FCB100 series

100W Fan cooled **80W** Convection cooled

AC-DC power supplies

The FCB100 is a series of open frame AC-DC power supplies designed for medical devices (including BF), industrial electronics, ITE & household applications.

The FCB100 is compliant with class B conducted & radiated emissions, can be used in both class I & class II installations and the wide 80VAC to 264VAC operating input range makes it ideal for both home healthcare applications and in hospital use.

With both convection and fan cooled ratings, extremely low emissions, and safety & EMC certification for global use, the FCB100 benefits system designers with easy integration into a wide range of applications across multiple end markets.

Features

- 100W fan cooled 80W convection cooled
- 101.6 x 50.8mm (4" x 2") footprint, 31.8mm profile
- Regulated single outputs from 12 to 48VDC
- Input range 80 to 264VAC
- Class I & class II applications
- Medical (BF), ITE & household approvals
- Class B conducted & radiated emissions
- Short circuit, overvoltage & overload protection
- <0.3W no load input power
- -25°C to +70°C operating temperature
- 3 year warranty

Applications

Medical

Household appliances

Industrial electronics

Robotics

Home healthcare

Dimensions

101.6 x 50.8 x 31.8 mm (4.00" x 2.00" x 1.25")

Documentation

For further information click the link or scan the code

→ xppower.com

Models & ratings

Model number	Output power	Output voltage	Convection cooled (+40°C)	Convection cooled (+50°C)	Fan cooled (10cfm)
FCB100US12	100W	12.0VDC	7.5A	6.7A	8.3A
FCB100US15		15.0VDC	6.0A	5.3A	6.7A
FCB100US19		19.0VDC	4.7A	4.2A	5.3A
FCB100US24		24.0VDC	4.0A	3.5A	4.2A
FCB100US36		36.0VDC	2.6A	2.4A	2.8A
FCB100US48		48.0VDC	2.0A	1.8A	2.1A

Input

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Input voltage	80		264	VAC	Derate from 100% at 90VAC to 90% at 85VAC and 80% at 80VAC
Input frequency	47		63	Hz	
Input current - full load		1.8/1.1		A rms	115/230VAC full load
No load input power			0.3	W	
Inrush current			60	A	At 264VAC, cold start +25°C
Earth leakage current			270	µA	
Input protection	Internal T3.15A/300VAC fuse fitted in line and neutral				

Output

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Output voltage	12		48	VDC	
Initial set accuracy			1.5	%	At 50% load
Minimum load	No minimum load required				
Line regulation			±0.5	%	90-264VAC
Load regulation			±1	%	
Start up delay			2	s	
Start up rise time			50/150	ms	≥0°C/≤+10°C
Overshoot			5	%	
Hold up time	8	14		ms	At full load and 115/230VAC
Transient response			4	%	Deviation, recovery within 1% in less than 500µs for a 25% load change
Ripple & noise			1	%	0°C to +70°C
Overvoltage protection	110		150	% Vnom	Recycle input to reset
Overload protection	110		175	%	
Short circuit protection	Trip & restart (hiccup mode)				
Patient leakage current			95	µA	
Overtemperature protection	Measured internally, recycle input to reset				
Temperature coefficient			0.02	%/°C	

General

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Efficiency		87		%	Model dependant
Isolation: input to output	4000			VAC	2 x MOPP
input to ground	1500				1 x MOPP
output to ground	1500				1 x MOPP
Switching frequency	22		70	kHz	
Power density			0.61 (10)	W/cm³ (W/in³)	
Mean time between failure		390		khrs	MIL-HDBK-217F, +25°C GB.
Weight		160 (0.35)		g (lb)	

Environmental

Characteristic	Minimum	Typical	Maximum	Units	Notes & conditions
Operating temperature	-25		+70	°C	Derate linearly from 80W at +50°C to 40W at +70°C (12, 15, 19V models), Convection cooled
					Derate linearly from 85W at +50°C to 45W at +70°C (24, 36, 48V models), Convection cooled
					Derate linearly from 100W at +50°C to 50W at +70°C, Fan cooled
Storage temperature	-40		+85	°C	
Cooling	Convection/Fan cooled (see models and ratings)				
Humidity			95	%RH	Non-condensing
Operating altitude			4000 / 5000	m	Medical/ITE and household
Shock	±3 x 30g shocks in each plane, total 18 shocks. 30g = 11ms (±0.5ms) half sine. Conforms to EN60068-2-27 and EN60068-2-47				
Vibration	Single axis 10-500Hz at 2g sweep and endurance at resonance in all 3 planes. Conforms to EN50068-2-6				

Safety approvals

Certification	Standard	Notes & conditions
CB report	IEC60950-1, IEC62368-1, IEC60335	Audio/Video, Information and Communication Technology Equipment, Household and Similar Appliances (report only)
	IEC60601-1	Medical
UL	UL62368-1	Audio/Video, Information and Communication Technology Equipment
	ANSI/AAMI ES60601-1	Medical
EN	EN62368-1	Audio/Video, Information and Communication Technology Equipment - Pending
	EN60601-1	Medical
CE	Meets all applicable directives	
UKCA	Meets all applicable legislation	

Isolation	Standard	Notes & conditions
Primary to Secondary	2 x MOPP (Means of Patient Protection)	IEC60601-1 Ed.3
Primary to Earth	1 x MOPP (Means of Patient Protection)	
Secondary to Earth	1 x MOPP (Means of Patient Protection)	

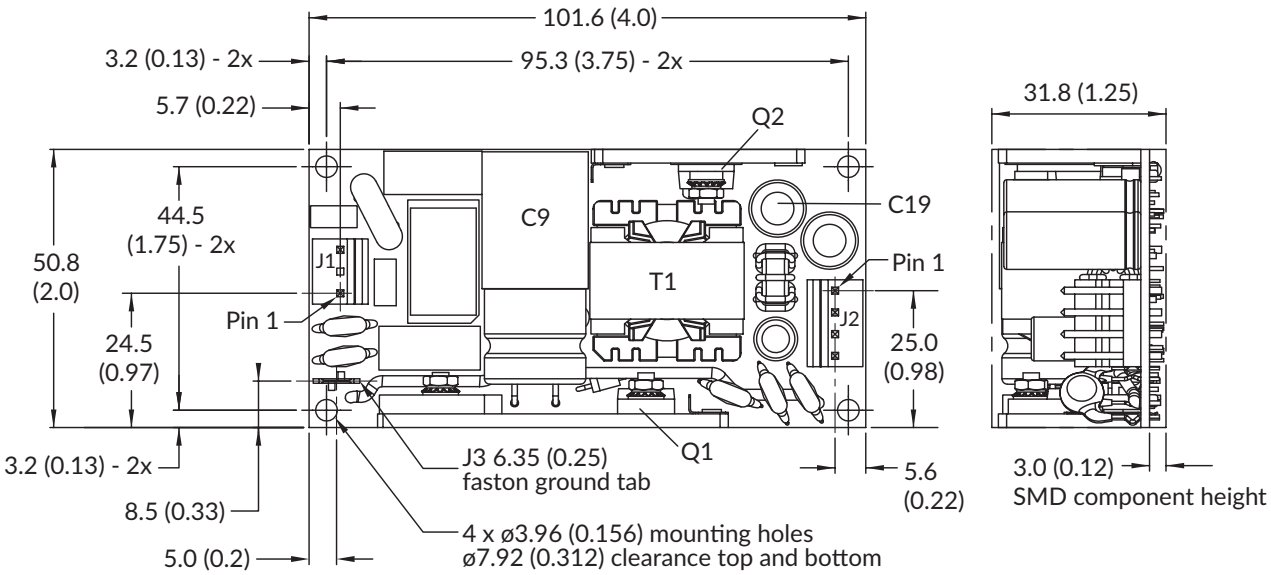
EMC: emissions

Phenomenon	Standard	Test level	Notes & conditions
Conducted	EN55032, EN55011	Class B	
Radiated	EN55032, EN55011	Class B	
Harmonic currents	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	4	A	±8kV contact / ±15kV air discharge
Radiated immunity	EN61000-4-3	3	A	
EFT	EN61000-4-4	3	A	
Surge	EN61000-4-5	Installation class 3	A	
Conducted	EN61000-4-6	3	A	
Magnetic field	EN61000-4-8	4	A	
Dips and interruptions	EN61000-4-11 (100VAC/60Hz)	100% (0VAC) for 8.4ms	A	Pout = 85W
		100% (0VAC) for 16.7ms	B	
		60% (40VAC) for 200ms	B	
		30% (70VAC) for 500ms	A	Pout = 60W
		20% (80VAC) for 5000ms	A	
		100% (0VAC) for 5000ms	B	
	EN61000-4-11 (115VAC/60Hz)	100% (0VAC) for 8.4ms	A	
		100% (0VAC) for 16.7ms	B	
		60% (46VAC) for 200ms	B	
		30% (80VAC) for 500ms	A	Pout = 60W
		20% (92VAC) for 5000ms	A	
		100% (0VAC) for 5000ms	B	
	EN61000-4-11 (240VAC/50Hz)	100% (0VAC) for 10ms	A	
		100% (0VAC) for 20ms	A	
		60% (96VAC) for 200ms	A	
		30% (168VAC) for 500ms	A	
		20% (192VAC) for 5000ms	A	
		100% (0VAC) for 5000ms	B	
	EN60601-1-2 (100VAC/50Hz)	100% (0VAC) for 10ms	A	Pout = 65W
		100% (0VAC) for 20ms	A	Pout = 40W
		60% (40VAC) for 100ms	A	Pout = 20W
		30% (70VAC) for 500ms	A	Pout = 60W
		100% (0VAC) for 5000ms	B	
	EN60601-1-2 (240VAC/50Hz)	100% (0VAC) for 10ms	A	
		100% (0VAC) for 20ms	A	
		60% (96VAC) for 100ms	A	
		30% (168VAC) for 500ms	A	
		100% (0VAC) for 5000ms	B	

Mechanical details



Input connector J1	
Pin	**Function**
1	N
2	No connection
3	L

Mates with MOLEX housing 09-50-1031, MOLEX series 5194 crimp terminals.

Output connector J2	
Pin	**Function**
1	Return
2	Return
3	+Vout
4	+Vout

Mates with MOLEX housing 09-50-1041, MOLEX series 5194 crimp terminals.

J3 connector	
Pin	**Function**
6.35 faston	E

Notes:

1. Dimensions in mm (inches).
2. Weight: 160g (0.35lbs)
3. Tolerances x.x (x.xx) = ±0.5 (±0.02), x.xx (x.xxx) = ±0.25 (±0.010)

Thermal considerations

In order to ensure safe operation of the PSU in the most adverse conditions permitted in the end-use equipment, the temperature of the components listed in the table below must not be exceeded. See mechanical drawing for component locations. Temperature should be monitored using K type thermocouples placed on the hottest part of the component (out of direct air flow).

Temperature measurements at maximum ambient +50°C	
Component	**Max temperature °C**
T1	+120°C
C9	+90°C
C19	+100°C
Q1	+110°C
Q2	+110°C