

### Features:



1. Wide input range (90-305VAC,100-430VDC)
2. Size 87\*52\*30mm
3. No load power consumption<0.3W
4. Protection type: short circuit/ over load/ over voltage/ over temperature
5. Operating temperature range: -40°C to +85°C
6. 4000V isolation voltage, CLASS III over voltage level
7. 100% high temperature burn-in and function test
8. 3 years warranty



### Selection Guide

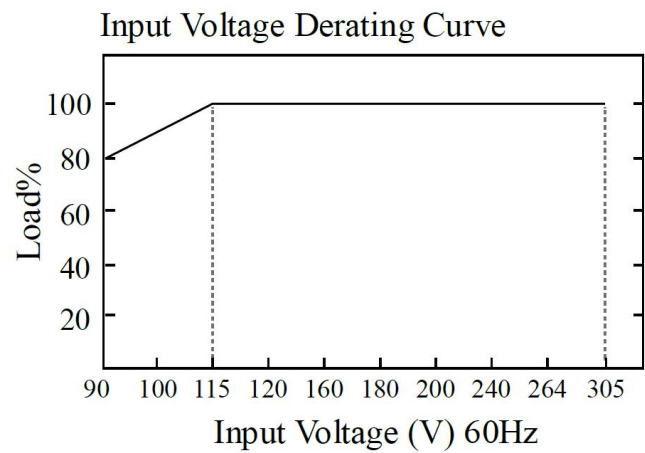
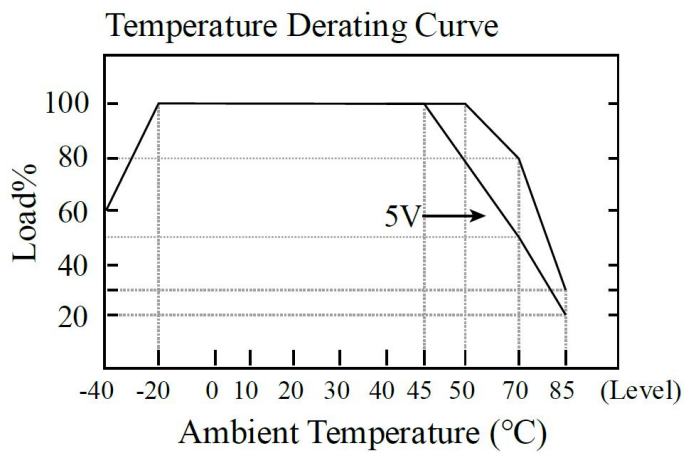
Model	Input Voltage	Rated Power (W)	Output Voltage (V)	Output Current (A)	Ripple & Noise (mVp-p)	Efficiency (%)
QM60-23B05R2	90-305VAC 100-430VDC	50	5	10	100	84
QM60-23B12R2		60	12	5	100	87
QM60-23B15R2		60	15	4	100	87
QM60-23B24R2		60	24	2.5	120	89
QM60-23B48R2		60	48	1.25	120	90

## Specifications

OUTPUT	Voltage Tolerance	±2.0%					
	Line Regulation	±1.0%					
	Load Regulation	±1.0%					
	Setup, Rise Time (Typ.)	1200ms, 40ms/230VAC 2500ms, 50ms/115VAC at full load					
	Hold Up Time (Typ.)	60ms/230VAC 20ms/115VAC at full load					
	Ripple & Noise (Max.) (Note 2.)	5/12/15V: 150mV			24/48V: 170mV		
INPUT	Voltage Range	90-305VAC 100-430VDC					
	Frequency Range	47-440Hz					
	Current (Typ.)	1.1A/115VAC 0.6A/230VAC					
	Inrush Current (Typ.)	60A/230VAC					
	External Fuse Recommended	T2A/250V					
	Leakage Current (Typ.)	<0.1mA/265VAC/50Hz					
PROTECTION	Over Load	≥110% load, recovers automatically after fault condition is removed					
	Short Circuit	Hiccup mode, recovers automatically after fault condition is removed					
	Over Temperature	Output off, recovers automatically after fault condition is removed					
	Over Voltage (Note 4.)	Output voltage clamp or hiccup					
		Voltage	5VDC	12VDC	15VDC	24VDC	48VDC
		Range	≤6.5VDC	≤16VDC	≤24VDC	≤35VDC	≤60VDC
ENVIRONMENT	Working Temp.	-40°C to +85°C (Refer to "Derating curve")					
	Working Humidity	85%RH max					
	Storage Temp., Humidity	-40°C to +85°C, 10-95%RH					
	Temp. Coefficient	0.03%/ (0-50°C)					
	Vibration	10-500Hz, 2G, 10min./1cycle, 60min.each along X, Y, Z axes					
SAFETY & EMC (NOTE 3.)	Safety Standards	EN62368-1, UL62368					
	Isolation Voltage	I/P-O/P: 4000VAC					
	Isolation Resistance	I/P-O/P: >100M Ohms/500VDC 25°C 70% RH					
	EMC Emission & Immunity	EN55011, EN55032 (CISPR32) CLASS B (Refer to "Typical Application")					
	ESD	IEC/EN 61000-4-2 level 4 Contact ±8kV/Air ±15kV (Refer to "Typical Application")					
	RF	IEC/EN 61000-4-3 (Refer to "Typical Application")					
	EFT	IEC/EN 61000-4-4 level 4 4kV (Refer to "Typical Application")					
	Surge	IEC/EN 61000-4-5 level 4 2kV					
OTHERS	MTBF	300K hrs min. MIL-HDBK-217F (25°C)					
	Dimension	87*52*30mm					
	Weight	210g/PCS 7.0kg/Carton					
	Package	30PCS/Carton					
	Carton Size	360*300*250mm					

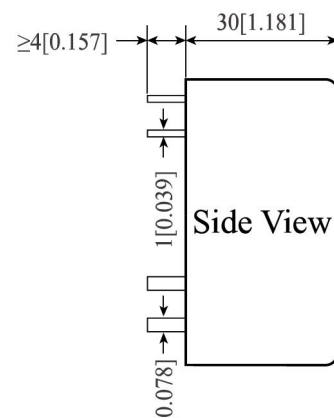
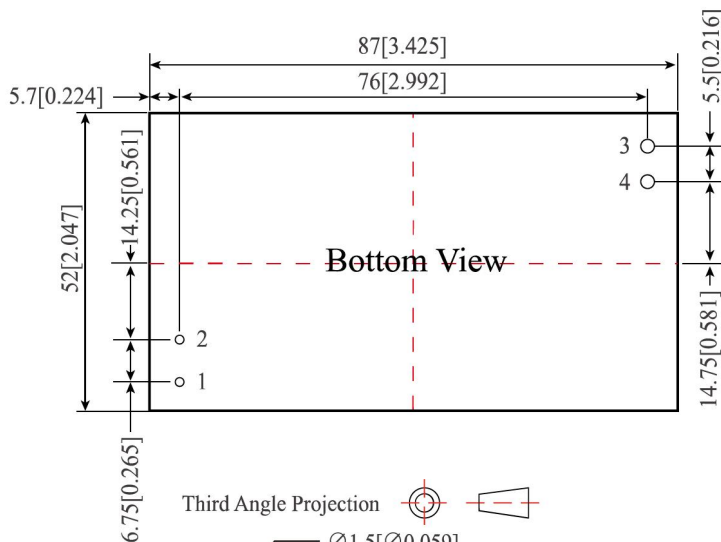
NOTE	1. All parameters not specially mentioned are measured at 230VAC input, rated load and 25°C of ambient temperature.
	2. Ripple & noise are measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 0.1uF & 47uF parallel capacitor and connected according to "typical application". Element parameters shall be the same as those measured in the suggestion form.
	3. The power supply is considered as an independent unit, but the final equipment still need to re-confirm that the whole system complies with the EMC directives.
	4. This series of overvoltage protection protects the subsequent circuit in case of module abnormality through the peripheral TVS tube.

### Typical Characteristics Curve

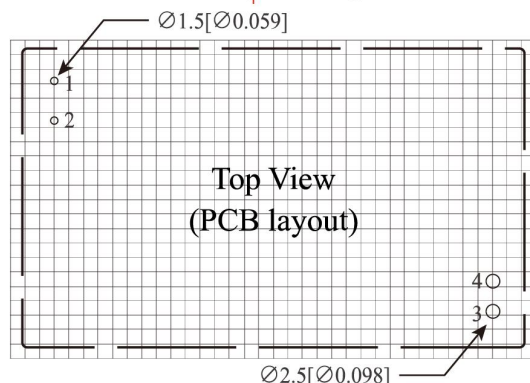


### Mechanical Specification

Standard type package



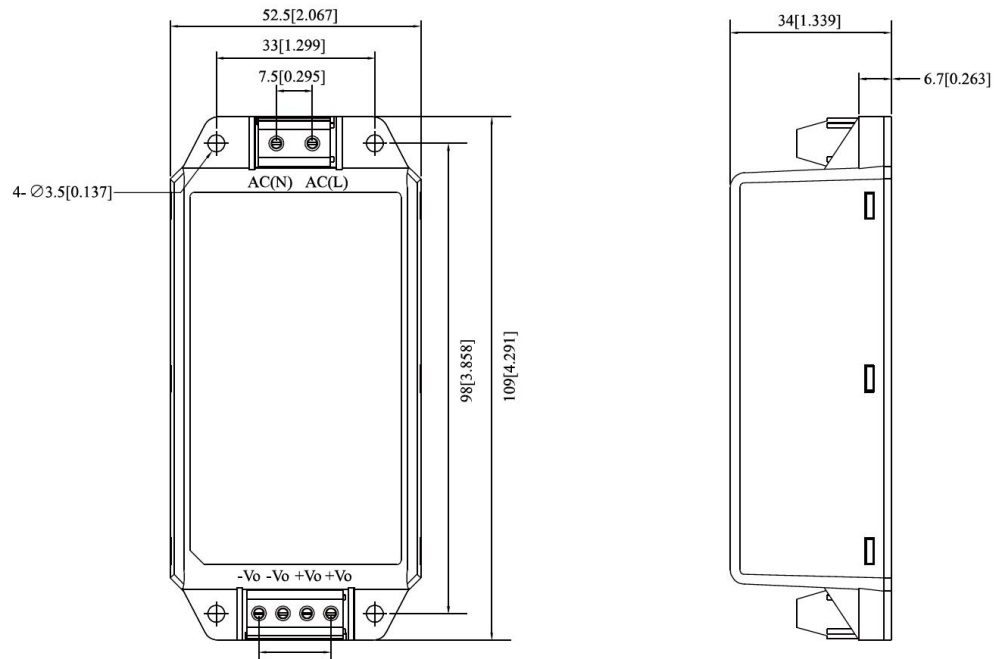
Third Angle Projection



Note: Grid Spacing 2.54 \* 2.54mm

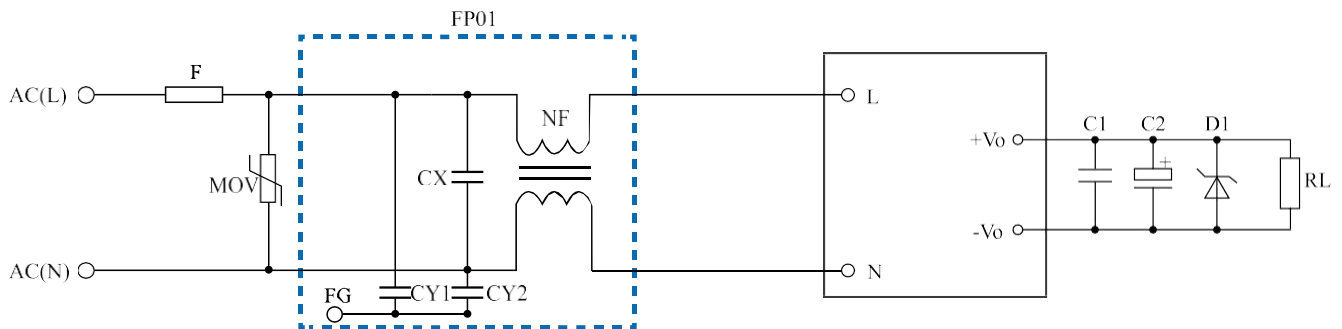
Pin	Function
1	AC(L)
2	AC(N)
3	+Vo
4	-Vo

PCB mounting style



NOTE: Unit size: mm[inch] Terminal tolerance:  $\pm 0.1\text{mm}$  Unmarked tolerances:  $\pm 0.5\text{mm}$

## Typical Application



1. Output filter capacitor C2 is electrolytic capacitor. It is recommended to use high-frequency low-resistance electrolytic capacitor. Refer to technical specifications provided by manufacturers for capacity and current. C1 is to remove high frequency noise..
2. The dotted box in the figure shows the EMC filter connected to meet the higher EMC requirements. It can be omitted in general applications.
3. Our company has formed a filter with L1, CX and NF in the dashed box for customers to use. The model is FP01.

## List Of Components

Position Model	F	MOV	FP01	C1	C2	D1
QM60-23B05R2	T2A/250V	Varistors 14D561K	Filter Type FP01	104K/50V (Ceramic capacitor)	680uF/50V	P6KE6.5A
QM60-23B12R2					220uF/50V	P6KE16A
QM60-23B15R2					220uF/50V	P6KE24A
QM60-23B24R2					120uF/50V	P6KE35A
QM60-23B48R2					100uF/63V	P6KE60A

**Notes:**

1. If the product works under the minimum required load, it cannot guarantee that the performance of the product complies with all the performance indicators in this manual;
2. The maximum capacitive load is tested under the input voltage range and full load condition;
3. Unless otherwise stated, all indexes in this manual are measured at Ta=25°C, humidity <75%RH, nominal input voltage and rated output load;
4. All index testing methods in this manual are based on the enterprise standards of the company;
5. Our company can provide product customization, specific needs can directly contact our technical staff;
6. AMCHARD reserves the right to make changes to the product at any time without notice.