



# CFM25S SERIES 25 WATT OPEN FRAME AC-DC MODULES

## Features

- Universal Input Range 90~264Vac
- High Efficiency up to 87%
- 2"x 1.1" Open Frame Compact Size
- Class II
- No Load Input Power < 0.1W
- Approval IEC/EN/UL 62368-1
- Approval IEC/EN 60335-1
- Approval EN 55032 Class B and CISPR/FCC Class B
- Operating Altitude 5000m
- Continuous Short Circuit Protection
- Over Voltage Protection
- Peak Load (2 Times of Rated Current (note7))



MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	VOLTAGE ACCURACY NOTE1	RIPPLE& NOISE NOTE2	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
CFM25S050	5 V	4.0 A	±2%	50mV	±1%	±1%	81%
CFM25S120	12 V	2.1 A	±1%	120mV	±1%	±1%	84%
CFM25S150	15 V	1.67 A	±1%	150mV	±1%	±1%	85%
CFM25S240	24 V	1.05 A	±1%	240mV	±1%	±1%	86%
CFM25S360	36 V	0.7 A	±1%	360mV	±1%	±1%	87%
CFM25S480	48 V	0.52 A	±1%	480mV	±1%	±1%	87%

Note:

1. Voltage accuracy is set at 100% full load.
2. Add a 0.1uF ceramic capacitor and a 10uF E.L. capacitor to output for ripple & noise measurement @20MHz BW.
3. Line regulation is measured from 90V<sub>ac</sub> to 264V<sub>ac</sub> with 100% full load.
4. Load regulation is measured from 10% to 100% full load.
5. Typical efficiency at 230 V<sub>ac</sub> and 100% full load at 25°C.
6. T Version wafer with JST B3B-XH/B4B-XH and mate with JST housing XH series or equivalent.
7. PL (peak load function) lasting time <10 seconds with a maximum 10% duty cycle and must add external 33uF/400V capacitor to BC+ & BC-.
8. L version & EL version Safety only approved only IEC/EN 60335-1.

## PART NUMBER

Series	Number of Outputs	Nominal Output Voltage	Type	Optional
CFM25	X	XXX	-XX	XX
CFM25	S: Single	050: 5V 120: 12V 150: 15V 240: 24V 360: 36V 480: 48V	Blank: PCB Mount E: Encapsulated T: Wafer L: Lead Wire EL: Encapsulated & Lead Wire	Blank: None PL: Peak Load Function

Part Number Example:

**CFM25S120-T:** Open Frame, 25W, Single 12V<sub>dc</sub> Output, Wafer



# CFM25S Series

## TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, full load at 25°C unless otherwise noted.)

### ABSOLUTE MAXIMUM RATINGS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input Voltage	Safety approvals only to the AC input	All	90		264	V <sub>ac</sub>
				120		370
Operating Case Temperature	See Derating Curve	All	-30		70	°C
Storage Temperature		All	-30		85	°C
Operating Altitude	IEC/EN/UL 62368-1	All			5000	m
	IEC/EN 60335-1					

### INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Voltage Range		All	100		240	V <sub>ac</sub>
Input Frequency Range		All	50		60	Hz
Maximum Input Current	100% Load, V <sub>in</sub> =100V <sub>ac</sub>	All			0.7	A
Leakage Current		All			0.25	mA
Inrush Current	V <sub>in</sub> =240V <sub>ac</sub> , Cold start at 25°C	All			60	A

### OUTPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Voltage Set Point	V <sub>in</sub> =Nominal V <sub>in</sub> , I <sub>o</sub> =I <sub>o</sub> max., T <sub>c</sub> =25°C	CFM25S050	4.90	5	5.10	V <sub>dc</sub>
		CFM25S120	11.88	12	12.12	
		CFM25S150	14.85	15	15.15	
		CFM25S240	23.76	24	24.24	
		CFM25S360	35.64	36	36.36	
		CFM25S480	47.52	48	48.48	
Operating Output Current Range	V <sub>in</sub> =115V <sub>ac</sub> and 230V <sub>ac</sub> , T <sub>c</sub> =25°C	CFM25S050			4.0	A
		CFM25S120			2.1	
		CFM25S150			1.67	
		CFM25S240			1.05	
		CFM25S360			0.7	
		CFM25S480			0.52	
Holdup Time	V <sub>in</sub> =115V <sub>ac</sub>	All		8		ms
Output Voltage Regulation						
Load Regulation	10% Load to full load	All			±1.0	%
Line Regulation	V <sub>in</sub> =High Line to low line	All			±1.0	%
Over Voltage Protection	Built-in a TVS component to clamp output voltage	CFM25S050	6.45	6.8	7.44	V <sub>dc</sub>
		CFM25S120	14.3	15	16.2	
		CFM25S150	17.1	18	18.9	
		CFM25S240	28.5	30	31.5	
		CFM25S360	40.9	43	45.6	
		CFM25S480	53.2	56	59.2	
Output Ripple and Noise	1. Add a 0.1uF ceramic capacitor and a 10uF aluminum electrolytic capacitor to output 2. Oscilloscope is 20MHz band width 3. Ambient Temperature=25°C	CFM25S050			50	mV
		CFM25S120			120	
		CFM25S150			150	
		CFM25S240			240	
		CFM25S360			360	
		CFM25S480			480	



# CFM25S Series

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Load Capacitance	1. $V_{in}=115V_{ac}$ and $230V_{ac}$ 2. Output is max. load 3. Ambient temperature= $25^{\circ}C$	CFM25S050			81000	uF
		CFM25S120			40900	
		CFM25S150			19800	
		CFM25S240			6600	
		CFM25S360			4000	
		CFM25S480			2170	
Efficiency	1. Output is rated load 2. Ambient temperature= $25^{\circ}C$ 3. Input voltage is $230V_{ac}$	CFM25S050		81		%
		CFM25S120		84		
		CFM25S150		85		
		CFM25S240		86		
		CFM25S360		87		
		CFM25S480		87		

## ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 minute	All			3000	$V_{ac}$
Isolation Resistance	Input to output	All	100			M $\Omega$

## FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	Pout=max. rated power	All		65		kHz

## GENERAL SPECIFICATIONS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
MTBF	$I_o=100\%$ ; $T_a=25^{\circ}C$ per MIL-HDBK-217F	All	500			k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5, Table 516.5-I 10ms, each axis 3 times( $\pm X$ 、 $\pm Y$ 、 $\pm Z$ axis)	All		75		g
Vibration	Meet MIL-STD-810F Table 514.5C-VIII, 15~2000Hz, X、Y、Z axis, 1 hour (each axis),. Total 3 hrs.	All		4		g
Weight		CFM25S		38		grams
		CFM25S-E		75		
		CFM25S-T		40		
		CFM25S-L		43		
		CFM25S-EL		80		
Dimensions	Blank (PCB mount)	All	2.000x1.100x0.980Inches (50.80x27.94x24.90mm)			
	E (Encapsulated)	All	2.091x1.193x0.976Inches (53.10x30.30x24.80mm)			
	T (Wafer)	All	2.776x1.100x0.906 Inches (70.50x27.94x23.00 mm)			
	L (Lead wire)	All	2.000x1.100x0.906Inches (50.80x27.94x23.00mm)			
	EL (Encapsulated & Lead wire)	All	2.091x1.193x0.976Inches (53.10x30.30x24.80mm)			
Safety	Class II, IEC/EN/UL 60950-1, IEC/EN/UL 62368-1, IEC/EN 60335-1 L Version & EL Version Safety only approved only IEC/EN 60335-1					
EMC Emission	EN55032 Class B, EN61000-3-2:2014, EN61000-3-3:2013, EN61000-6-3:2012, EN61000-6-4:2011, 47 CFR FCC Part 15 Subpart B, Oct.2014					Class B
Conducted Disturbance	EN55032, EN61000-6-3:2012 Class B, 47 CFR FCC Part 15 Subpart B					Class B
Radiated Disturbance	EN55032, EN61000-6-3:2012 Class B, 47 CFR FCC Part 15 Subpart B					Class B
Harmonic Current Emissions	EN 61000-3-2:2014					
Voltage Fluctuations & Flicker	EN 61000-3-3:2013					
EMC Immunity	EN55024, EN61204-3:2000, EN61000-6-1:2007, EN61000-6-2:2005					
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008, Air Discharge: $\pm 8kV$ , Contact Discharge: $\pm 4kV$					Criterion A



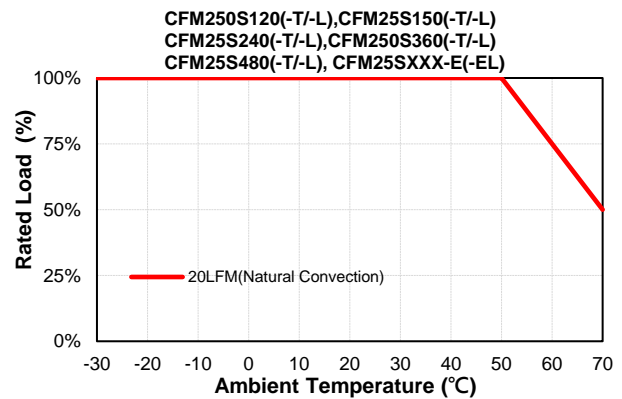
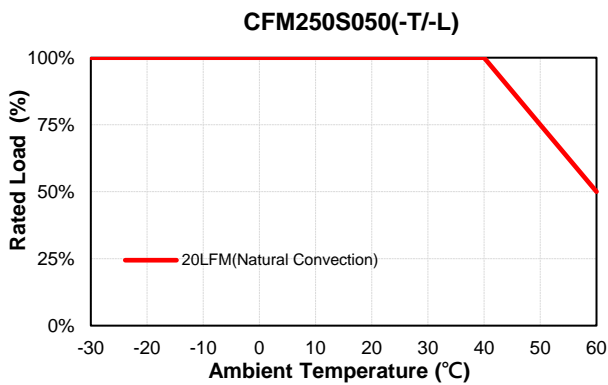
# CFM25S Series

## GENERAL SPECIFICATIONS

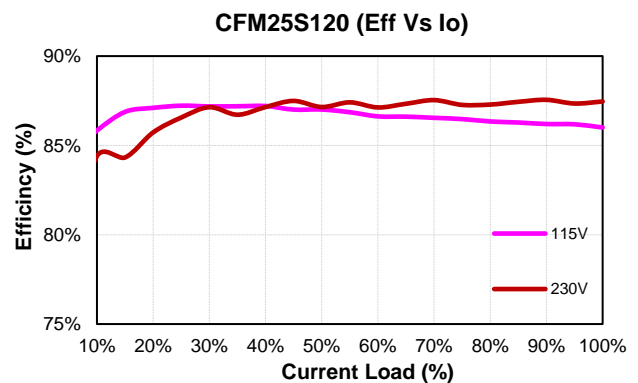
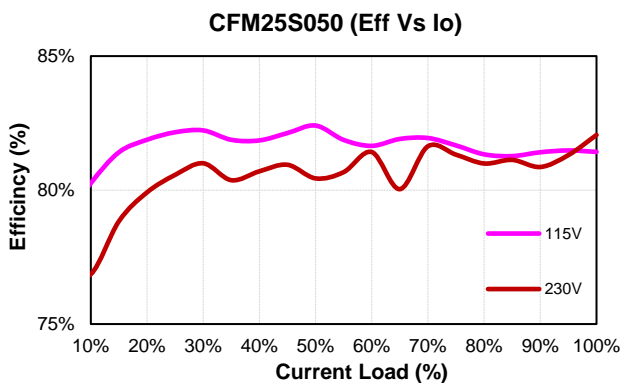
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3:2010	Criterion A
Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, $\pm 0.5\text{kV}$ , $\pm 1\text{kV}$ , $\pm 2\text{kV}$	Criterion A
Surge	IEC 61000-4-5:2014, L-N: $\pm 0.5\text{kV}$ , $\pm 1\text{kV}$	Criterion A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6:2013	Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8:2009	Criterion A
Voltage Dips	IEC 61000-4-11:2004, Dip: 30% Reduction, Dip >95% Reduction	Criterion A
Voltage Interruptions	IEC 61000-4-11:2004, >95% Reduction	Criterion B
Application Note Link	<a href="#">CFM25S Series App Notes</a>	

## CHARACTERISTIC CURVE

### Power Derating Curve



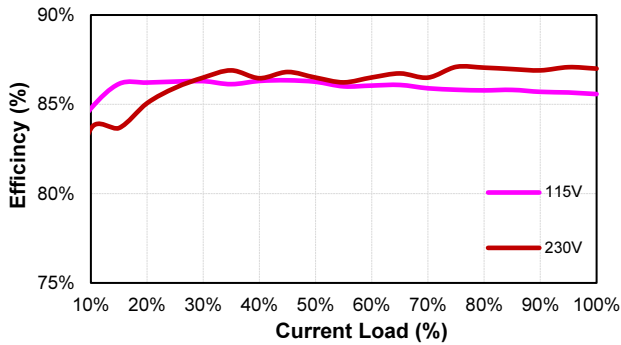
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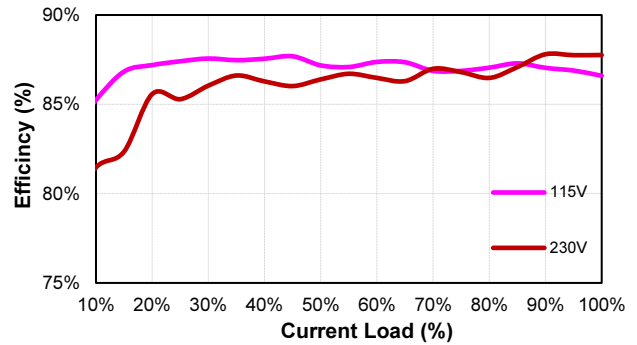


# CFM25S Series

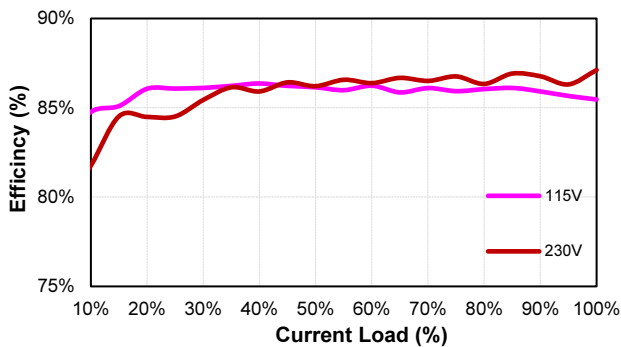
CFM25S150 (Eff Vs Io)



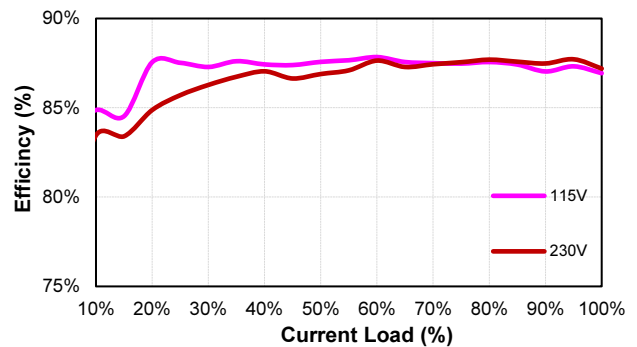
CFM25S240 (Eff Vs Io)



CFM25S360 (Eff Vs Io)

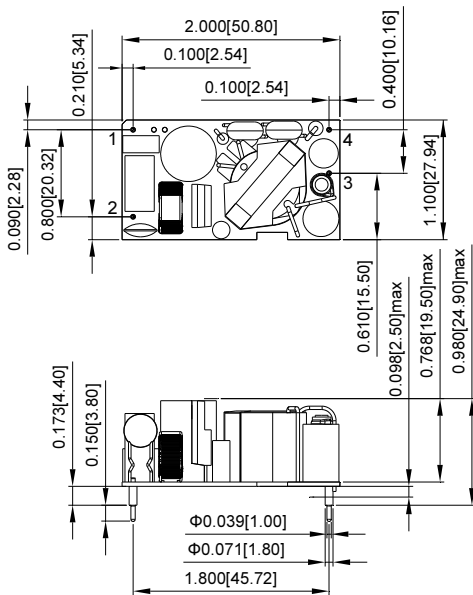


CFM25S480 (Eff Vs Io)

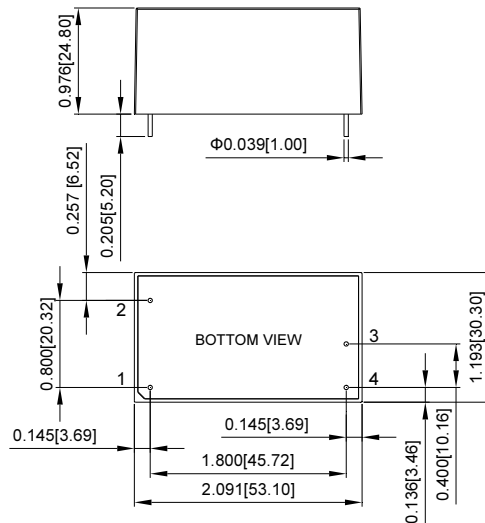


## MECHANICAL SPECIFICATION

CFM25SXXX



CFM25SXXX-E



PIN CONNECTION

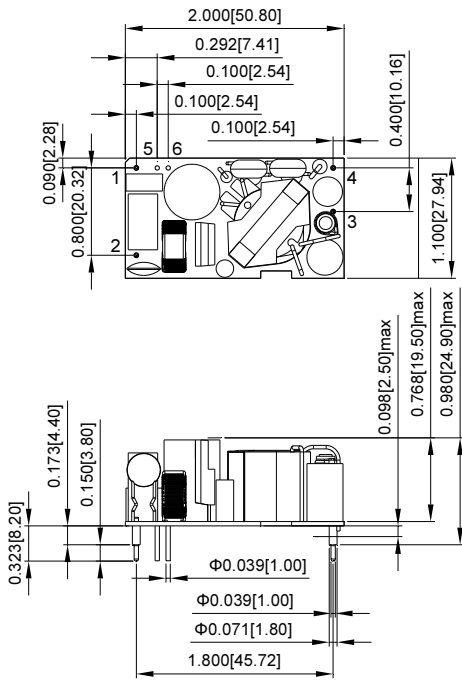
Pin	Function
1	ACL
2	ACN
3	+Vout
4	-Vout

All Dimensions are in inches[mm]  
Tolerance: Inches: X.XXX±0.02  
Millimeters: X.XX±0.5

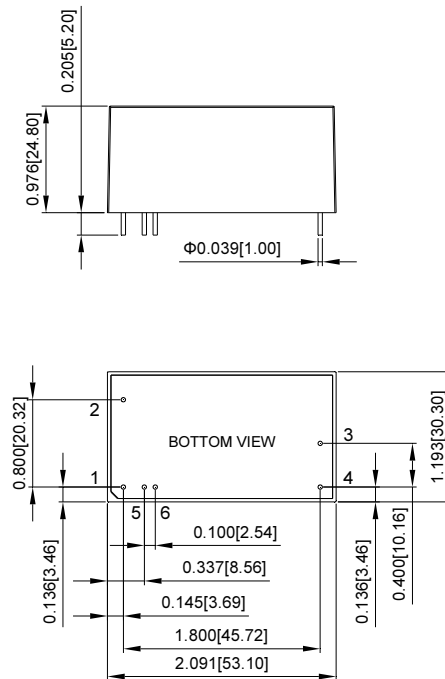


# CFM25S Series

CFM25SXXX PL



CFM25SXXX-E PL

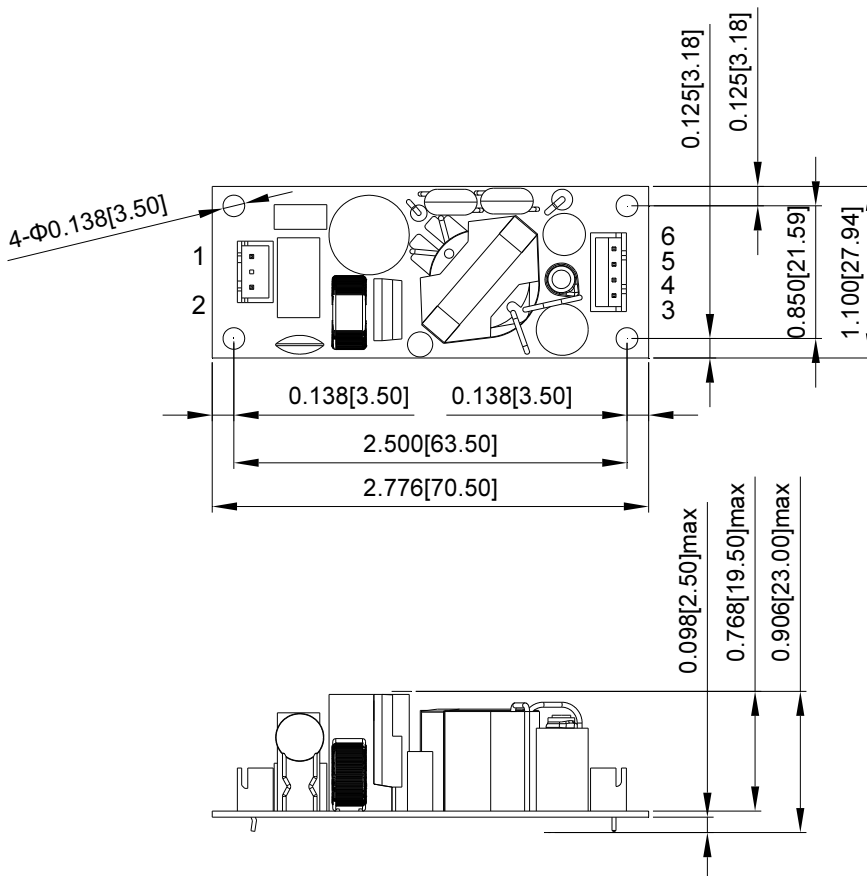


PIN CONNECTION

Pin	Function
1	ACL
2	ACN
3	+Vout
4	-Vout
5	BC+(Optional)
6	BC-(Optional)

All Dimensions are in inches[mm]  
Tolerance: Inches: X.XXX±0.02  
Millimeters: X.XX±0.5

CFM25SXXX-T



PIN CONNECTION

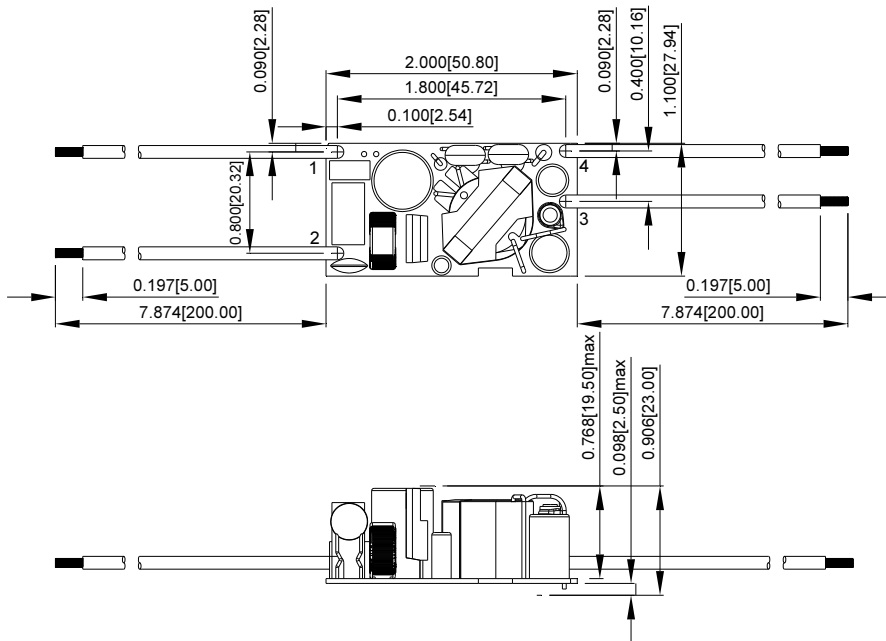
Pin	Function
1	ACL
2	ACN
3	+Vout
4	+Vout
5	-Vout
6	-Vout

All Dimensions are in inches[mm]  
Tolerance: Inches: X.XXX±0.02  
Millimeters: X.XX±0.5



# CFM25S Series

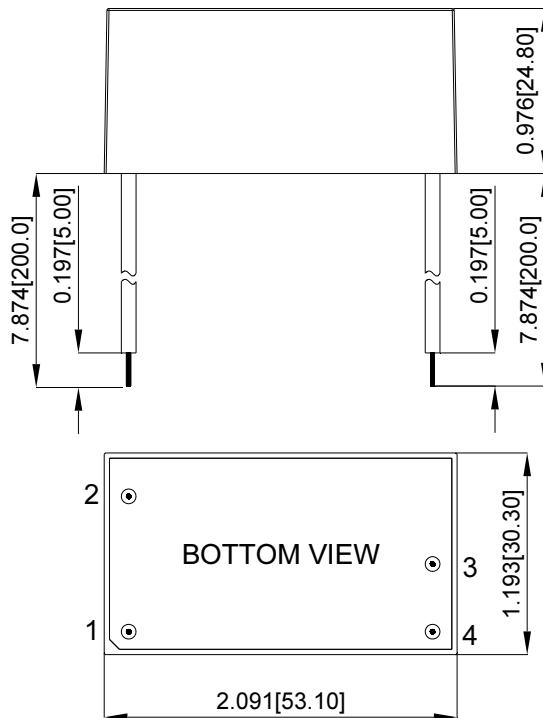
## CFM25SXXX-L



PIN CONNECTION	
Pin	Function
1 (Brown)	ACL
2 (Blue)	ACN
3 (Red)	+Vout
4 (Black)	-Vout

Cable: 20AWG/UL 1007,  $\Phi 1.8 \pm 0.2\text{mm}$   
 All Dimensions In Inches[mm]  
 Tolerance Inches:x.xxx=  $\pm 0.02$   
 Millimeters: x.xx =  $\pm 0.5$

## CFM25SXXX-EL



CONNECTION	
Pin	Function
1 (Brown)	ACL
2 (Blue)	ACN
3 (Red)	+Vout
4 (Black)	-Vout

Cable: 20AWG/UL 1007,  $\Phi 1.8 \pm 0.2\text{mm}$   
 All Dimensions In Inches[mm]  
 Tolerance Inches:x.xxx=  $\pm 0.02$   
 Millimeters: x.xx =  $\pm 0.5$