

## 60W CONVECTION COOLED

AC-DC POWER SUPPLIES

The VCB60 is a series of open frame AC-DC single output power supplies designed for low cost ITE, industrial and domestic applications. With approvals to world-wide safety standards including ITE and Household, compliance with class B for conducted and radiated emissions, this series benefit system designers with easy integration into a wide range of applications. A wide input range of 90-305VAC and approval to overvoltage category III (OVC III) eases installation in building wiring systems.



### Features

- 60W convection cooled
- 4" x 2" footprint, low 1.01" profile
- Low cost
- ITE & household appliance approvals
- Overvoltage category III
- EN55035 and EN55024 immunity standard
- Class I operation
- Input voltage range 90 to 305VAC
- Regulated single outputs from 5 to 54VDC
- Efficiency to 90%
- Short circuit, overvoltage & overload protection
- -10°C to +60°C operating temperature
- Full load to +50°C

### Applications



Household Appliances



Industrial Electronics



Instrumentation



IoT



Robotics

### Dimensions

4.00" x 2.00" x 1.01" (101.6 x 50.8 x 25.6mm)

### Models & Ratings

Model Number	Output Power	Output Voltage	Output Current
VCB60US05	40W	5.0VDC	8.00A
VCB60US12	60W	12.0VDC	5.00A
VCB60US15	60W	15.0VDC	4.00A
VCB60US19	60W	19.0VDC	3.16A
VCB60US24	60W	24.0VDC	2.50A
VCB60US30	60W	30.0VDC	2.00A
VCB60US48	60W	48.0VDC	1.25A
VCB60US54	60W	54.0VDC	1.11A

## Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage	90		305	VAC	
Input Frequency	47		63	Hz	
Input Current - Full Load		1.7/0.85		A rms	115/230VAC full load
No Load Input Power			0.3	W	
Inrush Current			70	A	At 230VAC, cold start 25°C
Earth Leakage Current			200	μA	
Input Protection	Internal T3.15A/300VAC fuse fitted in line				

## Output

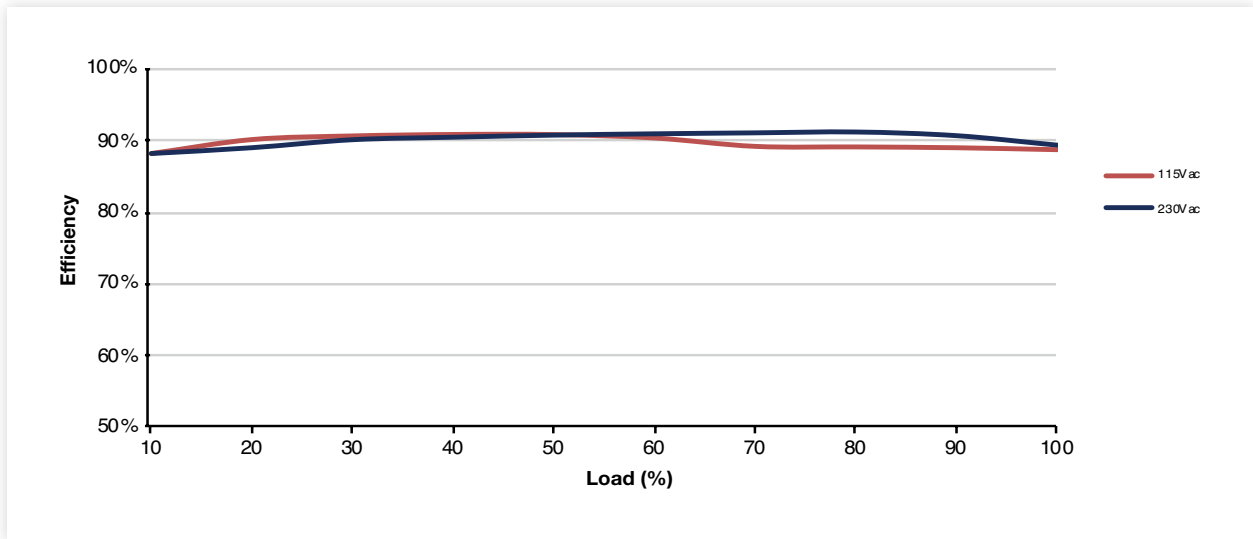
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	5		54	VDC	
Initial Set Accuracy			1.0	%	
Minimum Load	0			A	No minimum load
Line Regulation			1	%	
Load Regulation			2	%	
Start Up Delay			2.5	s	
Start Up Rise Time			35	ms	
Hold Up Time	8	14		ms	At full load and 115 VAC
Transient Response			4	%	Deviation, recovery within 1% in less than 500μs for a 25% load change
Ripple & Noise			1	%	Measured with 20MHz bandwidth and 10μF electrolytic in parallel with 0.1μF ceramic
Overvoltage Protection	115		160	%Vnom	
Overload Protection	110		190	%	
Short Circuit Protection	Trip and restart (hiccup mode)				
Temperature Coefficient			0.05	%/°C	

## General

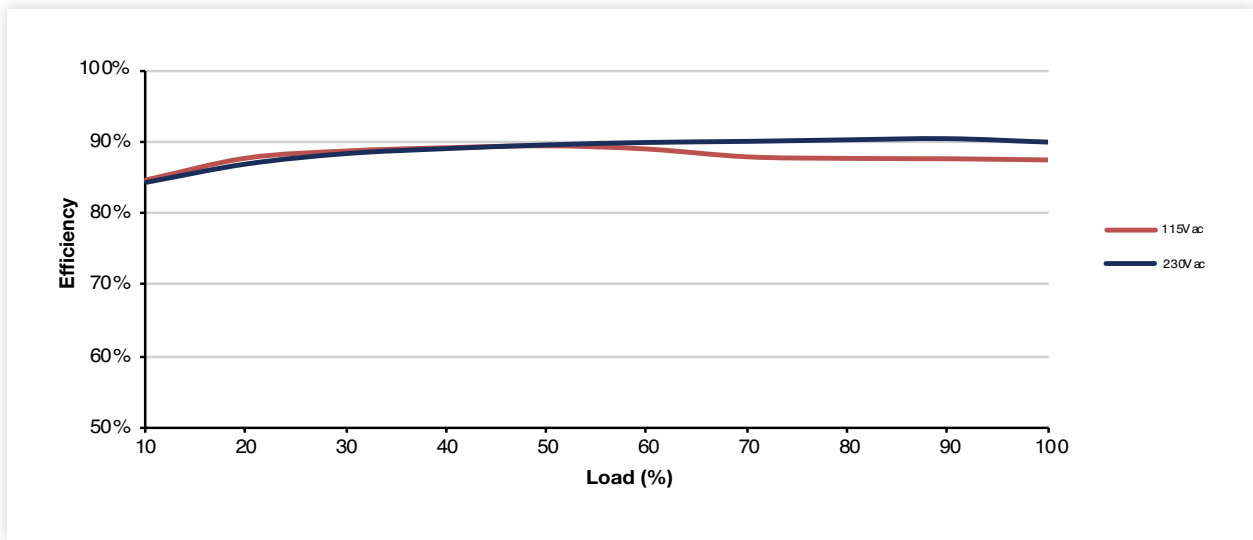
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		85		%	Model dependant
Isolation: Input to Output	3000			VAC	
Input to Ground	1500			VAC	
Output to Ground	500			VDC	
Switching Frequency	5		75	kHz	Varied with load
Power Density			7.4	W/in <sup>3</sup>	
Mean Time Between Failure	550	600		khrs	MIL-HDBK-217F, 25°C GB.
Weight		0.29 (130)		lb (g)	

## Efficiency Graphs

VCB60US12



VCB60US24



## Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-10		+60	°C	Derate linearly from 100% load at +50°C to 50% load at +60°C.
Storage Temperature	-40		+85	°C	
Cooling	Convection cooled				
Humidity			95	%RH	Non-condensing
Operating Altitude			5000	m	
Shock	IEC68-2-27, 30g, 11ms half sine, 3 times in each of 6 axes				
Vibration	IEC68-2-6, 2g, 10Hz to 500kHz, 10 mins/cycle, 60 mins each cycle				

## EMC: Emissions

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
Conducted	EN55032, EN55014-1	Class B		
Radiated	EN55032, EN55014-1	Class B		
Harmonic Current	EN61000-3-2	Class A		
Voltage Flicker	EN61000-3-3			

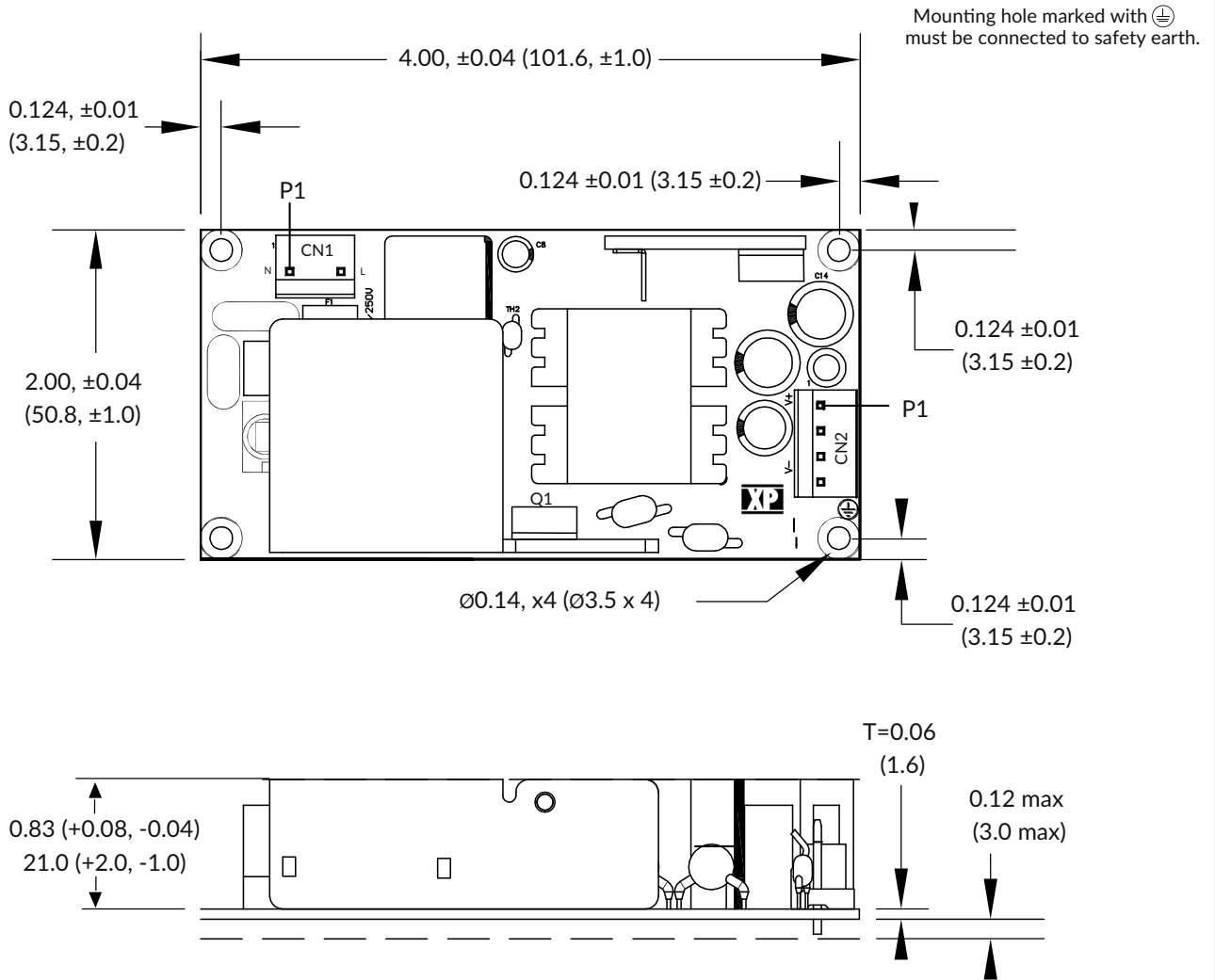
## EMC: Immunity

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ITE	EN55024 EN55035 EN55014-2	As below	As below	
ESD Immunity	EN61000-4-2	2 / 3	A	±6kV contact / ±8kV air discharge
Radiated Immunity	EN61000-4-3	10V/m	A	
EFT	EN61000-4-4	3	A	
Surge	EN61000-4-5	2	A	Line to Line
Conducted	EN61000-4-6	10Vrms	A	
Magnetic Fields	EN61000-4-8	30A/m	A	
Dips and Interruptions	EN61000-4-11 (115 VAC)	70% U <sup>T</sup> (80.5 VAC) for 100ms	A	
		40% U <sup>T</sup> (46 VAC) for 200ms	B	
		<5% U <sup>T</sup> (0 VAC) for 10ms	A	
		<5% U <sup>T</sup> (0 VAC) for 5000ms	B	
	EN61000-4-11 (230 VAC)	70% U <sup>T</sup> (161 VAC) for 100ms	A	
		40% U <sup>T</sup> (92 VAC) for 200ms	A	
		<5% U <sup>T</sup> (0 VAC) for 10ms	A	
		<5% U <sup>T</sup> (0 VAC) for 5000ms	B	

## Safety Approvals

Certification	Standard	Notes & Conditions
CB Report	IEC60950-1, IEC62368-1	Information and Communication Technology Equipment
	IEC60335-1	Household and Similar Appliances
UL	UL62368-1	Information and Communication Technology Equipment
EN	EN62368-1	Information and Communication Technology Equipment
	EN61558-1 & -2-16	General Safety for Power Supplies
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

## Mechanical Details



Pin Connections CN1	
Pin	Function
1	N
2	L
3	L

Mates with MOLEX housing 09-50-3031 and MOLEX series 2878 crimp terminals

Pin Connections CN2	
Pin	Function
1	+Vout
2	+Vout
3	-Vout
4	-Vout

Mates with MOLEX housing 09-50-3041 and MOLEX series 2878 crimp terminals

### Notes:

1. Dimensions in inches (mm).
2. Weight: 0.29lbs (130g)

3. Tolerances:  $x.xx = \pm 0.04$  ( $x.x = \pm 1.0$ )  $x.xxx = \pm 0.01$  ( $x.xx = \pm 0.25$ )

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