

## 10ACFE2W\_3.6 series

10W - AC-DC converter

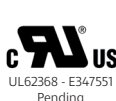


### AC-DC Converter

10 Watt

- ⊕ Wide input voltage range: 85-305VAC/120-430VDC
- ⊕ No load power consumption 0.35W
- ⊕ Transfer efficiency 78%(typ.)
- ⊕ Switching frequency: 65kHz
- ⊕ Protections: short circuit and over current
- ⊕ Isolation voltage: 3600VAC
- ⊕ Meets IEC62368/UL62368/EN62368 test standards
- ⊕ Ultra-small package for bare board, industrial design
- ⊕ PCB mounting

Introducing our ultra-compact 10ACFE2W\_3.6 series with a wide input voltage range of 85-305VAC/120-430VDC. It features no-load power consumption of just 0.35W and a typical transfer efficiency of 78%. With a switching frequency of 65kHz, it includes robust protections against short circuits and overcurrent. The converter offers 3600VAC isolation and meets IEC62368/UL62368/EN62368 test standards. Designed for bare board industrial applications, it supports PCB mounting for easy integration.



#### Common specifications

Short circuit protection	Full input voltage range - Continuous, self-recovery Hiccup
Over current protection	Input 220VAC - $\geq 110\%$ Io, self-recovery - Hiccup
Switching frequency	65 kHz
Operating temperature	-20°C - +85°C (with derating)
Storage temperature	-40°C - +105°C
Soldering temperature	Wave soldering 260°C ( $\pm 4^\circ\text{C}$ ), time 5 - 10s Manual soldering 360°C ( $\pm 8^\circ\text{C}$ ), time 4 - 7s
Relative humidity	10~90% RH
Hot plug	Unavailable
Remote control terminal	Unavailable
Safety standard	EN62368, IEC62368, UL62368
Vibration	10-55Hz, 10G, 30Min along X, Y, Z
Safety standard	CLASS II
MTBF (MIL-HDBK-217F@25°C)	>300,000 Hours

#### Input specifications

Item	Operating condition	Min	Typ	Max	Units
Input voltage range	AC input DC input	85 120	220 310	305 430	VAC VDC
Input frequency range		47	50	63	Hz
Input current	115VAC 220VAC			0.20 0.15	A
Surge current	115VAC 220VAC			20 35	A
Leakage current	0.25mA typ/230VAC/50Hz				
Recommended external input fuse	1A-3A/250VAC slow fusing				

#### Example:

**10ACFE2W\_05S3.6**

**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

#### Output specifications

Item	Operating condition	Min	Typ	Max	Units
Voltage accuracy	Full input voltage range, 10-100% load (0%-10% load, could work if output stable) Vo		$\pm 2.0$	$\pm 6.0$	%
Line regulation	Nominal load - Vo		$\pm 1.0$	$\pm 3.0$	%
Load regulation	Nominal input voltage, 20%~100% load - Vo1		$\pm 1.0$	$\pm 5.0$	%
No load consumption	Input 115VAC Input 220VAC			0.35	W
Minimum load	Single output	10			%
Start up delay time	Nominal input voltage (full load)		1000		mS
Power-off holding time	Input 115VAC (full load) Input 220VAC (full load)		50 80		mS
Dynamic response	Overshoot range 25% ~ 50% ~ 25% Recovery time 50% ~ 75% ~ 50%	-5.0 -5.0		+5.0 +5.0	% mS
Output overshoot	Full input voltage range		$\leq 10\%V_o$		%
Temperature drift			$\pm 0.03\%$		%/°C

#### Isolation specifications

Item	Operating Conditions	Min	Typ	Max	Units
Isolation voltage	Input-output test 1min, leakage current $\leq 5\text{mA}$	3600			VAC
Insulation resistance	Input-output@ DC500V	100			MΩ

- The product should be used within the specification range, or it will cause permanent damage to it;
- The input terminal should connect to fuse;
- If the product is worked under the minimum requested load, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- If the product is not operated within the required load range, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
- Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a = 25^\circ\text{C}$ , humidity  $< 75\%$  with nominal input voltage and rated output load (pure resistance load);
- All index testing methods in this datasheet are based on our company's corporate standards;
- The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, please directly contact our technician for specific information;
- We can provide product customization service,
- Specifications are subject to change without prior notice, please follow up with our website for newest manual.

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EMC specifications					
EMC	EMI	CE	CISPR22/EN55032	CLASS B (See recommended circuit on photo 2)	
EMC	EMI	RE	CISPR22/EN55032	CLASS B (See recommended circuit on photo 2)	
EMC	EMS	RS	IEC/EN61000-4-3	10V/m	Perf. Criteria B (See Recommended Circuit on photo 1)
EMC	EMS	CS	IEC/EN61000-4-6	10Vr.m.s	Perf. Criteria B (See Recommended Circuit on photo 1)
EMC	EMS	ESD	IEC/EN61000-4-2	Contact ±6kV / Air ±8kV	Perf. Criteria B
EMC	EMS	Surge	IEC/EN61000-4-5	±1kV	Perf. Criteria B
EMC	EMS	EFT	IEC/EN61000-4-4	±2kV	Perf. Criteria B
EMC	EMS	Voltage dips and interruptions	IEC/EN61000-4-11	0%~70%	Perf.Criteria B

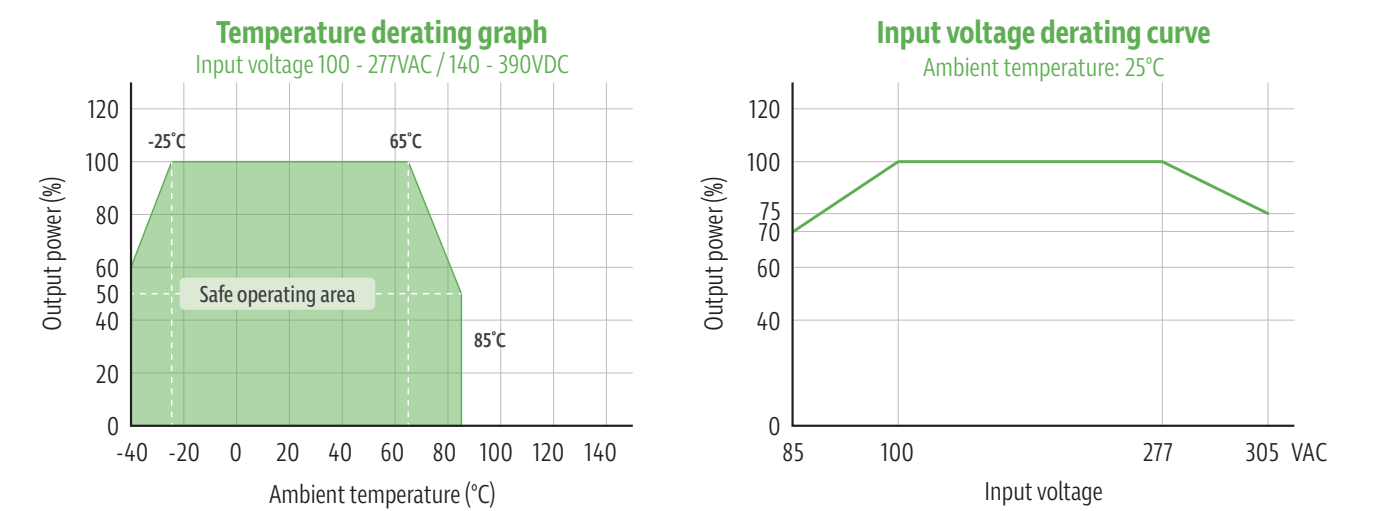
Product Selection Guide

Approval	Part number	Output Power (W)	Output Voltage Vo(V)	Output Current Io(mA)	Max. Capacitive Load (uF)	Ripple & Noise 20MHz (max)	Efficiency Full Load, 220VAC typ. (%)
	10ACFE2W_03S3.6	6.6	3.3	2000	800	100	75
	10ACFE2W_05S3.6	10	5	2000	800	100	78
	10ACFE2W_09S3.6	10	9	1111	400	120	80
	10ACFE2W_12S3.6	10	12	833	300	120	82
	10ACFE2W_12.5S3.6	10	12.5	800	300	120	82
	10ACFE2W_15S3.6	10	15	667	300	120	82
	10ACFE2W_24S3.6	10	24	416	47	150	84

Note:

- 1: The typical value of output efficiency is based on module is full loaded and burned-in after half an hour.  
2: The fluctuation range of full load efficiency (%) in table is ±2%, full load efficiency = output power/module's input power.  
3: Ripple & noise is tested by twisted pair method, details please refer to ripple & noise test at back.

Product Characteristic Curve

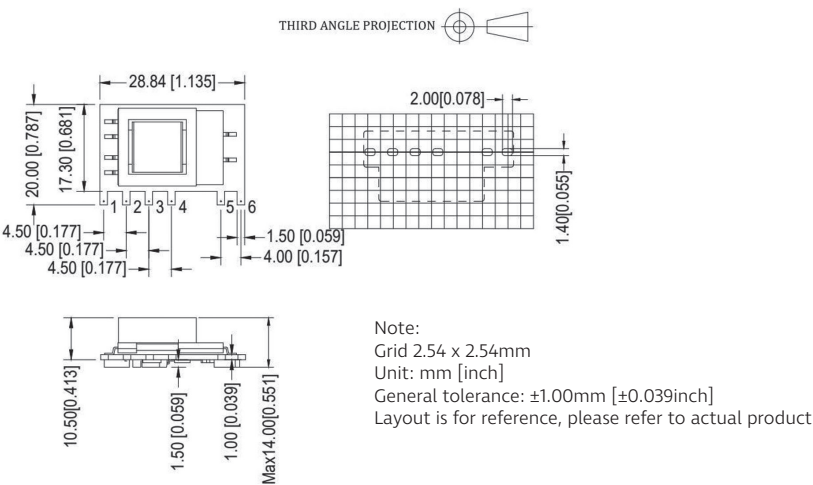


Note 1: Input Voltage should be derated based on Input voltage derating curve when it is 85~100VAC/277~305VAC and 120~140VDC/ 390~430VDC.  
2: Our product is suitable to use under natural air cooling environment, if you use it under closed condition, please contact us.

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Dimensions and recommended layout



Pin	1	2	3	4	5	6
Single	AC (L)	AC (N)	+Vc	-Vc	-Vo	+Vo

Typical application circuit

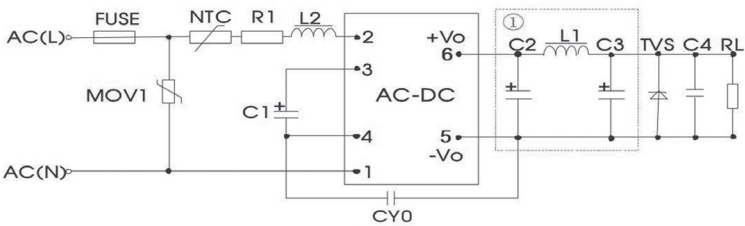
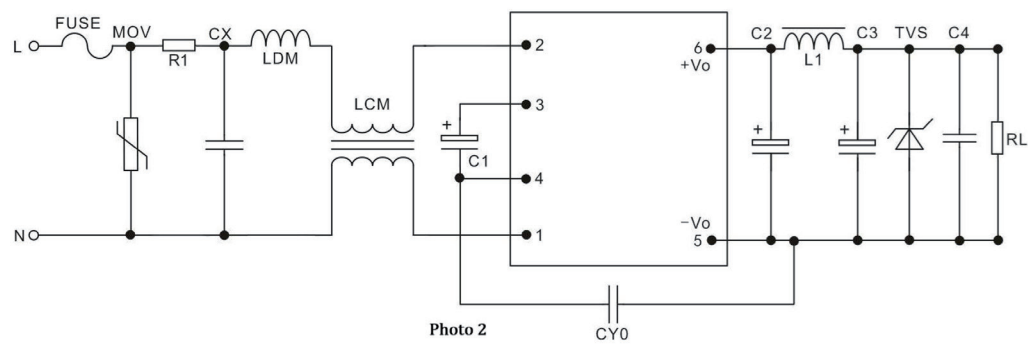


Photo 1  
Note : 1 as Pi filter circuit

Products Number	C1 (Necessary)	C2 (Necessary to connect the external solid-state capacitor)	L1 (Necessary)	C3 (Necessary to connect the external solid-state capacitor)	C4	L2	NTC	CY0	FUSE (Necessary)	TVS Tube
10ACFE2W_03S3.6	22uF/450V	820uF/10V	2.0uH	330uF/10V	0.1uF/50V	4.7mH	5D-9	1nF/400V	2A/250V	SMBJ7.0A
10ACFE2W_05S3.6	22uF/450V	820uF/10V	2.0uH	330uF/10V	0.1uF/50V	4.7mH	5D-9	1nF/400V	2A/250V	SMBJ7.0A
10ACFE2W_09S3.6	22uF/450V	470uF/16V	2.0uH	100uF/16V	0.1uF/50V	4.7mH	5D-9	1nF/400V	2A/250V	SMBJ20A
10ACFE2W_12S3.6	22uF/450V	470uF/16V	2.0uH	100uF/16V	0.1uF/50V	4.7mH	5D-9	1nF/400V	2A/250V	SMBJ20A
10ACFE2W_12.5S3.6	22uF/450V	470uF/16V	2.0uH	100uF/16V	0.1uF/50V	4.7mH	5D-9	1nF/400V	2A/250V	SMBJ20A
10ACFE2W_15S3.6	22uF/450V	470uF/25V	2.0uH	100uF/25V	0.1uF/50V	4.7mH	5D-9	1nF/400V	2A/250V	SMBJ20A
10ACFE2W_24S3.6	22uF/450V	220uF/35V	2.0uH	47uF/35V	0.1uF/50V	4.7mH	5D-9	1nF/400V	2A/250V	SMBJ30A

Note: 1) C1: AC input, C1 is input filter electrolytic capacitor (necessary), recommended value is 22uF/450V; DC input, C1 is big filter capacitor in the EMC filter (necessary), recommended value is 22uF/450V;  
2) R1 is limited resistor, recommended value is 6.8Ω/3W;  
3) MOV1 is piezoresistor, recommended model is 14D561K;

EMC recommended circuit (used under high EMC requirement)



FUSE	Recommend 2A, 250V (Necessary)	CY0	1nF/400VAC
MOV	14D561K	LDM	330uH
CX	Recommended 0.1uF/310VAC	R1	winding resistor 6.8Ω/3W
LCM	1.2mH/MAX:2.5Ω/MIN:0.35A		