

Features

1. Rated power: 15W
2. Universal input: 85~305VAC 47~63Hz
3. Regulated single output Isolation voltage 4000VAC Typical efficiency up to 87%
4. Energy saving, standby power only less than 0.1W
5. Operating temperature range: -40~+85°C
6. RoHS compliance Compact DIP package
7. Over current and short circuit protection
8. *Meet IEC/EN/UL62368-1, EN60335, EN61558, CISPR32, EN55032 Class B
9. 3 year warranty



3 years
Warranty

Selection Guide

Model Number	Input Voltage [VAC]	Output Voltage [VDC]	Output Current [mA] Max.	Efficiency [%] Typ.	Capacitive Load [uF] Max.
QM15-23B03R2	85~305VAC 100~430VDC	3.3	4000	79	6600
QM15-23B05R2		5	3000	80	5000
QM15-23B09R2		9	1670	84	3000
QM15-23B12R2		12	1250	85	2000
QM15-23B15R2		15	1000	85	1500
QM15-23B24R2		24	625	87	680

* Only typical models are listed, other models may be available, upon request.

Input & Output Specification

Parameters	Condition	Min.	Typ.	Max.	Unit	Note
Input voltage range	AC in DC in	85 100	-	305 430	VAC/DC	
Input frequency		47	-	63	Hz	
Nominal input voltage		100	-	277	VAC	
Input current	115VAC 230VAC	-	-	0.50 0.30	A	
Inrush current Cold start	115VAC 230VAC	-	30 60	-	A	
Leakage current	277VAC, 50Hz	-	-	0.1	mA RMS	
Output voltage accuracy		-	±2	-	%	
Line regulation	Full load	-	±0.5	-	%	
Load regulation $I_{out}=0\%\sim 100\%$ of $I_{out,r}$ rated		-	±1	-	%	
Ripple and noise 20MHz bandwidth, peak to peak		-	70	120	mV	
Temperature coefficient		-	±0.02	-	%/°C	
Standby power consumption	$V_{OUT}=24V$ Others	-	-	0.12 0.10	W	
Hold up time Full load	115VAC 230VAC	-	10 55	-	mS	
Over current protection	Automatic recovery	110	-	-	% I_{OUT}	
Short circuit protection		Continuous, hiccup mode, automatic recovery				
External fuse		2A, 300V slow blow *required*				
Minimum load		No minimum load is required				

* Ripple and noise measured at 20MHz of bandwidth by using a 12" twisted pair-wire terminated with a 1uF ceramic capacitor and a 10uF electrolytic capacitor in parallel.

General Specifications

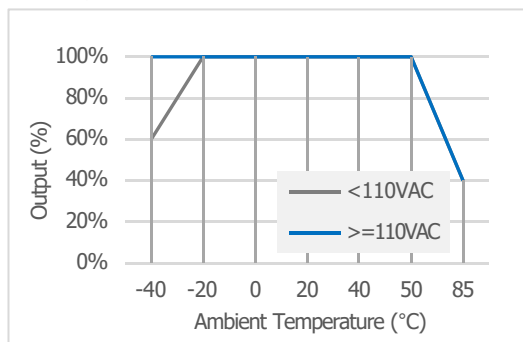
Parameters	Condition	Min.	Typ.	Max.	Unit	Note
Isolation voltage 1 minute, leakage current 5mA max	I/P to O/P	4000	-	-	VAC	
Isolation resistance 500VDC, 25°C, 70%RH	I/P to O/P	100	-	-	M Ohm	
Operating temperature range	See "Derating Curve"	-40	-	85	°C	
Storage temperature		-40	-	105	°C	
Storage humidity		10	-	95	%RH	
Operating altitude		-	-	5000	m	
Soldering temperature	Wave Manual	-	260 360	-	°C	
Case material		Black plastic UL94-V0				
Cooling method		Free air convection				
Vibration		10Hz to 55Hz, 10G, 30 minutes along X, Y and Z axis				
Class II power		Yes, no FG				
MTBF	MIL-HDBK-217F	> 3,200,000 Hours, 25°C				
Design based on standards		RoHS5 compliant, UL/IEC/EN62368, EN60335, EN61558				
Safety certifications		*UL/IEC/EN62368, EN60335, EN61558				
EMC		CISPR32, EN55032 Class B				
Size, and Weight	Default Package	45.7x25.4x21.5 mm, 36g				

Characteristic Curves

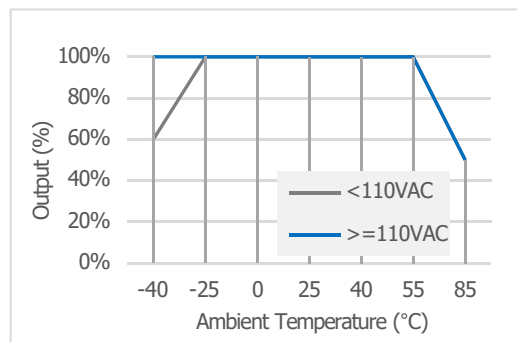
Derating Curve

Output vs Ambient Temperature

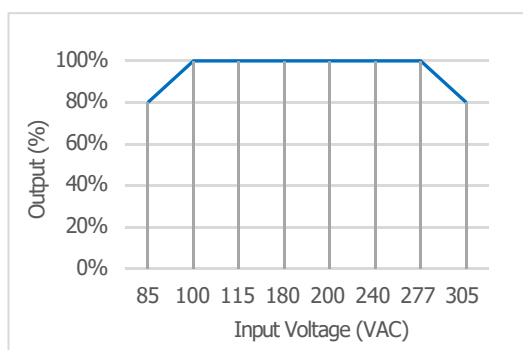
$V_{out}=3.3, 5V$



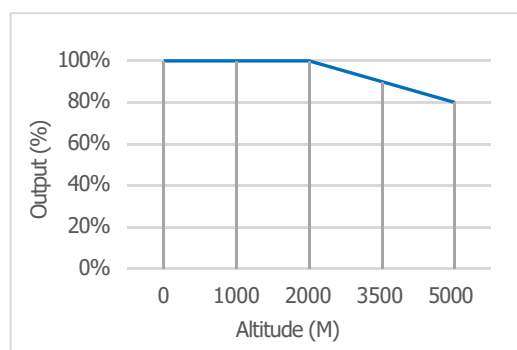
$V_{out}=9 \dots 24V$



Output vs Input Voltage

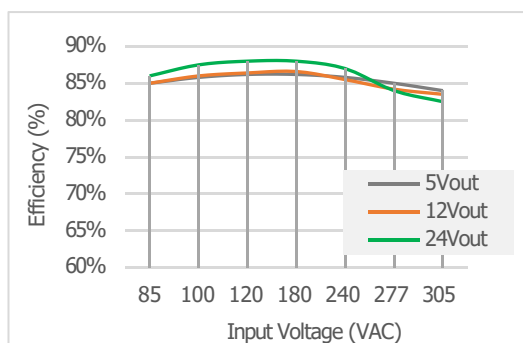


Output vs Altitude

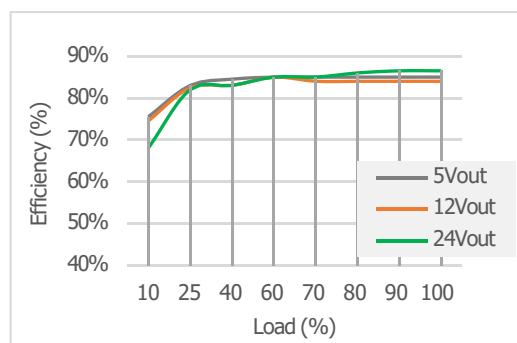


Efficiency Curves

Efficiency vs Input Voltage



Efficiency vs Load



Recommended External Circuits

Typical External Circuit

* This application circuit is recommended for EMC enhancement. It is not mandatory for general operating.

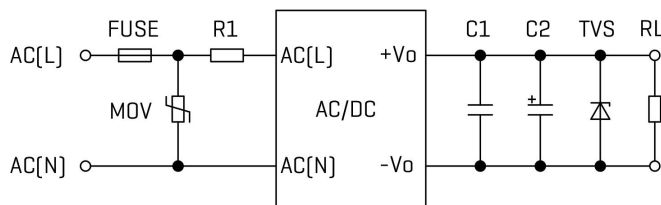


Figure 1. Typical external circuit

[Table 1] Recommended Components

SPEC	FUSE*	MOV	R1*	C1	C2	TVS
$V_{OUT}=3.3, 5V$	3.15A, 300V	10D561K	6.8 Ohm, 3W	1uF, 50V	220uF, 16V	SMBJ7.0A
$V_{OUT}=9V$	3.15A, 300V	10D561K	6.8 Ohm, 3W	1uF, 50V	100uF, 35V	SMBJ12A
$V_{OUT}=12, 15V$	3.15A, 300V	10D561K	6.8 Ohm, 3W	1uF, 50V	100uF, 25V	SMBJ20A
$V_{OUT}=24V$	3.15A, 300V	10D561K	6.8 Ohm, 3W	1uF, 50V	100uF, 35V	SMBJ30A

* Components with "*" are required, and others are recommended.

EMC Enhancement for EN55032 Class B

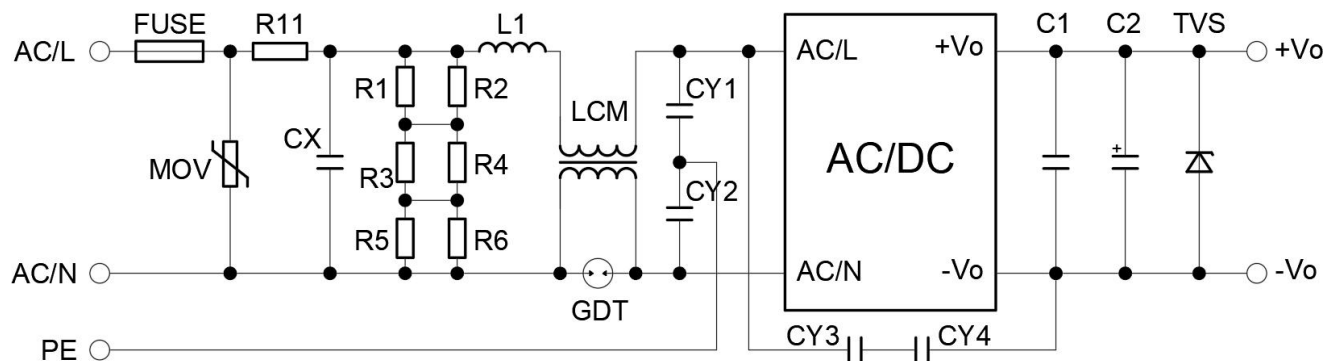


Figure 1. Circuit for EMC Enhancement

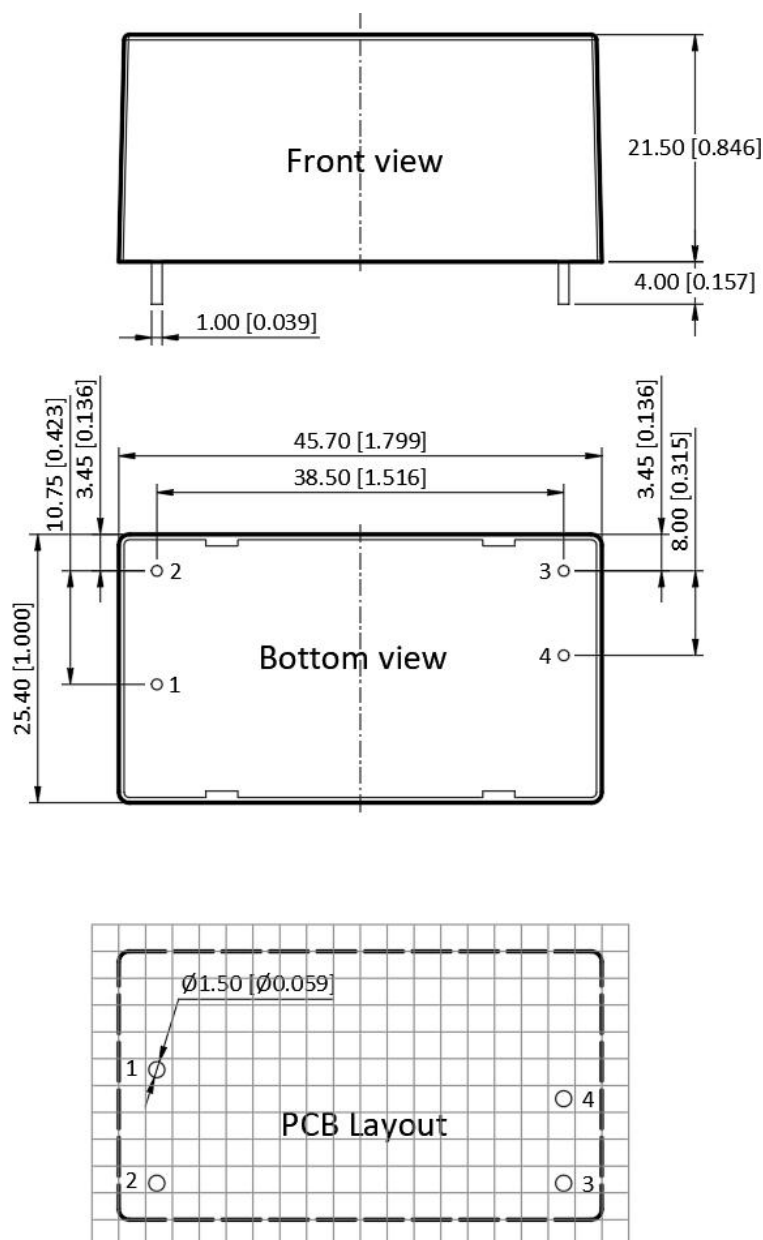
[Table 2] Recommended Components

MOV	CX	R11	L1	LCM	GDT	CY1, CY2	CY3, CY4
S14K350	334K, 305VAC	12 Ohm, 5W	1.2mH, 0.5A	20mH	300V, 1KA	2.2nF, 400VAC	1nF, 400VAC

*R1 ... R6 is the bleeder resistance of CX – 1.5Mohm, 150VDC

*Other components see the same in Table 1

Mechanical Specifications



Pin #	Single Out
1	AC (L)
2	AC (N)
3	-V _{OUT}
4	+V _{OUT}

Unless otherwise specified unit: mm [inch]
 General tolerance: ±1.00 [±0.040]
 Pin thickness: ±0.15 [±0.006]
 Pin distance: ±0.50 [±0.020]
 Footprint grid 2.54 x 2.54 mm

Notes & Instructions

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.