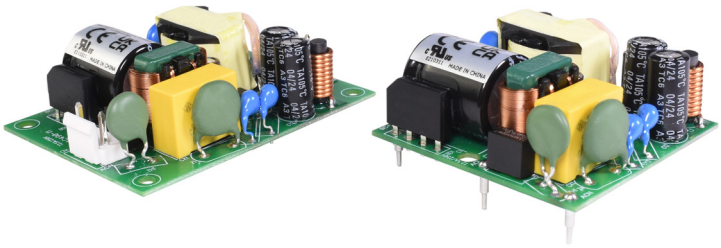
SERIES: VOF-40E | **DESCRIPTION:** INTERNAL AC-DC POWER SUPPLY

FEATURES

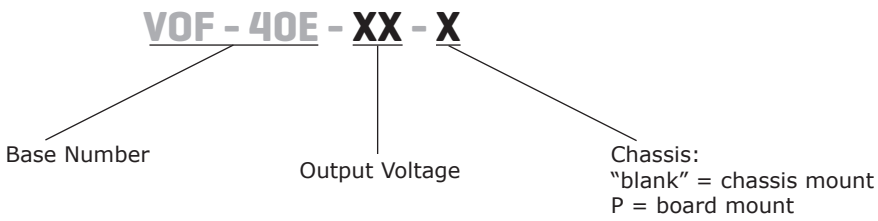
- universal input range (90 ~ 264 Vac)
- Class B emissions (EN 55032/CISPR/FCC)
- certified to IEC/EN/UL 62368-1
- designed to meet IEC/EN 60335
- short circuit, over voltage protection
- <0.15 W no-load power consumption
- Class II
- 5,000 m operating altitude
- 2x peak load capability



MODEL	output voltage typ (Vdc)	output current max (A)	output power max (W)	ripple and noise[1] max (mVp-p)	efficiency[2] typ (%)
VOF-40E-5	5	6.00	30	100	87
VOF-40E-12	12	3.34	40	120	90
VOF-40E-15	15	2.67	40	150	90
VOF-40E-24	24	1.67	40	240	90
VOF-40E-36	36	1.11	40	360	90
VOF-40E-48	48	0.83	40	480	90

Notes: 1. At full load, nominal input, 20 MHz bandwidth oscilloscope with 0.1µF ceramic capacitor and 10 µF electrolytic capacitor.
2. At 230 Vac input.
3. PL (peak load function) Lasting time < 10 seconds with a maximum 10% duty cycle and must add external 68uF / 400V capacitor to BC+& BC-.
4. All specifications are measured at Ta=25°C, humidity <75%, nominal input voltage, and rated output load unless otherwise specified.

PART NUMBER KEY



Please read our datasheet & drawing disclaimer here.

INPUT

parameter	conditions/description	min	typ	max	units
voltage	ac input dc input	90 120		264 370	Vac Vdc
frequency		47	50~60	63	Hz
current	at 100 Vac, full load			1	A
inrush current	at 240 Vac, full load			70	A
leakage current				0.25	mA
no load power consumption				0.15	W

OUTPUT

parameter	conditions/description	min	typ	max	units
capacitive load	5 Vdc output model 12 Vdc output model 15 Vdc output model 24 Vdc output model 36 Vdc output model 48 Vdc output model			6,000 3,330 2,650 1,650 1,090 810	µF µF µF µF µF µF
output voltage set point	5 Vdc output model 12 Vdc output model 15 Vdc output model 24 Vdc output model 36 Vdc output model 48 Vdc output model	4.90 11.88 14.85 23.76 35.64 47.52		5.10 12.12 15.15 24.24 36.36 48.48	Vdc Vdc Vdc Vdc Vdc Vdc
voltage accuracy	5 Vdc output model all other output models		±2 ±1		% %
line regulation	high line to low line			±0.5	%
load regulation	10 % to 100 % load			±1.0	%
hold-up time	at 115 Vac		10		ms
switching frequency			65		kHz

PROTECTIONS

parameter	conditions/description	min	typ	max	units
over voltage protection	TVS component to clamp output voltage 5 Vdc output model 12 Vdc output model 15 Vdc output model 24 Vdc output model 36 Vdc output model 48 Vdc output model		 6.8 15.0 18.0 30.0 43.0 56.0		 Vdc Vdc Vdc Vdc Vdc Vdc
short circuit protection	auto recovery				

SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
isolation voltage	input to output, for 1 minute			3,000	Vac
safety approvals	certified to 62368-1: IEC, EN, UL designed to meet 60335-1: EN				
safety class	Class II				
EMC	EN 55032, EN 61000-3-2, EN 61000-3-3, EN 61000-6-3, EN 61000-6-4, 47 CFR FCC Part 15 Subpart B, Class B				
EMC immunity	EN 55035:2017+A11:2020, EN 61204-3:2000, EN 61000-6-1:2019, EN 61000-6-2:2019, perf. Criteria A				
conducted emissions	EN 55032:2015+A11:2020, EN 61000-6-3:2012, 47 CFR FCC Part 15 Subpart B, Class B				
radiated emissions	EN 55032:2015+A11:2020, EN 61000-6-3:2012, 47 CFR FCC Part 15 Subpart B, Class B				
ESD	IEC 61000-4-2:2008, Air discharge: ±8 kV, Contact discharge: ±4 kV, perf. Criteria A				

SAFETY & COMPLIANCE

parameter	conditions/description	min	typ	max	units
EFT/burst	IEC 61000-4-4:2012, ±2 kV, perf. Criteria A				
surge	IEC 61000-4-5:2014+A1:2017, L-N: ±1 kV, perf. Criteria A				
voltage dips	IEC 61000-4-11:2020, Dip: 30% 10 ms, Dip: 60% 100 ms, Dip >95% 5000 ms, perf. Criteria A				
voltage interruption	IEC 61000-4-11:2020, >95% 5000 ms, perf. Criteria B				
MTBF	as per MIL-HDBK-217F at 25°C as per Telcordia SR 332 at 25°C	390,000 3,170,000			hours hours
RoHS	yes				

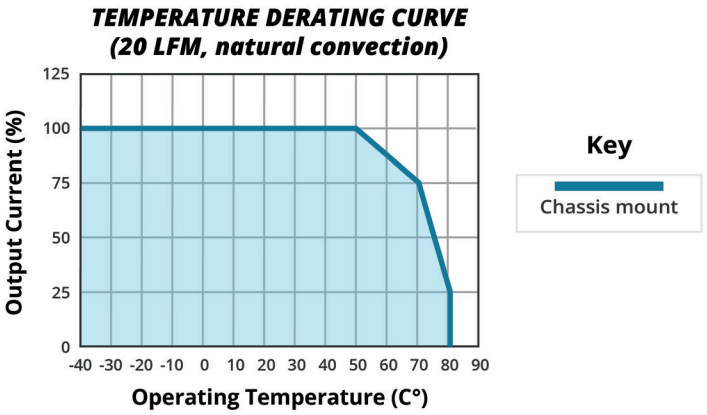
ENVIRONMENTAL

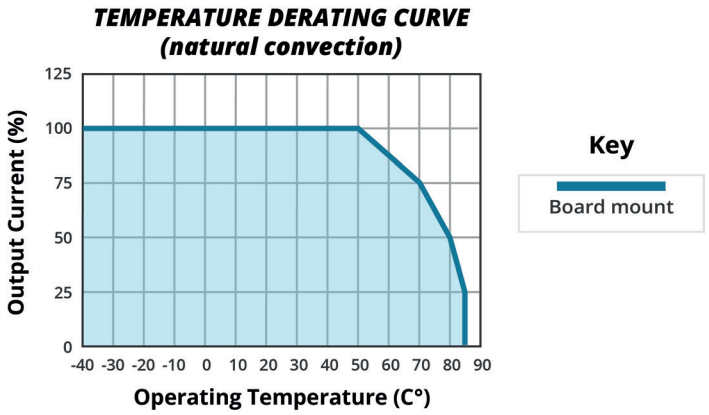
parameter	conditions/description	min	typ	max	units
operating temperature	see derating curve	-40		85	°C
storage temperature		-40		85	°C
storage humidity	non-condensing	0		93	%
altitude	IEC/EN/UL 62368-1 OVC II designed to meet EN 60335-1 OVC II			5,000 2,000	m m

MECHANICAL

parameter	conditions/description	min	typ	max	units
dimensions	chassis mount: 2.700 x 2.000 x 0.941 [68.58 x 50.80 x 23.9 mm] board mount: 2.000 x 2.000 x 1.010 [50.80 x 50.80 x 25.6 mm]				inch inch
weight	chassis mount board mount		64 61		g g

DERATING CURVES



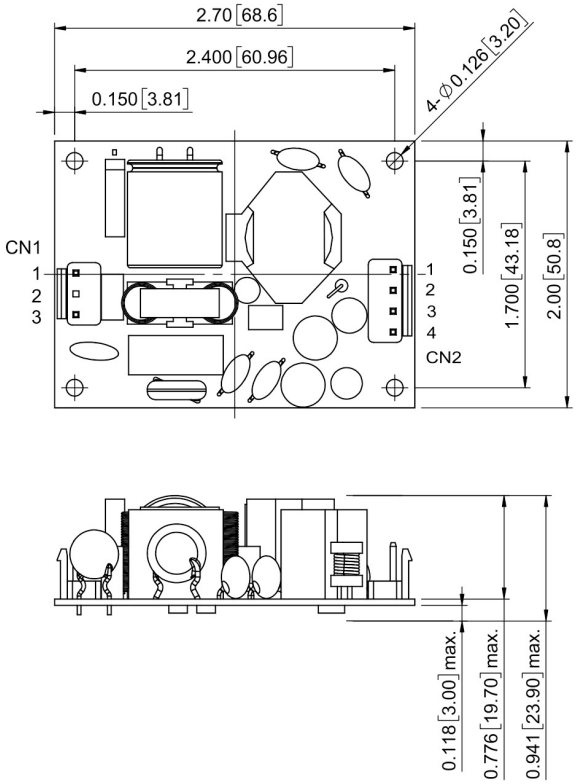


MECHANICAL DRAWING

Chassis mount
units: inch [mm]
tolerance: inches: x.xx = ±0.03, x.xxx = ±0.02
mm: x.x - ±0.7, x.xx = ±0.5

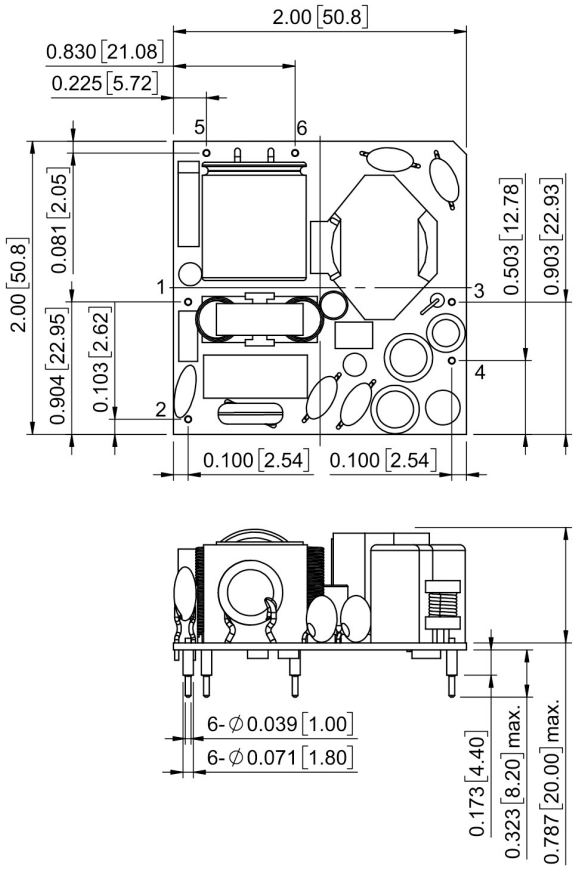
AC Input Connector (CN1): TKP PVHI-03N2 or equivalent			
PIN	Function	Mating Housing	Terminal
1	AC(L)	JST VHR-3N or equivalent	JST SVH-21T-P1.1 or equivalent
2	-		
3	AC(N)		

DC Output Connector (CN2): TKP PVHI-04 or equivalent			
PIN	Function	Mating Housing	Terminal
1	+Vout	JST VHR-4N or equivalent	JST SVH-21T-P1.1 or equivalent
2	+Vout		
3	-Vout		
4	-Vout		



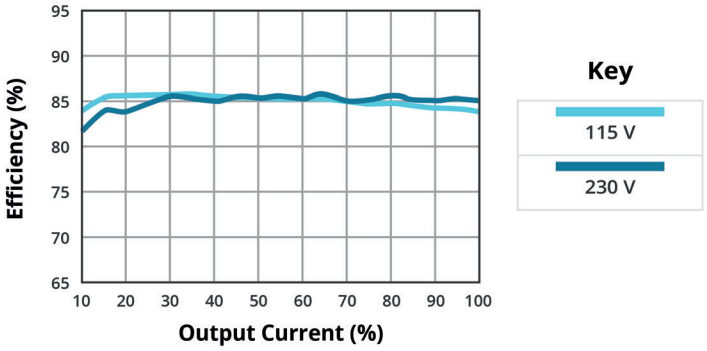
Board mount
units: inch [mm]
tolerance: inches: x.xx = ±0.03, x.xxx = ±0.02
mm: x.x - ±0.7, x.xx = ±0.5

PIN CONNECTIONS	
PIN	Function
1	AC(L)
2	AC(N)
3	+Vout
4	-Vout
5	BC+
6	BC-

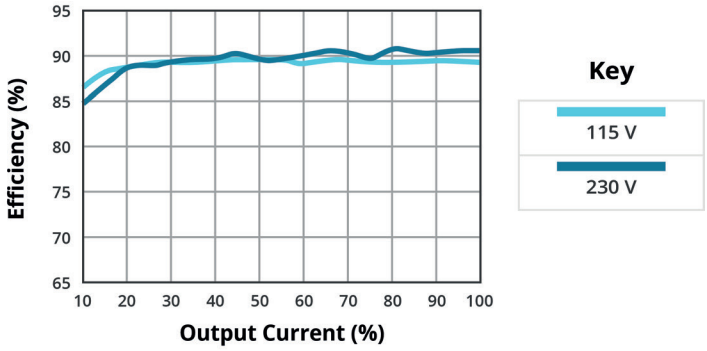


EFFICIENCY CURVES

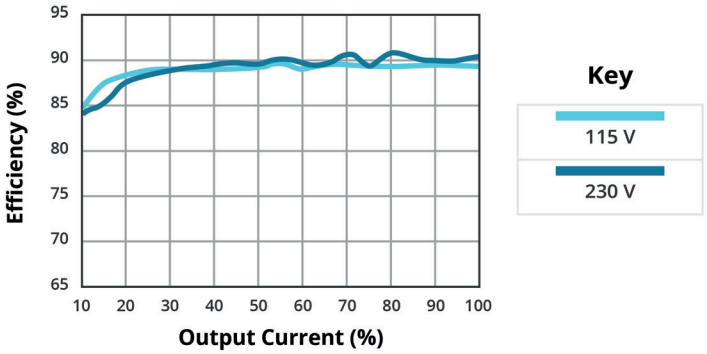
EFFICIENCY VS OUTPUT LOAD (VOF-40E-5)



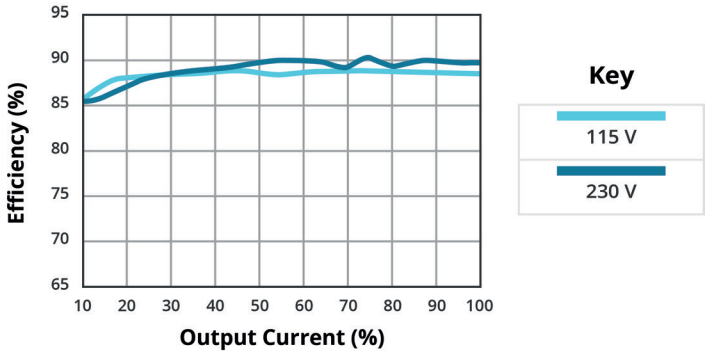
EFFICIENCY VS OUTPUT LOAD (VOF-40E-12)



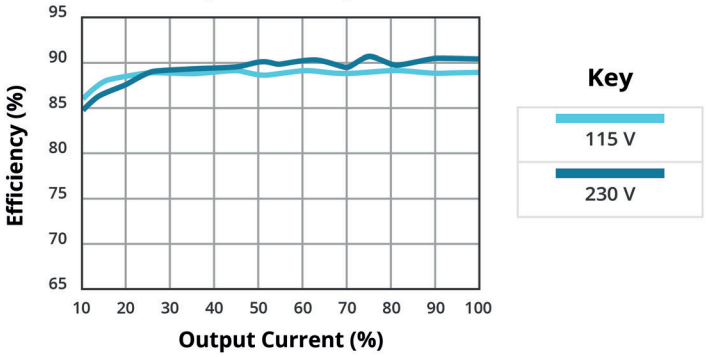
EFFICIENCY VS OUTPUT LOAD (VOF-40E-15)



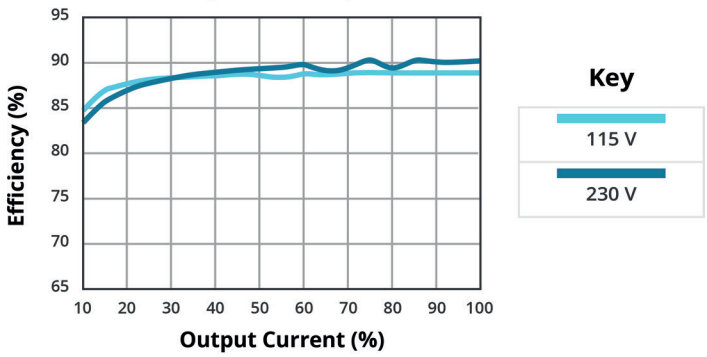
EFFICIENCY VS OUTPUT LOAD (VOF-40E-24)



EFFICIENCY VS OUTPUT LOAD (VOF-40E-36)

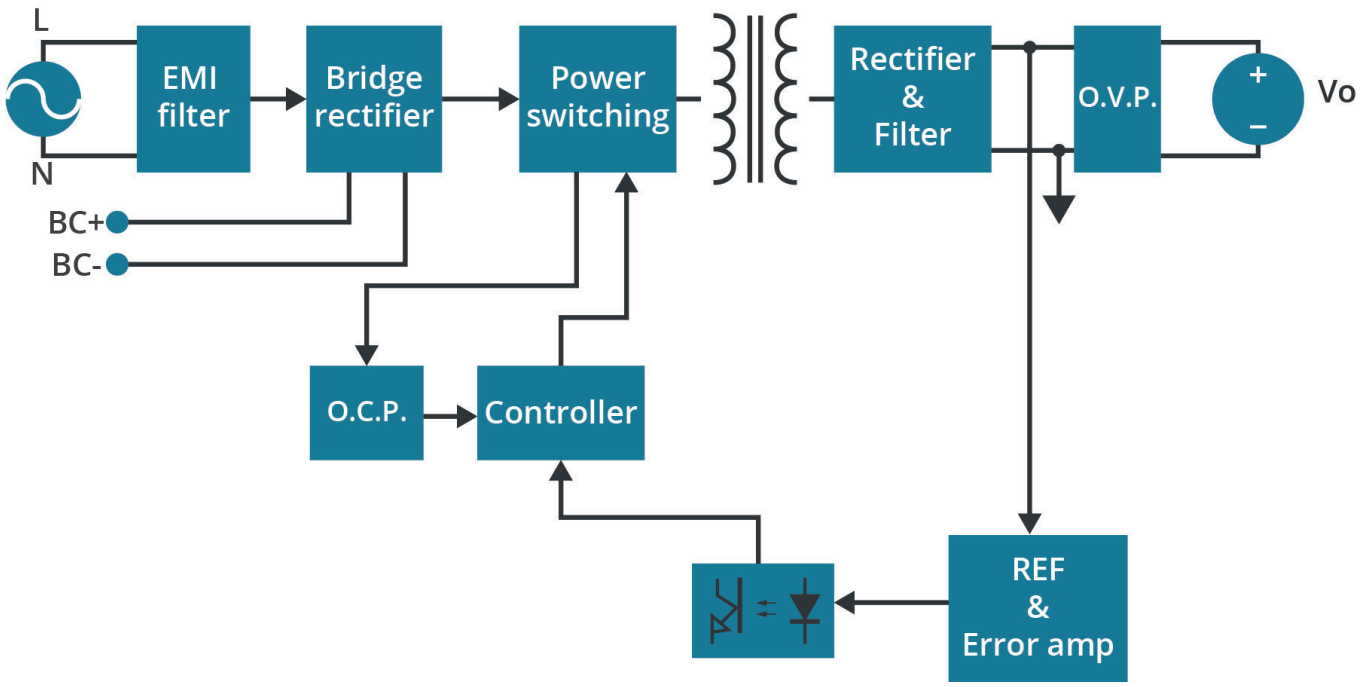


EFFICIENCY VS OUTPUT LOAD (VOF-40E-48)



ELECTRICAL BLOCK DIAGRAM

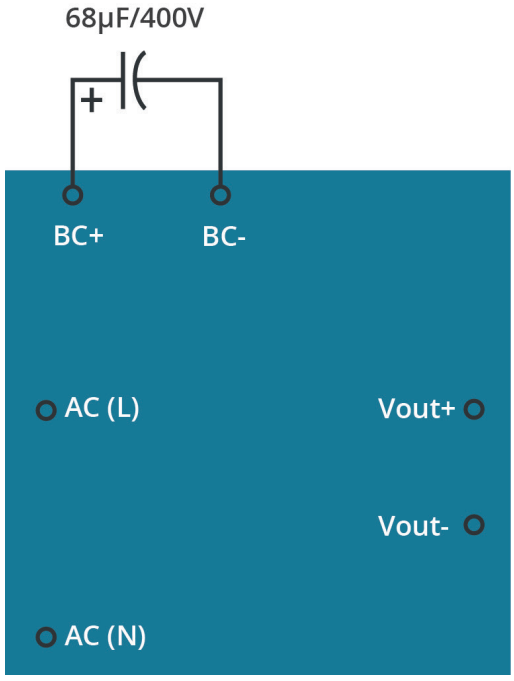
Figure 1



PEAK LOAD FUNCTION

The board mount option includes a peak load function capable of delivering twice its rated power.
If Vin < 200 Vac then a 68 µF, 400 Vdc capacitor needs to be placed on the BC+ and BC- pins to support peak load.
If Vin > 200 Vac then the supply supports peak load without the additional capacitor.
The peak load current must be less than 10 seconds and less than 10% duty cycle.
When operating with peak load, the non-peak load level must be less than 80% of the rated output power.

Figure 2



CLASS I EMI RECOMMENDED CIRCUIT

The series requires additional inductance and YCap to comply with EN 55032 Class B standards under Class I test conditions. If customers are using Class II systems, this section can be disregarded.

Figure 3
Chassis mount

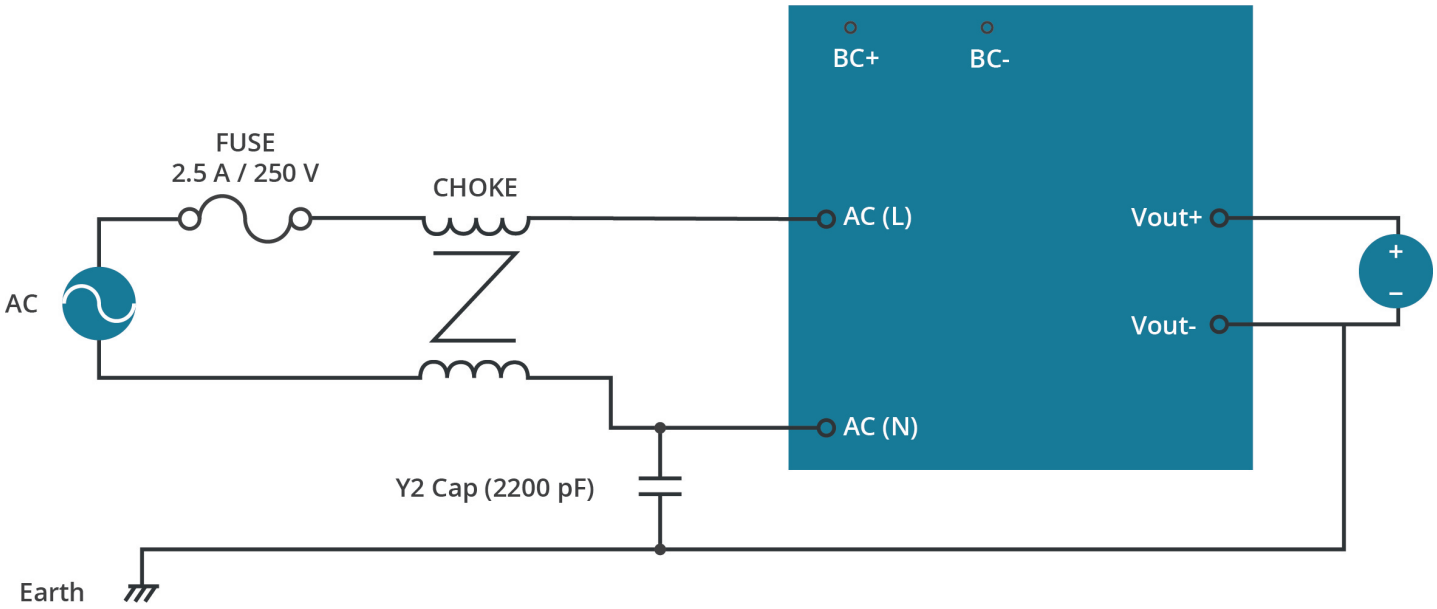
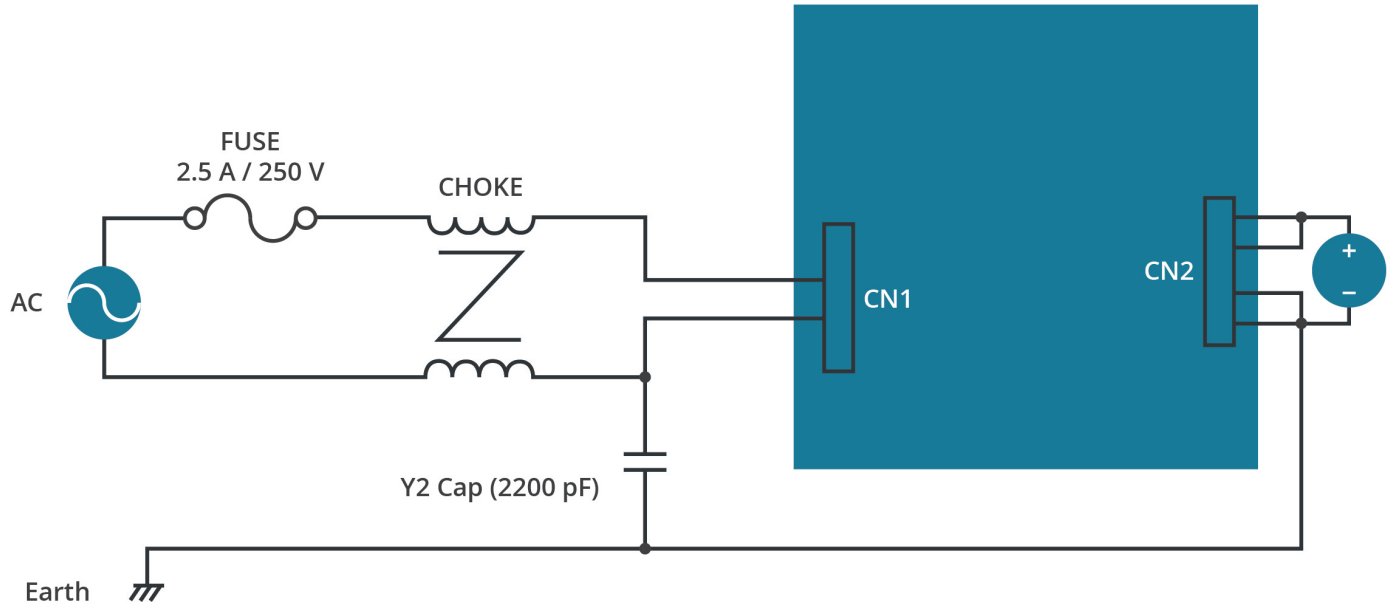


Figure 4
Board mount



REVISION HISTORY

rev.	description	date
1.0	initial release	10/16/2024

The revision history provided is for informational purposes only and is believed to be accurate.

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CUI offers a two (2) year limited warranty. Complete warranty information is listed on our website.

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