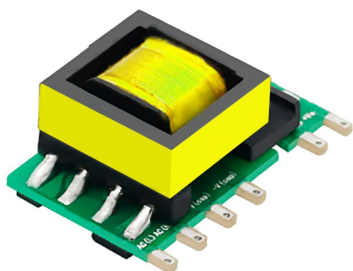


ACS05W-xxV Series



RoHS



FEATURES

- Ultra-wide 85-305VAC and 70-430VDC input voltage range
- Accepts AC or DC input(dual-use of same terminal)
- Operating ambient temperature range -40°C to +85°C
- Compact size, high power density, green power
- No-load power consumption 0.1W
- Output short circuit, over-current protection
- Adjustable cost for multiple application

DESCRIPTION

The ACS05W-xxV series is an efficient modular power supply for miniaturized bare boards, 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

ACS05W-xxV

Series Output Power Output Voltage

SELECTION GUIDE

Product Model	Output Voltage (Vo)	Output Current (Io)(mA)	Output Power (W)	Efficiency (230VAC, %/Typ.)	Maximum capacitive load (uF)
ACS05W-03V	3.3	1000	3.3	69	2200
ACS05W-05V	5	1000	5	76	1500
ACS05W-09V	9	560	5	77	680
ACS05W-12V	12	420	5	79	470
ACS05W-15V	15	340	5	79	330
ACS05W-24V	24	210	5	81	100

INPUT CHARACTERISTICS

Parameter	Conditions	Min.	Typ.	Max.	Units
Input Voltage	AC Input	85	--	305	VAC
	DC Input	70	--	430	VDC
Input voltage frequency	AC Input	47	--	63	Hz
Input Current	115VAC	--	--	0.2	A
	230VAC	--	--	0.1	A
Inrush Current	115VAC	--	20	--	A
	230VAC	--	40	--	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	--	±5	--	%
Line regulation	Rated load	--	±1.5	--	%
Load regulation	10% to 100% load	--	±3	--	%
Minimum load		10	--	--	%
Stand-by power	230VAC	--	0.10	0.15	W
Ripple & Noise	20MHz bandwidth(peak-to-peak value), 10% - 100% load	--	80	150	mV
Temperature drift Coefficient		--	±0.15	--	%/°C
Short circuit protection		Hiccup, continuous, self-healing			
Overcurrent protection		≥110%Io, self-recovery			

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	+55°C to +85°C	1.67	--	--	%°C
	85VAC to 100VAC	1.33	--	--	%/VAC
	277AVC to 305VAC	0.72	--	--	%/VAC
Working temperature		-40	--	+85	°C
Storage Temperature		-40	--	+105	°C
Storage Humidity		--	--	95	%RH
Soldering Profile	Wave-soldering	260 ± 5°C; time : 5 - 10s			
	Manual-welding	360 ± 8°C; time : 3 - 5s			
Safety Standard		Design refer to IEC/EN60335-1, IEC/EN61558-1			
Safety Class		CLASS II			
MTBF	MIL-HDBK-217F@25°C	>1,000,000h			

PHYSICAL CHARACTERISTICS

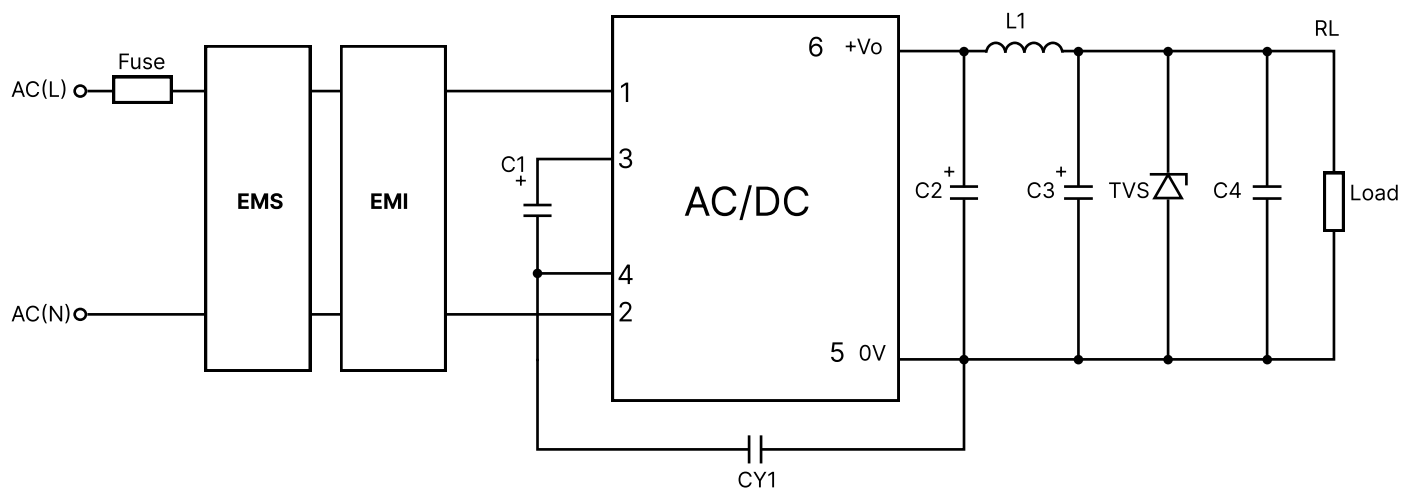
Parameter	Contents
Dimension	26.40 × 16.73 × 11.00 mm
Weight	5.2g (Typ.)
Cooling mode	Natural air cooling

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)

Parameter	Category	Content	
EMC	ESD	IEC/EN61000-4-2	Contact $\pm 6\text{KV}$ perf. Criteria B
	RS	IEC/EN61000-4-3	10V/m perf. Criteria A
	EFT	IEC/EN61000-4-4	$\pm 2\text{KV}$ (Recommended circuit 1, 2) perf. Criteria B
		IEC/EN61000-4-4	$\pm 4\text{KV}$ (Recommended circuit 3, 4) perf. Criteria B
	Surge	IEC/EN61000-4-5	line to line $\pm 1\text{KV}$ (Recommended circuit 1, 2) perf. Criteria B
		IEC/EN61000-4-5	line to line $\pm 2\text{KV}$ (Recommended 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 REFERENCE

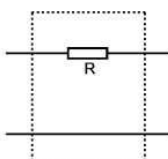
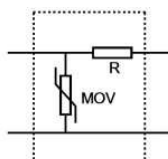


Model No	C1 (required)	C2 (required)	L1 (required)	C3 (required)	C4	CY1 (required)	TVS
ACS05W-03V	10uF/450V (-25°C to +85°C, 85-305VAC input; -40°C to +85°C, 165-305VAC input)	820uF/6.3V(solid-state capacitor)	4.7uH/ 60mΩ / 2.2A	100uF/35V	0.1uF/50V	1nF/400VAC	SMBJ7.0A
ACS05W-05V		470uF/16V(solid-state capacitor)					SMBJ12A
ACS05W-09V		270uF/16V (solid-state capacitor)					
ACS05W-12V	22uF/450V (-40°C to +85°C, 85-305VAC input)	220uF/35V	4.7uH/ 60mΩ / 2.2A	47uF/35V	0.1uF/50V	1nF/400VAC	SMBJ20A
ACS05W-15V							SMBJ30A
ACS05W-24V							

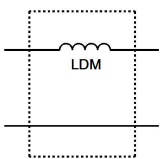
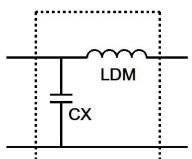
Environmental Application - EMC Solution Selection Table

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	Intelligent household electrical appliance		-25°C to +55°C	Class B	III level
	Indoor Industry	Intelligent building		-25°C to +55°C	Class B	III level
3	Outdoor industry	Manufacturing workshop		-25°C to +55°C	Class B	IV level
4	Outdoor ordinary	ITS/Charging point/ Communication/Security and protection		-40°C to +85°C	Class A	IV level

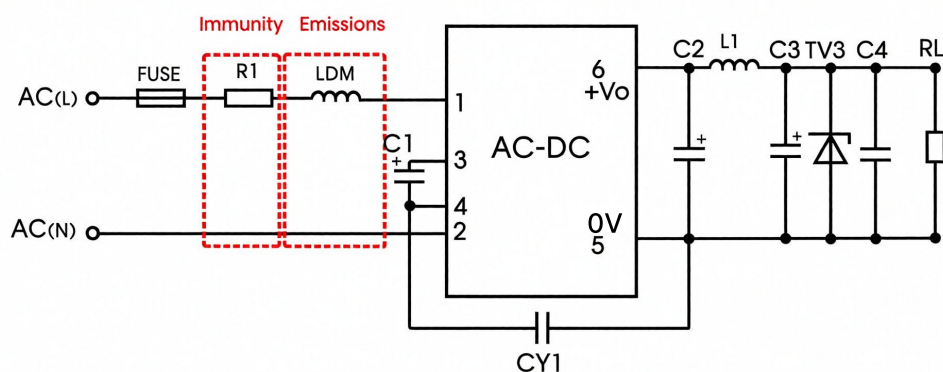
EMS protection circuit design reference

III level	IV level
	

EMI protection circuit design reference

Class A	Class B
	

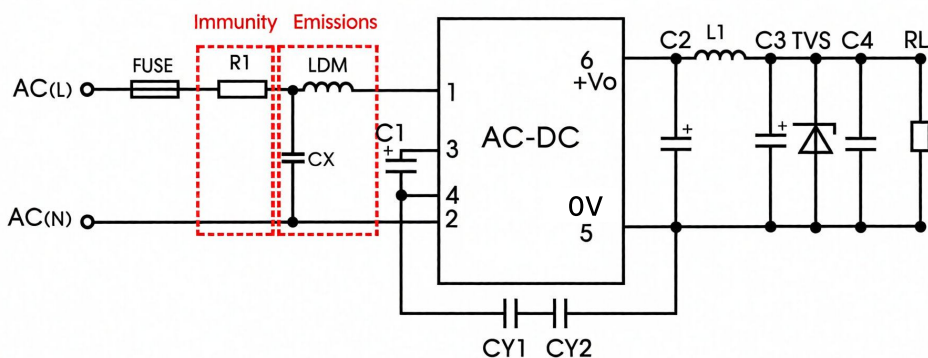
Recommended Circuit 1



Component	Value
FUSE (required)	1A/300V, slow-blow
R1 (wire-wound resistor, required)	12Ω/3W
LDM	4.7mH/Max: 15Ω/Min: 0.2A

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)	12Ω/3W
LDM	1.2mH/Max: 4.0Ω/Min: 0.2A
CX	0.1uF/310VAC

Application environmental

Ambient temperature range

Immunity LEVEL

Emissions CLASS

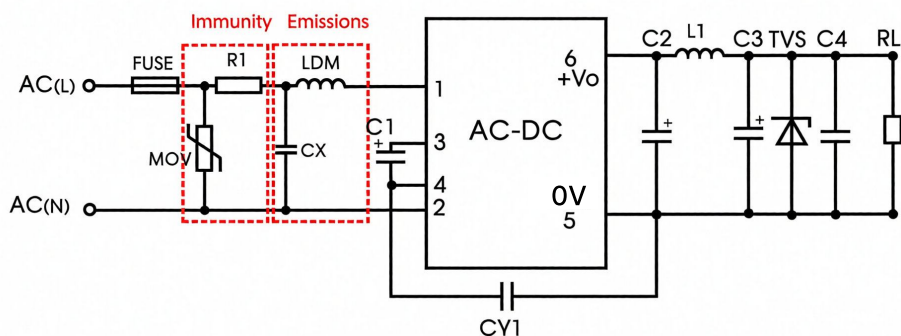
Indoor civil

-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)	12Ω/3W
LDM	1.2mH/Max: 4.0Ω/Min: 0.2A
CX	0.1uF/310VAC
MOV	S14K350

Application environmental

Ambient temperature range

Immunity LEVEL

Emissions CLASS

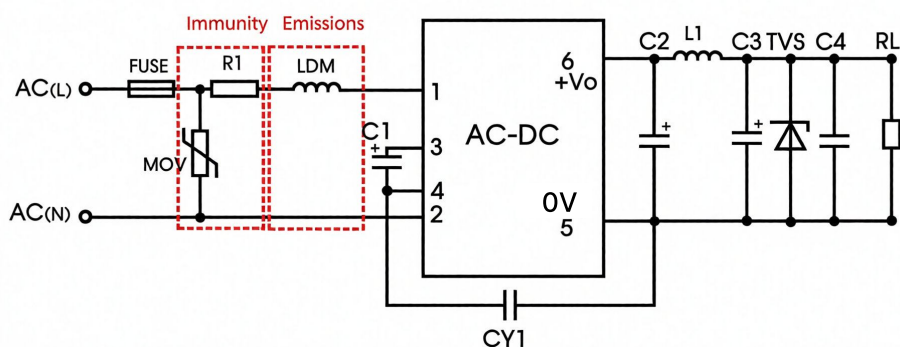
Indoor Industrial

-25°C to +55°C

Level 4

Class B

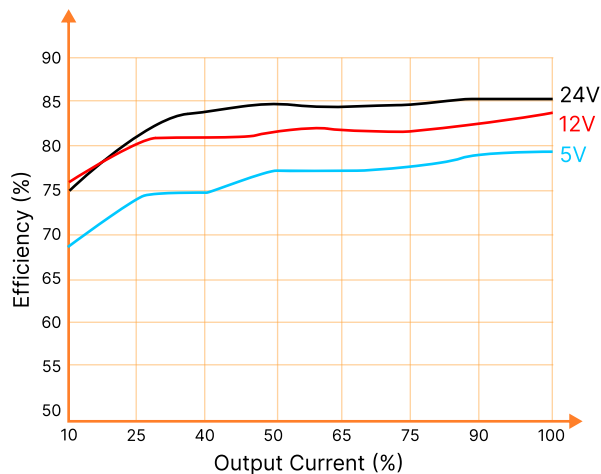
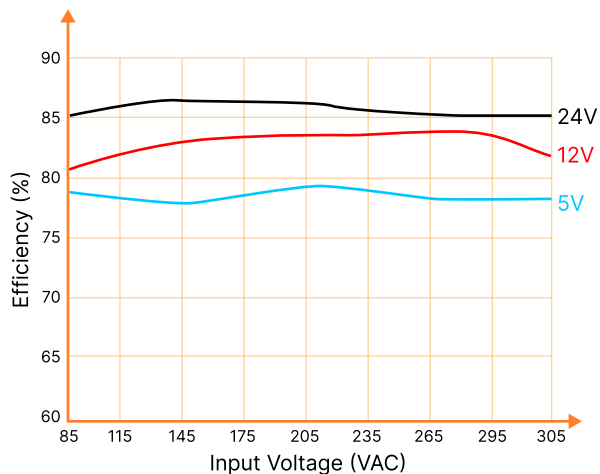
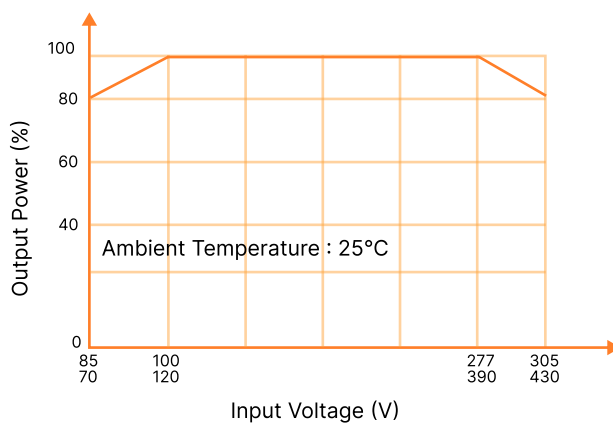
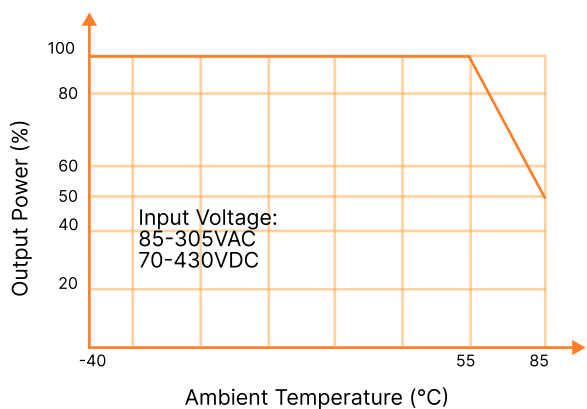
Recommended Circuit 4



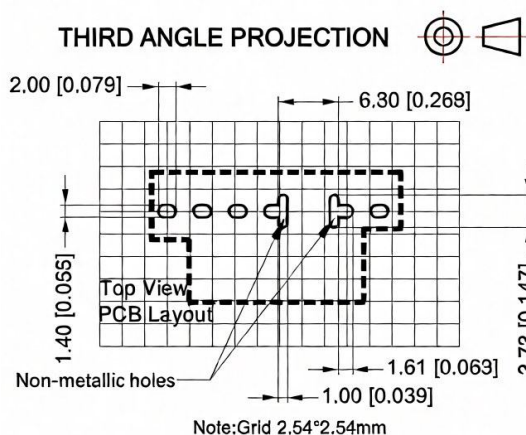
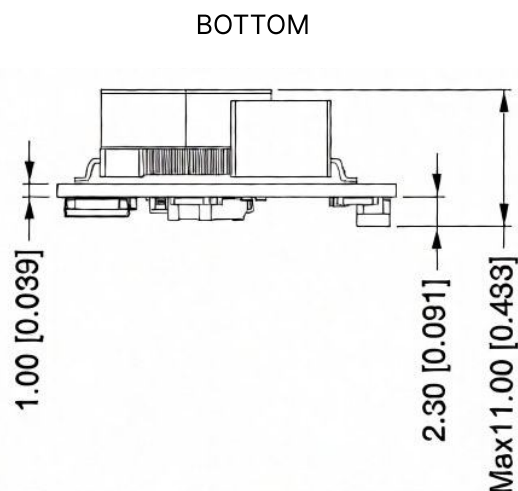
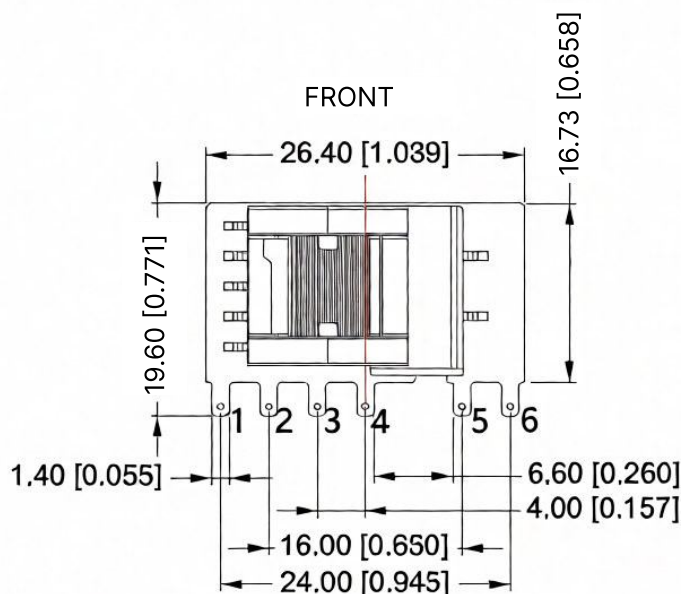
Component	Value
FUSE (required)	2A/300V, slow-blow
R1 (wire-wound resistor, required)	12Ω/3W
LDM	4.7mH/Max: 15Ω/Min: 0.2A
MOV	S14K350

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



Pin	Function
1	AC(L)
2	AC(N)
3	+V(cap)
4	-V(cap)
5	0V
6	+Vo

Note:
Dimensions in mm
Pin section tolerance: ± 0.10 [± 0.004]
General tolerance: ± 1.00 [± 0.039]
The layout of the device is for reference only,
please refer to the actual product

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.