



45ACO_3 series

45W - Single Output AC-DC Converter - Universal input - Isolated & Regulated

AC-DC Converter 45 Watt

- + 85 - 264V Universal AC or wide 100 - 370V DC Input
- + 3x2" high power density
- + Operating ambient temp. range: -25°C to +70°C
- + Regulated output, Low ripple & noise
- + Output short circuit, over-current, over-voltage protection
- + High efficiency, high reliability
- + EMI performance meets CISPR32 / EN55032 CLASS B
- + UL/EN/IEC62368 approved



The 45ACO_3 is one of GAPTEC's compact size power converter. It features universal AC input and at the same time accepts DC input voltage, low power consumption, high efficiency, high reliability, reinforced isolation. It offers good EMC performance compliant to IEC/EN61000-4 and CISPR32/EN55032 and meets IEC/EN/UL62368 standards. The converters are widely used in industrial, office and civil applications. For extremely harsh EMC environment, we recommend using the application circuit show in Design Reference of this datasheet.

Common specifications					
Item	Test conditions	Min	Typ	Max	Units
Isolation (input-output)	Electric Strength Test for 1min. (leakage current <5mA)	3000			VAC
Short circuit protection	Hiccup, continuous, self-recovery				
Operating temperature		-25		+70	°C
Storage temperature		-25		+85	°C
Storage humidity				90	%RH
Switching Frequency			65		kHz
Power derating	• -25°C to -10°C • +50°C to +70°C • 85VAC-100VAC • 240VAC - 264VAC	2.0 2.5 0.375 0.833			%/°C %/°C %/VAC %/VAC
Safety standard	IEC62368/UL62368/EN62368				
Safety certification	CE62368/EN62368				
Safety class	CLASS II				
MTBF	MIL-HDBK-217F@25°C	>300,000 h			
Dimensions	76.20 x 50.80 x 30.00 mm				
Weight	90g TYP.				
Cooling Method	Free air convection				

Input specifications					
Item	Test conditions	Min	Typ	Max	Units
Input Voltage Range	• AC input • DC input	85 100		264 370	VAC VDC
Input frequency		47		63	Hz
Input current	• 115VAC • 230VAC			1.2 0.7	A A
Inrush current	• 115VAC • 230VAC		35 50		A A
Hot plug	Unavailable				

Output specifications					
Item	Test conditions	Min	Typ	Max	Units
Output voltage accuracy	• 3.3V Output • Other Outputs		±3.0 ±2.0		% %
Line regulation	Full load		±0.5		%
Load regulation	0% - 100% load		±1.		%
Ripple & noise*	20MHz bandwidth (peak-to-peak value)		50	100	mV
Temperature coefficient			±0.02		%/°C
Stand-by power consumption				0.5	W
Over-voltage protection**	3.3VDC Output 5VDC Output 9VDC Output 12VDC Output 15VDC Output 24VDC Output 48VDC Output		≤7.5VDC ≤9VDC ≤16VDC ≤20VDC ≤24VDC ≤35VDC ≤60VDC		
Over-current protection				150% - 300%lo,	self-recovery
Minimum load			0		%
Hold-up time	230VAC input		50		ms

*The "parallel cable" method is used for Ripple and noise test, please refer to AC-DC Converter Application Notes for specific information.

** Output voltage clamp or turn off

Example: 45ACO_24S3

45 = 45Watt; AC = AC-DC; O = series; 24 = 24 Vout;
S = single output; 3 = 3kVAC isolation

Note:

- There will be noise generated when product working at light load, but it does not affect the performance and reliability;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta = 25 °C, humidity <75% with nominal input voltage and rated output load;
- All index testing methods in this datasheet are based on our Company's corporate standards;
- We can provide product customization service;
- Products are related to laws and regulations: see "Features" and "EMC";
- Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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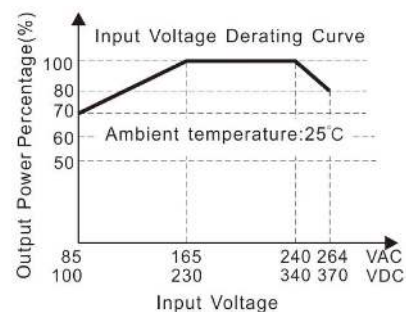
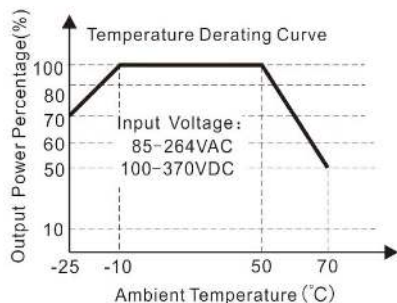
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EMC specifications					
Emissions	CE		CISPR32/EN55032	CLASS B	
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Immunity	ESD		IEC/EN61000-4-2	Contact ±6KV	perf. Criteria B
Immunity	RS		EC/EN61000-4-3	10V/m	perf. Criteria A
Immunity	EFT		IEC/EN61000-4-4	±2KV	perf. Criteria B
Immunity	Surge		IEC/EN61000-4-5	line to line ±1KV	perf. Criteria B
Immunity	CS		IEC/EN61000-4-6	10Vr.m.s	perf. Criteria A
Immunity	Voltage dips, short interruptions and voltage variations immunity		IEC/EN61000-4-11	0%,70%	perf. Criteria B

Product Selection Guide

Selection Guide						
Approval	Model	Output Power [W]	Nominal Output Voltage and Current [Vo/Io]	Efficiency at 220VAC [% , typ]	Max. Capacitive Load (µF max)	
UL/CE	45ACO_03S3	26.4	3.3V/8000mA	76	30000	
UL/CE	45ACO_05S3	40	5V/8000mA	82	20000	
UL/CE	45ACO_09S3	40	9V/4444mA	84	6000	
UL/CE	45ACO_12S3	45	12V/3750mA	84	4000	
UL/CE	45ACO_15S3	45	15V/3000mA	86	3500	
UL/CE	45ACO_24S3	45	24V/1875mA	86	1000	
UL/CE	45ACO_48S3	45	48V/940mA	87	600	

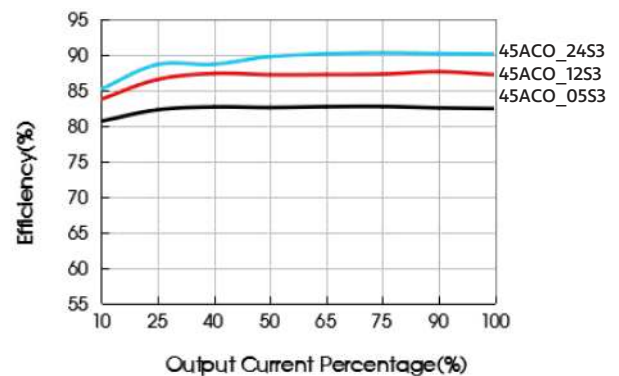
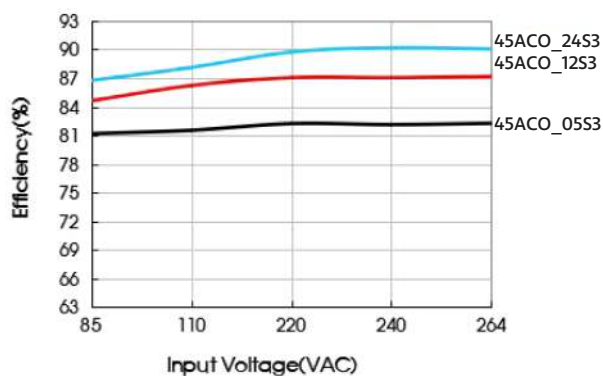
Product Characteristic Curve



Note:

- ① With an AC input between 85-165V/240-264VAC and a DC input between 100-230V/340-370VDC, the output power must be derated as per temperature derating curves;
- ② This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

Efficiency



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Typical application

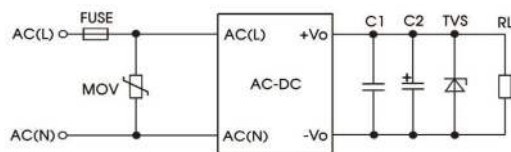


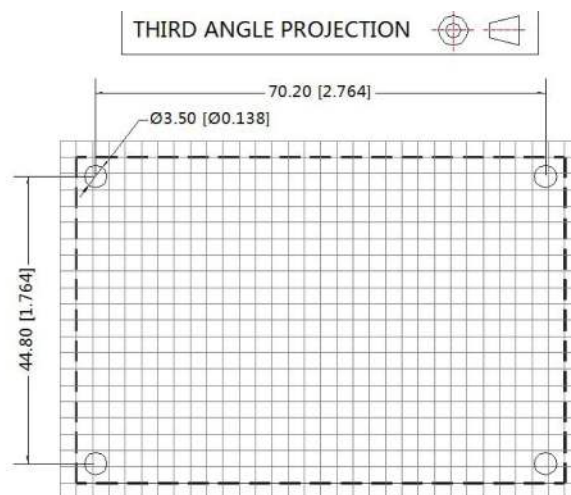
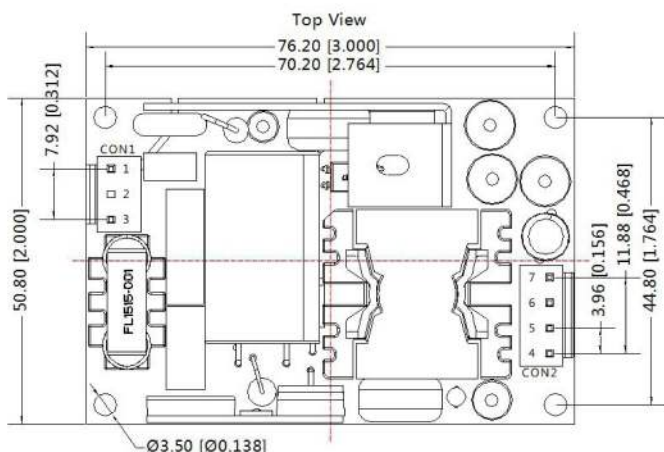
Fig. 1: Typical circuit diagram

Model	FUSE	MOV	C2(μF)	C1(μF)	TVS
45ACO_03S3	3.15A/250V slow-blow	S14K300	1	680	SMBJ7.0A
45ACO_05S3					SMBJ7.0A
45ACO_09S3				47	SMBJ12A
45ACO_12S3					SMBJ20A
45ACO_15S3					SMBJ20A
45ACO_24S3					SMBJ30A
45ACO_48S3				SMBJ64A	

Output Filter Components:

We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2. Choose a Capacitor voltage rating with at least 20% margin, in other words not exceeding 80%. C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

Dimensions and Recommended Layout



Note: Grid 2.54*2.54mm

Note:

Unit: mm[inch]

General tolerances: ±0.50[±0.020]

In CON1 model: VH-3A, Recommend terminal: VH-3Y

Out CON2 model: VH-4A, Recommend terminal: VH-4Y

Mounting hole screwing torque: Max 0.4 N·m

Pin-Out			
Pin	Function	Connector	Terminal
1	AC(L)	VH-3A or B2P3-VH or the same Spec.	VH-3Y or VHR-3N or the same Spec.
2	NoPin		
3	AC(N)		
4	-Vo	VH-4A or B4P-VH or the same Spec.	VH-4Y or VHR-4N or the same Spec.
5	-Vo		
6	+Vo		
7	+Vo		