

MPM-40E Series

Low Cost, Encapsulated Single Output, 40W AC/DC Power Supplies



Key Features:

- 40W Output Power
- Universal 85-264 VAC Input
- EN 60950 Approved (UL)
- Meets IEC Safety Class II
- Industry Standard Pin-Out
- Meets EN 55022 Class B
- >200 kHour MTBF
- **Low Cost**



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Electrical Specifications

Specifications typical @ +25°C, 230 VAC input voltage & rated output current, unless otherwise noted. Specifications subject to change without notice.

Input						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Input Voltage Range		85		264	VAC	
		120		370	VDC	
Input Frequency		47		440	Hz	
Input Current	See Model Selection Guide					
Inrush Current	115 VAC		30.0		A Pk	
	230 VAC		50.0			

Output						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Output Voltage	See Model Selection Guide					
Output Current	See Model Selection Guide					
Standby Power				0.5	W	
Output Voltage Accuracy			±2.0		%	
Line Regulation	V _{IN} = Min to Max		±0.5		%	
Load Regulation	See Note 2		±1.0		%	
Ripple & Noise (20 MHz)			50	100	mV P-P	
Hold-Up Time	115 VAC		15		mSec	
	230 VAC		80			
Temperature Coefficient			±0.02		%/°C	
Short Circuit Protection	Continuous (Autorecovery)					
Over Voltage Protection	Zener Diode Clamp					
Overload Protection	Autorecovery	110			%W	

General						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Isolation Voltage	60 Sec	3,000			VAC	
Isolation Resistance	500 VDC	100			MΩ	

EMI Characteristics						
Parameter	Standard	Min.	Typ.	Max.	Units	
Radiated Emissions	EN 55022			Class B		
Conducted Emissions	EN 55022			Class B		
ESD	EN 61000-4-2	Criteria B; ±8 kV Air/±6 kV Contact				
RS	EN 61000-4-3	Criteria A; 10V/m				
EFT	EN 61000-4-4	Criteria B; ±2 kV				
Surge	See Note 4	Criteria B; ±1 kV/ ±2 kV				
CS	EN 61000-4-6	Criteria A; 10 Vrms				
PFMF	EN 61000-4-8	Criteria A; 10A/m				
Voltage Dips	EN 61000-4-11	Criteria B; 95% 5000 mS				
Switching Frequency			65		kHz	

Environmental						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Operating Temperature Range	Ambient	-40	+25	+70	°C	
Operating Temperature Range	Case			+90	°C	
Storage Temperature Range		-40		+85	°C	
Cooling	Free Air Convection (See Derating Curve)					
Humidity	RH, Non-condensing			95	%	

Physical						
Parameter	Conditions	Min.	Typ.	Max.	Units	
Case Size		3.50 x 2.50 x 0.984 Inches (89.0 x 63.5 x 25.0 mm)				
Case Material		Non-Conductive Black Plastic (UL94-V0)				
Weight		8.8 Oz (250g)				

Reliability Specifications						
Parameter	Conditions	Min.	Typ.	Max.	Units	
MTBF	MIL HDBK 217F, 25°C, Gnd Benign	200			kHours	
Safety Standards		EN 60950				
Safety Class		IEC 61140 Class II				

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Model Number	Input		Output			Capacitive Load (μ F Max.)	Efficiency (% Typ)
	Current (A)		Voltage (VDC)	Current (A Max.)	Current (% Min.)		
	115 VAC	230 VAC					
MPM-40S-03E	0.860	0.460	3.3	8.000	10	60,000	78
MPM-40S-05E	0.860	0.460	5.0	8.000	10	40,000	82
MPM-40S-09E	0.860	0.460	9.0	4.444	10	7,200	84
MPM-40S-12E	0.860	0.460	12.0	3.333	10	9,000	84
MPM-40S-15E	0.860	0.460	15.0	2.666	10	6,600	84
MPM-40S-24E	0.860	0.460	24.0	1.666	10	2,000	84

Notes:

1. Operation at no load will not damage the units, however, they may not meet all specifications.
2. Load regulation is measured for an output change of 10% to 100% at nominal input line.
3. All units are rated for EN 55022 (CE/RE) class B without external components.
4. All units are rated for EN 61000-4-4 (± 2 kV) and EN 61000-4-5 (± 1 kV/ ± 2 kV) without external components. They will meet EN 61000-4-5 (± 2 kV/ ± 4 kV) with additional input filtering as shown below.
5. It is recommended that a fuse be used on the input of a power supply for protection. For the MPM-40S-xxE series, a 3.15A/250 VAC slow blow should be used.

Typical Connection

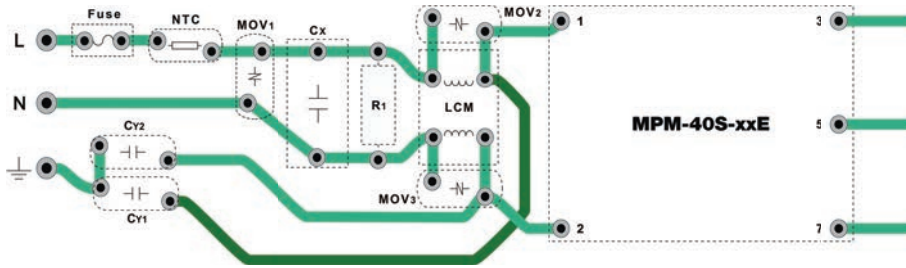
The diagram below illustrates a typical application connection of the MPM-40S-xxE series. Notes on this circuit (starting with the input circuit) are:



1. It is recommended that an external fuse and NTC be used. The recommended fuse is a 3.15A/250V slow blow and for the NTC, a 5D-9.
2. An external MOV is required on the input to protect the unit in the event of a surge. A 561KD20 or equivalent is recommended.
3. Recommended output filtering capacitors are:

	C1	C2	TVS
MPM-40S-03E	1.0 μ F/50V	680 μ F/10V	SMBJ7.0A
MPM-40S-05E	1.0 μ F/50V	680 μ F/10V	SMBJ7.0A
MPM-40S-09E	1.0 μ F/50V	220 μ F/25V	SMBJ12A
MPM-40S-12E	1.0 μ F/50V	220 μ F/25V	SMBJ20A
MPM-40S-15E	1.0 μ F/50V	220 μ F/25V	SMBJ20A
MPM-40S-24E	1.0 μ F/50V	120 μ F/35V	SMBJ30A

Typical Board Layout: With EMI Components (See note 4)



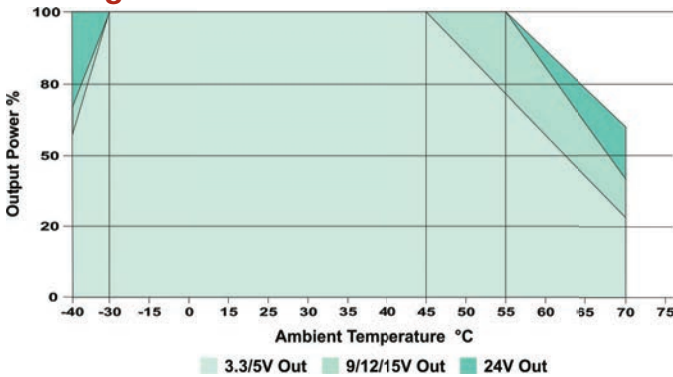
The output filtering capacitor (C2) is a high frequency, low resistance electrolytic capacitor. Capacitor (C1) is ceramic. Voltage derating of capacitors should be 80% or above.

4. Input noise and surge suppression components are illustrated in the typical board layout at left. Modules are available for a number of MPD AC/DC power supplies that contain these components. For pricing or full technical information on these modules (ACFM-01 and ACFM-02) or suggested EMI circuits, please contact the factory.

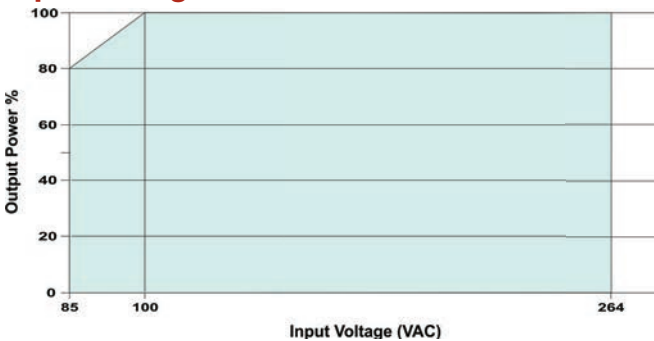
Pin Connections

Pin	Function	Pin	Function
1	AC-Line	5	-VOUT
2	AC-Neutral	7	Trim
3	+VOUT		

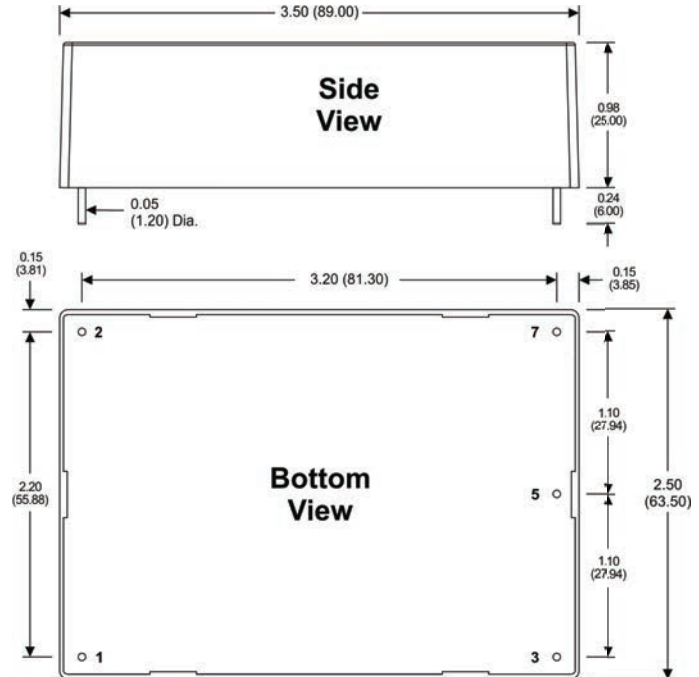
Derating Curve



Input Voltage Vs Load



Mechanical Dimensions



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Notes:

- All dimensions are typical in inches (mm)
- Tolerance x.xx = ± 0.02 (± 0.50)