC to DC Converter, 5W, Vin 220V AC, Vout 12V DC	MPFA5-220S12G2D4
AC to DC Converter, 5W, Vin 220V AC, Vout 24V DC	MPFA5-220S24G2D4

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