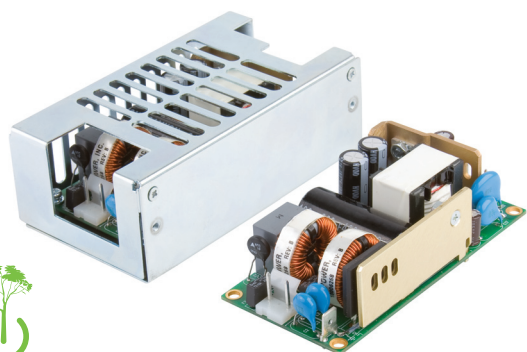


## ECS Series



GREEN XP POWER

- IT & Medical Safety Approvals
- 65/80/100 W – Convection-cooled Ratings
- Class I & Class II Construction
- Industry Standard 2"x 4" Package
- <0.5 W No Load Input Power
- Low Leakage Current
- 3 Year Warranty

## Specification

## Input

|                       |                                                                                                                                           |
|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
| Input Voltage         | • 80-264 VAC derate output power <90 VAC, see derating curves                                                                             |
| Input Frequency       | • 47-63 Hz <sup>(1)</sup>                                                                                                                 |
| Input Current         | • 65 W: 1.0/0.6 A typical at 115/230 VAC<br>100 W: 1.5/0.9 A typical at 115/230 VAC,<br>130 W: 1.9/1.1 A typical at 115/230 VAC full load |
| Inrush Current        | • 40 A max at 230 VAC, cold start at 25 °C                                                                                                |
| Power Factor          | • EN61000-3-2, class A                                                                                                                    |
| No Load Input Power   | • <0.5 W                                                                                                                                  |
| Earth Leakage Current | • 65/130 W: 260 µA at 264 VAC/60 Hz max<br>100 W: 230 µA at 264 VAC/60 Hz max                                                             |
| Input Protection      | • Internal T3.15 A/250 V fuse in line and neutral                                                                                         |

## Output

|                          |                                                                                  |
|--------------------------|----------------------------------------------------------------------------------|
| Output Voltage           | • 12-48 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, 20 MHz bandwidth                                                     |
| 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                                                                       |

## General

|                     |                                                                                                                    |
|---------------------|--------------------------------------------------------------------------------------------------------------------|
| Efficiency          | • Up to 90% model dependent                                                                                        |
| Isolation           | • 4000 VAC Input to Output, 2 x MOPP,<br>1500 VAC Input to Ground, 1 x MOPP,<br>500 VDC Output to Ground, 1 x MOPP |
| Switching Frequency | • 65 KHz typical                                                                                                   |
| Power Density       | • 65 W: 7.7 W/in <sup>3</sup> , 100 W: 10 W/in <sup>3</sup> ,<br>130 W: 13 W/in <sup>3</sup>                       |
| MTBF                | • 65 W: 850 kHrs, 100 W: 834 kHrs,<br>130 W: 715 kHrs to MIL-HDBK-217F at 25 °C, GB                                |

## Environmental

|                       |                                                                                                   |
|-----------------------|---------------------------------------------------------------------------------------------------|
| Operating Temperature | • -20 °C (-40 °C, ECS130) to +70 °C derate linearly from +50 °C at 2.5%/°C to 50% load at +70 °C. |
| Cooling               | • Convection & fan cooled ratings (see tables)                                                    |
| Operating Humidity    | • 95% RH, non-condensing                                                                          |
| Storage Temperature   | • -40 °C to +85 °C                                                                                |
| Operating Altitude    | • 65-100 W: 3000 m, 130 W: 5000m                                                                  |
| 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 Emissions | • EN61204-3, high severity level<br>• EN55011/32 level B conducted<br>• EN55011/32 level A radiated, level B Suffix '-B' models                                                                                                                                                     |
| Harmonic Currents             | • EN61000-3-2, class A                                                                                                                                                                                                                                                              |
| Voltage Flicker               | • EN61000-3-3                                                                                                                                                                                                                                                                       |
| ESD Immunity                  | • EN61000-4-2, ±6 kV Contact, ±15 kV Air Discharge, Perf Criteria A                                                                                                                                                                                                                 |
| 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,<br>• 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              | • IEC60950-1:2005 Ed 2 / IEC62368-1:2014<br>UL 62368-1 & CAN/CSA C22.2 No. 62368-1-14, EN62368-1:2014/A11:2017<br>IEC60601-1 CB report, CSA 22.2 No. 60601-1, ANSI/AMMI ES60601-1, TUV 60601-1, including risk management, CE & UKCA meets all applicable directives & legislation. |
| Equipment Protection Class    | • Class I & II (ECS65 Non '-B' models, Class I only)                                                                                                                                                                                                                                |

## Notes

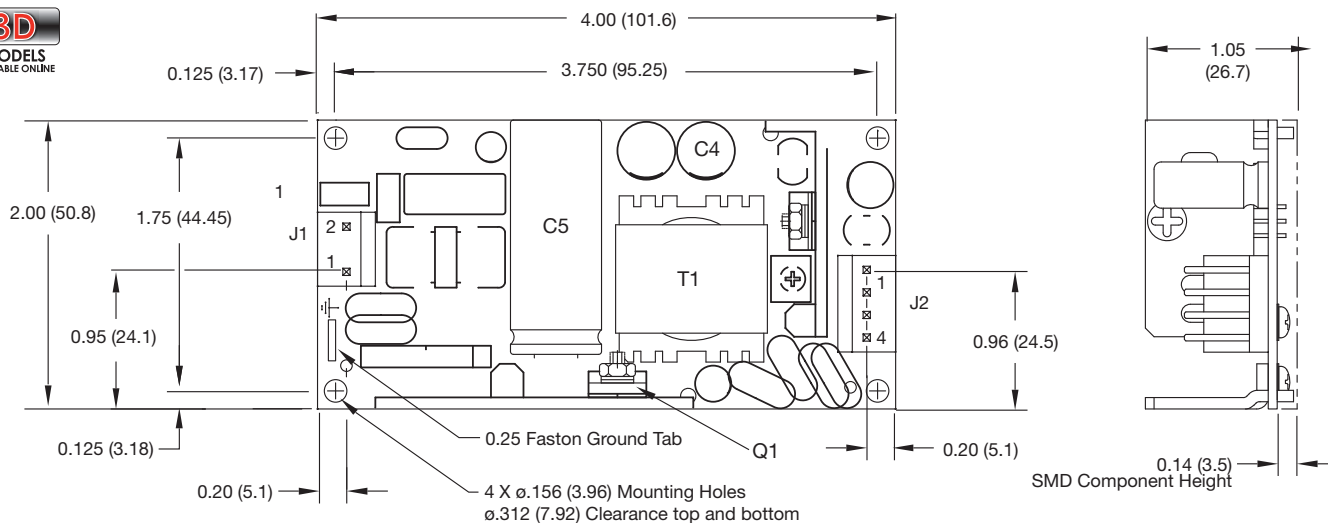
1. ECS65US12 has 400Hz IT approval.

| Output Power | Output Voltage | Output Current | Model Number <sup>(1)</sup> |
|--------------|----------------|----------------|-----------------------------|
| 65 W         | 12.0 VDC       | 5.4 A          | ECS65US12                   |
| 65 W         | 15.0 VDC       | 4.3 A          | ECS65US15                   |
| 65 W         | 18.5 VDC       | 3.4 A          | ECS65US18                   |
| 65 W         | 24.0 VDC       | 2.7 A          | ECS65US24                   |
| 65 W         | 28.0 VDC       | 2.3 A          | ECS65US28                   |
| 65 W         | 48.0 VDC       | 1.4 A          | ECS65US48                   |

## Notes

1. For Class B radiated emissions models, add suffix -B to model number. For covered versions, add suffix '-C' to model number or order part no. ECM40/60 COVER for standalone cover. Derate output power by 20% with cover. The cover is not suitable for Class II installations.

## Mechanical Details



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

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

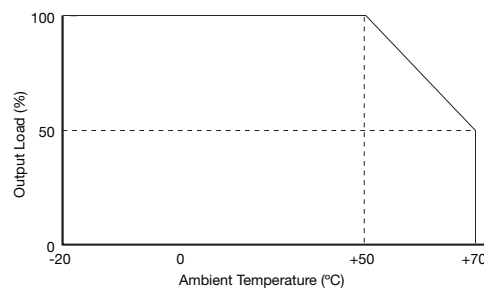
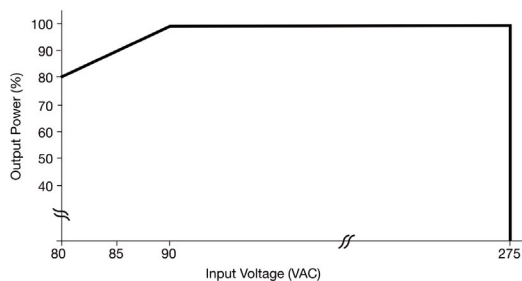
J1 mates with Molex Housing PN 09-50-1031, J2 mates with Molex Housing PN 09-50-1041 and both with Molex Series 5194 Crimp Terminals

## Notes

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

2. Weight: 0.386 lbs (175 g)

## Derating Curve - ECS65 Models



## Models and Ratings

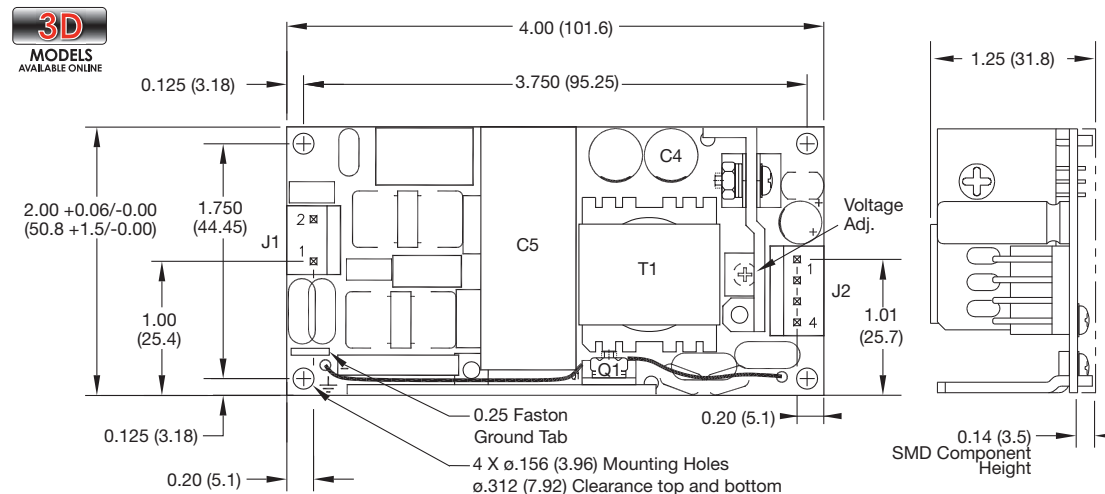
ECS100 **XP**

| Output Power           |                   | Output Voltage | Output Current | Model Number <sup>(1)</sup> |
|------------------------|-------------------|----------------|----------------|-----------------------------|
| Forced Cooled (10 CFM) | Convection-cooled |                |                |                             |
| 100 W                  | 80 W              | 12.0 VDC       | 8.3 A          | ECS100US12                  |
| 100 W                  | 80 W              | 15.0 VDC       | 6.7 A          | ECS100US15                  |
| 100 W                  | 80 W              | 18.0 VDC       | 5.5 A          | ECS100US18                  |
| 100 W                  | 80 W              | 24.0 VDC       | 4.2 A          | ECS100US24                  |
| 100 W                  | 80 W              | 28.0 VDC       | 3.6 A          | ECS100US28                  |
| 100 W                  | 80 W              | 48.0 VDC       | 2.1 A          | ECS100US48                  |

## Notes

1. For Class B radiated emissions models, add suffix -B to model number. For covered versions, add suffix '-C' to model number or order part no. ECM40/60 COVER for standalone cover. Derate output power by 20% with cover. The cover is not suitable for Class II installations. '-C' not available for '-B' models.

## Mechanical Details

Output Connector J2  
Molex PN 09-65-2048

|       |     |
|-------|-----|
| Pin 1 | +V1 |
| Pin 2 | +V1 |
| Pin 3 | RTN |
| Pin 4 | RTN |

Input Connector J1  
Molex PN 09-65-2038

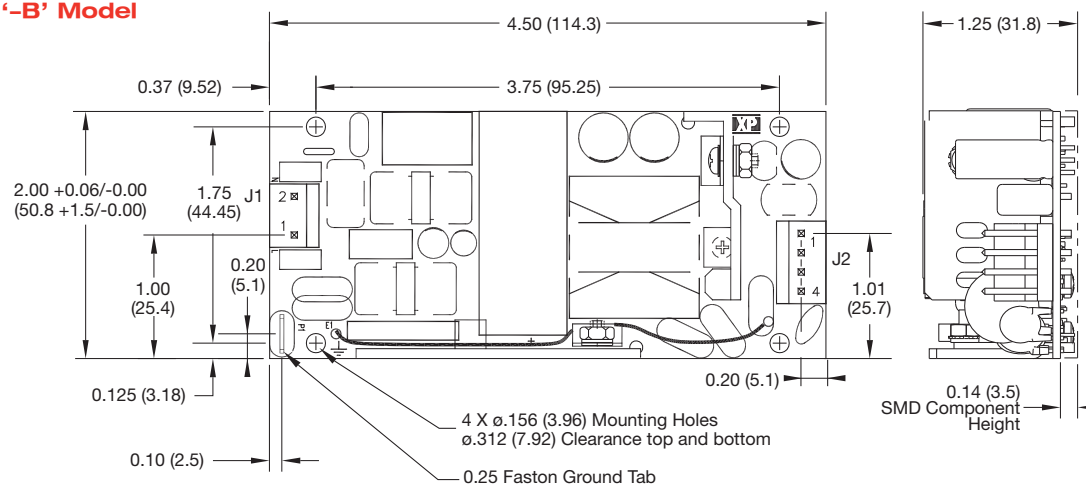
|              |         |
|--------------|---------|
| Pin 1        | Line    |
| Pin 2        | Neutral |
| 0.25" Faston | Earth   |

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

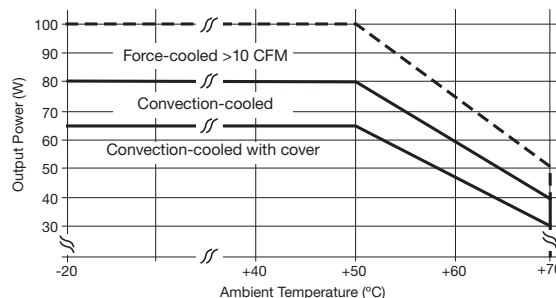
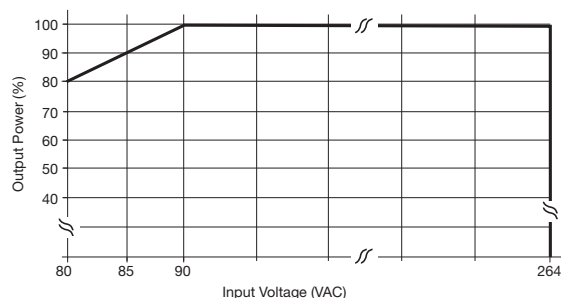
## Notes

- All dimensions in inches (mm).  
Tolerance .xx = ±0.02 (0.50); .xxx = ±0.01 (0.25)
- Weight: 0.386 lbs (175 g)

## '-B' Model



## Derating Curve - ECS100 Models

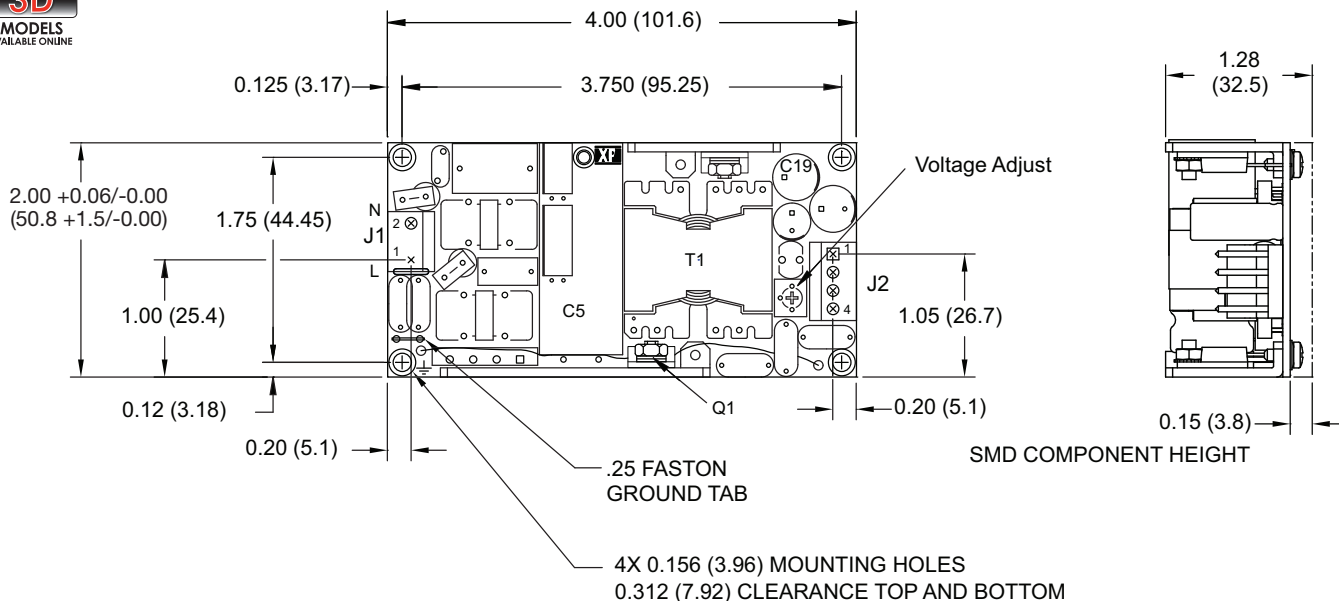


| Output Power           |                   | Output Voltage | Output Current | Model Number <sup>(1)</sup> |
|------------------------|-------------------|----------------|----------------|-----------------------------|
| Forced Cooled (10 CFM) | Convection-cooled |                |                |                             |
| 130 W                  | 100 W             | 12.0 VDC       | 10.9 A         | ECS130US12                  |
| 130 W                  | 100 W             | 15.0 VDC       | 8.7 A          | ECS130US15                  |
| 130 W                  | 100 W             | 18.0 VDC       | 7.3 A          | ECS130US18                  |
| 130 W                  | 100 W             | 24.0 VDC       | 5.4 A          | ECS130US24                  |
| 130 W                  | 100 W             | 28.0 VDC       | 4.7 A          | ECS130US28                  |
| 130 W                  | 100 W             | 48.0 VDC       | 2.7 A          | ECS130US48                  |

## Notes

1. For covered versions, add suffix '-C' to model number or order part no. ECM40/60 COVER for standalone cover, see derating curve. The cover is not suitable for Class II installations. '-C'.

## Mechanical Details



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

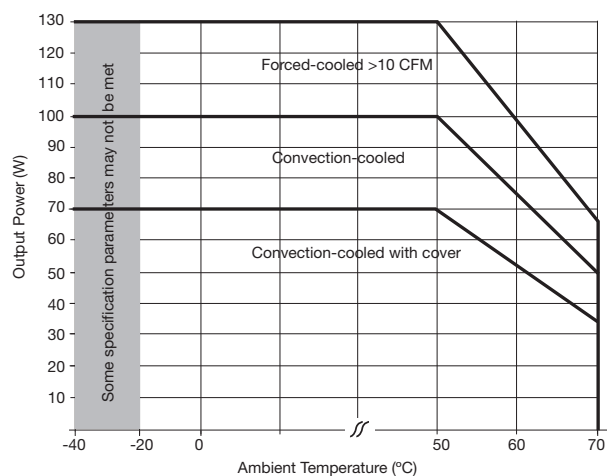
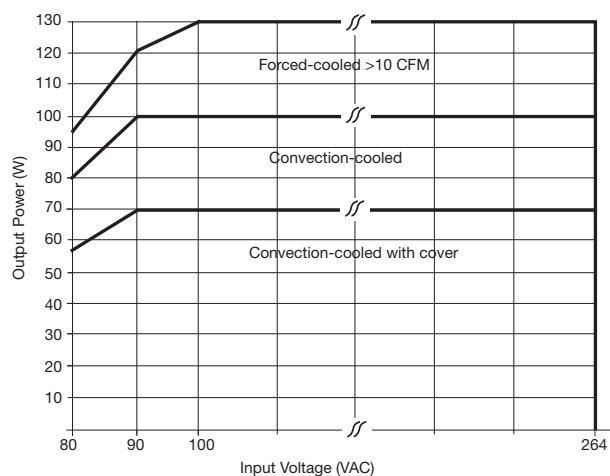
## Notes

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

| Output Connector J2<br>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

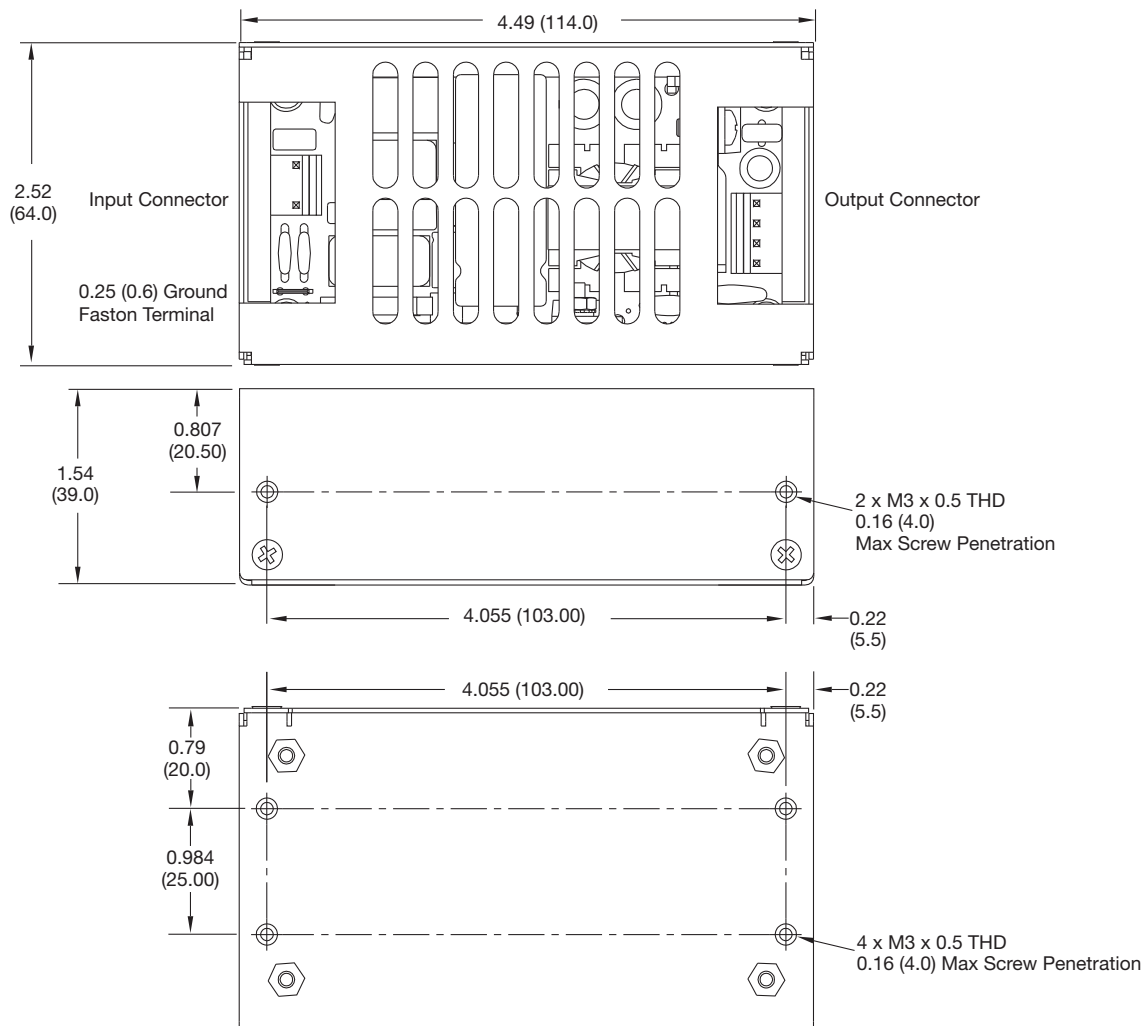
## Derating Curve – ECS130 Models



## Mechanical Details

**ECS65/100/130 XP**

Covered Version (not available for ECS100-B Models)



### Notes

1. All dimensions in inches (mm).

Tolerance .xx =  $\pm 0.02$  (0.50); .xxx =  $\pm 0.01$  (0.25)

2. Weight: 0.8 lbs (360 g)

## Thermal Considerations - All Models

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 any direct air flow).

| Temperature Measurements (Ambient $\leq 50$ °C) |                    |
|-------------------------------------------------|--------------------|
| Component                                       | Max Temperature °C |
| T1                                              | 110 °C             |
| C5                                              | 100 °C             |
| C4/C19                                          | 100 °C             |
| Q1                                              | 110 °C             |