

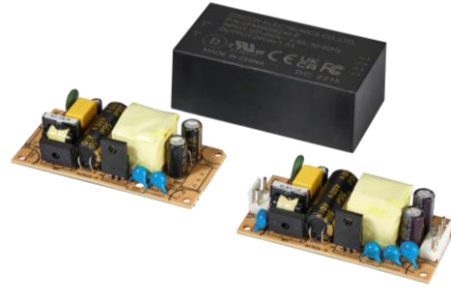


electronic powersolutions

# CFM36S SERIES 36 WATT OPEN FRAME AC-DC MODULES

## Features

- Universal Input Range 90~264V<sub>ac</sub>
- High Efficiency up to 89%
- 1.5"x 3" Size
- Class II: Type "Blank" & "E"
- Class II or I: Type "T"
- No Load Power <0.1W
- Approval IEC/EN/UL 62368-1
- Approval EN 55032 Class B and CISPR/FCC Class B
- Design Meets IEC/EN 60335-1
- Operating Altitude 5000m
- Continuous Short Circuit Protection
- Over Voltage Protection



MODEL NUMBER	OUTPUT VOLTAGE	OUTPUT CURRENT	RIPPLE & NOISE NOTE2	VOLTAGE ACCURACY NOTE1	LINE REGULATION NOTE3	LOAD REGULATION NOTE4	%EFF. (Typ.) NOTE5
CFM36SA050	5.0 V	6.0 A	100 mV	±2%	±0.5%	±1%	85%
CFM36SA120	12 V	3.0 A	120 mV	±2%	±0.5%	±1%	88%
CFM36SA150	15 V	2.4 A	150 mV	±2%	±0.5%	±1%	88%
CFM36SA240	24 V	1.5 A	240 mV	±2%	±0.5%	±1%	89%
CFM36SA480	48 V	0.75 A	480 mV	±2%	±0.5%	±1%	89%
CFM36SB050	5.0 V	6.0 A	100 mV	±2%	±0.5%	±1%	85%
CFM36SB120	12 V	3.0 A	120 mV	±2%	±0.5%	±1%	88%
CFM36SB150	15 V	2.4 A	150 mV	±2%	±0.5%	±1%	88%
CFM36SB240	24 V	1.5 A	240 mV	±2%	±0.5%	±1%	89%
CFM36SB480	48 V	0.75 A	480 mV	±2%	±0.5%	±1%	89%

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 high line to low line with 100% full load.
4. Load regulation is measured from 10% to 100% full load.
5. Typical efficiency at 230 Vac and 100% full load at 25°C.
6. T Version wafer with TAIWAN KING PIN TERMINAL PVHI series, JST PH series and mate with PVHI series or equivalent.

## PART NUMBER

Series	Number of Outputs	Nominal Output Voltage	Type
CFM36	SX	XXX	-X
CFM36	SA : Single, Class I (Type "T" Only) SB : Single, Class II (All Types)	050 : 5.0V 120 : 12V 150 : 15V 240 : 24V 480 : 48V	Blank : PCB mount T : Wafer E : Encapsulated

Part Number Example:

- CFM36SB120:** 36W, Single 12Vdc Output, Class II, PCB Mount Type.
- CFM36SB120-E:** 36W, Single 12Vdc Output, Class II, Encapsulated Type.
- CFM36SA120-T:** 36W, Single 12Vdc Output, Class I, Wafer Type.
- CFM36SB120-T:** 36W, Single 12Vdc Output, Class II, Wafer Type.



## TECHNICAL SPECIFICATIONS

(All specifications are typical at nominal input, 100% 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 Temperature	See Derating Curve	All	-40		80	°C
Storage Temperature		All	-40		85	°C
Operating Altitude	IEC/EN/UL 62368-1 Meets EN 60335-1	All			5000	m
					2000	

### INPUT CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Operating Voltage Range	See Derating Curve	All	100		240	V <sub>ac</sub>
Input Frequency Range		All	50		60	Hz
Maximum Input Current	100% Full load, V <sub>in</sub> =100V <sub>ac</sub>	All			0.9	A
Leakage Current		All			0.1	mA
Inrush Current	V <sub>in</sub> =240V <sub>ac</sub> , Cold start at 25°C	All			90	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	CFM36SX050	4.90	5	5.10	V <sub>dc</sub>
		CFM36SX120	11.76	12	12.24	
		CFM36SX150	14.70	15	15.30	
		CFM36SX240	23.52	24	24.48	
		CFM36SX480	47.02	48	48.96	
Operating Output Current Range	V <sub>in</sub> =90V <sub>ac</sub> ~240V <sub>ac</sub> , See Derating Curve	CFM36SX050			6.0	A
		CFM36SX120			3.0	
		CFM36SX150			2.4	
		CFM36SX240			1.5	
		CFM36SX480			0.75	
Holdup Time	V <sub>in</sub> =115V <sub>ac</sub>	All		8		ms
Output Voltage Regulation						
Load Regulation	10% to 100% Full load	All			±1.0	%
Line Regulation	V <sub>in</sub> =High line to low line	All			±0.5	%
Over Current Protection	Hiccup mode, auto recovery	All	110		180	%
Short Circuit Protection	Auto recovery	All				
Over Voltage Protection	Latch mode (AC recycle to restart)	CFM36SX050			7.44	V <sub>dc</sub>
		CFM36SX120			16.8	
		CFM36SX150			21.5	
		CFM36SX240			31.5	
		CFM36SX480			63.0	



# CFM36S Series

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Output Ripple and Noise	1. Add a 0.1uF ceramic capacitor and a 10uF aluminum electrolytic capacitor to output 2. Oscilloscope is 20MHz bandwidth 3. Ambient temperature=25°C	CFM36SX050			100	mV
		CFM36SX120			120	
		CFM36SX150			150	
		CFM36SX240			240	
		CFM36SX480			480	
Load Capacitance	1. $V_{in}=115V_{ac}$ and $230V_{ac}$ 2. Output is 100% full load 3. Ambient temperature=25°C	CFM36SX050			6000	uF
		CFM36SX120			3000	
		CFM36SX150			2400	
		CFM36SX240			1500	
		CFM36SX480			750	
Efficiency	1. $V_{in}=230V_{ac}$ 2. Output is 100% full load 3. Ambient temperature=25°C	CFM36SX050		85		%
		CFM36SX120		88		
		CFM36SX150		88		
		CFM36SX240		89		
		CFM36SX480		89		

## ISOLATION CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Input to Output	1 minute	All			4000	$V_{ac}$
Isolation Resistance	Input to output	All	100			MΩ

## FEATURE CHARACTERISTICS

PARAMETER	NOTES and CONDITIONS	Device	Min.	Typ.	Max.	Units
Switching Frequency	$P_{out}=\max.$ 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	700			k hours
Humidity	Non-condensing	All			93	% RH
Shock	Meet MIL-STD-810F Table 516.5, Table 516.5-1 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	Blank (PCB mount)	All		55		grams
	T (Wafer)			55		
	E (Encapsulated)			156		
Dimensions	Blank (PCB mount)	All	3.00x1.50x1.100 Inches (76.2x38.1x27.94 mm)			
	T (Wafer)		3.00x1.50x1.000 Inches (76.2x38.1x25.40 mm)			
	E (Encapsulated)		3.10x1.60x1.134 Inches (78.8x40.7x28.80 mm)			
Safety	Class I or II, IEC/EN/UL 62368-1					
EMC Emission	EN 55032:2015+A11:2020, 47 CFR FCC Part 15 Subpart B, ICES-003 Issue7, EN 61204-3:2018, EN 61000-6-3:2021, EN 61000-6-4:2019 EN 61000-3-2:2019, EN 61000-3-3:2013+A1:2019					Class B
Conducted Disturbance	EN 55032:2015+A11:2020, 47 CFR FCC Part 15 Subpart B, ICES-003 Issue7, EN 61204-3:2018, EN 61000-6-3:2021, EN 61000-6-4:2019					Class B
Radiated Disturbance	EN 55032:2015+A11:2020, 47 CFR FCC Part 15 Subpart B, ICES-003 Issue7, EN 61204-3:2018, EN 61000-6-3:2021, EN 61000-6-4:2019					Class B
Harmonic Current Emissions	EN 61000-3-2:2019					
Voltage Fluctuations & Flicker	EN 61000-3-3:2013+A1:2019					
EMC Immunity	EN 55035:2017+A11:2020, EN 61204-3:2018, EN 61000-6-1:2019, EN 61000-6-2:2019					
Electrostatic Discharge (ESD)	IEC 61000-4-2:2008					Criterion A

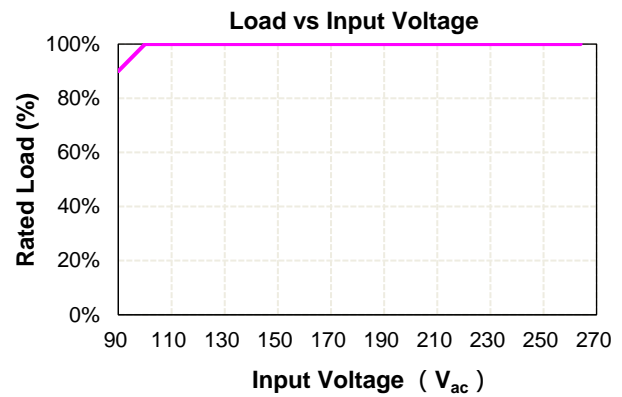
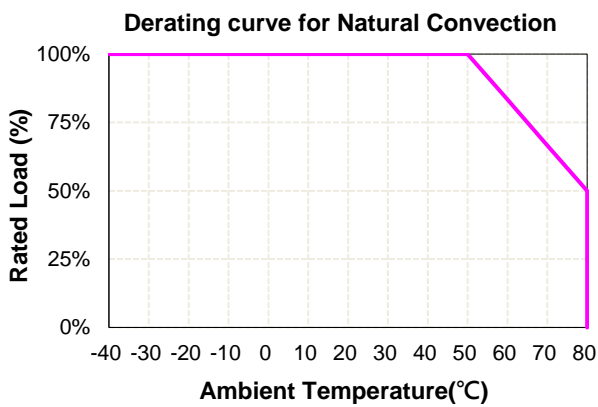


## GENERAL SPECIFICATIONS

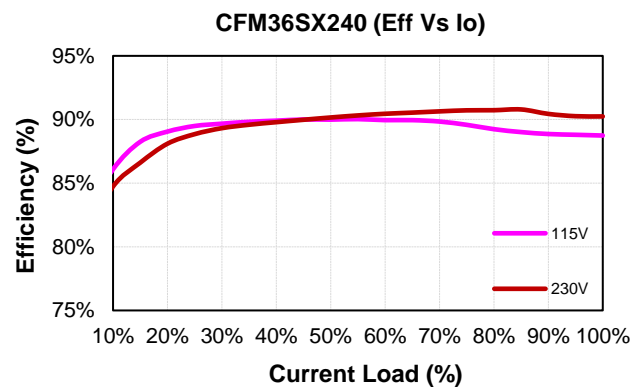
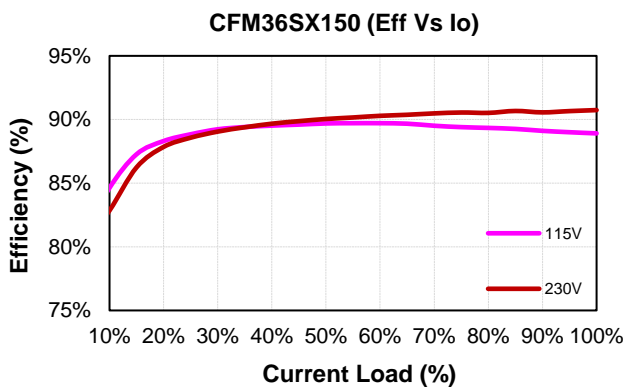
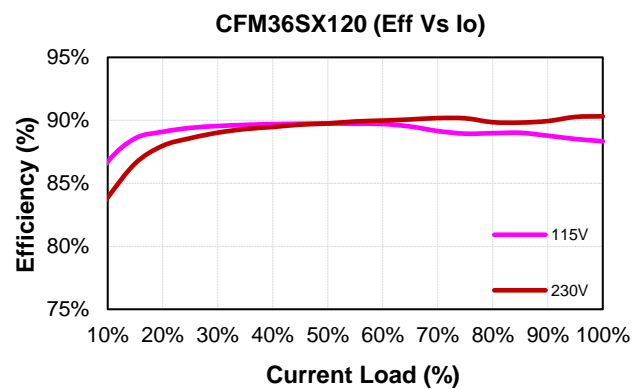
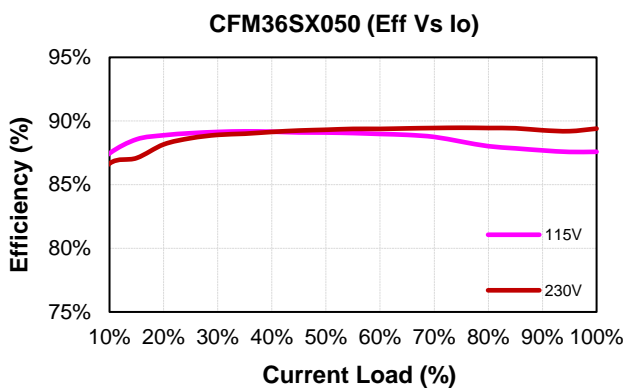
Radio-Frequency, Continuous Radiated Disturbance	IEC 61000-4-3:2020	Criterion A
Electrical Fast Transient (EFT)	IEC 61000-4-4:2012, ±1kV, ±2kV	Criterion A
Surge	IEC 61000-4-5:2014+A1:2017, L-N: ±0.5kV, ±1kV, L-E(Ground): ±0.5kV, ±1kV, ±2kV	Criterion A
Conducted Disturbances, Induced by RF Fields	IEC 61000-4-6:2013+COR1:2015	Criterion A
Power Frequency Magnetic Field	IEC 61000-4-8:2009	Criterion A
Voltage Dips	IEC 61000-4-11:2020, Dip: 30% Reduction, Dip >95% Reduction	Criterion A
Voltage Interruptions	IEC 61000-4-11:2020, >95% Reduction	Criterion B
Application Note Link	<a href="#">CFM36S Series App Notes</a>	

## CHARACTERISTIC CURVE

### Power Derating Curve

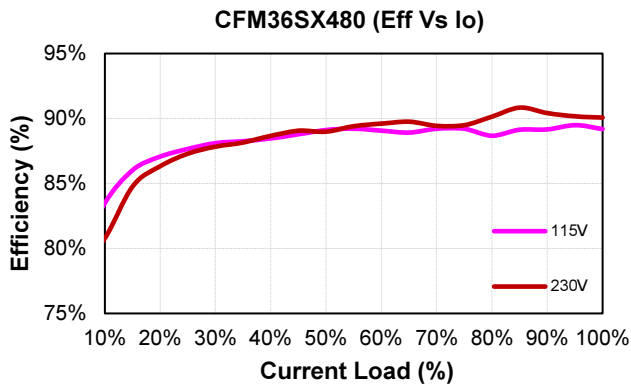


### Performance Data

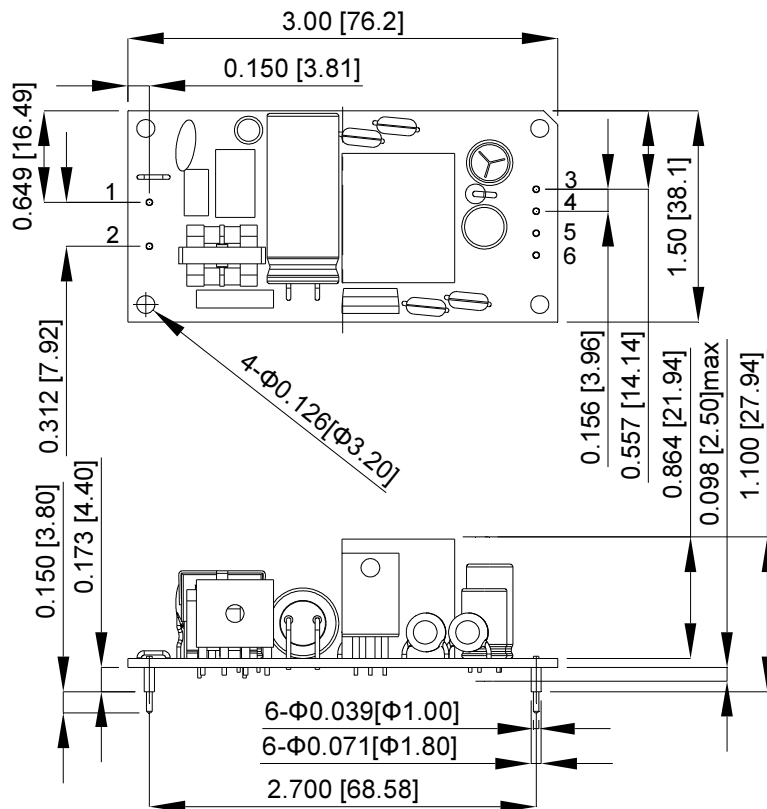




# CFM36S Series



## MECHANICAL SPECIFICATION

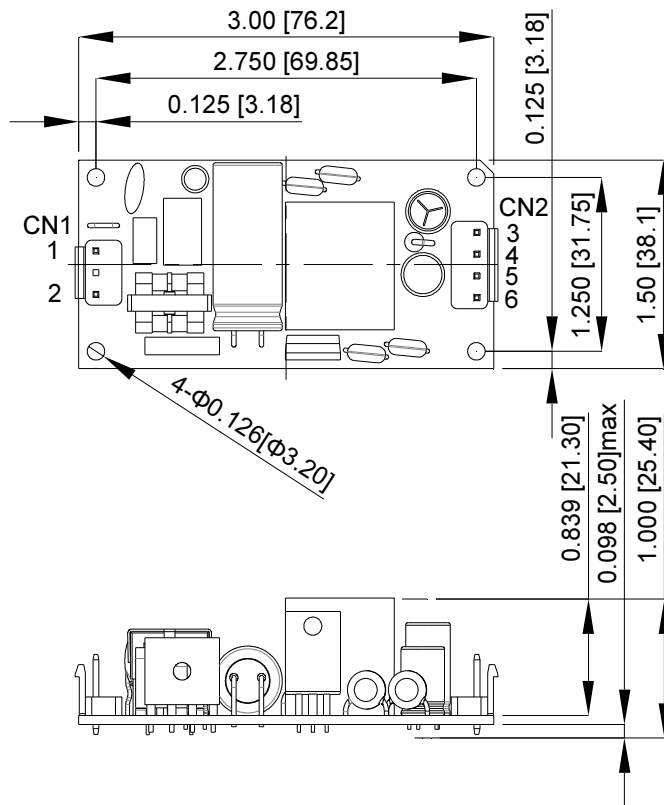


## CFM36SBXXX

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

All Dimensions in Inches[mm]  
 Tolerance Inches: x.xx=±0.03, x.xxx=±0.020  
 Millimeters: x.x=±0.7, x.xx=±0.50

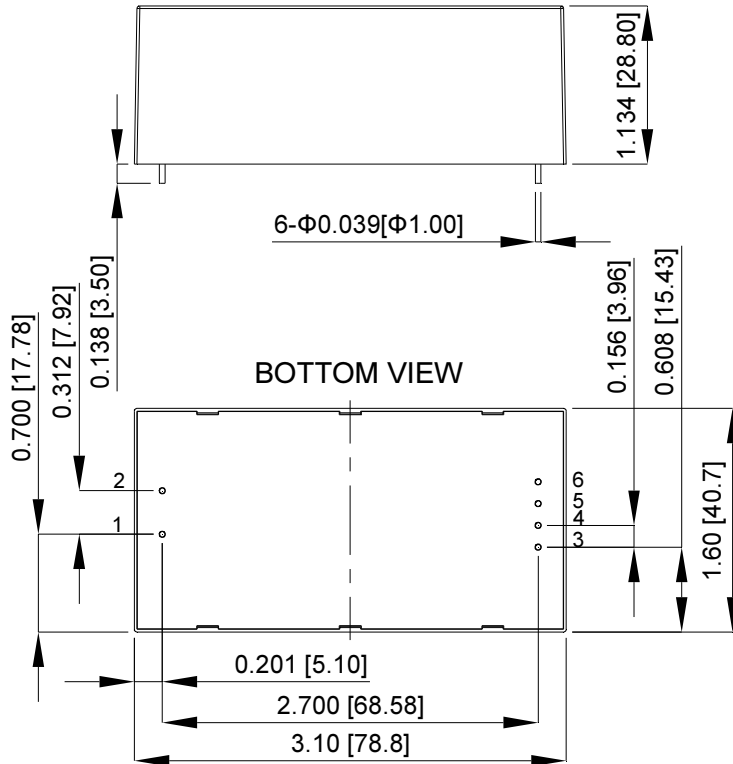
## MECHANICAL SPECIFICATION



### CFM36SBXXX-T

PIN CONNECTION		
Pin	Function	Wafer
1	ACN	CN1
2	ACL	
3	+Vout	CN2
4	+Vout	
5	-Vout	
6	-Vout	

All Dimensions in Inches[mm]  
 Tolerance Inches: x.xx=±0.03, x.xxx=±0.020  
 Millimeters: x.x=±0.7, x.xx=±0.50



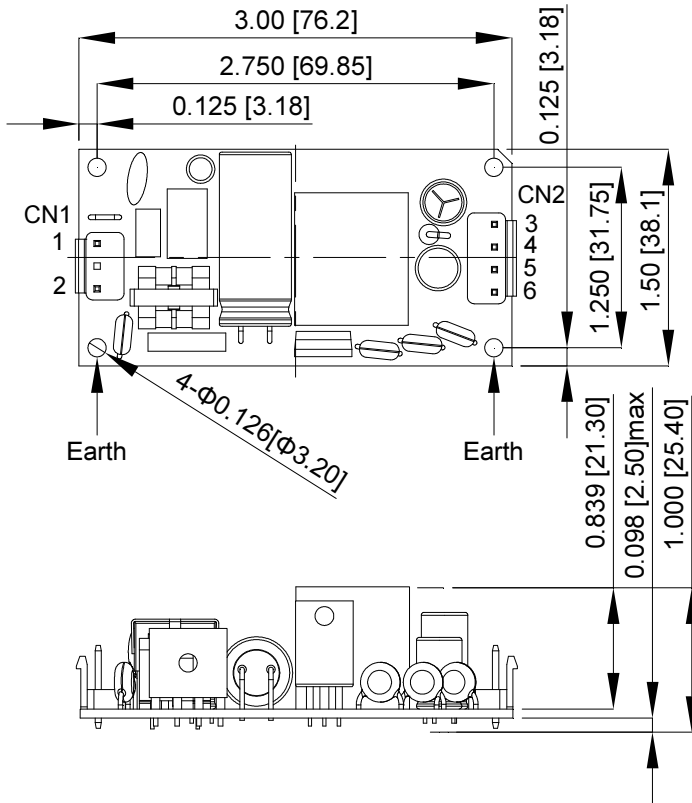
### CFM36SBXXX-E

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

All Dimensions in Inches[mm]  
 Tolerance Inches: x.xx=±0.03, x.xxx=±0.020  
 Millimeters: x.x=±0.7, x.xx=±0.50



## MECHANICAL SPECIFICATION



## CFM36SAXXX-T

PIN CONNECTION		
Pin	Function	Wafer
1	ACN	CN1
2	ACL	
3	+Vout	CN2
4	+Vout	
5	-Vout	
6	-Vout	

All Dimensions in Inches[mm]  
Tolerance Inches: x.xx=±0.03, x.xxx=±0.020  
Millimeters: x.x=±0.7, x.xx=±0.50

Specifications are subject to change without notice, E&OE. ALL PSU Terms & Conditions apply.

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