30ACE1W_4R series

30W - Single Output AC-DC Converter



AC-DC Converter 30 Watt

- Input voltage range: 85-305VAC / 100-430VDC
- DIP package type
- Operating temperature range: -40°C to +85°C
- 4000VAC isolation voltage
- Up to 89% efficiency
- Input undervoltage protection
- OVC III (EN61558-1 compliant)
- Short circuit protection (SCP)
- Over current protection
- Meets safety standards: EN61558, EN62368, UL62368-1
- MTBF: 500,000 hours

Introducing our latest 30ACE1W_4R series: designed with a wide input voltage range of 85-305VAC / 120-430VDC, this converter ensures flexibility and versatility in various applications. With an operating temperature range: -40°C to +85°C and a typical efficiency of 89%, it delivers efficient performance. The converter includes comprehensive protection features such as short circuit, over current, and over voltage protection. It provides reliable and stable performance. It features a robust isolation voltage of 4000VAC and meets stringent safety standards and classified as OVC III for safety.

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 <115VAC 5V 2.67 %/°C -40°C - -25°C input voltage <115VAC 3.3/9/12/15/18/24/48V 1.33 %/°C +50°C - +70°C 2.5 %/°C +70°C - +85°C 0.67 %/°C 85VAC - 100VAC 1.67 %/VAC 277VAC - 305VAC 0.72 %/VAC
Working 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 3.3/5/9/12/15/18/24V DC Input 48V	85 100 120		305 430 430	VAC VDC VDC
Input current	115VAC 230VAC			1.0 0.5	A
Inrush current	115VAC 230VAC		25 50		A
Input frequency		47		63	HZ
Fuse	3.15A/300V,Slow-blow				
Leakage current	230VAC/50Hz 0.1mA RMS MAX.				

Example:
30ACE1W_09S4R
30 = 30Watt; 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
Output voltage accuracy	3.3V 5/9/12/15/24/48V		±3 ±2		%
Linear regulation	Vin = min. to max. @full load		±0.5		%
Load regulation (0% - 100% load)	3.3V 5V 9/12/15/18/24/48V		±2.0 ±1.5 ±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
Minimum 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
Isolation voltage	Input-output,test time 1 minute, leakage current less than 5mA	4000			VAC
Isolation resistance	Input-output, isolated 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 corporate standards;
6. For specific requirements please contact our technical team directly;
7. Product specifications are subject to change without prior notice.

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EMC specifications			
EMI	CE	CISPR32/EN55032 CLASS B EN55014-1	
EMI	RE	CISPR32/EN55032 CLASS B EN55014-1	
EMS	RS	IEC/EN61000-4-3 10V/m IEC/EN55014-2	perf. criteria A perf. criteria A
EMS	EFT	IEC/EN61000-4-4 ±2kV IEC/EN61000-4-4 ±4kV (see fig. (2-1, 2-2) for recommended circuit) IEC/EN55014-2	perf. criteria B perf. criteria A perf. criteria B
EMS	Surge	IEC/EN61000-4-5 line to line ±2kV IEC/EN61000-4-5 line to line ±2kV/line to PE ±4kV/ (see fig.(2-1, 2-2) for recommended circuit) IEC/EN55014-2	perf. criteria B perf. criteria A perf. criteria A
EMS	CS	IEC/EN61000-4-6 10Vr.m.s IEC/EN55014-2	perf. criteria A perf. criteria A
EMS	ESD	IEC/EN61000-4-2 Contact ±8kV / Air ±15kV	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.
	30ACE1W_03S4R	85-305	19.8	3.3	6000	85	6600
	30ACE1W_05S4R	85-305	30	5	6000	86	6600
	30ACE1W_09S4R	85-305	30.6	9	3400	88	4400
	30ACE1W_12S4R	85-305	30	12	2500	89	4400
	30ACE1W_15S4R	85-305	30	15	2000	89	3300
	30ACE1W_18S4R	85-305	30	18	1670	87	3300
	30ACE1W_24S4R	85-305	31.2	24	1300	88	1000
	30ACE1W_48S4R	85-305	30.2	48	630	89	470

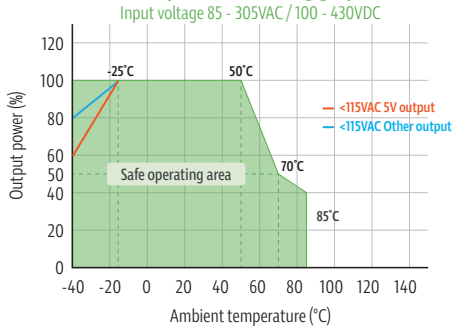
Note:

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

Typical characteristics

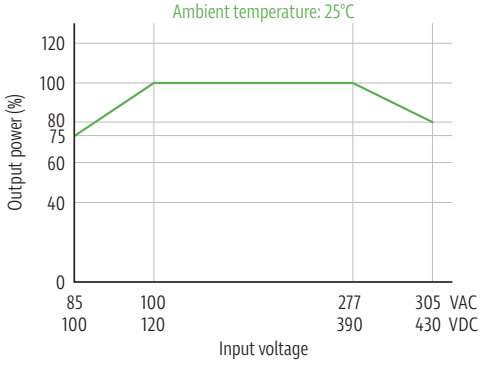
Temperature derating graph

Input voltage 85 - 305VAC / 100 - 430VDC



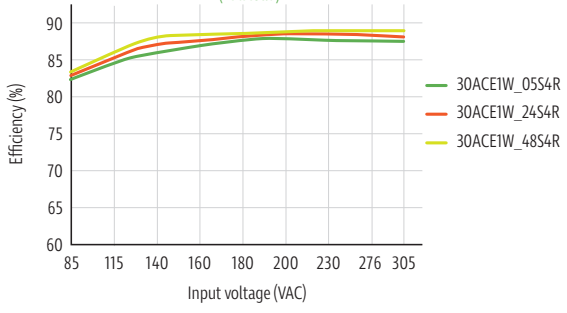
Input voltage derating curve

Ambient temperature: 25°C



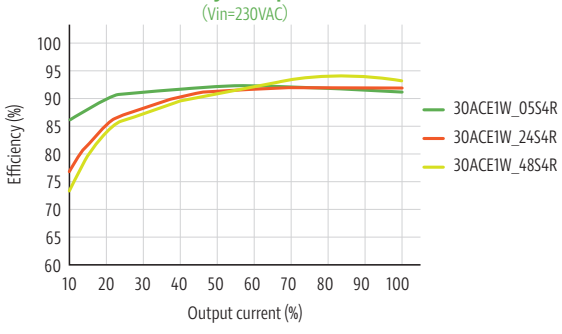
Efficiency vs input voltage

(Full load)



Efficiency vs output load

(Vin=230VAC)



Notes: 1. For input voltages of 85-100VAC/277-305VAC,voltage derating should be carried out on the basis of temperature derating.
2. This product is suitable for use in a natural wind-cooled environment.

Application circuit

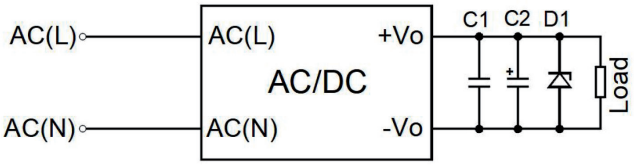


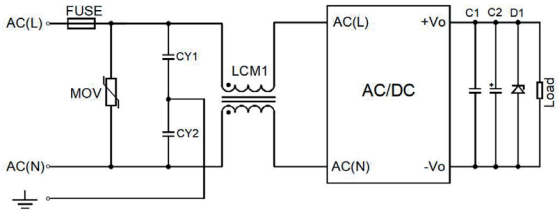
Figure 1

Reference Table for Selection of Peripheral Devices

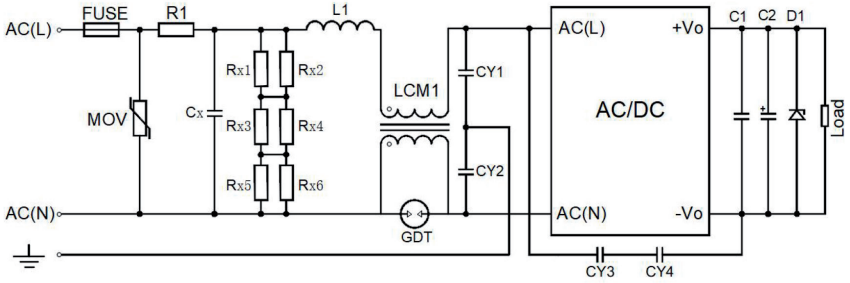
Out Voltage	C1	C2	D1
3.3/5VDC	1uF/16V	220uF/16V	See note1
9/12VDC		100uF/25V	
15/24VDC	1uF/35V	100uF/35V	
48VDC	1uF/100V	10uF/63V	

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 - Recommended circuits



EMC Recommended Circuit (2-1)

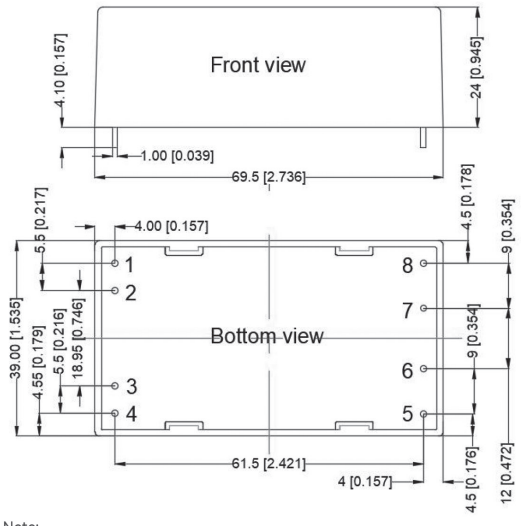


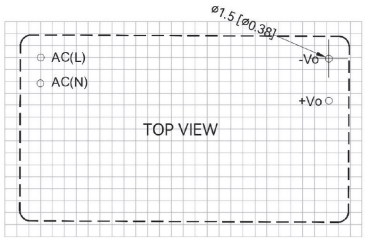
EMC Recommended Circuit (2-2)
(When the output of the product needs to be connected to PE or connected to PE through Y capacitor,Recommended)

Recommended parameter values for EMC solution circuits

Model	Recommended value
FUSE	3.15A/300VAC, Slow-blow, required
MOV	14D561K
R1	6.8Ω/5W wire-wound resistor, required
Cx	0.33uF/305VAC
L1	1.2mH/0.5A
CY1, CY2	2.2nF/400VAC
CY3, CY4	1.0nF/400VAC
GDT	300V/1KA
LCM	20mH, common mode inductance
Rx1, Rx2, Rx3, Rx4, Rx5, Rx6	1.5MΩ/1206
C1, C2, D1	Refer to typical circuit design and application

Mechanical dimensions and recommended layout





Grid size: 2.54*2.54mm

Pin Function Table

Pin	Function
3	AC (N)
4	AC (L)
5	-Vo
6	+Vo
1/2/7/8	No pin

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