

FEATURES

5W,AC-DC converter

- ◆ Universal input range:85~265V_{AC}/100~375V_{DC}
- ◆ Regulated output,low ripple and noise
- ◆ Over-current,short circuit and over-voltage protection
- ◆ Plastic case,meets UL94V-0
- ◆ Meet UL60950,EN60950 standards
- ◆ PCB mounting,Chassismounting,DIN-Railmounting
- ◆ Three year warranty



Selection Guide

Certification	Part No.*	Output Power	Nominal Output Voltage and Current		Efficiency (230V _{AC} ,%/Typ.)	Max.Capacitive Load(μF)	
			(Vo1/Io1)	(Vo2/Io2)		Vo1	Vo2
	CFAME5S3V3	4W	3.3V/1250mA	--	70	8100	--
	CFAME5S05	5W	5V/1000mA	--	75	6800	--
	CFAME5S09		9V/550mA	--	77	1200	--
	CFAME5S12		12V/420mA	--	79	1000	--
	CFAME5S15		15V/330mA	--	80	680	--
	CFAME5S24		24V/230mA	--	82	270	--
	CFAME5D05		+5V/500mA	-5V/500mA	75	1480	1480
	CFAME5D12		+12V/210mA	-12V/210mA	79	130	130
	CFAME5D15		+15V/160mA	-15V/160mA	79	110	110
	CFAME5D24		+24V/100mA	-24V/100mA	80	16	16
	CFAME5T05-05I		5V/800mA	±5V/100mA	70	2400	370
	CFAME5T05-12I		5V/600mA	±12V/100mA	73	1600	170
	CFAME5T05-15I		5V/600mA	±15V/80mA	74	1760	80
	CFAME5T05-24I		5V/600mA	±24V/50mA	75	1170	50
	CFAME5D05-05I		5V/900mA	5V/100mA	71	3360	370
	CFAME5D05-12I		5V/750mA	12V/100mA	73	2400	170
	CFAME5D05-15I		5V/700mA	15V/100mA	73	2160	170
	CFAME5D05-24I		5V/600mA	24V/100mA	75	3000	100

Note: *About CFAME5DXX, we use Vo2 as sampling feedback; and all others use Vo1 as sampling feedback.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Input Voltage Range	AC input	85	--	265	V _{AC}
	DC input	100	--	375	V _{DC}
Input frequency		47	--	63	Hz

Input current	115VAC	--	--	0.125	A
	230VAC	--	--	0.08	
Inrush current	115VAC	--	10	--	
	230VAC	--	20	--	
Leakage current			0.3mA RMStyp./230VAC/50Hz		
Recommended External Input Fuse(Special package seriesinclude fuse)			1A/250V,slow fusing		
Hot Plug			Unavailable		

Output Specifications

Item	Operating Conditions			Min.	Typ.	Max.	Unit
Output Voltage Accuracy	Main circuit			--	±2	--	%
Line Regulation	Full load	Main circuit		--	±0.5	--	
		Auxiliary circuit		--	±1.5	--	
Load Regulation	10%-100% load	Single output		--	±1	--	
		Dual output(balanced load)		--	±2	--	
		Isolated triple output (balanced load)	Main circuit	--	±3	--	
			Auxiliary circuit	--	±5	--	
		Isolated and separated twin output(balanced load)	Main circuit	--	±3	--	
			Auxiliary circuit	--	±5	--	
Ripple/Noise*	20MHz bandwidth (peak-peakvalue)			--	50	150	mV
Temperature Coefficient	Main circuit			--	±0.02	--	%/°C
Short Circuit Protection				Continuous,self-recovery			
Over-current Protection				≥110%losself-recovery			
Over-voltage Protection	Main circuit	3.3/5V _{DC} Output		≤7.5V _{DC}			
		9V _{DC} Output		≤13V _{DC}			
		12/15V _{DC} Output		≤20V _{DC}			
		24V _{DC} Output		≤30V _{DC}			
Min.Load	Single output models			0	--	--	%
	Dual output models(balanced load)			10	--	--	
	Isolated and separated twin output(balanced load)			10	--	--	
	Isolated triple output(balanced load)			10	--	--	
Hold-up Time	115V _{AC} input			--	15	--	ms
	230V _{AC} input			--	80	--	
Note:*Ripple and noise are measured by“parallel cable”method,please see AC-DC Converter Application Notes for specific operation.							

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General Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Isolation Voltage	Input-output	Testtime:1min	3000	--	--	VAC
Operating Temperature			-25	--	+55	°C
Storage Temperature			-40	--	+105	
Storage Humidity			--	--	95	%RH
Welding Temperature	Wave-soldering		260±5°C;time:5~10s			
	Manual-welding		360±10°C;time:3~5s			
Switching Frequency	CFAME10D24		--	65	--	kHz
	Others		--	--	140	
Power Derating	-25°C~-40°C		2.0	--	--	%/°C
	+55°C~+70°C		4.0	--	--	
Safety Standard	IEC60950/EN60950/UL60950					
Safety Certification	EN60950/UL60950					

Safety Class		CLASS I
MTBF		MIL-HDBK-217F@25°C>300,000h

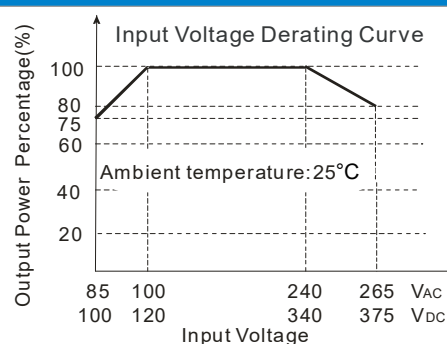
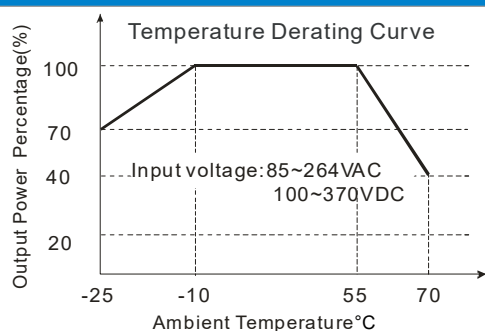
Physical Specifications

Casing Material		Black flame-retardant and heat-resistant plastic(UL94-V0)
Dimension	Horizontal package	48.5*36.0*20.5mm
	Z1 chassis mounting	96.1*54.0*29.0mm
	Z Din-Rail mounting	96.1*54.0*33.6mm
Weight	Horizontal package/Z1 chassis mounting /ZDin-Railmounting	55g/100g/140g(Typ.)
Cooling method		Free air convection

EMC Specifications

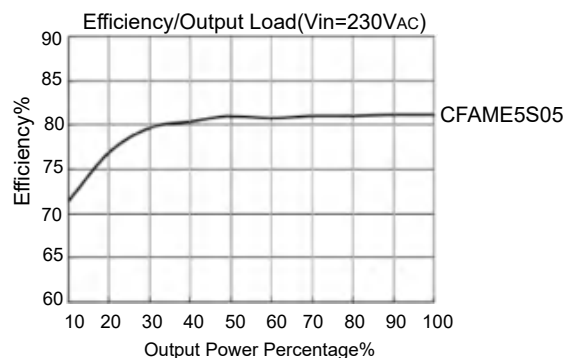
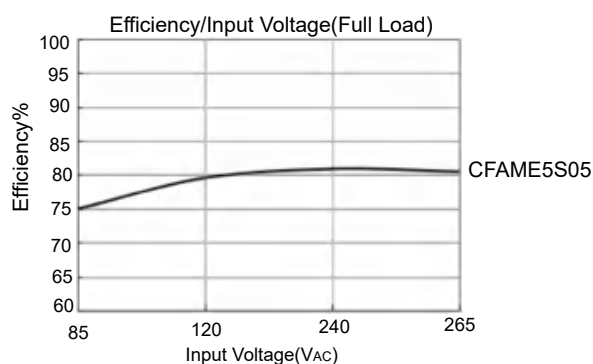
EMI	CE	CISPR22/EN55022,CLASS B	
	RE	CISPR22/EN55022,CLASS B	
EMS	ESD	IEC/EN61000-4-2 $\pm 6\text{KV}/\pm 8\text{KV}$	Perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 $\pm 2\text{KV}$	perf. Criteria B
		IEC/EN61000-4-4 $\pm 4\text{KV}$ (See Fig.5 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5 $\pm 1\text{KV}/\pm 2\text{KV}$	perf. Criteria B
		IEC/EN61000-4-5 $\pm 2\text{KV}/4\text{KV}$ (See Fig.5 for recommended circuit)	perf. Criteria B
EMS	CS	IEC/EN61000-4-6 10 V.r.m.s	perf. Criteria A
	PFM	IEC/EN61000-4-8 10A/m	perf. Criteria A
	Immunities of voltage dip, drop and short interruption	IEC/EN61000-4-11 0%-70%	perf. Criteria B

Product Characteristic Curve



Note: ①When input 85~100VAC/240~265VAC/100~120VDC/340~375VDC, it need to be voltage derated on basis of temperature derating;

②This product is suitable for use in natural air cooling environments, if in a closed environment,



Design Reference

1. Typical application circuit

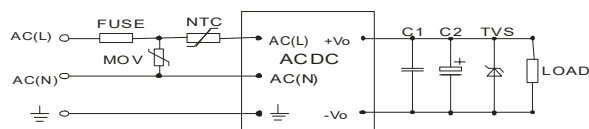


Fig.1: Typical application circuit

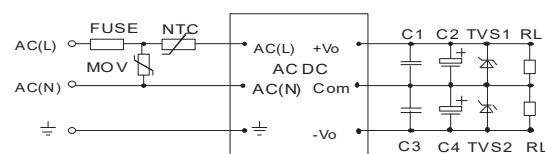


Fig.2: CFAME5D (Dual Output) serial typical application circuit

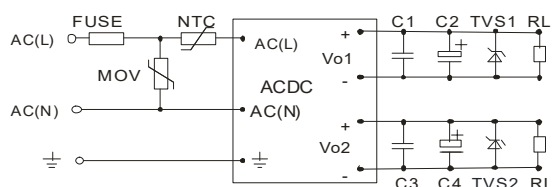


Fig.3: CFAME5D (Isolate Twin Output) serial typical application circuit

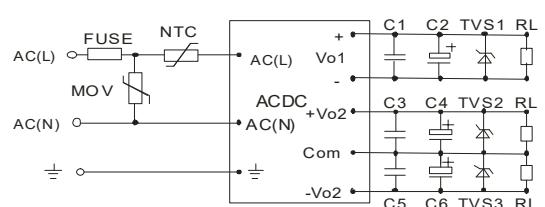


Fig.4: CFAME5T (Triple Output) serial typical application circuit

Model	C2(μF)	C4(μF)	C6(μF)	TVS1	TVS2	TVS3
CFAME5S3V3	330			SMBJ7.0A		
CFAME5S05	330			SMBJ7.0A		
CFAME5S09	120			SMBJ12A		
CFAME5S12	120			SMBJ20A		
CFAME5S15	68			SMBJ20A		
CFAME5S24	68			SMBJ30A		
CFAME5D05	120	120		SMBJ7.0A	SMBJ7.0A	
CFAME5D12	68	68		SMBJ20A	SMBJ20A	
CFAME5D15	47	47		SMBJ20A	SMBJ20A	
CFAME5D24	10	10		SMBJ30A	SMBJ30A	
CFAME5T05-05I	220	22	22	SMBJ7.0A	SMBJ7.0A	SMBJ7.0A
CFAME5T05-12I	120	22	22	SMBJ7.0A	SMBJ20A	SMBJ20A
CFAME5T05-15I	120	22	22	SMBJ7.0A	SMBJ20A	SMBJ20A
CFAME5T05-24I	120	22	22	SMBJ7.0A	SMBJ30A	SMBJ30A
CFAME5D05-05I	220	22		SMBJ7.0A	SMBJ7.0A	
CFAME5T05-12I	220	22		SMBJ7.0A	SMBJ20A	
CFAME5T05-15I	120	22		SMBJ7.0A	SMBJ20A	
CFAME5T05-24I	120	22		SMBJ7.0A	SMBJ30A	

Note:

Output filtering capacitors C2, C4, C6 are electrolytic capacitors, it is recommended to use high frequency and low impedance electrolytic capacitor.

For capacitance and current of capacitor please refer to manufacture's datasheet. Capacitor withstand voltage derating should be 80% or above. C1, C3, C5 are ceramic capacitors, which is used to filter high-frequency noise. TVS is a recommended component to protect post-circuits if converter fails. External input NTC is recommended to use 5D-9. External input FUSE model is recommended to use 1A/250V slow fusing. External input MOV model is recommended to use S14K300.

2. EMC solution-recommended circuit

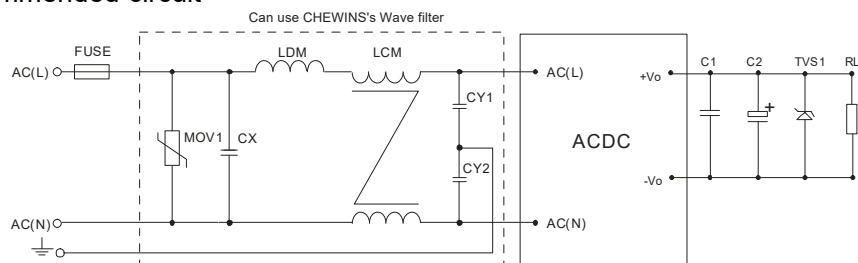
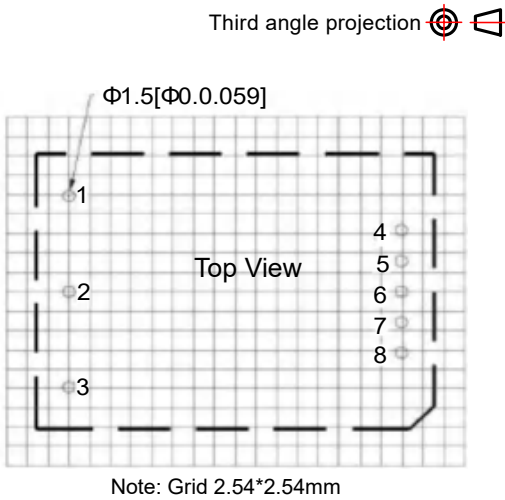
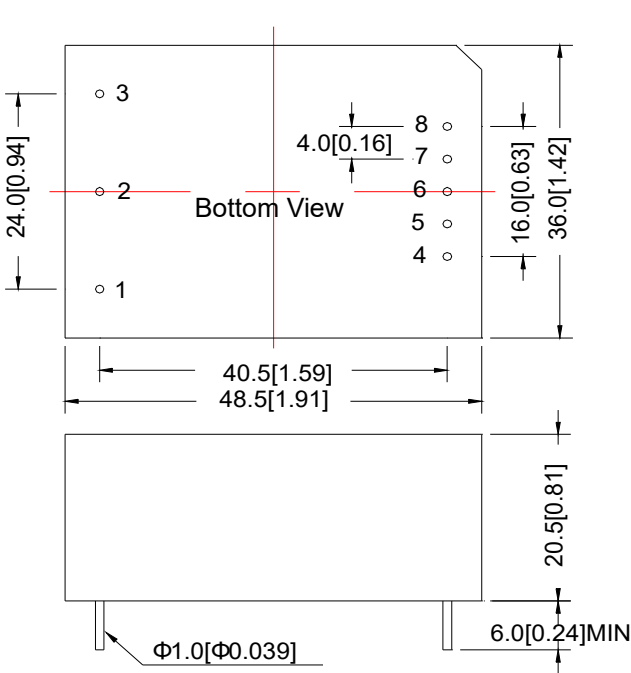


Fig.5: EMC Recommended circuit with higher requirements

Element model	Recommended value
MOV1	S14K300
CY1,CY2	1000pF/400V _{AC}
CX	0.1μF/275V _{AC}
LCM	10mH,recommended
LDM	4.7μH/2A
Wave filter	2KV/4KV EMC filter
FUSE	2A/250V slow fusing,necessary

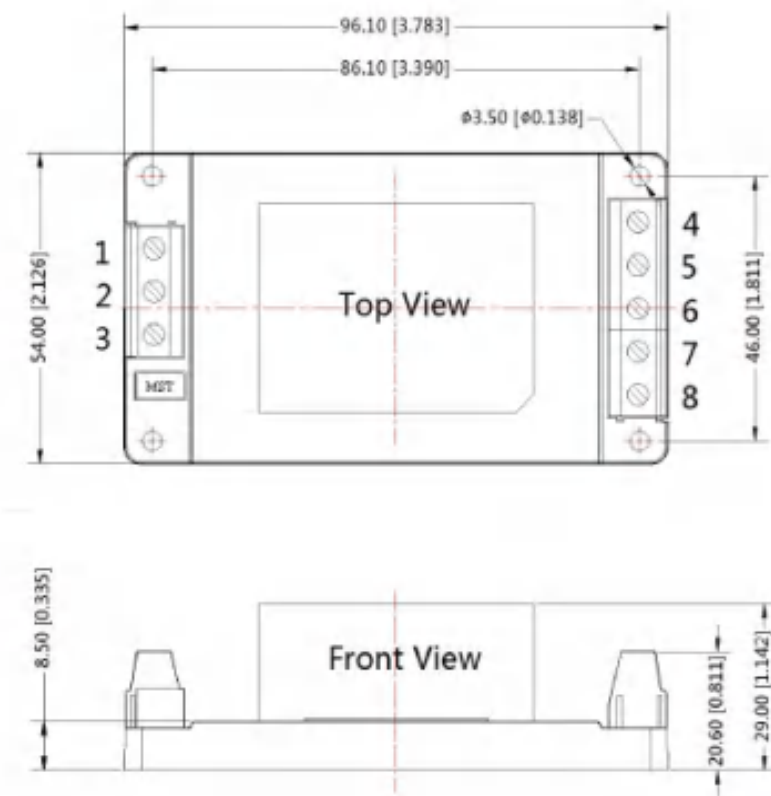
Dimensions and Recommended Layout



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

Pin	1	2	3	4	5	6	7	8
Single	FG	N	L	-Vo	NP	NP	NP	+Vo
Balance load Dual	FG	N	L	-Vo2	NP	COM	NP	+Vo1
Imbalance load Dual	FG	N	L	-Vo1	+Vo1	NC	-Vo2	+Vo2
Triple	FG	N	L	-Vo1	+Vo1	-Vo3	COM	+Vo2

Z2 Dimensions

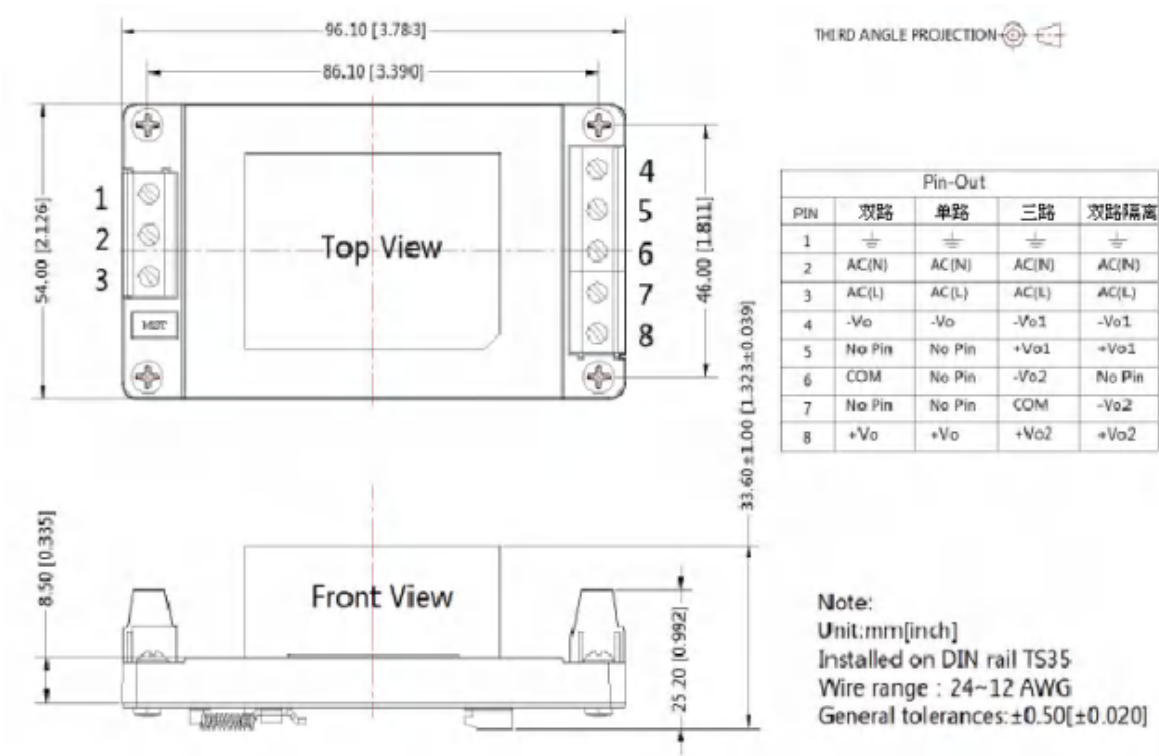


THIRD ANGLE PROJECTION

Pin-Out				
PIN	双路	单路	三路	三路两两
1	⊥	⊥	⊥	⊥
2	AC(N)	AC(N)	AC(N)	AC(N)
3	AC(L)	AC(L)	AC(L)	AC(L)
4	-Vo	-Vo	-Vo1	-Vo1
5	No Pin	No Pin	+Vo1	+Vo1
6	COM	No Pin	-Vo2	No Pin
7	No Pin	No Pin	COM	-Vo2
8	+Vo	+Vo	+Vo2	+Vo2

Note:
Unit:mm[inch]
Wire range : 24~12 AWG
General tolerances:±0.50[±0.020]

Z4 Dimensions



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.The performance parameters of the product models listed in this manual are as above,but some parameters of non-standard model products may exceed the requirements mentioned above.Please contact our technicians directly for specific information;
- 5.We can provide product customization service;Specifications are subject to change without prior notice.



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