VCE10 Series

AC-DC Power Supplies

XP Power

10 Watts

- Compact Size
- Single Outputs from 3.3 to 48VDC
- PCB Mount
- Encapsulated & Open Frame
- 85 to 305VAC Input
- ITE & Household Appliance Approvals
- Class II
- Low Cost
- 3 Year Warranty

GREEN XP POWER



Dimensions:

VCE10:
2.00 x 1.15 x 0.91" (50.8 x 29.2 x 23.1 mm)
VCE10-P:
1.90 x 1.05 x 0.88" (48.3 x 26.7 x 22.4 mm)

The VCE10 is a series of open frame and encapsulated AC-DC single output power supplies designed for low cost ITE, industrial and domestic applications. The series provides two mechanical options including open frame and encapsulated PCB mount. With approvals to world-wide safety standards including ITE and Household, compliance with class B for conducted and radiated emissions, these class II isolation parts benefit system designers with easy integration into a wide range of applications.

Models & Ratings

Output Power	Output Voltage	Output Current	Model Number [1]
8 W	3.3 VDC	2400 mA	VCE10US03
10 W	5.0 VDC	2000 mA	VCE10US05
10 W	9.0 VDC	1110 mA	VCE10US09
10 W	12.0 VDC	830 mA	VCE10US12
10 W	15.0 VDC	670 mA	VCE10US15
10 W	24.0 VDC	420 mA	VCE10US24
10 W	48.0 VDC	210 mA	VCE10US48

Notes

1. For Open Frame version add suffix -P to model number, e.g. VCE10US12-P.

Summary

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	85		305	VAC	Derate from 100% at 90 VAC to 90% at 85 VAC
No Load Input Power			0.3	W	
Efficiency		80		%	Model dependant
Operating Temperature	-25		+70	°C	Derate linearly from 100% at +50 °C to 50% at +70 °C
EMC	EN55032 Level B Conducted & Radiated, EN601000-3-2, EN61000-3-3, EN55024				
Safety Approvals	IEC62368-1, IEC60335-1, IEC60950-1, EN62368-1, EN60335-1, UL62368-1				

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Input Voltage Range	85		305	VAC	Derate from 100% at 90 VAC to 90% at 85 VAC
Input Frequency	47		63	Hz	
Input Current - Full Load		0.20/0.12		A rms	At 115/230 VAC
No Load Input Power			0.3	W	
Inrush Current			40	A	At 230 VAC, cold start 25 °C
Earth Leakage Current					Class II construction no earth
Input Protection	Internal T1.0 A/300 VAC fuse fitted in line				

Output

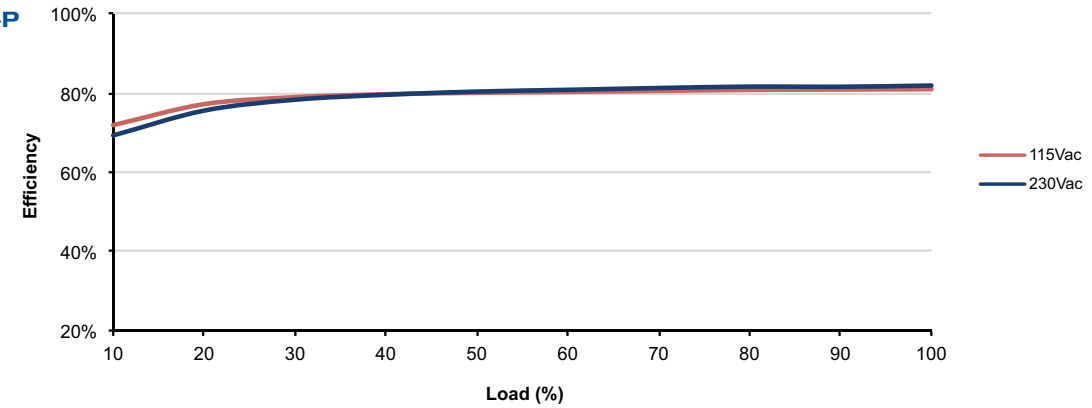
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		48	VDC	
Initial Set Accuracy			3/2	%	3% for 3.3 & 5 V models, 2% for others at 50% load
Minimum Load	0			A	No minimum load required
Total Regulation			5/3	%	For 3.3 & 5 V models/Other models: from 10% to 100% load. Includes inital set accuracy, line and load regulation. Total regulation is 7% max. from 0% to 100% load.
Start Up Delay			2	s	
Start Up Rise Time			35	ms	
Hold Up Time	16	20		ms	at full load and 115 VAC
Transient Response			4	%	Deviation, recovery within 1% in less than 500 µs for a 25% load change
Ripple & Noise			120	mV pk-pk	3.3 & 5 V models, 20 MHz bandwidth
			1	% pk-pk	9 to 48 V models, 20 MHz bandwidth
Overvoltage Protection	115		140	% Vnom	210% typical for 03 model, auto recovery
Overload Protection	110		180	%	
Short Circuit Protection					Trip & Restart (hiccup mode)
Temperature Coefficient			0.05	%/°C	

General

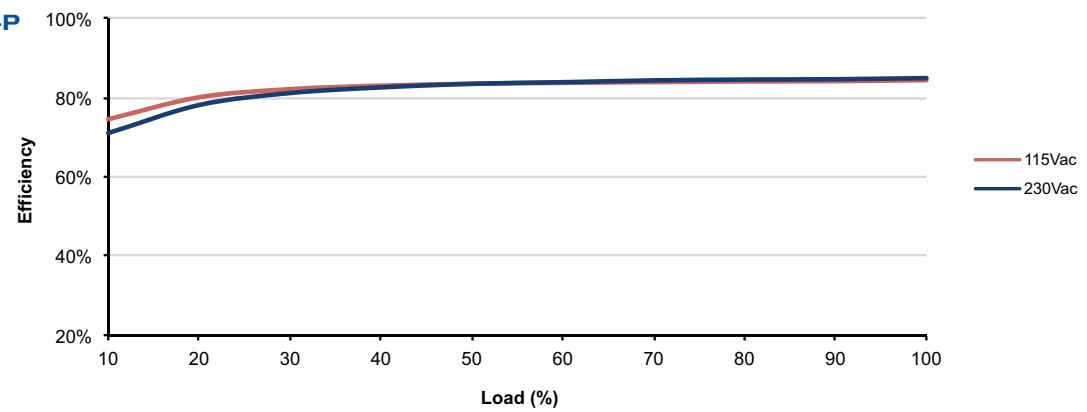
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		80		%	Model Dependant
Isolation: Input to Output	3000			VAC	
Switching Frequency	5		50	kHz	Varied with load
Power Density			5.7	W/in³	For '-P' version
Mean Time Between Failure	550	600		kHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.051 (23)		lb (g)	Open frame versions (-P)
		0.115 (52)		lb (g	Encapsulated version

Efficiency Graphs

VCE10US12-P



VCE10US24-P



Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Operating Temperature	-25		+70	°C	Derate linearly from 100% at +50 °C to 50% at +70 °C
Storage Temperature	-40		+85	°C	
Cooling					Convection-cooled
Humidity			95	%RH	Non-condensing
Operating Altitude			3048	m	
Shock	IEC68-2-27, 30 g, 11 ms half sine, 3 times in each of 6 axes				
Vibration	IEC68-2-6, 2 g, 10 Hz to 500 kHz, 10 mins/cycle, 60 mins each cycle				

EMC: Emissions

Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
Conducted	EN55032	Class B		If output is connected to a ground additional external components will be required. Contact sales for details
Radiated	EN55032	Class B		
Harmonic Current	EN61000-3-2			Class A
Voltage Flicker	EN61000-3-3			

EMC: Immunity

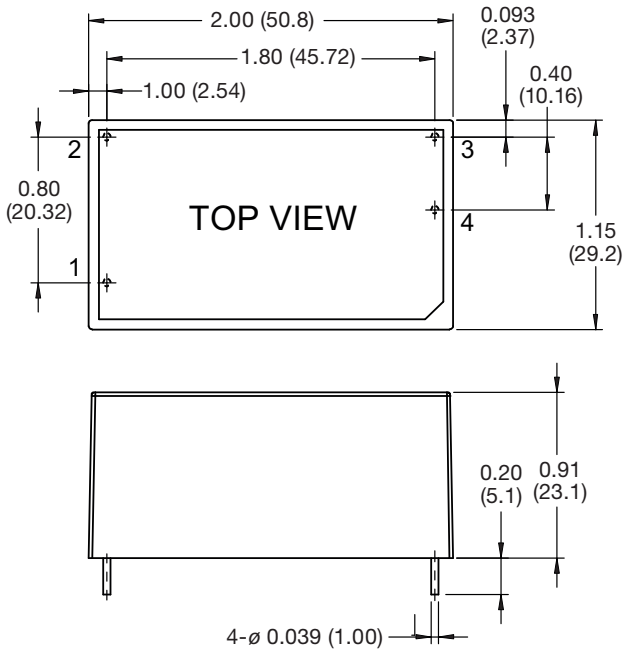
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD	EN61000-4-2	±6kV contact, ±8kV air discharge	A	
Radiated	EN61000-4-3	10 V/m	A	
EFT	EN61000-4-4	3	A	
Surge	EN61000-4-5	2	A	Line to Line
Conducted	EN61000-4-6	10 Vrms	A	
Magnetic Fields	EN61000-4-8	30 A/m	A	
Dips and Interruptions	EN61000-4-11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

Safety Approvals

Safety Agency	Safety Standard	Notes & Conditions
CB	IEC60950-1	ITE
	IEC62368-1	
	IEC60335-1	Household, Encapsulated Version
	IEC61558-1	Power Supply Units
UL	UL62368-1	ITE
TUV	EN62368-1	ITE

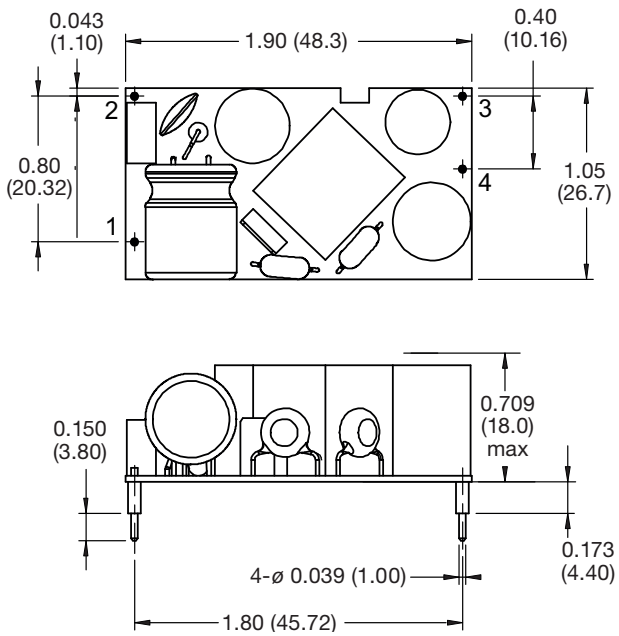
Mechanical Details

Encapsulated



Pin Connections	
Pin	Single
1	ACN
2	ACL
3	-Vout
4	+Vout

Open Frame (-P)



Notes

1. Dimensions in inches (mm).
2. Weight: Open frame versions (-P): 0.051 lbs (23 g)
   Encapsulated: 0.115 lbs (52 g))
3. Tolerances: x.xx = ± 0.02 (x.x = ± 0.5)
   x.xxx = ± 0.01 (x.xx = ± 0.25)