

15ACF1W_4 series

15W - AC-DC converter

AC-DC Converter

15 Watt

- ⊕ Wide input voltage range: 85-305VAC/120-430VDC
- ⊕ No load power consumption $\leq 0.25W$
- ⊕ Transfer efficiency 85% (typ.)
- ⊕ Switching frequency: 65kHz
- ⊕ Protections: short circuit, over current
- ⊕ Isolation voltage: 4000VAC
- ⊕ Meets IEC62368/UL62368/EN62368 test standards
- ⊕ PCB mounting
- ⊕ Ultra-small package for bare board, industrial design

Our 15ACF1W_3 series features a wide input voltage range of 85-305VAC/120-430VDC, ensuring versatility in various applications. It offers low no-load power consumption $\leq 0.25W$ and a typical transfer efficiency of 85%. Operating at a switching frequency of 65kHz, it provides robust protection against short circuits and over current. With an isolation voltage of 4000VAC, it guarantees safety and reliability. Additionally, it meets the IEC62368/UL62368/EN62368 test standards, supports PCB mounting, and comes in an ultra-small package designed for bare board, industrial use.



Common specifications	
Short circuit protection	Full input voltage range - Continuous, self-recovery Hiccup
Over current protection	Input 220VAC - $\geq 130\%$ Io, self-recovery - Hiccup
Switching frequency	65 kHz (typ.)
Operating temperature	-40°C - +75°C
Storage temperature	-40°C - +85°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	85	220	305	VAC
	DC input	120	310	430	VDC
Input frequency range		47	50	63	Hz
Input current	115VAC			0.40	A
	220VAC			0.30	
Surge current	115VAC			10	A
	220VAC			20	
Leakage current	0.25mA TYP/230VAC/50Hz				
Recommended external Input fuse	1A-3A/250VAC slow fusing				

Example:

15ACF1W_05S4

15 = 15Watt; AC = AC-DC; F1 = Open Frame; W = Wide input; 05 = 5Vout; S = Single output; 4 = 4kVAC isolation

Output specifications					
Item	Operating condition	Min	Typ	Max	Units
Voltage accuracy	Full input voltage range, any load - Vo1		± 2.0	± 3.0	%
Linear regulation rate	Nominal load - Vo1			± 1.0	%
Load regulation	Nominal input voltage, 20%-100% load - Vo			± 1.0	%
No load consumption	Input 115VAC Input 220VAC			0.25	W
Minimum load	Single Output	0			%
Start up delay time	Nominal input voltage (full load)		1000		mS
Power-off holding time	Input 115VAC (full load)		50		mS
	Input 220VAC (full load)		80		
Dynamic response	Overshoot range 25%-50%-25%	-5.0		+5.0	% mS
	Recovery time 50%-75%-50%		+5.0		
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 $\leq 5\text{mA}$	4000			VAC
Insulation resistance	Input-Output @ DC500V	100			MΩ

1. The product should be used within the specification range, or it will cause permanent damage to it;
2. The input terminal should connect to fuse;
3. If the product is worked under the minimum requested load, the product performance cannot be guaranteed to comply with all parameters in the datasheet;
4. 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;
5. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta = 25°C, humidity <75% with nominal input voltage and rated output load (pure resistance load);
6. All index testing methods in this datasheet are based on our company's corporate standards;
7. 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;
8. We can provide product customization service,
9. Specifications are subject to change without prior notice, please follow up with our website for newest manual.

15ACF1W_4 series

15W - AC-DC converter

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	±2KV	Perf.Criteria B (See Recommended Circuit on photo 2)
EMC	EMS	EFT	IEC/EN61000-4-4	±2KV ±4KV	Perf.Criteria B Perf.Criteria B (See Recommended Circuit on photo 2)
EMC	EMS	Voltage dips and interruptions	IEC/EN61000-4-11	0%~70%	Perf.Criteria B

Product Selection Guide

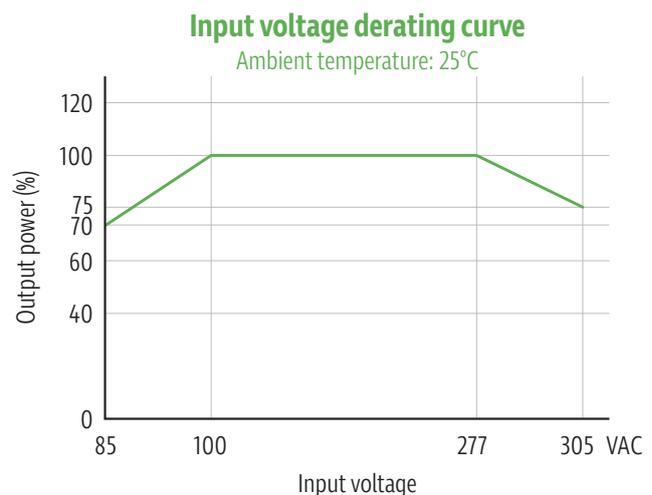
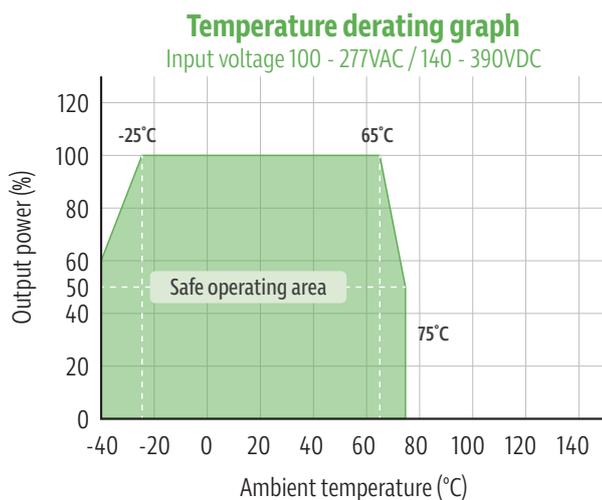
Approval	Model	Output Power (W)	Output Voltage Vo(V)	Output Current Io(mA)	Max. Capacitive Load (uF)	Ripple & Noise 20MHz (Max)	Efficiency Full Load, 220VAC Typ. (%)
	15ACF1W_03S4	10	3.3	3000	2000	120	76
	15ACF1W_05S4	15	5	3000	2000	100	80
	15ACF1W_12S4	15	12	1250	1000	120	83
	15ACF1W_15S4	15	15	1000	1000	120	84
	15ACF1W_24S4	15	24	625	800	150	85

Note:

2: The typical value of output efficiency is based on module is full loaded and burned-in after half an hour.

3: The fluctuation range of full load efficiency (%typ) in table is ±2%, full load efficiency = output power/module's input power. Note 4: Ripple & noise is tested by twisted pair method, details please refer to ripple & noise test at back.

Product characteristic curve

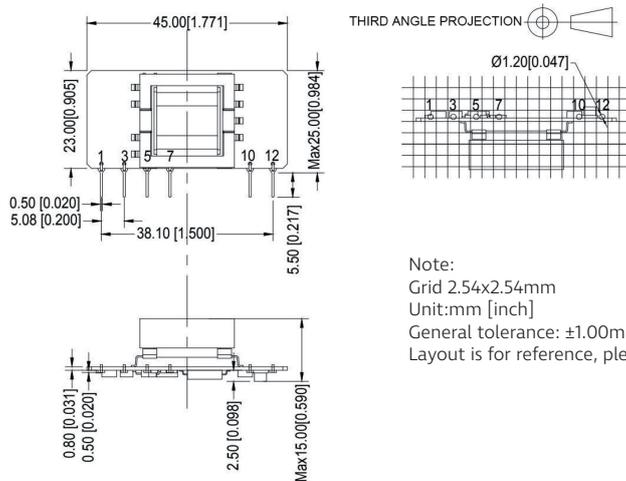


Note

1: Input Voltage should be derated based on Input voltage derating curve when it is 85-100VAC/277-305VAC/120-140VDC/ 390-430VDC

2: Our product is suitable to use under natural air cooling environment, if use it under closed condition, please contact with us.

Dimensions and recommended layout - standard package

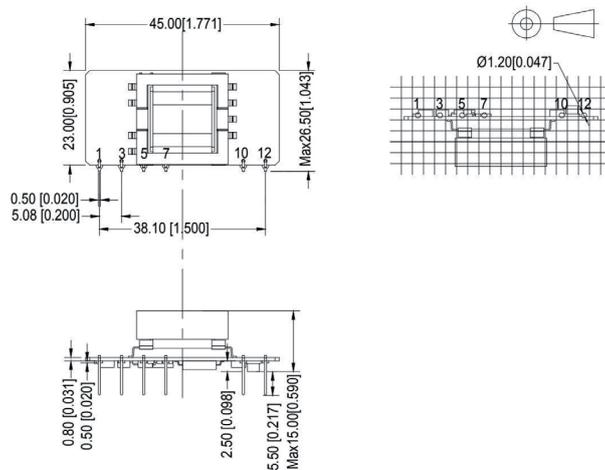


Note:
 Grid 2.54x2.54mm
 Unit:mm [inch]
 General tolerance: ±1.00mm[±0.039inch]
 Layout is for reference, please refer to actual item

Pin	1	3	5	7	10	12
Single	AC (N)	AC (L)	+Vc	-Vc	-Vo	+Vo

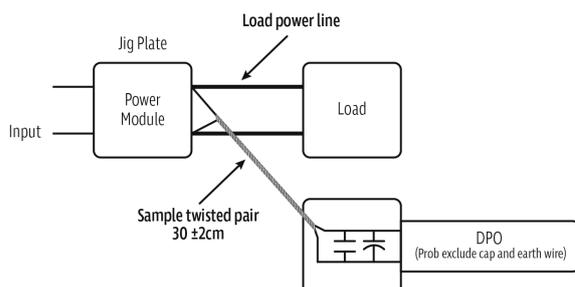
Note: If the definition of pin is not in accordance with the model selection manual, please refer to the label on actual item.

Dimensions and recommended layout - L-shaped bent pins



Ripple & noise test: (twisted pair method 20MHz bandwidth)

Twisted pair method (20MHz bandwidth)



Test Method:

1. Connect the twisted pair, set the oscilloscope bandwidth to 20MHz, use a 100M bandwidth probe, and terminate with a 0.1uF polypropylene capacitor and a 10uF high-frequency low-resistance electrolytic capacitor in parallel. Configure the oscilloscope to sample mode.

2. Connect the input terminal to the power supply and the output terminal to the electronic load using a jig plate. Use a 30cm (±2 cm) sampling line, and select the power line from appropriately insulated wires of the corresponding diameter according to the output current flow.

Typical application circuit

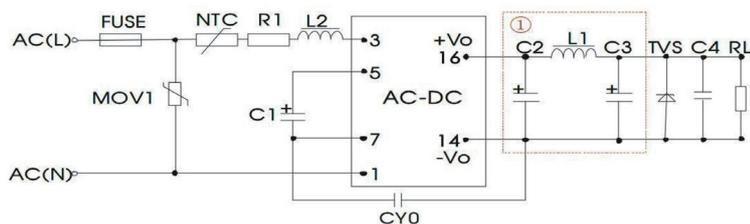


Photo 1
Note : 1 as Pi filter circuit

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
15ACFIW_05S4	33uF/450V	680uF/10V	2.0uH	470uF/10V	0.1uF/50V	4.7mH	5D-9	102M/400V	3.15A/250V	SMBJ7.0A
15ACFIW_12S4	33uF/450V	470uF/16V	2.0uH	220uF/16V	0.1uF/50V	4.7mH	5D-9	102M/400V	3.15A/250V	SMBJ20A
15ACFIW_24S4	33uF/450V	470uF/35V	2.0uH	220uF/35V	0.1uF/50V	4.7mH	5D-9	102M/400V	3.15A/250V	SMBJ30A

Note:
 1) C1: AC input, C1 is input filter electrolytic capacitor (necessary), recommended value is 33uF/450V; DC input, C1 is big filter capacitor in the EMC filter (necessary), recommended value is 33uF/450V;
 2) R1 is limited resistor, recommended value is 12Ω, 5W;
 3) MOV1 is piezoresistor, recommended model is 10D561K;

EMC solutions and recommended circuits

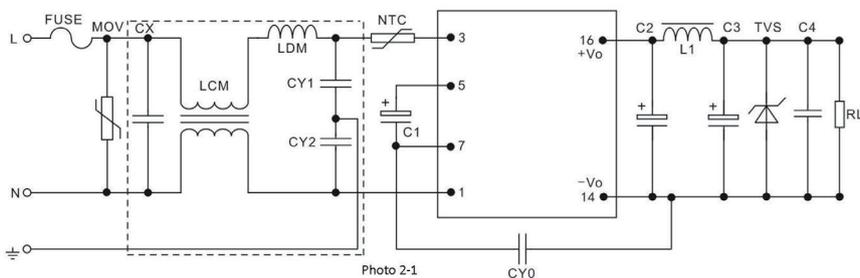


Photo 2-1

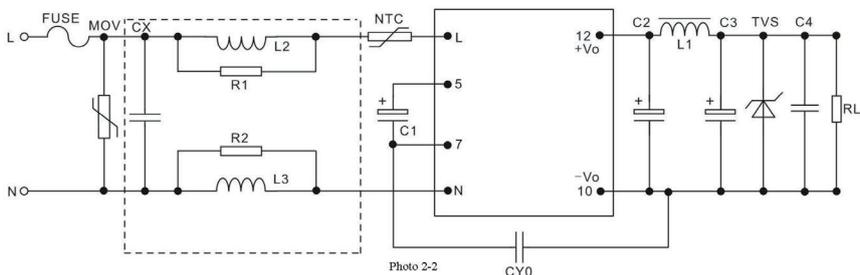


Photo 2-2

Component	Recommend 3.15A, 250V (necessary)	NTC	5D-9	R1, R2	2.2K, above 1/8W
MOV	10D561K	CY0	1nF/400VAC		
CX	Recommend 0.22uF/275VAC	LDM	330uH		
LCM	40mH min	L2, L3	Color ring inductor 1mH, 1W		