

FEATURES

- ◆ Wide input voltage range:85-264VAC/100-370VDC
- ◆ Regulated output,Low ripple & noise
- ◆ High efficiency up to 86%
- ◆ Output short circuit,over-current,over-voltage protection
- ◆ Plastic case,meets UL94V-0
- ◆ IEC60950,UL60950,EN60950approval
- ◆ Mounting:PCBmounting,Chassismounting,DIN-Rail mounting available



RoHS

Selection Guide

Certificate	Part No.	Output Power	Nominal Output Voltage and Current	Efficiency at 230VAC (%)Typ.	Capacitive Load (uF)Max.
CE	CFAE15S3V3M	13.2W	3.3V/4000mA	82	6600
	CFAE15S05M	15W	5V/3000mA	85	5000
	CFAE15S09M		9V/1670mA	84	3000
	CFAE15S12M		12V/1250mA	85	2000
	CFAE15S15M		15V/1000mA	85	1500
	CFAE15S24M		24V/625mA	86	680

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	265	VAC
	DC input	100	--	375	VDC
Input Frequency		47	--	63	Hz
Input Current	115VAC	--	--	0.45	A
	230VAC	--	--	0.30	
Inrush Current	115VAC	--	30	--	
	230VAC	--	60	--	
Leakage Current	277VAC/50Hz	0.1mARMS Max.			
Built In Fuse		2A/300V,slow-blow			
Hot Plug		Unavailable			

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Output Voltage Accuracy		--	±2	--	%
Line Regulation	Full load	--	±0.5	--	
Load Regulation	0%-100%load	--	±1	--	
Ripple/Noise*	20MH zbandwidth(peak-to-peakvalue)	--	70	120	mV

Stand-by Power Consumption	230VAC	3.3/5/9/12/15Vdc	--	--	0.10	W
		24Vdc	--	--	0.12	
Temperature Coefficient			--	±0.02	--	%/°C
Short Circuit Protection			Hiccup,continuous,self-recovery			
Over-current Protection			≥110%Io,self-recovery			
Over-voltage Protection	3.3/5V	≤7.5VDC(Output voltage clamp orhiccup)				
	9V	≤15VDC(Output voltage clamp orhiccup)				
	12/15V	≤20VDC(Output voltage clamp orhiccup)				
	24V	≤30VDC(Output voltage clamp orhiccup)				
Minimum Load			0	--	--	%
Hold-up Time	115VAC		--	10	--	ms
	230VAC		--	55	--	
Note:*The"Tip and barrel method"is used for ripple and noise test,output parallel 10uF electrolytic capacitor and 1uF ceramic capacitor,please refer to AC-DC Converter Application Notes for specific information.						

General Specifications

Item		Operating Conditions	Min.	Typ.	Max.	Unit
Isolation	Input-output	Electric Strength Testfor1min.,leakagecurrent<5mA	3000	--	--	VAC
Insulation Resistance	Input-output	At 500VDC	100	--	--	MΩ
Operating Temperature			-40	--	+85	°C
Storage Temperature			-40	--	+85	
Storage Humidity			--	--	95	%RH
Soldering Temperature	Wave-soldering		260±5°C;time:5-10s			
	Manual-welding		360±10°C;time:3-5s			
Switching Frequency			--	65	--	kHz
Power Derating	+50°Cto+70°C		3.0	--	--	% / °C
	+55°Cto+70°C		2.67	--	--	
	+70°Cto+85°C		0.66	--	--	
	85VAC-100VAC		1.33	--	--	% / VAC
	277VAC-305VAC		0.71	--	--	
	2000-5000m		6.7	--	--	% / Km
Safety Standard			IEC/UL62368-1,EN61558-1,EN60335-1Safety Approval&EN62368-1(Report); Design refertoI EC/EN60601-1/ANSI/AAMI ES60601-1			
Safety Class			CLASS II			
MTBF			MIL-HDBK-217F@25°C>3,200,000h			
Designed Life	230VAC	Ta: 25°C 100%load	>130x10 ³ h			
		Ta: 55°C 100%load	>27x10 ³ h			

Mechanical Specifications

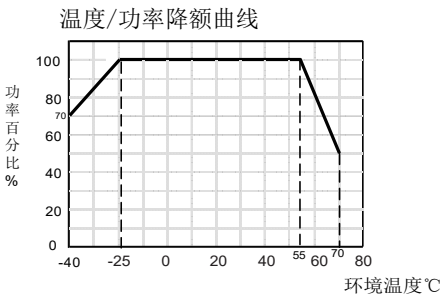
Case Material		Blackplastic,flame-retardantandheat-resistant(UL94V-0)
Dimension	DIP package	50.8x25.4x15.6mm
	Z Schassis mounting	76.0x31.5x32.3mm
Weight	DIP	48g(Typ.)
	Z chassis mounting	88g(Typ.)
Cooling method		Free ai r convection

Electromagnetic Compatibility(EMC)

Emissions	CE	CISPR32/EN55032 CLASS B	
		CISPR32/EN55032 CLASS B(See Fig.3 for recommended circuit)	
		CISPR11/EN55011 CLASS B	
		EN55014-1	
	RE	CISPR32/EN55032 CLASS B	
		CISPR32/EN55032 CLASS B(See Fig.3 for recommended circuit)	
		CISPR11/EN55011 CLASS B	
		EN55014-1	
Immunity	ESD	IEC/EN61000-4-2 Contact ±8KV	Perf.Criteria B
		IEC/EN55014-2	Perf.Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf.Criteria A
		IEC/EN55014-2	perf.Criteria A
	EFT	IEC/EN61000-4-4 ±2KV	perf.Criteria B
		IEC/EN61000-4-4 ±4KV(See Fig.2 for recommended circuit)	perf.Criteria B
		IEC/EN61000-4-4 ±4KV(See Fig.3 for recommended circuit)	perf.Criteria A
		IEC/EN55014-2	perf.Criteria B
	Surge	IEC/EN61000-4-5 line to line ±1KV	perf.Criteria B
		IEC/EN61000-4-5 line to line ±2KV(See Fig.2 for recommended circuit)	perf.Criteria B
		IEC/EN61000-4-5 line to line ±2KV/line to ground ±4KV (See Fig.3 for recommended circuit)	perf.Criteria A
		IEC/EN55014-2	perf.Criteria B
	CS	IEC/EN61000-4-6 10Vr.m.s	perf.Criteria A
		IEC/EN55014-2	perf.Criteria A
	Voltage dip,short interruption and voltage variation	IEC/EN61000-4-11 0%,70%	perf.Criteria B
		IEC/EN55014-2	perf.Criteria B

Note:When the output terminal of the product needs to be connected to PE through a Y capacitor,or close to the metal frame,please refer to the Fig.3 for recommended circuit.

Product Characteristic Curve



Note:①With an AC input between 85-1265VAC and a DC input between 120V-375VDC,the output power must be derated as per temperature derating curves;
②This product is suitable for applications using natural air cooling; for applications in closed environment please consult factory or one of our FAE.

Design Reference

1. Typical application

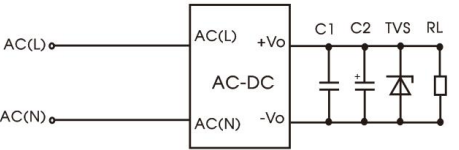


Fig.1:Typical circuit diagram

Part No.	C1	C2	TVS
CFAE15S3V3M	1uF/50V	220uF/16V	SMBJ7.0A
CFAE15S05M		220uF/16V	SMBJ7.0A
CFAE15S09M		100uF/25V	SMBJ12A
CFAE15S12M		100uF/25V	SMBJ20A
CFAE15S15M		100uF/25V	SMBJ20A
CFAE15S24M		100uF/35V	SMBJ30A

Output Filter Components:
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2(refer to manufacture's datasheet).Choosea Capacitor voltage rating with at least 20% margin,in other words not exceeding 80%.C1 is a ceramic capacitor used for filtering high-frequency noise and TVS is a recommended suppressor diode to protect the application in case of a converter failure.

2.EMC compliance recommended circuit

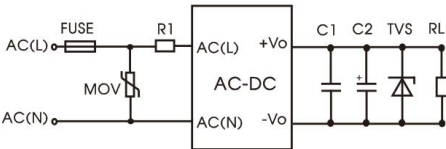


Fig2:EMC application circuit with higher requirements

Component	Recommended value
FUSE	3.15A/300V,slow-blow,required
MOV	S14K350
R1(wire-woundresistor,required)	6.8Ω/3W

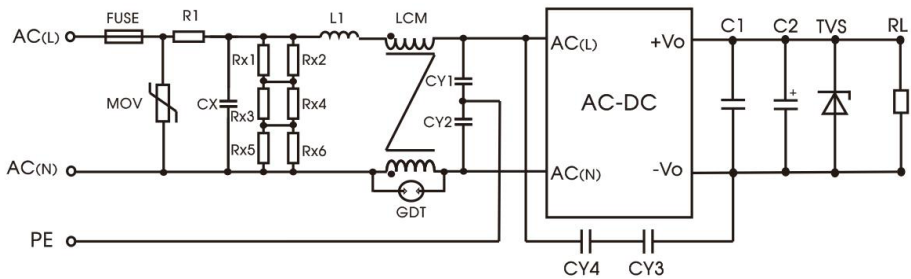
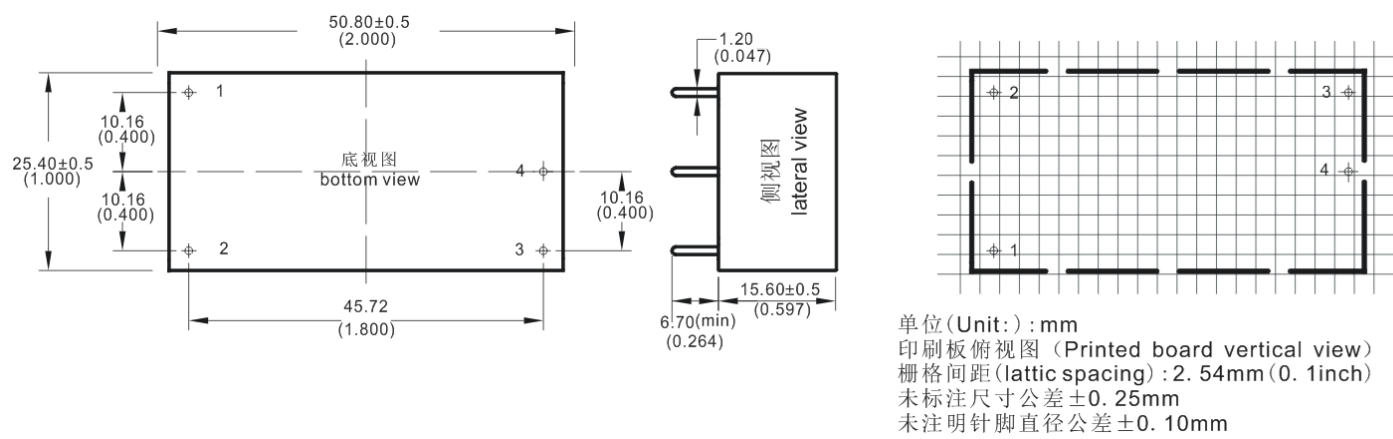


Fig3:Recommended circuit for Class I equipment

Component	Recommended value
FUSE	3.15A/300V,slow-blow,required
MOV	S14K350
CX	334K/305VAC
R1	12Ω/5W(wire-woundresistor)
L1	1.2mH/0.5A
CY1/CY2	2.2nF/400VAC
CY3/CY4	1nF/400VAC
GDT	300V/1KA
LCM	20mH

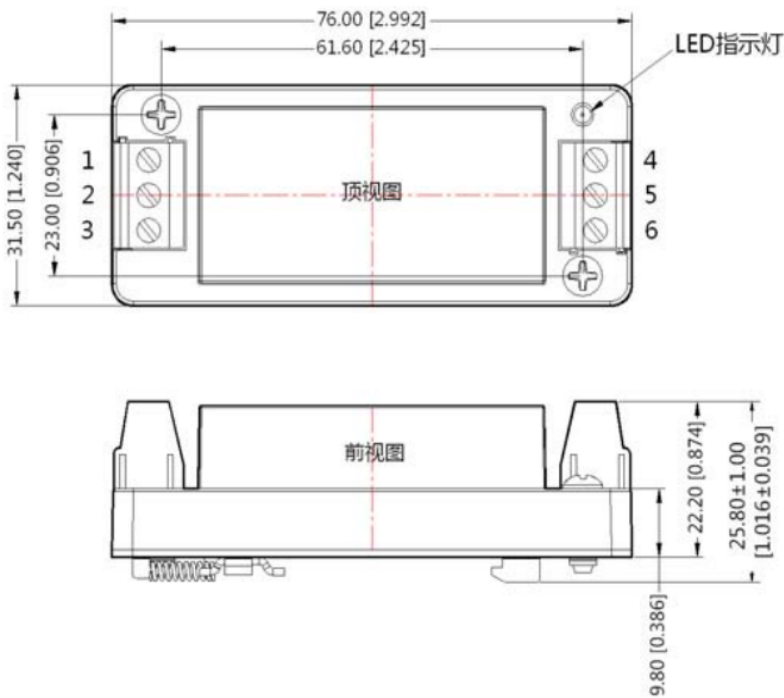
Note:Rx1/Rx2/Rx3/Rx4/Rx5/Rx6 is the bleeder resistance of CX,and the recommended resistance value is1.5MΩ/150VDC.

Dimensions and Recommended Layout



管脚	1	2	3	4
定义	AC (N)	AC (L)	+Vo	-Vo
	输入零线	输入火线	输出正	输出负

Z Dimensions



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

- Note:
- 1.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;
 - 2.Unless otherwise specified,parameters in this datasheet were measured under the conditions of Ta=25℃,humidity<75% with nominal input voltage and rated output load;
 - 3.All index testing methods in this datasheet are based on our Company's corporate standards;
 - 4.We can provide product customization service,please contact our technicians directly for specific information;
 - 5.Specifications are subject to change without prior notice .



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