

ACS10W-xxVP Series



RoHS



FEATURES

- Input voltage range: 85~305VAC (90~430VDC)
- Working temperature range: -40°C to +85°C
- Complete protection functions
- Accepts AC or DC input (dual-use of same terminal)
- Isolation 3600VAC
- Multi application, flexible layout
- SIP ultra-small size, high power density, flexible application
- No-load power consumption as low as 0.1W
- Output short circuit, overcurrent, input undervoltage protection

DESCRIPTION

The ACS10W-xxVP series is an efficient modular power supply for miniaturized bare boards, with advantages such as dual use of AC and DC, wide input voltage range, high reliability, low power consumption, and safe isolation. If it is necessary to apply in harsh electromagnetic compatibility environments, EMC peripheral circuits must be added.

MODEL NUMBERING

ACS10W-xxVP

Series Name

Output Power

Output Voltage

SELECTION GUIDE

Product Model	Rated Power (W)	Output Voltage (VDC)	Output Current (mA)	Efficiency (230VAC, %/Typ.)	Maximum capacitive load (uF)
ACS10W-03VP	6.6	3.3	2000	70	1500
ACS10W-05VP	10	5	2000	77	1500
ACS10W-09VP	10	9	1100	80	1000
ACS10W-12VP	10	12	830	83	680
ACS10W-15VP	10	15	670	83	470
ACS10W-24VP	10	24	420	84	330

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage	AC Input	85	--	305	VAC
	DC Input	90	--	430	VDC
Input voltage frequency		47	--	63	Hz
Input Current	115VAC	--	--	0.30	A
	230VAC	--	--	0.15	A
Inrush Current	115VAC	--	15	--	A
	230VAC	--	30	--	A
Recommended External Input Fuse		1A, slow-blow, required			

Remarks: This product does not support hot plug

OUTPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Output voltage accuracy	10% - 100% load	--	±2.5	±5	%
Linear regulation	Rated load	--	±0.75	±1.5	%
Load regulation	10% - 100% load	--	±1.5	±3	%
Minimum load		10	--	--	%
Stand-by power	230VAC	--	0.1	0.15	W
Ripple & Noise	20MHz bandwidth (peak-to-peak value)	--	80	150	mV
Temperature drift coefficient		--	--	±0.2	%/°C
Short circuit protection		Hiccup, continuous, self-healing			
Over Current protection		≥110% Io, self-healing			

Note: The testing method for ripple and noise is parallel line testing

GENERAL CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Isolation voltage	Input-output, test time 1 minute, leakage current less than 5mA	3600	--	--	VAC
		5000	--	--	VDC
Power Derating	-40°C to -25°C	1.33	--	--	%/°C
	+55°C to +85°C	1.67	--	--	%/°C
	85VAC - 100VAC	1.33	--	--	%/VAC
	277AVC - 305VAC	1	--	--	%/VAC
Working temperature		-40	--	+85	°C
Storage Temperature		-40	--	+105	°C
Storage Humidity		--	--	95	%RH
Soldering Profile	Wave-soldering	260±5°C; time: 5 to 10s			
	Manual-welding	360±10°C; time: 3 to 5s			
Safety Standard		Designed to meet IEC/EN60335-1, IEC/EN61558-1 standards			
Safety Class		CLASS II			
MTBF	MIL-HDBK-217F@25°C	>1000Kh			

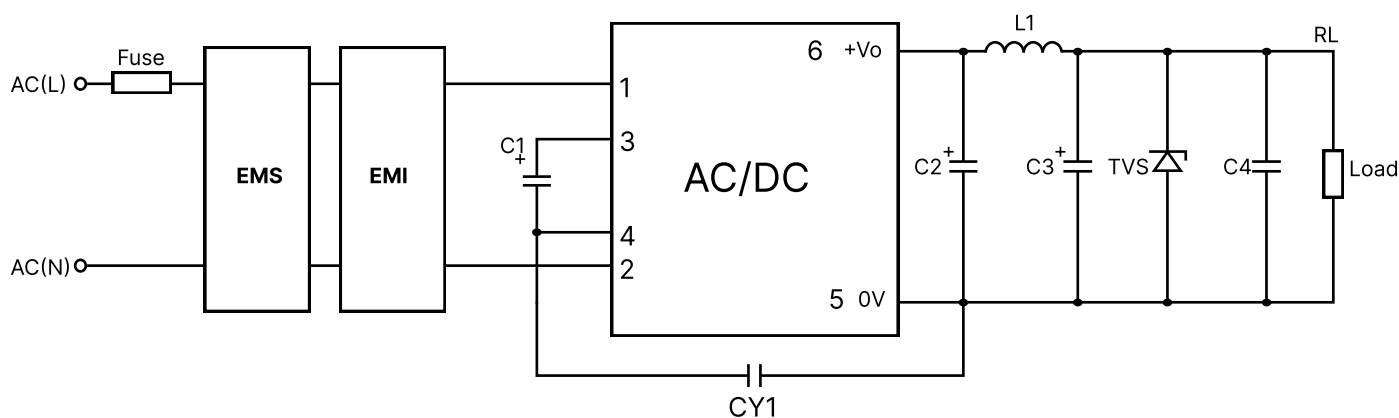
PHYSICAL CHARACTERISTICS

Parameter	Contents
Overall dimensions	28.84 × 17.20 × 14.05 mm
Weight	8.2g (Typ.)
Cooling mode	Natural air cooling

SAFETY & EMC CHARACTERISTICS

Parameter	Category	Content		
EMI	CE	CISPR32/EN55032	CLASS A (Application circuit 1, 4)	
		CISPR32/EN55032	CLASS B (Application circuit 2, 3)	
	RE	CISPR32/EN55032	CLASS A (Application circuit 1, 4)	
		CISPR32/EN55032	CLASS B (Application circuit 2, 3)	
EMS	ESD	IEC/EN61000-4-2	Contact±6KV	Perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria A
	EFT	IEC/EN61000-4-4	±2KV (Application circuit 1, 2)	Perf. Criteria B
		IEC/EN61000-4-4	±4KV (Application circuit 3, 4)	Perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line ±1KV(Application circuit 1, 2)	Perf. Criteria B
		IEC/EN61000-4-5	line to line ±2KV(Application circuit 3, 4)	Perf. Criteria B
	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria A
	Voltage dip, short interruption and voltage variation	IEC/EN61000-4-11	0%, 70%	Perf. Criteria B

CIRCUIT DESIGN & APPLICATION

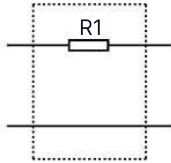
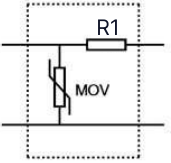


Product Model	C1 (Must)	C2 (Must)	L1 (Must)	C3 (Must)	C4	CY1 (Must)	TVS
ACS10W-03VP	22uF/ 450V	1500uF/6.3V (solid-state capacitor)	2.2uH/ 15mΩ Max/6.5A	330uF/25V	0.1uF/50V	1nF/ 400VAC	SMBJ7.0A
ACS10W-05VP		820uF/16V (solid-state capacitor)		330uF/25V			SMBJ7.0A
ACS10W-09VP		470uF/16V (solid-state capacitor)		150uF/35V			SMBJ12A
ACS10W-12VP		470uF/16V (solid-state capacitor)		150uF/35V			SMBJ20A
ACS10W-15VP		470uF/16V (solid-state capacitor)		220uF/35V			SMBJ20A
ACS10W-24VP		470uF/35V		47uF/50V			SMBJ30A

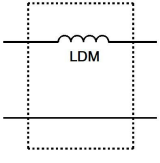
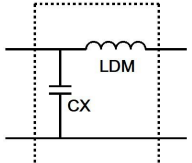
Environmental Application - EMC Solution Selection Table

Recommended circuit	Application environment	Application industry	Input Voltage	Ambient Temperature	EMI	EMS
1	Basic applications	--	85-305VAC	-40°C to +85°C	Class A	III level
2	Indoor civil	Smart home/Home appliances (2Y)		-25°C to +55°C	Class B	III level
	Indoor ordinary	Intelligent building/Intelligent agriculture				
3	Indoor industrial	Manufacturing workshop		-25°C to +55°C	Class B	IV level
4	Outdoor ordinary	ITS/Video monitoring/Charging point/Communication/Security and protection		-40°C to +85°C	Class A	IV level

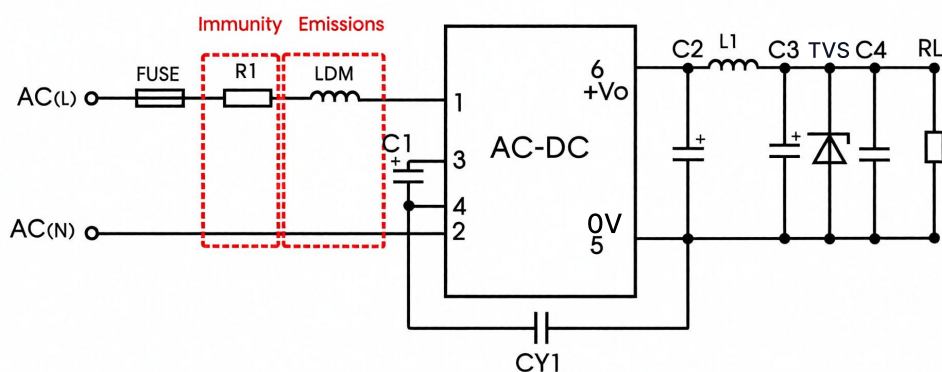
EMS protection circuit design reference

III level	IV level
	

EMI protection circuit design reference

Class A	Class B
	

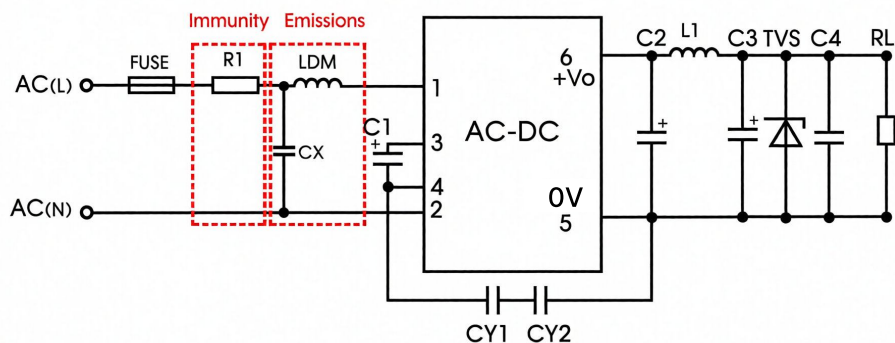
Recommended Circuit 1



Component	Value
FUSE (required)	1A/300V, slow-blow
R1 (wire-wound resistor, required)	6.8Ω/3W
LDM	1.2mH/Max:2.5Ω/Min:0.35A

Application environmental	Ambient temperature range	Immunity LEVEL	Emissions CLASS
Basic applications	-40°C to +85°C	Level 3	Class A

Recommended Circuit 2



Component	Value
FUSE (required)	1A/300V, slow-blow
R1 (wire-wound resistor, required)	6.8Ω/3W
LDM	1.2mH/Max: 2.5Ω/Min: 0.35A
CX	0.1uF/310VAC
CY1/CY2	1nF/400VAC

Application environmental

Ambient temperature range

Immunity LEVEL

Emissions CLASS

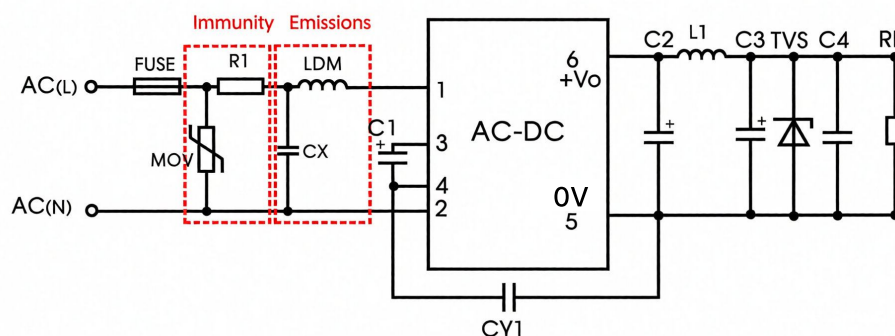
Indoor civil

-25°C to +55°C

Level 3

Class B

Recommended Circuit 3



Component	Value
FUSE (required)	2A/300V, slow-blow
R1 (wire-wound resistor, required)	6.8Ω/3W
LDM	1.2mH/Max: 2.5Ω/Min: 0.35A
CX	0.1uF/310VAC
MOV	S14K350
CY1	1nF/400VAC

Application environmental

Ambient temperature range

Immunity LEVEL

Emissions CLASS

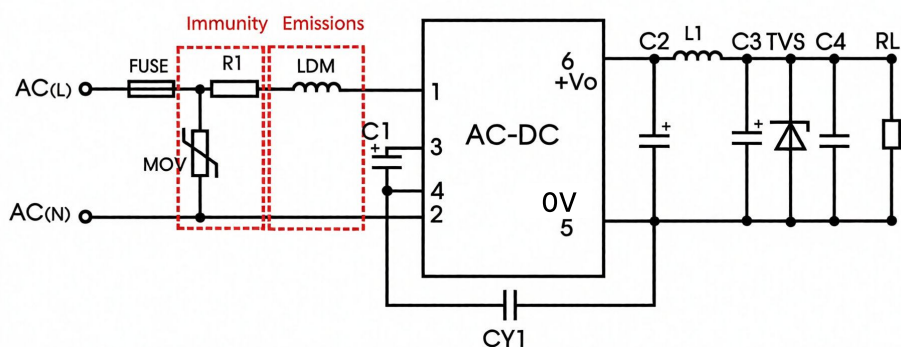
Indoor Industrial

-25°C to +55°C

Level 4

Class B

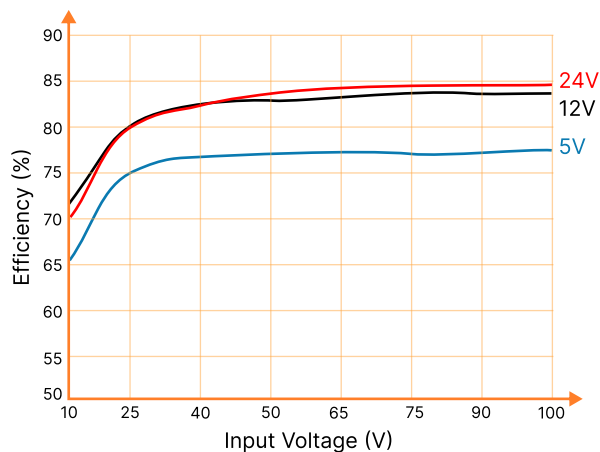
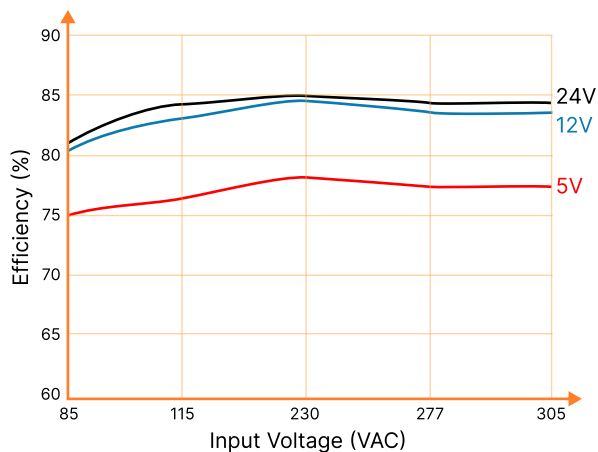
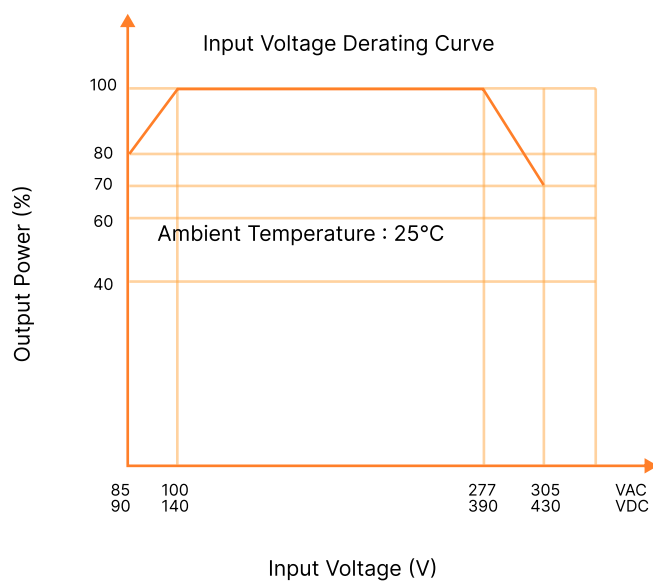
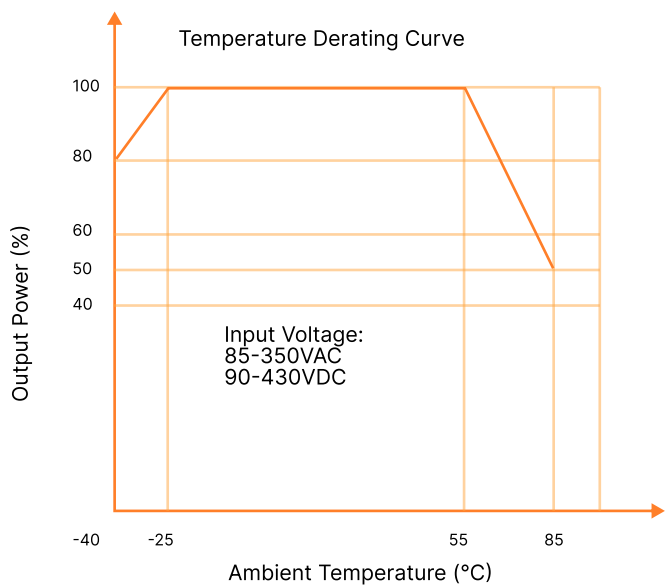
Recommended Circuit 4



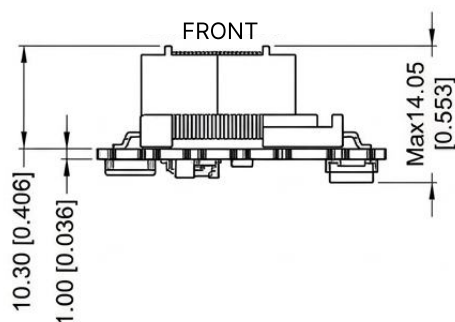
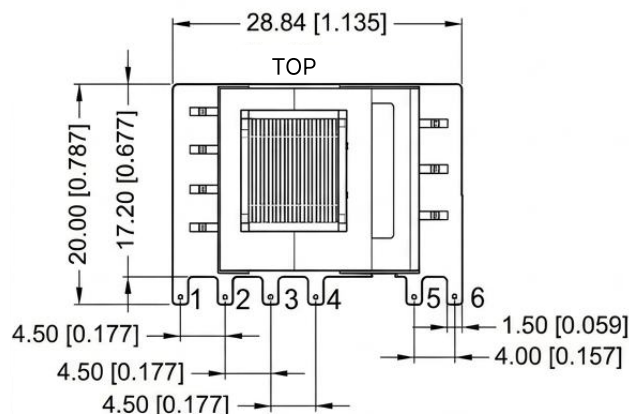
Component	Value
FUSE (required)	2A/300V, slow-blow
R1 (wire-wound resistor, required)	6.8Ω/3W
LDM	1.2mH/Max:2.5Ω/Min:0.35A
MOV	S14K350

Application environmental	Ambient temperature range	Immunity LEVEL	Emissions CLASS
Outdoor Industrial	-40°C to +85°C	Level 4	Class A

PRODUCT CHARACTERISTIC CURVE



OVERALL DIMENSIONS AND PIN FUNCTIONS



Note:
Unit: mm[inch]
Pin section tolerances: $\pm 0.10 [\pm 0.004]$
General tolerances: $\pm 1.00 [\pm 0.039]$
The layout of the device is for reference only,
please refer to the actual product

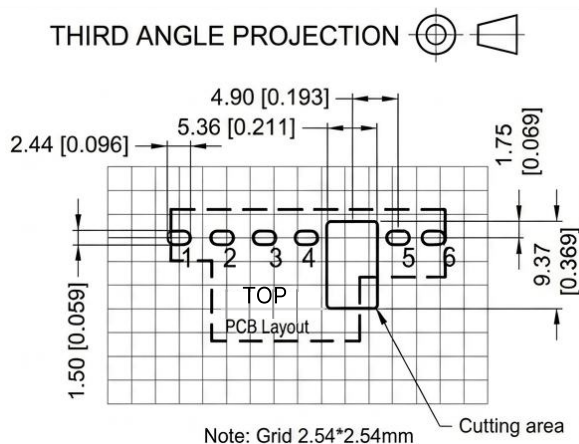


Table 3: Pin Function Table

Pin	Function
1	AC(N)
3	AC(L)
5	+V(cap)
7	-V(cap)
14	0V
16	+Vo

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.