3ACFE2W_4 series

3W - Single Output AC-DC Converter



AC-DC Converter 3 Watt

- Input voltage range: 85-305VAC and 100-430VDC
- SIP package style
- Operating temperature range: -40°C to +85°C
- 4000VAC isolation voltage
- Up to 81% efficiency
- Short circuit protection (SCP)
- Over current protection
- Meets safety standards: IEC/EN61558, IEC/EN60335
- MTBF: 1,000,000 hours

Introducing our new 3ACFE2W_4 series AC-DC power supplies in a compact SIP package, designed for reliable performance across a wide range of industrial and electronic applications. The series supports a broad input voltage range of 85–305VAC / 100–430VDC and operates over an extended temperature range from -40°C to +85°C. With efficiency of up to 81% and a high 4000VAC isolation voltage, the 3ACFE2W_4 series combines dependable power conversion with enhanced electrical safety.

Integrated short-circuit and overcurrent protection help ensure stable and reliable operation under demanding conditions. The series is designed to meet IEC/EN 61558 and IEC/EN 60335 safety standards and offers an MTBF of 1,000,000 hours, supporting long-term reliability and robust system performance.

UL62368-1 - 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	+55°C - +85°C 2.50 %/°C 85VAC - 100VAC 1.00 %/VAC 277VAC - 305VAC 0.535 %/VAC
Operating temperature	-40°C - +85°C (with derating)
Storage temperature	-50°C - +105°C
Soldering profile	Wave soldering: 260°C (±5°C); time: 5 - 10s Manual welding: 360°C (±5°C); time: 3- 5s
Product certification	UL- 62368-1; CB - 62368-1; CE - 62386-1
Safety standard	IEC/UL62368-1, IEC/EN60335-1, IEC/EN61558-1
Safety class	CLASS II
MTBF	>1,000,000 h (MIL-HDBK-217F@25°C)
Hot Plug	Unavailable
Package dimensions	26.40 x 11.00 x 17.60mm
Weight	5.01g (typ.)
Cooling method	Free air convection

Input specifications

Item	Operating condition	Min	Typ	Max	Units
Input voltage	AC Input DC Input	85 100		305 430	VAC VDC
Input current	115VAC 230VAC			0.15 0.07	A
Input frequency		47		63	HZ
Fuse	1A, slow-blow, required				

Example:
3ACFE2W_09S4
3 = 3Watt; AC = AC-DC; F = Open Frame; E2 = Series; W = Wide input range; 09 = 9Vout; S = Single output; 4 = 4kVAC isolation

Output specifications

Item	Operating condition	Min	Typ	Max	Units
Output voltage accuracy	10% - 100% load		±5		%
Linear regulation (rated load)	3.3V Other voltages		±2.5 ±1.5		%
Load regulation	10% - 100% load		±3		%
Ripple & noise	20MHz bandwidth, 10% - 100% load		80	150	mV
Temperature coefficient			±0.15		%/°C
Stand-by power consumption	230VAC		0.10		W
Minimum load		10			%Io
Over current protection		110			%Io

Note: The test method for ripple and noise adopts the proximity test method, with a 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

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.

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EMC specifications			
EMI	CE	CISPR32/EN55032 CLASS A (typical application circuit) CISPR32/EN55032 CLASS B (EMC recommended circuit)	
EMI	RE	CISPR32/EN55032 CLASS A (typical application circuit) CISPR32/EN55032 CLASS B (EMC recommended circuit)	
EMS	RS	IEC/EN61000-4-3 10V/m	perf. criteria A
EMS	EFT	IEC/EN61000-4-4 ±2kV (typical application circuit) IEC/EN61000-4-4 ±4kV (EMC recommended circuit)	perf. criteria B perf. criteria B
EMS	Surge	IEC/EN61000-4-5 line to line ±1kV (typical application circuit) IEC/EN61000-4-5 line to line ±2kV (EMC recommended circuit)	perf. criteria B perf. criteria B
EMS	CS	IEC/EN61000-4-6 10Vr.m.s	perf. criteria A
EMS	ESD	IEC/EN61000-4-2 Contact ±6kV / Air ±8kV	perf. criteria B

Product Selection Guide

Approval	Part number	Input Voltage (VAC)	Out Power (W)	Out Voltage (VDC)	Out Current (mA) max.	Full Load Efficiency % (230VAC, typ.)	Capacitive Load (µF) max.
	3ACFE2W_03S4	85-305	1.98	3.3	600	68	820
	3ACFE2W_05S4	85-305	3	5	600	73	680
	3ACFE2W_07S4	85-305	3	7.5	400	78	470
	3ACFE2W_09S4	85-305	3	9	340	77	470
	3ACFE2W_12S4	85-305	3	12	250	77	470
	3ACFE2W_15S4	85-305	3	15	200	78	330
	3ACFE2W_24S4	85-305	3	24	125	80	220
	3ACFE2W_18S4	85-305	3	18	167	81	220

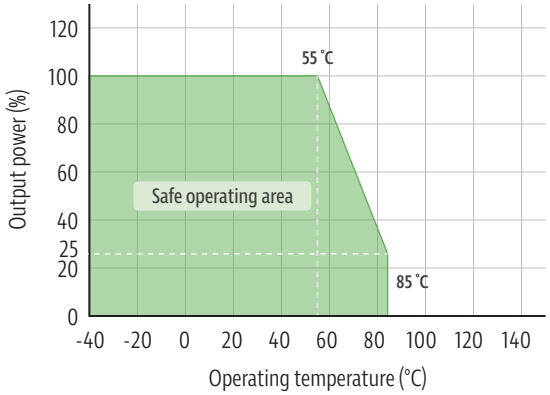
Note:

1. All the above data were tested within the parameter range of typical application circuits.
2. All models are without conformal paint protection on the surface.
3. Please add suffix „-F“ for 90° bent pins models (3ACFE2W_18S4/F)
4. If the product is used in a high vibration environment, it needs to be dispensed to fix its body.
5. The product images are for reference only. Please refer to the actual product for details.

Typical characteristics

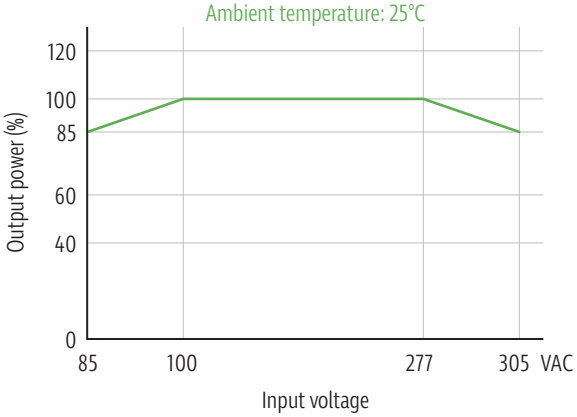
Temperature derating graph

Input voltage 85 - 305VAC

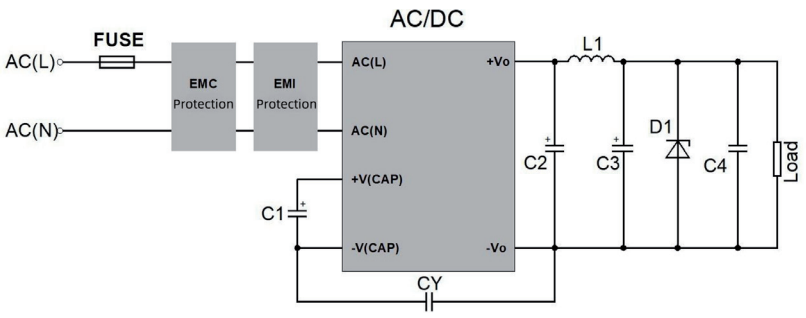


Input voltage derating curve

Ambient temperature: 25°C



Application circuit

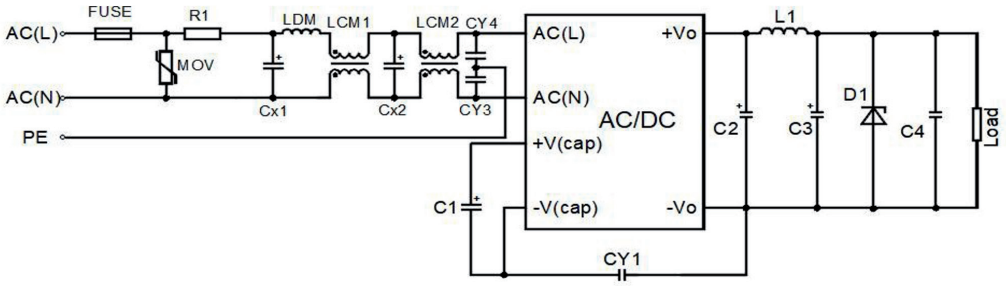


Reference Table for Selection of Peripheral Devices

Output voltage	C1 (required)	C2 (required)	L1 (required)	C3 (required)	C4	CY (required)	D1
5VDC	22uF/450V	470uF/16V (Solid state capacitors)	4.7uH 2.2A 60mΩMAX	150uF16V	0.1uF/50V	1nF/400VAC	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.
12VDC	22uF/450V	270uF/25V (Solid state capacitors)	4.7uH 2.2A 60mΩMAX	150uF/25V	0.1uF/50V	1nF/400VAC	
15/24VDC	22uF/450V	470uF/35V	4.7uH 2.2A 60mΩMAX	100uF/35V	0.1uF/50V	1nF/400VAC	

Note:
1. FUSE, EMC protection, EMI protection are selected according to the actual application needs.
2. C1 is a filtering electrolytic capacitor, which is a mandatory device, and it is recommended to use an electrolytic capacitor with a ripple current >400mA@100KHz.
3. C2, C4 and L1 form a Pi-type filter circuit, and it is recommended to use high-frequency and low-resistance electrolytic capacitors or solid-state capacitors.
4. L1 selection can take into account the ripple requirements, while paying attention to the current and internal resistance values.

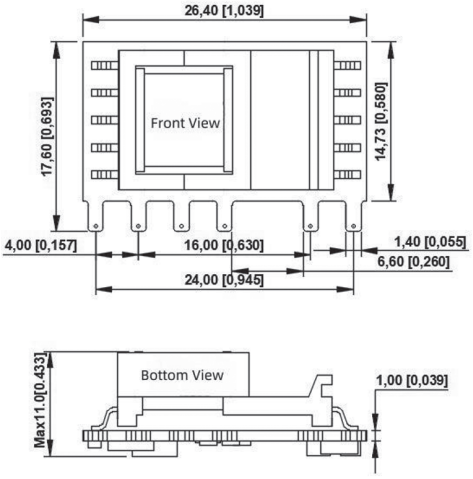
EMC solutions - Recommended circuits

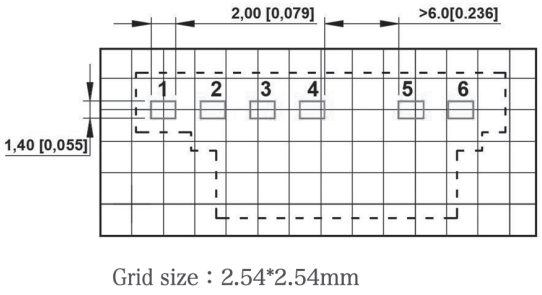


EMC Recommended Circuit Device Selection Reference Table

Model	Recommended value
FUSE	2A/300V, slow-blow, required
R1	12Ω/3W, wire-wound resistor, required
MOV	14D561K
LDM	4.7mH/Max: 15Ω/min.: 0.2A
LCM1	200uH 0.8A
LCM2	12.6mH/min.: 0.5A
CX1, CX2	0. 1uF/310VAC
CY1, CY3, CY4	1nF/400VAC
other	Refer to the peripheral device selection reference table

Dimensions and recommended layout





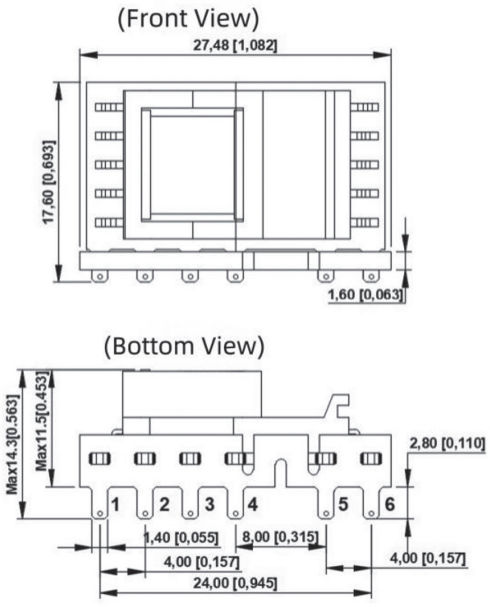
Grid size：2.54*2.54mm

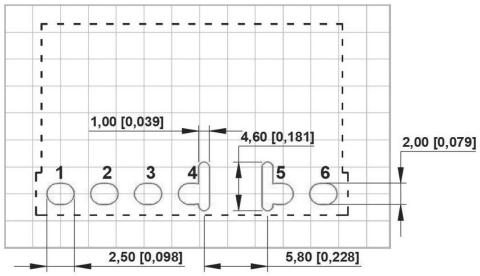
Pin Function Table

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

Note:
Unit: mm [inch]
Pin section tolerances:±0.10 [±0.004]
General tolerances:±0.50 [±0.020]

Dimensions and recommended layout (bent pins)





Grid size：:2.54 x 2.54 mm

Pin Function Table

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

Note:
Unit: mm [inch]
Pin section tolerances:±0.10 [±0.004]
General tolerances:±0.50 [±0.020]