



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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## ECS Series



GREEN XP POWER

- IT & Medical Safety Approvals
- Very Small 2"x 3"x 0.95" Package
- <0.3 W No Load Input Power
- 25, 45 & 60 W – Convection Cooled Ratings
- Class I & Class II Installations
- -20 °C to +70 °C Operation
- 3 Year Warranty

## Specification

## Input

Input Voltage	• 80-264 VAC (120-370 VDC), derate linearly from 100% at 90 VAC to 80% at 80 VAC
Input Frequency	• 47-400 Hz <sup>(1)</sup>
Input Current	• 25 W: 0.45 A, 45 W: 0.75 A, 60 W: 0.95 A typical at 115 VAC, full load, 25 W: 0.30 A, 45 W: 0.45 A, 60 W: 0.60 A, typical at 230 VAC, full load
Inrush Current	• 40 A max at 230 VAC, cold start 25 °C
Power Factor	• EN61000-3-2, class A
No Load Input Power	• US05, 12 & 24 models: <0.3 W, US48 and all ECS60 models: <0.5 W
Earth Leakage Current	• 260 µA at 264 VAC/60 Hz max, 80/160 µA typical 115/230 VAC
Input Protection	• T3.15 A/250 V internal fuse in line and neutral

## Output

Output Voltage	• 5-48 VDC (see tables)
Output Voltage Trim	• ±10%
Initial Set Accuracy	• ±1%
Minimum Load	• No minimum load required
Start Up Delay	• 1 s typical
Start Up Rise Time	• 50 ms
Hold Up Time	• 16 ms min at 115 VAC
Drift	• ±0.2% after 20 min warm up
Line Regulation	• ±0.5% max
Load Regulation	• ±1%
Over/Undershoot	• 5% typical
Transient Response	• 4% max. deviation, recovery to within 1% in 500 µs for a 50-75-50% load change
Ripple & Noise	• 1% pk-pk V1, 20 MHz bandwidth <sup>(2)</sup>
Overvoltage Protection	• 115-140% Vnom, recycle input to reset
Overload Protection	• 110-160%
Short Circuit Protection	• Continuous trip and restart (hiccup mode)
Temperature Coefficient	• 0.05%/°C

## Notes

1. Safety approvals cover frequency 47-63 Hz.
2. ECS60US12 1.5% pk-pk, 20 MHz bandwidth under certain line/load conditions.
3. See longform datasheet or contact sales for details.

## General

Efficiency	• Up to 90%, model dependant
Isolation	• 4000 VAC In to Out, 2 x MOPP, 1500 VAC In to Earth, 1 x MOPP, 500 VDC Out to Earth, 1 x MOPP
Switching Frequency	• 65 KHz typical
Power Density	• Up to 7.9 W/in <sup>3</sup>
MTBF	• 25 & 45 W: 1072 kHrs, 60 W: 471 kHrs to MIL-HDBK-217F at 25 °C, GB

## Environmental

Operating Temperature	• -20 °C to +70 °C derate linearly from +50 °C at 2.5%/°C to 50% load at +70 °C.
Cooling	• Convection, see thermal considerations
Operating Humidity	• 95% RH, non-condensing
Storage Temperature	• -40 °C to +85 °C
Operating Altitude	• 3000 m
Shock	• 30 g pk, half sine, 6 axes
Vibration	• 2 g rms, 5 Hz to 500 Hz, 3 axes

## EMC &amp; Safety

Low Voltage PSU EMC	• EN61204-3, high severity level
Emissions	• All models: EN55011/22 level B conducted, 45 & 60 W: EN55011/22 level A radiated, ECS25 & ECS60US24/48 models: level B radiated
Harmonic Currents	• EN61000-3-2, class A
Voltage Flicker	• EN61000-3-3
Radiated Immunity	• EN61000-4-3, level 3 Perf Criteria A
EFT/Burst	• EN61000-4-4, level 3 Perf Criteria A
Surge	• EN61000-4-5, installation class 3 Perf Criteria A
Conducted Immunity	• EN61000-4-6, level 3 Perf Criteria A
Dips & Interruptions	• EN61000-4-11, 30% 10 ms, 60% 100 ms, 100% 5000 ms, Perf Criteria A, B, B, EN60601-1-2, 30% 500 ms, 60% 100 ms, 100% 10 ms, 100% 5000 ms, Perf Criteria A, A, A, B - 230 VAC. Consult longform datasheet for 115 V operation.
Safety Approvals	• IEC60950-1 CB report, UL60950-1, TUV EN60950-1, IEC60601-1 CB report, ANSI/AAMI ES60601-1, TUV 60601-1, Including Risk Management
Equipment Protection Class	• Class I and Class II

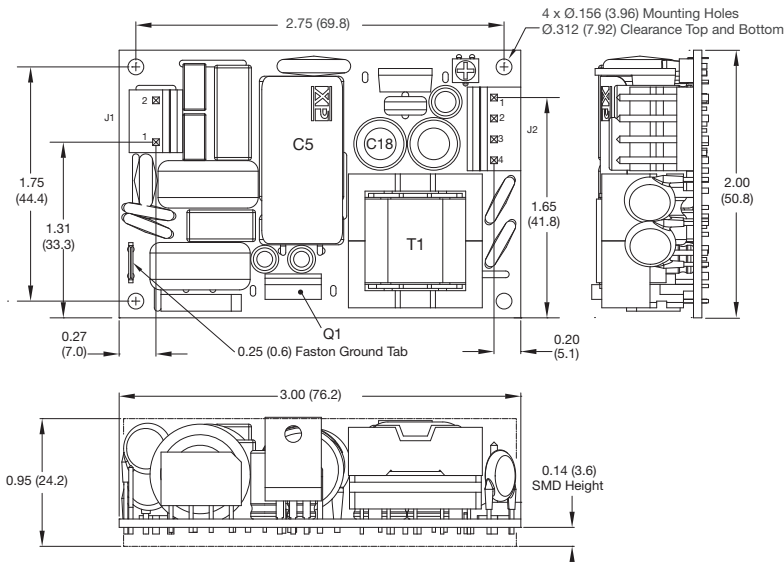


Output Power	Output Voltage	Output Current	Model Number <sup>(1)</sup>
25 W	12.0VDC	2.08 A	ECS25US12
25 W	15.0VDC	1.67 A	ECS25US15
25 W	24.0VDC	1.04 A	ECS25US24
25 W	48.0VDC	0.52 A	ECS25US48

### Notes

1. For covered versions, add suffix '-C' to model number or order part number ECS25-60 COVER KIT for standalone cover. Not suitable for use in class II installations, derate output power by 20% with cover.

### Mechanical Details



Input Connector J1 Molex PN 09-65-2038	
Pin 1	Line
Pin 2	Neutral
0.25" Faston	Earth

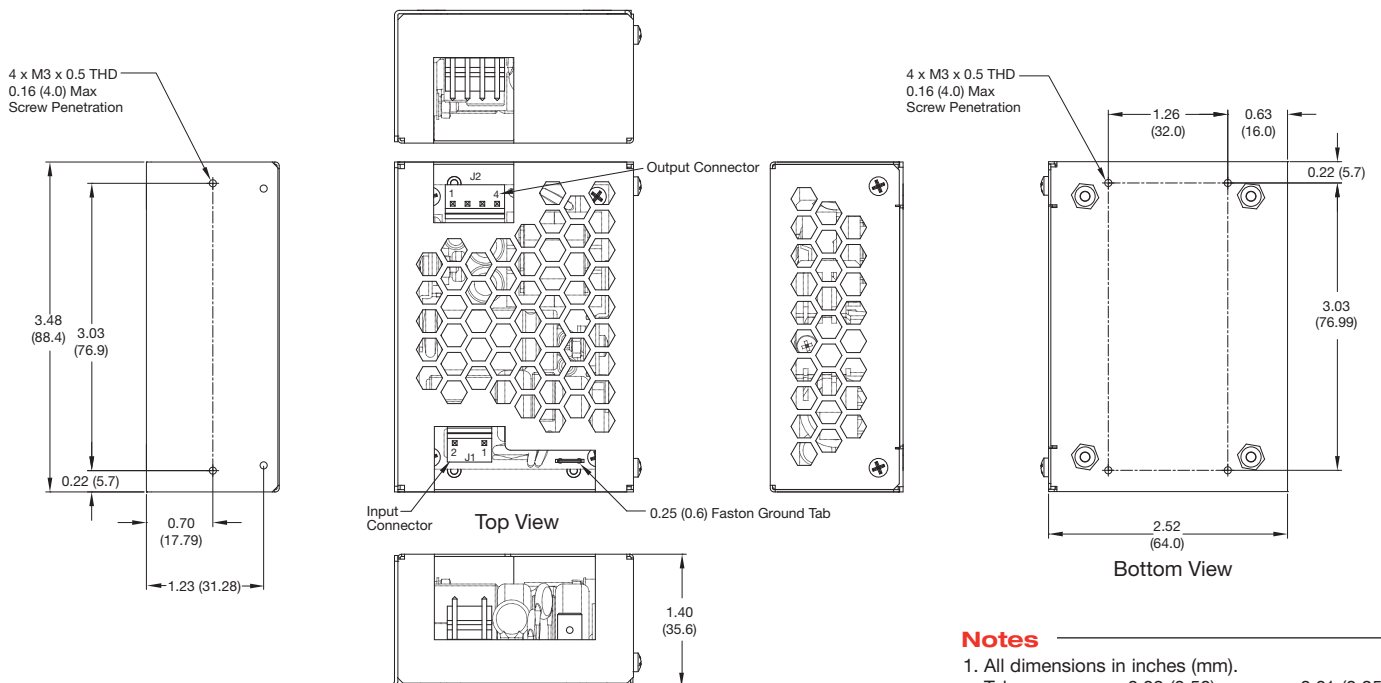
Output Connector J2 Molex PN 09-65-2048	
Pin 1	+V1
Pin 2	+V1
Pin 3	RTN
Pin 4	RTN

J1 mates with Molex Housing PN 09-50-1031, J2 mates with Molex Housing PN 09-50-1041 and both with Molex Series 5194 Crimp Terminals

### Notes

- All dimensions in inches (mm).  
Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)
- Weight 0.22 lbs (100 g)

### Covered version (All ECS25-60 Models)



### Notes

- All dimensions in inches (mm).  
Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)
- Weight 0.5 lbs (230 g)

Output Power	Output Voltage	Output Current	Model Number <sup>(1)</sup>
30 W	5.0VDC	6.00 A	ECS45US05
45 W	12.0VDC	3.75 A	ECS45US12
45 W	15.0VDC	3.00 A	ECS45US15
45 W	24.0VDC	1.90 A	ECS45US24
45 W	48.0VDC	0.95 A	ECS45US48

Notes

1. For covered versions, add suffix '-C' to model number or order part number ECS25-60 COVER KIT for standalone cover. Not suitable for use in class II installations, derate output power by 20% with cover.

Mechanical Details

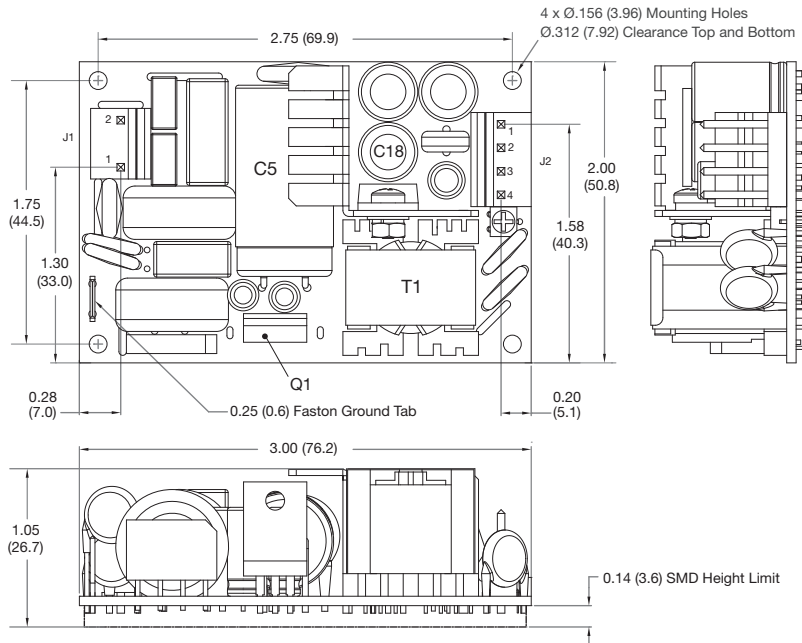
5 V version



Input Connector J1 Molex PN 09-65-2038	
Pin 1	Line
Pin 2	Neutral
0.25" Faston	Earth

Output Connector J2 Molex PN 09-65-2048	
Pin 1	+V1
Pin 2	+V1
Pin 3	RTN
Pin 4	RTN

J1 mates with Molex Housing PN 09-50-1031,  
J2 mates with Molex Housing PN 09-50-1041 and both with Molex Series 5194 Crimp Terminals



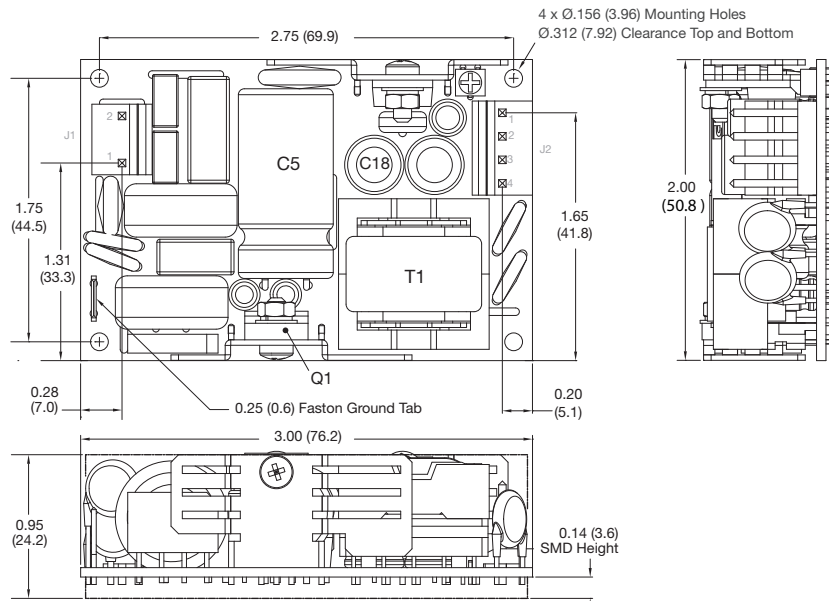
12-48 V version



Input Connector J1 Molex PN 09-65-2038	
Pin 1	Line
Pin 2	Neutral
0.25" Faston	Earth

Output Connector J2 Molex PN 09-65-2048	
Pin 1	+V1
Pin 2	+V1
Pin 3	RTN
Pin 4	RTN

J1 mates with Molex Housing PN 09-50-1031,  
J2 mates with Molex Housing PN 09-50-1041 and both with Molex Series 5194 Crimp Terminals



Notes

1. All dimensions in inches (mm).  
Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)

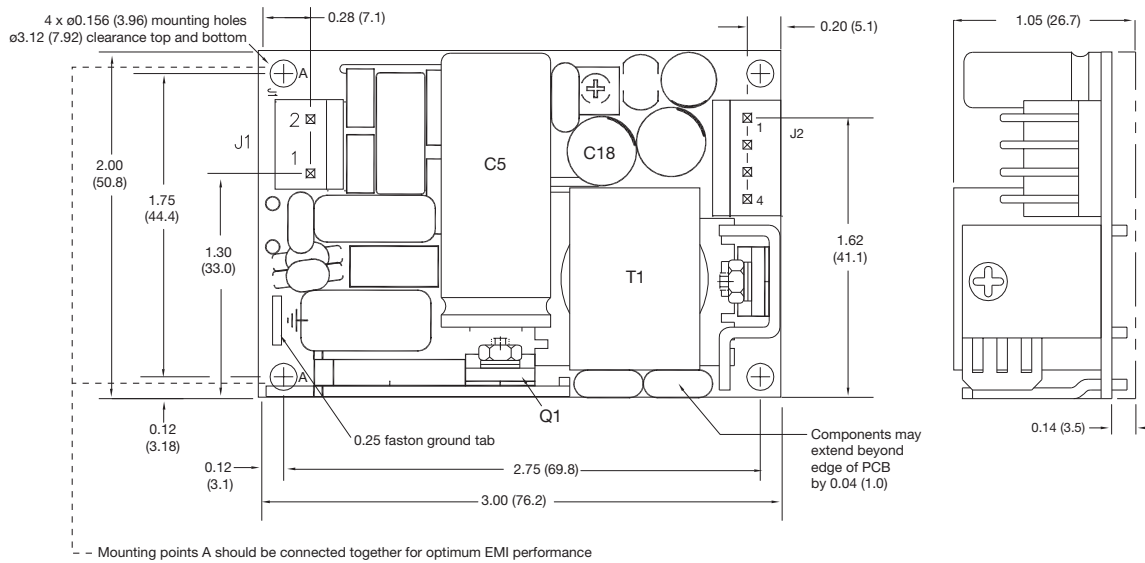
2. Weight 0.22 lbs (100 g)

Output Power	Output Voltage	Output Current	Model Number <sup>(1)</sup>
40 W	5.0 VDC	8.00 A	ECS60US05
60 W	12.0 VDC	5.00 A	ECS60US12
60 W	15.0 VDC	4.00 A	ECS60US15
60 W	24.0 VDC	2.50 A	ECS60US24
60 W	48.0 VDC	1.25 A	ECS60US48

Notes

1. For covered versions, add suffix '-C' to model number or order part number ECS25-60 COVER KIT for standalone cover. Not suitable for use in class II installations, derate output power by 20% with cover.

Mechanical Details



Input Connector J1 Molex PN 09-65-2038	
Pin 1	Line
Pin 2	Neutral
0.25" Faston	Earth

J1 mates with Molex Housing PN 09-50-1031

Output Connector J2 Molex PN 09-65-2048	
Pin 1	+V1
Pin 2	+V1
Pin 3	RTN
Pin 4	RTN

J2 mates with Molex Housing PN 09-50-1041 and both with Molex Series 5194 Crimp Terminals

Notes

1. All dimensions in inches (mm).  
Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)

2. Weight: 0.22 lbs (100 g)

Thermal Considerations (All ECS25-60 Models)

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

Temperature Measurements (Ambient ≤50 °C)	
Component	Max Temperature °C
T1	110 °C
Q1	110 °C
C5	100 °C
C18	100 °C