FEATURES

60W,AC-DC CONVERTER

- Universal 85-265VAC or 100-375VDC input voltage
- Operating ambient temperature range:-40℃ to +70℃
- High I/O isolation test voltage up to 4000VAC
- High reliability, high power density, high efficiency
- Output short circuit, over-current, over-voltage protection
- Regulated output, low ripple & noise
- Plastic case meets UL94V-0 flammability
- EMI performance meets CISPR32/EN55032 CLASS B
- Three year warranty

Selection Guide

Certification	Part No.*	Output Power	Nominal Output Voltage and Current(Vo/Io)	Efficiency at 230VAC (%)Typ.	Capacitive Load (uF)Max.
	CFAME60S05R3	50W	5V/10000mA	84	20000
	CFAME60S12R3	60W	12V/5000mA	87	4000
	CFAME60S15R3		15V/4000mA	88	3000
	CFAME60S24R3		24V/2500mA	89	1800
	CFAME60S48R3		48V/1250mA	90	470

Note:*1. Use suffix "Z1" for chassis and suffix "Z" for DIN-Rail mounting.
2. The product picture is for reference only. For details, please refer to the actual product.

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	--	--	1.8	A
	230VAC	--	--	1.0	
Inrush Current	115VAC	--	45	--	
	230VAC	--	90	--	
Leakage Current	240VAC/50Hz	0.25mA RMS Max.			
Built-in Fuse		3.15A/250V,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*	20MHz bandwidth (peak-to-peak value)	--	--	120	mV
Stand-by Power Consumption		--	--	0.5	W
Temperature Coefficient		--	±0.02	--	%/°C
Short Circuit Protection		Hiccup,continuous,self-recover			
Over-current Protection		≥110%Io,self-recover			

Over-voltage Protection	5VDC Output	≤9VDC(Output voltage clamp or hiccup)			
	12VDC Output	≤16VDC(Output voltage clamp or hiccup)			
	15VDC Output	≤25VDC(Output voltage clamp or hiccup)			
	24VDC Output	≤35VDC(Output voltage clamp or hiccup)			
	48VDC Output	≤60VDC(Output voltage clamp or hiccup)			
Minimum Load		0	--	--	%
Hold-up Time	115VAC input	--	8	--	ms
	230VAC input	--	65	--	
Note: * The “parallel cable” method is used for ripple and noise test, 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 Testfor 1min.,leakage current<5mA	4000	--	--	VAC
Operating Temperature			-40	--	+70	℃
Storage Temperature			-40	--	+105	
Storage Humidity			--	--	95	%RH
Soldering Temperature		Wave-soldering,Max.10 seconds	255	260	265	℃
		Manual-welding,Max.5 seconds	350	360	370	
Power Derating		-40℃ to -25℃(85-220VACinput)	4.0	--	--	%/℃
		+40℃ to +70℃(5V output)	1.83	--	--	
		+55℃ to +70℃(12V/15V/24V/48Voutput)	2.75	--	--	
		85VAC-110VAC	0.8	--	--	%/VAC
Safety Standard			IEC/BSEN/EN62368-1,BSEN/EN61558-1 safety approved; Design refer to UL62368-1			
Safety Class			CLASS II			
MTBF		MIL-HDBK-217F@25℃	≥300,000h			

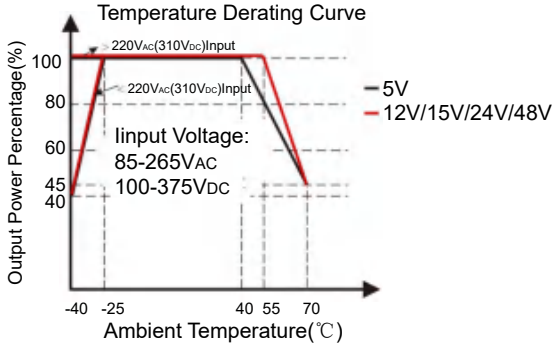
Mechanical Specifications

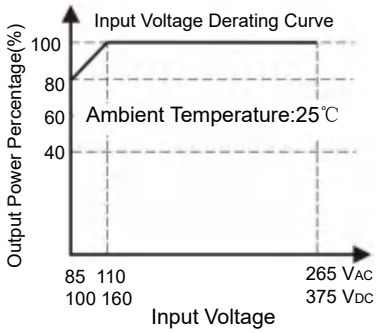
Case Material		Blackplastic,flame-retardantandheat-resistant(UL94V-0)
Dimension	DIP	87.0x52.0x29.5mm
	Z1 chassis mounting	135.0x70.0x37.9mm
	Z Din-Rail mounting	137.0x70.0x42.4mm
Weight	DIP	210g(Typ.)
	Z1 chassis mounting	290g(Typ.)
	Z Din-Rail mounting	360g(Typ.)
Cooling method		Free air convection

Electromagnetic Compatibility(EMC)

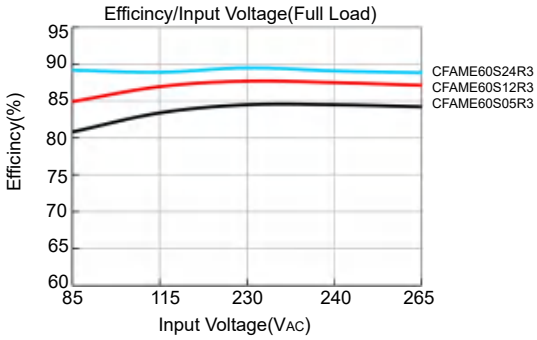
Emissions	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
Immunity	ESD	IEC/EN61000-4-2 Contact ±6KV/Air ±8KV	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 ±4KV	perf. Criteria B
	Surge	IEC/EN61000-4-5 line to line±1KV	perf. Criteria B
		IEC/EN61000-4-5 line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

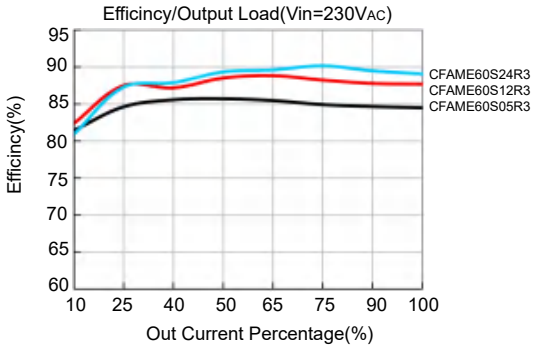
Product Characteristic Curve





Note: ① With an AC input between 85-110VAC and a DC input between 100-160VDC, 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 CHEWINS FAE.





Design Reference

1. Typical application

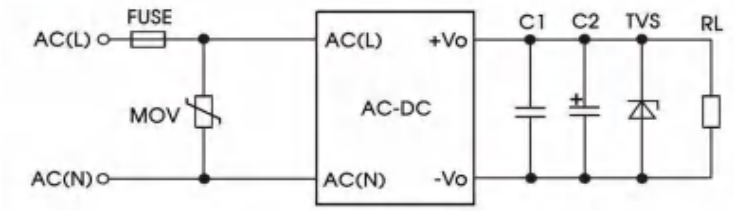


Fig.1: Typical circuit diagram

Part No.	C1(uF)	C2(uF)	FUSE	MOV	TVS
CFAME60S05R3	1	680	3.15A/250V, slow-blow	S10K300	SMBJ7.0A
CFAME60S12R3		330			SMBJ20A
CFAME60S15R3		330			SMBJ20A
CFAME60S24R3		200			SMBJ30A
CFAME60S48R3		100			SMBJ64A

Output Filter Components:
We recommend using an electrolytic capacitor with high frequency, and low ESR rating for C2 (refer to manufacture's datasheet). Choose a 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 arecommended suppressor diode to protect the application in case of a converter failure.

2. EMC compliance recommended circuit

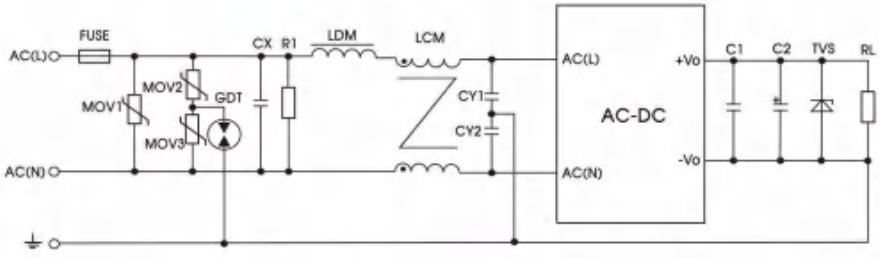


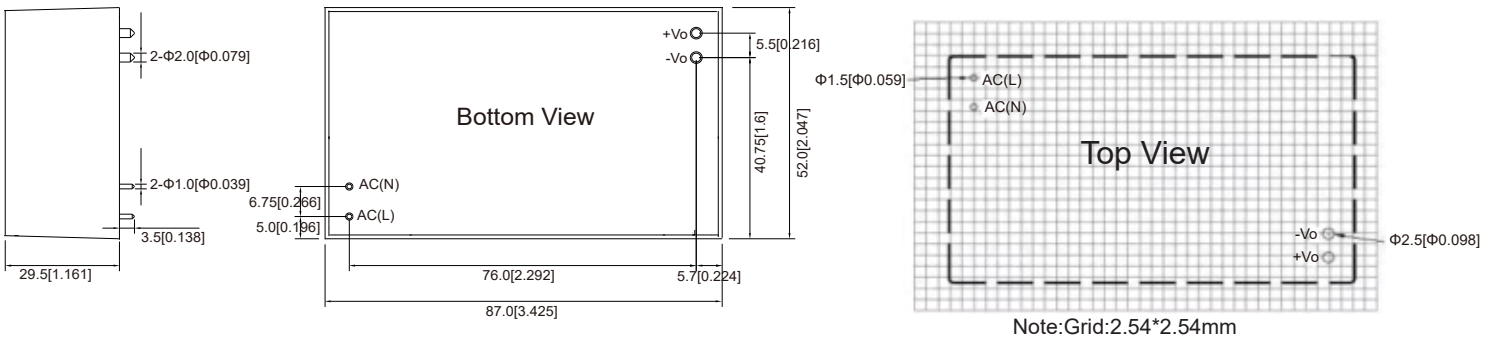
Fig. 2: EMC application circuit with higher requirements

Component	Recommended value
MOV1	S20K300
MOV2/MOV3	S10K300
CX	0.22uF/275VAC
CY1/CY2	1nF/400VAC
R1	1MΩ/2W
LDM	4.7uH
LCM	2mH
GDT	EM3600XS
FUSE	3.15A/250V,slow-blow,required

3. For additional information please refer to application notes on WWW.CHAWENS.COM

Dimensionsand Recommended Layout

THIRD ANGLE PROJEON

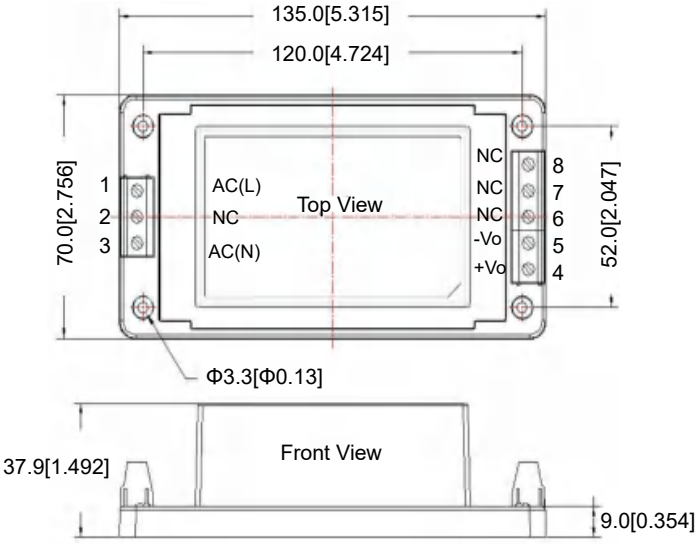


Note:Grid:2.54*2.54mm

Note:
Unit: mmlinch]
Pin diameter tolerances: +0.1[+0.004]
General tolerances:+0.5[+0.02]

Z1 Dimensions

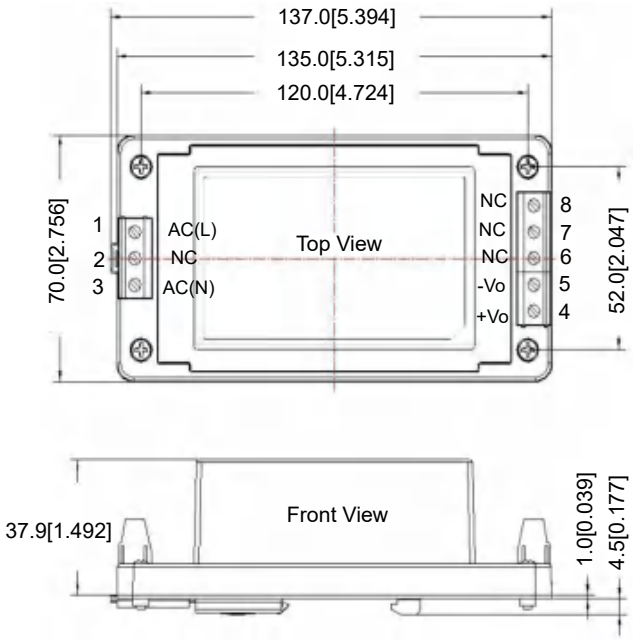
Third angle projection



Note:
Unit:mm[inch]
Wire range:24-12 AWG
Tightening torque:Max 0.4 N·m
Mounting rail:T$35, rail needs to connect safety ground
General tolerances:+0.5[+0.02]

Z Dimensions:

Third angle projection



Note:
Unit:mm[inch]
Wire range:24-12 AWG
Tightening torque:Max 0.4 N·m
Mounting rail:T$35, rail needs to connect safety ground
General tolerances:+0.5[+0.02]

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