



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of "Quality Parts,Customers Priority,Honest Operation,and Considerate Service",our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



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3 Watts

- Compact PCB mount SIL package
- Encapsulated & open frame versions
- ITE & household appliance approvals
- Class II operation
- Input range 85 to 305VAC
- Single outputs from 3.3 to 48VDC
- No load input power <0.3W
- Low cost
- -25°C to +70°C operating temperature
- 3 year warranty



Dimensions:

VCE03:
1.60 x 0.75 x 0.75" (40.6 x 19.10 x 19.10 mm)
VCE03-P:
1.50 x 0.65 x 0.65" (38.1 x 16.5 x 16.5 mm)

The VCE03 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⁾
3 W	3.3VDC	910 mA	VCE03US03
3 W	5.0VDC	600 mA	VCE03US05
3 W	9.0VDC	333 mA	VCE03US09
3 W	12.0VDC	250 mA	VCE03US12
3 W	15.0VDC	200 mA	VCE03US15
3 W	24.0VDC	125 mA	VCE03US24
3 W	48.0VDC	63 mA	VCE03US48

Notes

1. For Open Frame version add suffix -P to model number, e.g. VCE03US12-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 dependent
Operating Temperature	-25		+70	°C	Derate linearly from 100% at +50 °C to 50% at +70 °C
EMC	EN55032 Level B Conducted & Radiated, EN61000-3-2, 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	Covers all standard voltages in range from 100 VAC to 277 VAC
Input Frequency	47		63	Hz	
Input Current - Full Load		0.10/0.06/0.04		A rms	At 115/230/277 VAC
No Load Input Power			0.3	W	
Inrush Current			40/44.2	A	At 230/277 VAC, cold start 25 °C
Earth Leakage Current					Class II construction no earth
Input Protection	External T1.0 A/300 VAC fuse required in line				

Output

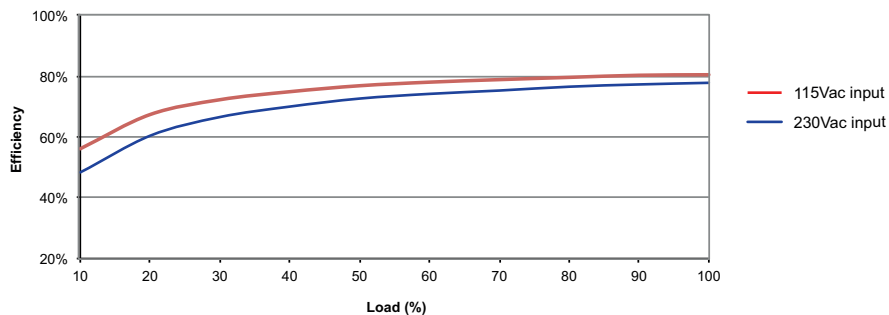
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Output Voltage	3.3		48	VDC	
Initial Set Accuracy			2/1	%	At 50% load for 3.3 & 5 V models/Other models
Minimum Load	0			A	No minimum load required
Total Regulation			5/3	%	For 3.3 & 5 V models/Other models: from 10% to 100% load. Includes initial 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			30	ms	
Hold Up Time	16	20		ms	at full load and 115 VAC
Transient Response			4	%	Deviation, recovery within 1% in less than 500 μ s for a 25% load change
Ripple & Noise			180/120	mV pk-pk	3.3 & 5V/9V models, 20 MHz bandwidth
			1	% pk-pk	12V to 48V models, 20 MHz bandwidth
Overvoltage Protection	115		140	% Vnom	210% typical for 3.3 V models, auto recovery
Overload Protection	110		180	%	
Short Circuit Protection					Trip & Restart (hiccup mode)
Temperature Coefficient			0.02	%/°C	

General

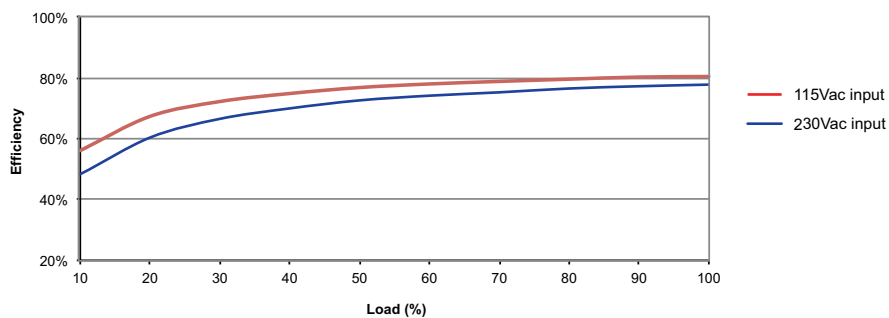
Characteristic	Minimum	Typical	Maximum	Units	Notes & Conditions
Efficiency		80		%	At 115 VAC, Model Dependent
Isolation: Input to Output	3000			VAC	
Switching Frequency	5		52	kHz	Varies with load
Power Density			4.7	W/in ³	For '-P' version
Mean Time Between Failure	400			kHrs	MIL-HDBK-217F, +25 °C GB
Weight		0.025 (11)		lb (g)	Open frame versions (-P)
		0.067 (30)		lb (g)	Encapsulated version

Efficiency Graphs

VCE03US12-P



VCE03US24-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

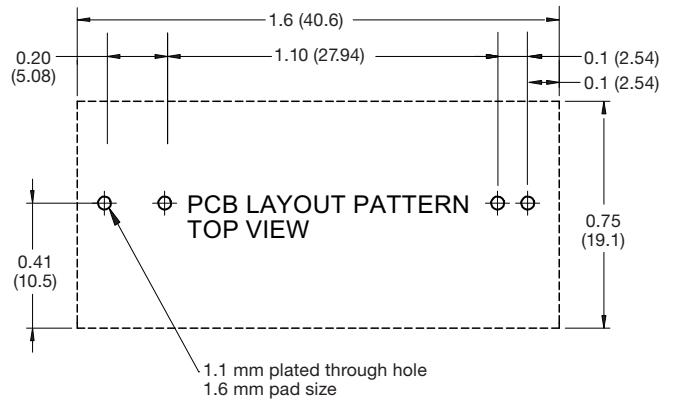
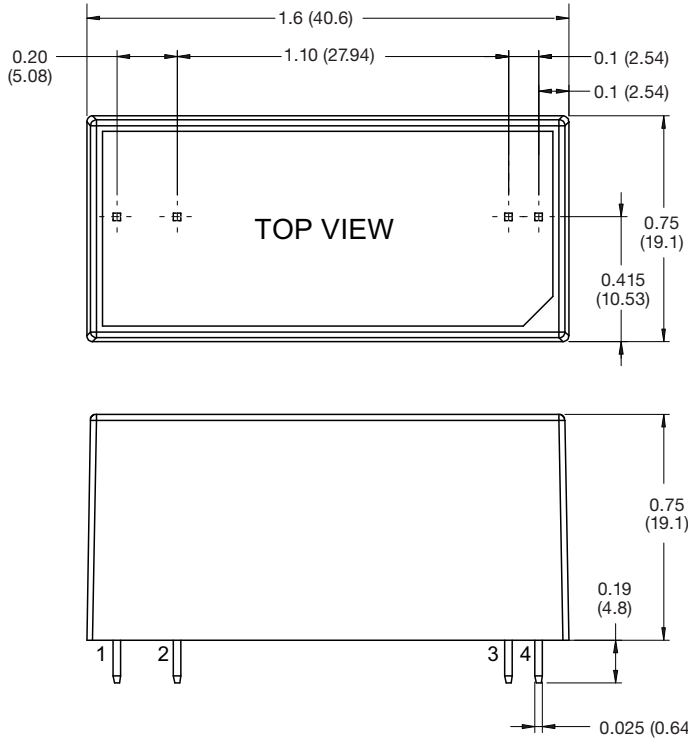
Phenomenon	Standard	Test Level	Criteria	Notes & Conditions
ESD	EN61000-4-2	±6kV contact, ±8kV air discharge	A	
Radiated	EN61000-4-3	10 V/m	A	
EFT	EN61000-4-4	3	A	
Surge	EN61000-4-5	2	A	Line to Line
Conducted	EN61000-4-6	10 Vrms	A	
Magnetic Fields	EN61000-4-8	30 A/m	A	
Dips and Interruptions	EN61000-4-11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

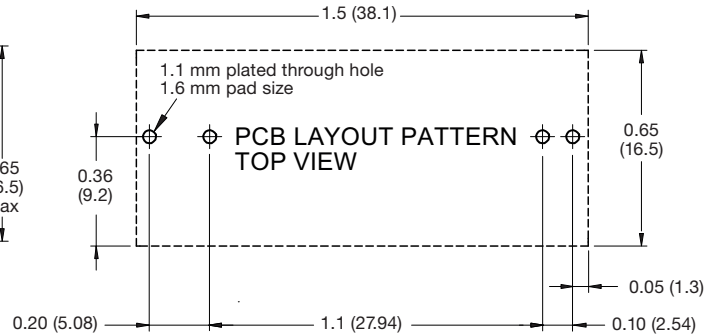
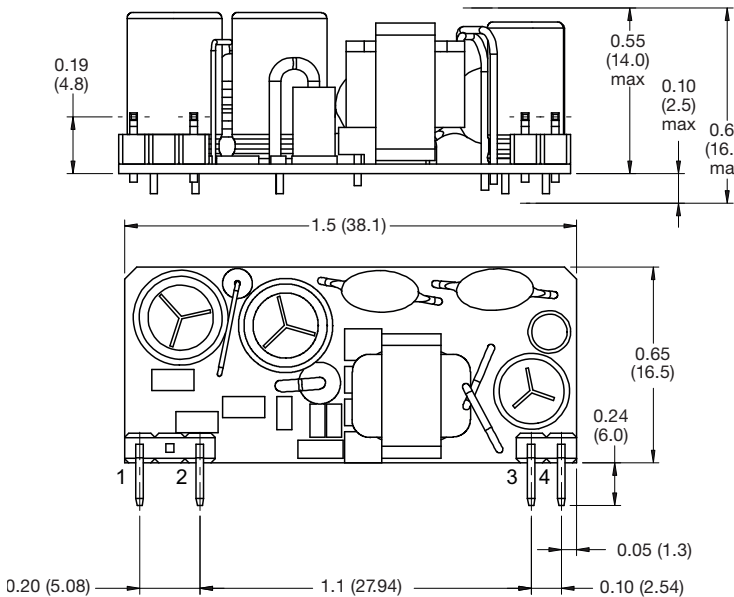
Mechanical Details

Encapsulated



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

Open Frame (-P)



Notes

- Dimensions in inches (mm).
- Weight: Open frame versions (-P): 0.025 lbs (10 g)
Encapsulated: 0.067 lbs (30 g)

- Tolerances: x.xx = ± 0.02 (x.x = ± 0.5)
x.xxx = ± 0.01 (x.xx = ± 0.25)