

Product Feature

1. Universal Input: 90-528VAC (110-745VDC)
2. Operating temperature range: -40°C - +85°C
3. Small size, high efficiency
4. Output short-circuit protection
5. Low power consumption, environmental protection
6. Industrial product technical design


**3 years
Warranty**

Selection Guide

Part No.	Input Voltage (VAC)	Out Power (W)	Out Voltage (VDC)	Out Current (mA)MAX	Full Load Efficiency % (Typ.)	Capacitive Load(μF) Max.
QO05-26B05R3	90-528	5	5	1000	74	4000
QO05-26B09R3		5	9	550	76	1000
QO05-26B12R3		5	12	420	78	820
QO05-26B15R3		5	15	330	78	680
QO05-26B24R3		5	24	210	79	330

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage	AC Input	90	--	528	VAC
	DC Input	110	--	746	VDC
Input Current	110VAC	--	0.10	--	A
	230VAC	--	0.05	--	
Input Frequency		47	--	63	Hz
Fuse		1A, slow-blow, required			
Leakage Current		0.2mA RMS typ. 230VAC/50Hz			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy	10% - 100%load	--	±2.5	±5	%
Linear Regulation	Rated load	--	±1.5	--	
Load Regulation	10% - 100%load	--	±3.0	--	
Ripple & Noise	20MHz bandwidth, 10% - 100%load	--	100	180	mV
Temperature Coefficient		--	±0.2	--	%/°C

Stand-by Power Consumption	230VAC	--	0.10	0.3	W
Min. Load		10	--	--	%
Over Current Protection		110	--	--	%Io
Short-Circuit Protection	Continuous, Self-Recovery				
Hold-up Time	230VAC	--	38	--	ms

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output, test time 1 minute, leakage current less than 5mA	4000	--	--	VAC
Insulation Resistance	Input-output, insulated voltage 500VDC	1000	--	--	MΩ
Power Derating	+55°C - +85°C	2.0	--	--	%°C
	90VAC - 110VAC	2.0	--	--	%VAC
	480VAC - 528VAC	0.5	--	--	
Operating Temperature		-40	--	+85	°C
Storage Temperature		-40	--	+105	
Soldering Profile	Wave-soldering	260 ± 5°C; time: 5 - 10s			
	Manual-welding	360 ± 5°C; time: 3 - 5s			
Safety Standard	IEC/UL62368-1				
Safety Class	CLASS II				
MTBF	MIL-HDBK-217F@25°C	>500,000Kh			

Mechanical Specification

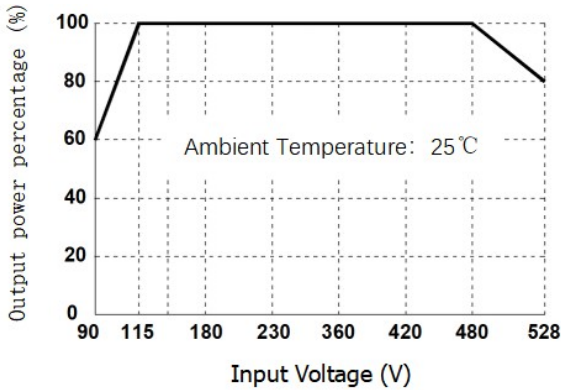
Package Dimensions	33.50 x 17.20 x 13.00 mm
Weight	6.5g (TYP.)
Cooling Method	Free air convection

EMC Specifications

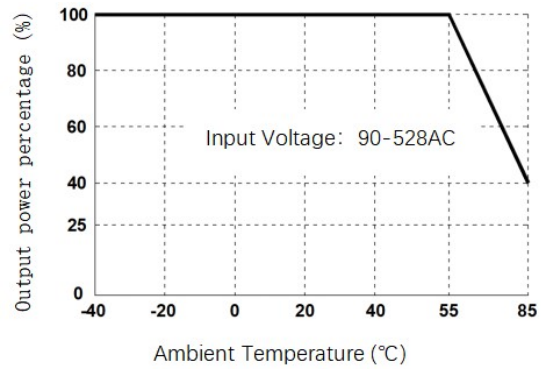
EMI	CE	CISPR32/EN55032 CLASS B			
	RE	CISPR32/EN55032 CLASS B			
EMS	RS	IEC/EN61000-4-3 10V/m			perf. Criteria A
	EFT	IEC/EN61000-4-4 ±2KV			perf. Criteria B
	Surge	IEC/EN61000-4-5 line to line ±1KV			perf. Criteria B
		IEC/EN61000-4-5 line to line ±2KV (application circuit 2)			perf. Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s			perf. Criteria A
ESD	IEC/EN61000-4-2 Contact ±6KV			perf. Criteria B	

Typical Characteristic Curves

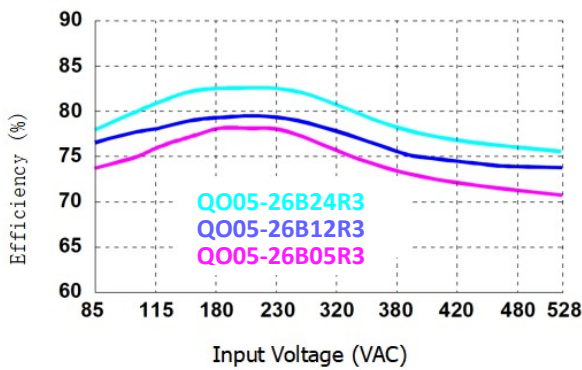
Input voltage Derating Curve



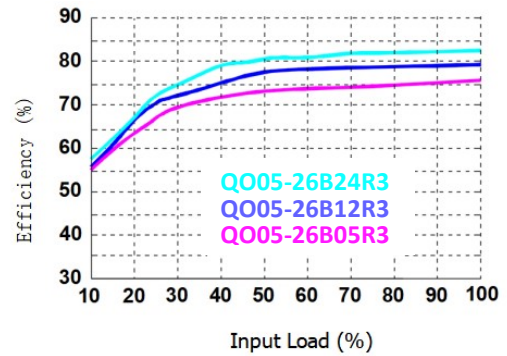
Temperature Derating Curve



Efficiency VS Input Voltage (Full Load)

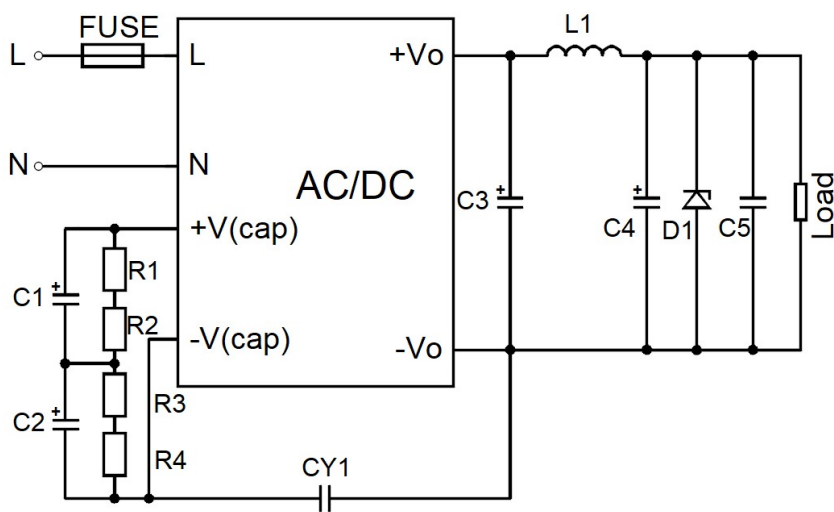


Efficiency VS Output Load (Vin=230VAC)



Typical Circuit Design And Application

Application circuit



Reference Table for Selection of Peripheral Devices

Output voltage	C1 (required)	C2 (required)	R1, R2, R3, R4	CY1
90-305VAC	22uF/450V	short circuit	Open	1nF/400VAC
90-528VAC	47uF/400V	47uF/400V	1MΩ/1206 (required)	
170-528VAC	33uF/400V	33uF/400V	1MΩ/1206 (required)	

Reference Table for Selection of Peripheral Devices

Output voltage	FUSE	L1	C3	C4	C5	D1
5VDC	1A/500VAC, slow-blow, required	2.2uH/6A	470uF/16V	150uF/25V	0.1uF/25	D1 is a TVS transistor that can protect the downstream circuit in case of module abnormalities. It is recommended to choose a model that is 1.2 times the output voltage
9/12VDC			470uF/16V	100uF/25V	0.1uF/25	
15/24VDC			220uF/35V	47uF/35V	0.1uF/50	

Note:

- FUSE, EMC protection, and EMI protection are selected based on actual application needs;
- C1, C2 is a filtering electrolytic capacitor, which is a required component. It is recommended to use ripple current > 400mA@100KHz Electrolytic capacitors.
- C3, C4, and L1 form a Pi type filtering circuit, and it is recommended to use high-frequency low resistance electrolytic capacitors or solid-state capacitors.
- When selecting L1, ripple requirements can be considered, while paying attention to current and internal resistance values.

EMS Solutions - Recommended Circuits

Environmental Application - EMC Solution Selection Table

Recommended circuit	Application environment	Application industry	Input Voltage	Ambient Temperature	EMI	EMS
1	Basic applications	-	90-528VAC	-40°C - +85°C	Class A	III level
2	Indoor ordinary	Intelligent building/Intelligent agriculture		-25°C - +55°C	Class B	IV level
3	Indoor industry	Manufacturing workshop		-25°C - +55°C	Class B	IV level
4	Outdoor ordinary	ITS/Charging point/Communication/Security and protection		-40°C - +85°C	Class A	IV level
5	Outdoor industry	Electricity/Grid		-40°C - +85°C	Class B	IV level
6	Strong lightning surge	Electricity dedicated		-40°C - +85°C	Class B	IV level

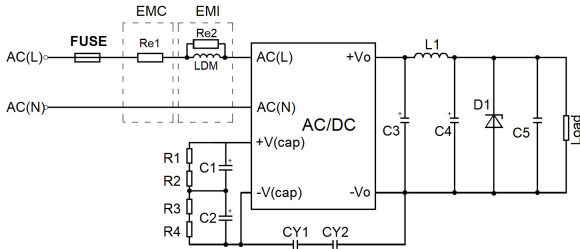
EMS protection circuit design reference

EMI protection circuit design reference

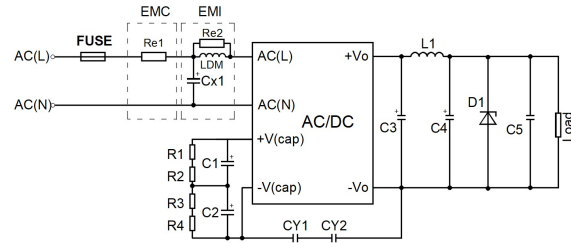
III level	IV level	Basic applications Outdoor ordinary	Indoor ordinary Indoor industry	Outdoor industry

EMC Solutions - Recommended Circuits

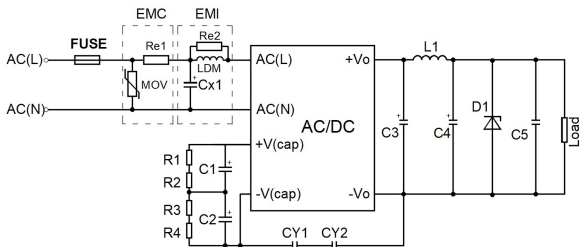
Recommended circuit 1



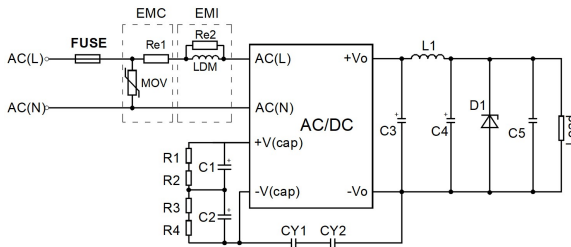
Recommended circuit 2



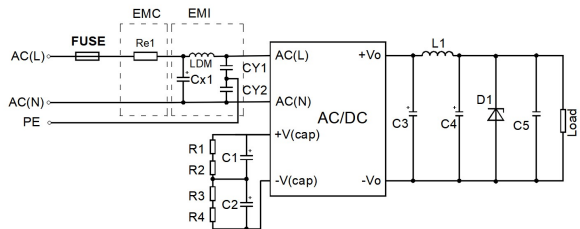
Recommended circuit 3



Recommended circuit 4



Recommended circuit 5

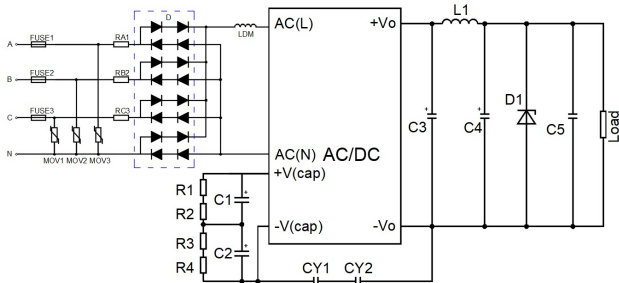


EMC Recommended Circuit Device Selection Reference Table

Components		Recommended circuit 1	Recommended circuit 2	Recommended circuit 3	Recommended circuit 4	Recommended circuit 5
FUSE (required)		1A/500V, Slow melting		2A/500V, Slow melting		
Re1(wire-wound resistor, required)		12Ω/3W				
MOV		14D911				
Re2	5V,9V	20K/1206(1/4W)				
	12V	2K/1206(1/4W)				
	15V,24V	15K/1206(1/4W)				
LDM	5V,9V	1.2mH/Max: 2.5Ω/Min:0.2A				
	12V	2.2mH/Max: 15Ω/Min:0.2A				
	15V,24V	4.7mH/Max: 15Ω/Min:0.2A				
CX1		0.1uF/480VAC				

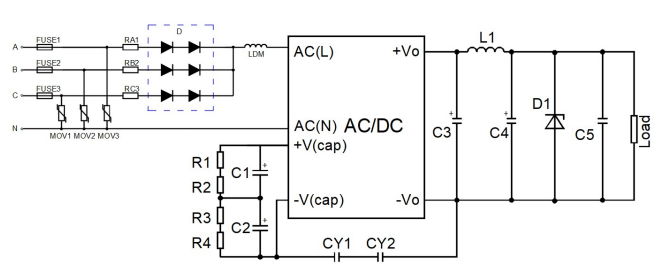
EMC Solutions for Strong Lightning Surge Environments - Recommended Circuits

Recommended circuit 6



Recommended circuits for 4KV differential mode surge--full-wave rectification

Recommended circuit 7



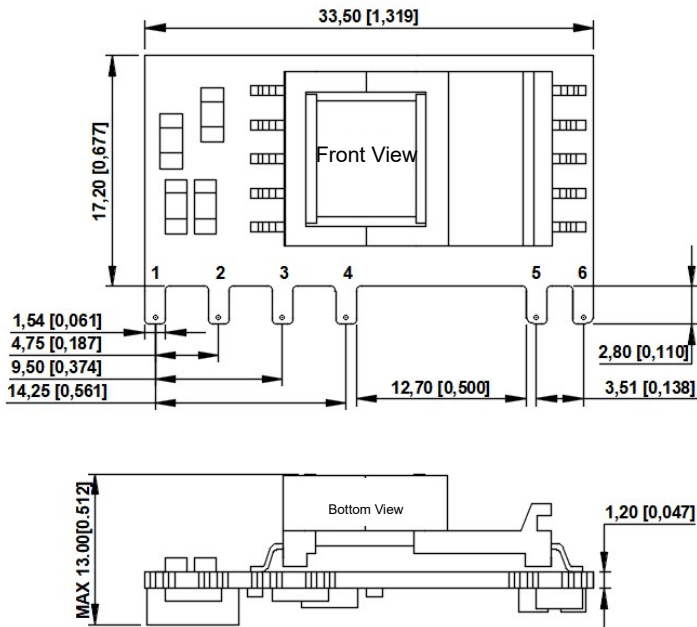
Recommended circuits for 4KV differential mode surge--half-wave rectification

Recommended parameter values for EMC solution circuits

Model	Recommended circuit 6	Recommended circuit 7
FUSE1, FUSE2, FUSE3(required)	3.15A/500VAC, slow-blow, required	
MOV1, MOV2, MOV3	14D911K	
RA1, RB2, RC3 (slow-blow, required)	12Ω/5W	
LDM	5V,9V	1.2mH/Max: 2.5Ω/Min:0.2A
	12V	2.2mH/Max: 15Ω/Min:0.2A
	15V,24V	4.7mH/Max: 15Ω/Min:0.2A
D	2A/1000V	

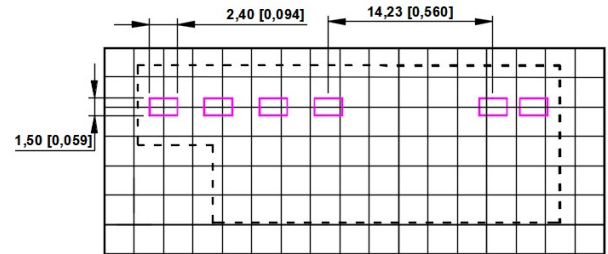
Dimensions and Recommended Layout

Dimensions



PCB Printing Layout

Grid size: 2.54 x 2.54 mm



Pin Function Table

Pin	Function
1	AC(L)
2	AC(N)
3	+V(CAP)
4	-V(CAP)
5	-Vo
6	+Vo

Note:
Unit: mm[inch]
Pin section tolerances: $\pm 0.10[\pm 0.004]$
General tolerances: $\pm 0.50[\pm 0.020]$

Note:

1. The input voltage cannot exceed the specified range value, otherwise permanent and irreparable damage may be caused;
2. Unless otherwise specified, the parameters in this datasheet were measured at 25°C, humidity 40%~75%, input nominal voltage and output pure resistance mode under full load;
3. All index test methods are based on our company's enterprise standards.

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