

10ACFE2W_3.6R series

10W - AC-DC converter

AC-DC Converter

10 Watt

- ⊕ Input voltage range 85-305VAC/90-430VDC
- ⊕ No load power consumption ≤0.25W@220VAC
- ⊕ Up to 82% efficiency
- ⊕ Operating temperature from -40°C to +85°C
- ⊕ Switching frequency: 65KHz
- ⊕ Short circuit protection (SCP)
- ⊕ Over current protection
- ⊕ 3600VAC isolation voltage
- ⊕ Altitude during operation 5000m (max.)
- ⊕ Compliant with IEC/EN62368/UL62368
- ⊕ Mini size open-frame design
- ⊕ PCB SIP mounting

Introducing our new 10ACFE2W_3.6R series, a mini size open-frame AC-DC power module designed for compact and reliable PCB SIP mounting. With a wide input voltage range of 85–305VAC / 90–430VDC, 3600VAC isolation, and efficiencies of up to 82%, the series provides stable power conversion for space-sensitive industrial and embedded applications. Low no-load power consumption of ≤0.25W at 220VAC supports energy-efficient system designs, while the 65kHz switching frequency enables consistent performance. Operating from -40°C to +85°C and suitable for altitudes up to 5000m, the 10ACFE2W_3.6R series integrates short circuit protection (SCP) and overcurrent protection, and complies with IEC/EN62368 and UL62368 safety standards.



Common specifications

Short circuit protection	Full input voltage range - continuous, self-recovery hiccup
Switching frequency	65 kHz
Operating temperature	-40°C - +85°C (with derating)
Storage temperature	-40°C - +105°C
Soldering temperature	Wave soldering, 260°C (±4°C), time: 5-10S Manual soldering, 360°C (±8°C), time: 4-7S
Relative humidity	10~90% RH
Hot plug	Not supported
Safety standard	IEC/EN62368
Vibration	10-55Hz, 10G, 30 Min, along X, Y, Z
Safety standard	CLASS II
MTBF (MIL-HDBK-217F@25°C)	>1,000,000 Hours
Weight	9g (typ.)
Dimensions	28.84 x 20.00 x 15.00 mm

Input specifications

Item	Operating condition	Min	Typ	Max	Units
Input voltage range	AC input DC input	85 90	220 310	305 430	VAC VDC
Input frequency range		47	50	63	Hz
Input current	115VAC 220VAC		0.15	0.25	W
Surge current	115VAC 220VAC			0.25 0.18	A
No load power consumption	115VAC 220VAC			15 20	A
Leakage current	0.25mA typ./ 230VAC/ 50Hz				
Fuse built-in	1A/300VAC slow blow fuse				

Example:

10ACFE2W_05S3.6R

10 = 10Watt; **AC** = AC-DC; **F** = Open Frame; **E2** = Cost effective;
W = Wide input; **05** = 5Vout; **S** = Single output; **3.6** = 3.6 kVAC isolation;
R = Revised version

Output specifications

Item	Operating condition	Min	Typ	Max	Units
Voltage accuracy	Full input voltage range, 10-100% load (the unit can work stably at 0-10% load)		±2.0	±5.0	%
Line regulation	Rated load		±0.5	±1.5	%
Load regulation	Nominal input voltage, 10%~100% load		±1.5	±3.0	%
Minimum load	Single output				%
Temperature drift coefficient				±0.2	%/°C
Turn-on delay time	Input 115VAC (full load) Input 220VAC (full load)			1000	mS
Power-off hold up time	Input 115VAC (full load) Input 220VAC (full load)		10 60		
Dynamic response	Overshoot range 25%~50%~25% Recovery time 50%~75%~50%	-5.0		+5.0 5.0	
Output overshoot			≤10		%Vo
Over current protection	Input 220VAC	110%Io	-	200%Io	Hiccup
Ripple & noise	10%-100% load, 20MHz bandwidth	-	80	120	mV

Isolation specifications

Item	Operating Conditions	Min	Typ	Max	Units
Isolation voltage	I/P-O/P - Test 1 min, leakage current <5mA	3600 5000			VAC VDC
Isolation resistance	I/P-O/P @ DC500V	100			MΩ

- The product should be used according to the specifications, otherwise it could be permanently damaged.
- The product performance cannot be guaranteed if it works at a lower load than the minimum load defined.
- The product performance cannot be guaranteed if it works under over-load condition.
- Unless otherwise specified, all values or indicators on this datasheet are tested at Ta = 25°C, humidity <75%RH, nominal input voltage and rated load (pure resistance load).
- All values or indicators on this datasheet have been tested based on GAPTEC test specifications.
- For specific needs, please contact our technical support team directly.

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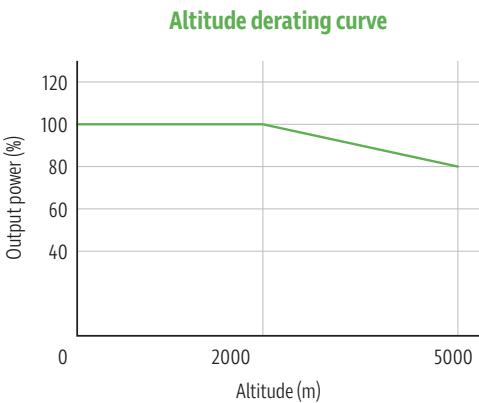
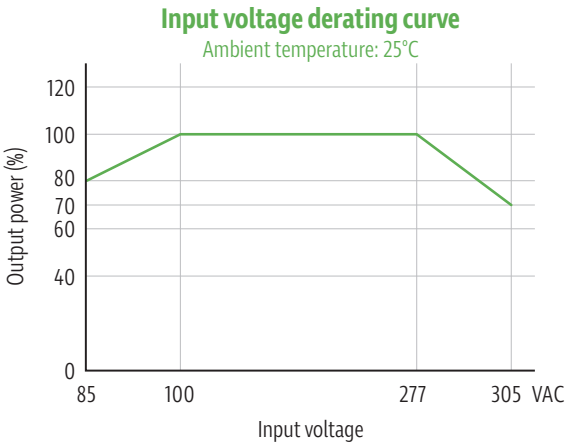
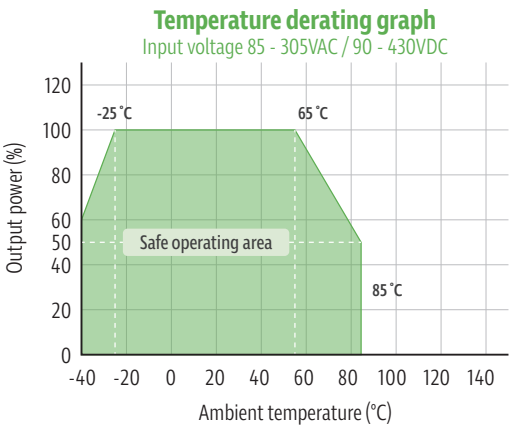
EMC specifications				
EMC	EMI	CE	CISPR32/EN55032	CLASS A (with the recommended circuit 1) CLASS B (with the recommended circuit 2)
EMC	EMI	RE	CISPR32/EN55032	CLASS A (with the recommended circuit 1) CLASS B (with the recommended circuit 2)
EMC	EMS	RS	IEC/EN61000-4-3	10V/m Perf. criteria B
EMC	EMS	CS	IEC/EN61000-4-6	10Vr.m.s Perf. criteria B
EMC	EMS	ESD	IEC/EN61000-4-2	Contact ±6kV / Air ±8kV Perf. criteria B (with the recommended circuit 2)
EMC	EMS	Surge	IEC/EN61000-4-5	±1KV Perf. Criteria B (with the recommended circuit 1) ±2KV Perf. Criteria B (with the recommended circuit 2)
EMC	EMS	EFT	IEC/EN61000-4-4	±2KV Perf. Criteria B (with the recommended circuit 1) ±4KV Perf. Criteria B (with the recommended circuit 2)
EMC	EMS	Voltage dips & Interruptions	IEC/EN61000-4-11	0%~70% Perf. criteria B

Product Selection Guide

Approval	Part number	Input Voltage Nom. (VAC)	Input Voltage Range (VAC)	Output Power P (W)	Output Voltage Vo (VDC)	Output Current Io (mA)	Max. Capacitive Load @220VAC (uF)	Ripple & Noise 20MHz (max.)	Efficiency Full Load, 220VAC typ. (%)
	10ACFE2W_03S3.6R	220	85-305	6.6	3.3	2000	5000	100	72
	10ACFE2W_05S3.6R	220	85-305	10	5	2000	5000	100	80
	10ACFE2W_09S3.6R	220	85-305	10	9	1111	1000	100	82
	10ACFE2W_12S3.6R	220	85-305	10	12	833	1000	100	83
	10ACFE2W_15S3.6R	220	85-305	10	15	667	1000	100	83
	10ACFE2W_24S3.6R	220	85-305	10	24	416	800	120	84

Note
1: Typical efficiency values are measured after the product has been aged at full load for 30 minutes.
2: The full load efficiency (% typ.) tolerance is ±2%. Efficiency is calculated as total output power divided by input power.

Product characteristic curve

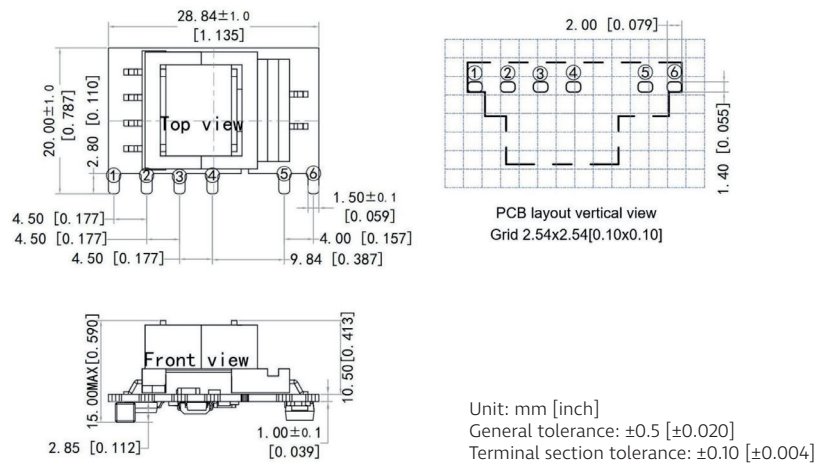


Notes
1: The output power should be derated based on the input voltage derating graph at 85~100VAC/90~140VDC & 277~305VAC/390~430VDC.
2: This product should operate under the condition of natural air, please contact us if it could be used at a closed space.

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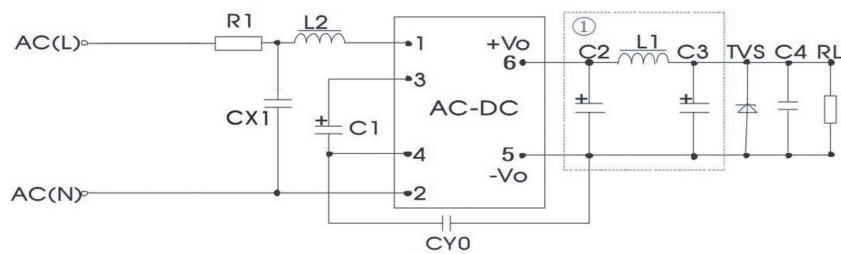
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Mechanical dimensions and recommended layout



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

Typical application circuit



Products Number	C1 (Required)	C2 (Required Solid-state capacitor)	L1 (Required)	C3 (Required Solid-state capacitor)	CY0 (Required)	R1 (Required)	CX1	L2	C4	TVS
10ACFE2W_03S3.6R	22 μ F 450V	820 μ F/10V	2.0uH/3A	330 μ F/10V	Y1 102M 400VAC	3W 6.8 Ω	X2 104K 310VAC	820uH 0.35A	0.1 μ F 50V	SMBJ7.0A
10ACFE2W_05S3.6R		820 μ F/10V		330 μ F/10V						SMBJ7.0A
10ACFE2W_09S3.6R		470 μ F/16V		100 μ F/16V						SMBJ20A
10ACFE2W_12S3.6R		470 μ F/16V		100 μ F/16V						SMBJ20A
10ACFE2W_15S3.6R		470 μ F/25V		100 μ F/25V						SMBJ20A
10ACFE2W_24S3.6R		220 μ F/35V		100 μ F/35V						SMBJ30A

Note:

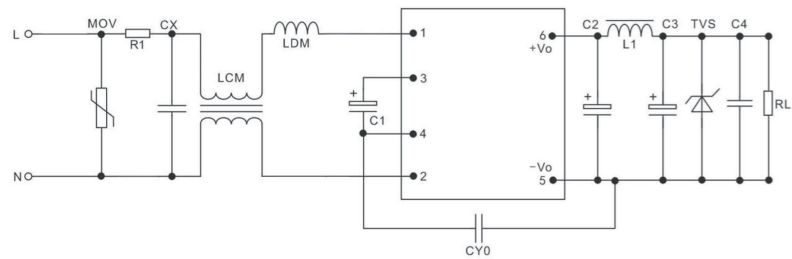
1) An electrolytic capacitor with Ripple current >300mA@100KHz is recommended for C1 which works as the input filter at AC input and EMC filter at DC input.

2) C2 & C3 are output filtering capacitors which capacitance and ripple current values should refer to the manufacturer's specs. The withstanding voltage should be derated at least 80%. C4 is a ceramic capacitor to suppress the high frequency noise.

3) A wire-wound resistor is recommended for the plug-in resistor R1, SMD or carbon film resistors are not available.

4) TVS is recommended to protect the output circuit under abnormal condition, its spec should be about 1.2X of output voltage.

Recommended circuits diagrams for high EMC requirements



MOV	14D561K/4500A	CY0	Y1/102M/400VAC
CX	X2/334K/310VAC	LDM	820uH/0.35A
LCM	25mH/0.35A	R1	Wire-wound resistor 6.8Ω/3W

Note: All the other components not mentioned in above table should be referred to the typical application recommendation.