40ACE1W_4R series

40W - Single Output AC-DC Converter



AC-DC Converter 40 Watt

- Universal input: 85-305VAC and 100-430VDC
- DIP package type
- Operating temperature range: -40°C to +85°C
- 4200VAC isolation voltage
- Up to 89% efficiency
- High power density and ultra-small housing
- Short circuit protection (SCP) Over current and over voltage protection
- Overvoltage Class III (according to EN61558-1)
- Design meets EMI CLASS B and surge ±2kV requirements

Introducing our new 40ACE1W_4R series AC-DC power supplies, designed to deliver high power density and reliable performance in an ultra-compact DIP package. The series supports a universal input range of 85–305VAC / 100–430VDC, making it suitable for a wide variety of industrial and electronic applications. With efficiency of up to 89%, the 40ACE1W_4R series combines compact dimensions with reduced power losses and dependable thermal performance. It operates across a wide temperature range from -40°C to +85°C and provides 4200VAC isolation voltage for enhanced system safety. Comprehensive protection features include short-circuit, overcurrent and overvoltage protection. The series is also designed for Overvoltage Category III according to EN 61558-1 and meets EMI Class B as well as ±2kV surge requirements. With its combination of wide input range, high efficiency, strong isolation and compact design, the 40ACE1W_4R series offers a robust solution for space-conscious applications requiring reliable and efficient power conversion.

UL62368 - E347551 Pending

Common specifications

Short circuit protection	Continuous, self recovery
Over current protection	110 (typ.) %Io
Over temperature protection	Shut down output voltage; recovers automatically after temperature decreases.
Power derating	-40°C - -25°C Input voltage <200VAC 4 %/°C +50°C - +70°C 2.5 %/°C +70°C - +85°C 1.67 %/°C +70°C - +85°C 0.67 %/°C 85VAC - 100VAC 1.67 %/VAC 277VAC - 305VAC 0.72 %/VAC
Operating temperature	-40°C - +85°C (with derating)
Storage temperature	-40°C - +85°C
Storage humidity	95% RH
Soldering profile	Wave soldering 260°C (±5°C); time: 5 - 10s Manual welding 360°C (±10°C); time: 3 - 5s
Safety standard	IEC/EN/BS EN62368-1, EN61558-1, EN60335-1; UL62368-1
Safety class	CLASS II
MTBF	>500,000 h (MIL-HDBK-217F@25°C)
Hot plug	Unavailable
Case material	Black plastic; flame-retardant and heat-resistant (UL94V-0)
Package dimensions	69.50 x 39.00 x 24.00mm
Weight	102g (typ.)
Cooling method	Free air convection

Input specifications

Item	Operating condition	Min	Typ	Max	Units
Input voltage	AC Input DC Input 5/9/12/15/18/24V DC Input 48V	85 100 120		305 430 430	VAC VDC VDC
Input current	115VAC 230VAC			1.0 0.6	A
Inrush current	115VAC 230VAC		30 60		A
Input frequency		47		63	HZ
Fuse	3.15A/300V, slow blow				
Leakage current	230VAC/50Hz 0.1mA RMS max.				

Example:
40ACE1W_09S4R
40 = 40Watt; AC = AC-DC; E1 = Cost effective; W = Wide input;
09 = 9Vout; S = Single output; 4 = 4kVAC isolation; R = Revised version

Output specifications

Item	Operating condition	Min	Typ	Max	Units
Voltage Accuracy			±2.0		%
Linear Regulation	Vin=Min. to Max. @Full Load		±0.5		%
Load regulation (0%-100% load)	5V 9/12/15/18/24/48V		±2.0 ±1.0		%
Ripple Noise	20MHz bandwidth,5%-100% load		100	150	mV
Temperature Drift Coefficient			±0.02		%/°C
Stand-by Power Consumption	230VAC		0.3	0.55	W
Min. Load		0			%
Over Current Protection		110			%Io
Hold-Up Time	230VAC		50		ms

Note:The ripple and noise test method is based on the reliability method,and the output is a parallel 10uF electrolytic capacitor and a 1uF ceramic capacitor.

Isolation specifications

Item	Operating Conditions	Min	Typ	Max	Units
Insulation Voltage	Input-output,test time 1 minute,leakage current less than 5mA	4200			VAC
Insulation Resistance	Input-output,insulated voltage 500VDC	100			MΩ

1. The input voltage should not exceed the specified range value, otherwise it may cause permanent and irreparable damage;
2. It is recommended to use at a load of over 5%. If the load is below 5%, the ripple index of the product may exceed the specifications, but it does not affect the reliability of the product;
3. The maximum capacitive load is tested within the input voltage range and under full load conditions;
4. Unless otherwise specified,all indicators in this datasheet are measured at Ta = 25°C, humidity <75% RH, nominal input voltage, and output rated load;
5. All indicator testing methods in this datasheet are based on our company's standards;
6. For specific requirements please contact our technical team directly;
7. Product specifications are subject to change without prior notice.

EMC specifications			
EMI	CE	CISPR32/EN55032 CLASS B	
EMI	RE	CISPR32/EN55032 CLASS B	
EMS	RS	IEC/EN61000-4-3 10V/m	perf. criteria A
EMS	EFT	IEC/EN61000-4-4 ±2kV IEC/EN61000-4-4 ±4kV (see figure 2 for emc recommended circuit)	perf. criteria B perf. criteria A
EMS	Surge	IEC/EN61000-4-5 line to line ±2kV IEC/EN61000-4-5 line to line ±2kV/line to PE ±4kV/ (see figure 2 for emc recommended circuit)	perf. criteria B perf. criteria A
EMS	CS	IEC/EN61000-4-6 10Vr.m.s	perf. criteria A
EMS	ESD	IEC/EN61000-4-2 Contact ±6kV / Air ±8kV	perf. criteria A

Product Selection Guide - Single output

Approval	Part number	Input Voltage (VAC)	Output Power (W)	Output Voltage (VDC)	Output Current (mA) max.	Full Load Efficiency % (230VAC, typ)	Capacitive Load (µF) max.
	40ACE1W_05S4R	85-305	35	5	7000	87	6600
	40ACE1W_09S4R	85-305	36	9	4000	88	4400
	40ACE1W_12S4R	85-305	40	12	3330	89	4400
	40ACE1W_15S4R	85-305	40	15	2666	89	3300
	40ACE1W_18S4R	85-305	40	18	2220	88	1800
	40ACE1W_24S4R	85-305	40	24	1670	88	1500
	40ACE1W_48S4R	85-305	40	48	833	89	470

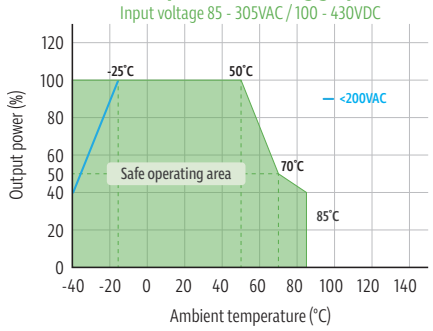
Note:

1. All the above data were tested within the parameter range of typical application circuits.
2. The product images are for reference only. Please refer to the actual product for details.
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Typical characteristics

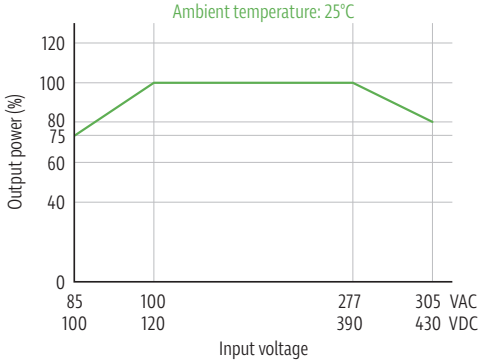
Temperature derating graph

Input voltage 85 - 305VAC / 100 - 430VDC



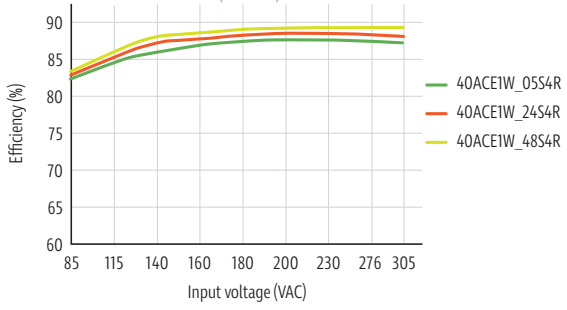
Input voltage derating curve

Ambient temperature: 25°C



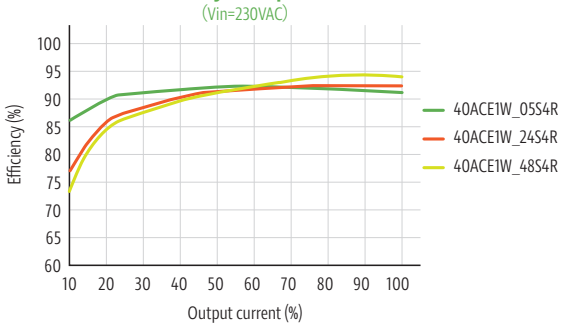
Efficiency vs input voltage

(Full load)



Efficiency vs output load

(Vin=230VAC)



Application circuit

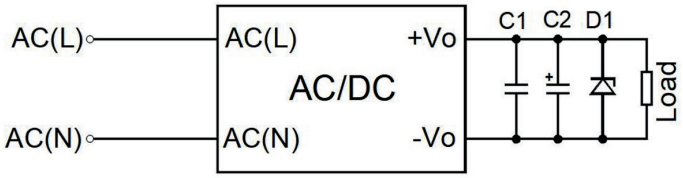


Figure 1

Reference table for selection of peripheral devices

Out Voltage	C1	C2	D1
5VDC	1uF/16V	330uF/16V	See note 1
9/12VDC		330uF/25V	
15/18/24VDC	1uF/35V	100uF/35V	
48VDC	1uF/100V	47uF/63V	

Note: 1. 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.

EMC Solutions and recommended circuits

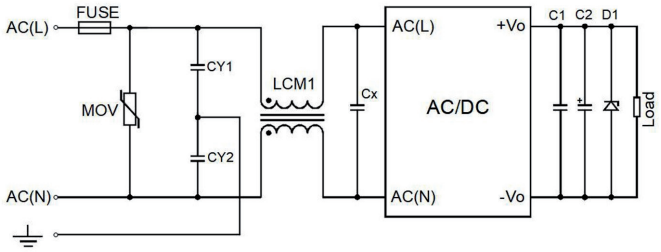
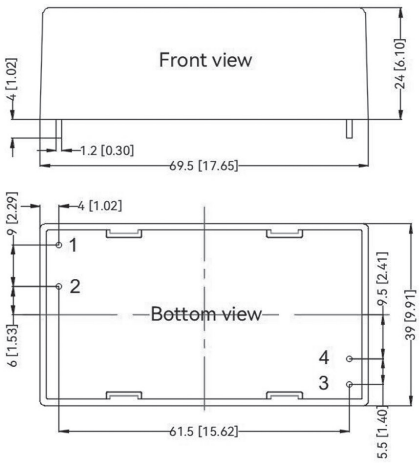


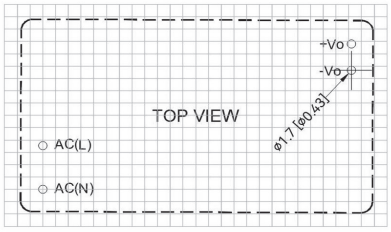
Figure 2

Recommended parameter values for EMC solution circuits

Model	Recommended value
FUSE	3.15A/300VAC, slow blow, required
MOV	14D561K
Cx	0.68uF/310VAC
CY1, CY2	1.0nF/400VAC
LCM	10mH, common mode inductance

Dimensions and recommended layout





Grid size: 2.54*2.54mm

Pin Function Table

Pin	Function
1	AC (N)
2	AC (L)
3	+Vo
4	-Vo

Note:
Unit: mm [inch]
Pin section tolerances:±0.10 [±0.004]
General tolerances:±0.80 [±0.031]