

## 10W CONVECTION COOLED

AC-DC POWER SUPPLIES

The ECE10 is a series of open frame and encapsulated AC-DC single output power supplies designed for low power ITE and industrial applications. The series provides two mechanical options including open frame and encapsulated PCB mount. With approvals to world-wide safety standards, compliance with class B for conducted and radiated emissions and a 20%, 30s peak load capability, these class II isolation parts benefit system designers with easy integration into a wide range of applications.



### Features

- Ultra Compact Size
- Single Outputs from 3.3 to 48V
- Encapsulated PCB Mount
- <0.3W No Load Input Power
- Peak Load Capability
- No External Components Required
- 3 Year Warranty

### Applications



### Dimensions

**ECE10:**

1.50" x 1.00" x 0.60" (38.1 x 25.4 x 15.24mm)

**ECE10-P:**

1.40" x 0.93" x 0.64" (35.56 x 23.7 x 16.3mm)

### Models & Ratings

| Model Number <sup>(2)</sup> | Output Voltage | Output Current |                     | Efficiency <sup>(3)</sup> | Output Power |
|-----------------------------|----------------|----------------|---------------------|---------------------------|--------------|
|                             |                | Nominal        | Peak <sup>(1)</sup> |                           |              |
| ECE10US03                   | 3.3VDC         | 2.60A          | 3.12A               | 77%                       | 10W          |
| ECE10US05                   | 5.0VDC         | 2.00A          | 2.40A               | 80%                       | 10W          |
| ECE10US09                   | 9.0VDC         | 1.11A          | 1.33A               | 82%                       | 10W          |
| ECE10US12                   | 12.0VDC        | 0.83A          | 1.00A               | 83%                       | 10W          |
| ECE10US15                   | 15.0VDC        | 0.66A          | 0.79A               | 82%                       | 10W          |
| ECE10US24                   | 24.0VDC        | 0.41A          | 0.49A               | 83%                       | 10W          |
| ECE10US48                   | 48.0VDC        | 0.21A          | 0.25A               | 83%                       | 10W          |

**Notes:**

1. Peak load lasting <30s with a maximum duty cycle of 10%, average output power not to exceed nominal power.
2. Add suffix-P to model number to denote open frame version. Available for OEM quantities.
3. Efficiencies measured at 100% load with 115VAC input.

## Summary

| Characteristic        | Minimum  | Typical | Maximum | Units | Notes & Conditions                                 |
|-----------------------|--|---------|---------|-------|--|
| Input Voltage Range   | 85   |         | 264     | VAC   | Derate from 100% at 90VAC to 90% at 85VAC          |
| No Load Input Power   |  |         | 0.3     | W     |  |
| Efficiency            |  | 83      |         | %     | 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, EN601000-3-2, EN61000-3-3, EN60601-1-2 |         |         |       |  |
| Safety Approvals      | IEC62368-1, IEC60950-1, EN62368-1, UL62368-1                                 |         |         |       |  |

## Input

| Characteristic        | Minimum                   | Typical | Maximum | Units | Notes & Conditions                              |
|-----------------------|---------------------------|---------|---------|-------|---|
| Input Voltage Range   | 85                        |         | 264     | VAC   | Derate load from 100% at 90VAC to 90% at 85VAC  |
|                       | 120                       |         | 370     | VDC   |   |
| Input Frequency       | 47                        |         | 63      | Hz    |   |
| Input Current         |                           |         | 0.2     | A rms | At 230VAC                                       |
| No Load Input Power   |                           |         | 0.3     | W     |   |
| Inrush Current        |                           |         | 10/20   | A     | 10A at 115VAC, 20A at 230VAC cold start at 25°C |
| Earth Leakage Current |                           |         |         |       | Class II construction no earth                  |
| Input Protection      | Internal T1 A/250VAC fuse |         |         |       |   |
| Power Factor          | EN61000-3-2 Class A       |         |         |       |   |

## Output

| Characteristic           | Minimum | Typical | Maximum | Units    | Notes & Conditions   |
|--------------------------|---------|---------|---------|----------|--|
| Output Voltage           | 3.3     |         | 48      | VDC      |  |
| Initial Set Accuracy     |         |         | ±1      | %        |  |
| Minimum Load             | 0       |         |         | A        | No minimum load required   |
| Line Regulation          |         |         | ±0.5    | %        |  |
| Load Regulation          |         |         | ±1      | %        |  |
| Start Up Delay           |         |         | 2       | s        |  |
| Start Up Rise Time       |         |         | 25      | ms       |  |
| Hold Up Time             |         | 8       |         | ms       | At full load and 115VAC  |
|                          |         | 40      |         |          | At full load and 230VAC  |
| Transient Response       |         |         | 4       | %        | Deviation, recovery within 1% in less than 500µs for a 25% load change |
| Ripple & Noise           |         |         | 60      | mV pk-pk | 3.3 & 5V models, 20MHz bandwidth                                       |
|                          |         |         | 1       | % pk-pk  | All other models, 20MHz bandwidth                                      |
| Overvoltage Protection   | 125     |         | 190     | %        | ECE10US03  |
|                          | 195     |         | 216     |          |  |
| Overload Protection      | 125     |         | 190     | %        |  |
| Short Circuit Protection |         |         |         |          | Trip & Restart (hiccup mode)   |
| Temperature Coefficient  |         |         | 0.05    | %/°C     |  |

## General

| Characteristic             | Minimum | Typical    | Maximum | Units             | Notes & Conditions      |
|----------------------------|---------|------------|---------|-------------------|-------------------------|
| Efficiency                 |         | 83         |         | %                 |                         |
| Isolation: Input to Output | 4000    |            |         | VAC               |                         |
| Switching Frequency        |         | 130        |         | kHz               |                         |
| Power Density              |         |            | 11.1    | W/in <sup>3</sup> |                         |
| Mean Time Between Failure  | 450     |            |         | khrs              | MIL-HDBK-217F, +25°C GB |
| Weight                     |         | 0.053 (24) |         | lb (g)            | ECE10                   |
|                            |         | 0.031 (14) |         |                   | ECE10-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 (10 000) | m (ft) |  |
| Vibration             | 2g, 10Hz to 500Hz, 10 mins/cycle, 60 mins each of 3 axes. |         |               |        |  |

## Safety Approvals

| Certification | Standard                         | Notes & Conditions |
|---------------|----------------------------------|--------------------|
| CB            | IEC60950-1                       | ITE                |
|               | IEC62368-1                       |                    |
| UL            | UL62368-1                        | ITE                |
| TUV           | EN62368-1                        |                    |
| CE            | Meets all applicable directives  |                    |
| UKCA          | Meets all applicable legislation |                    |

## EMC: Emissions

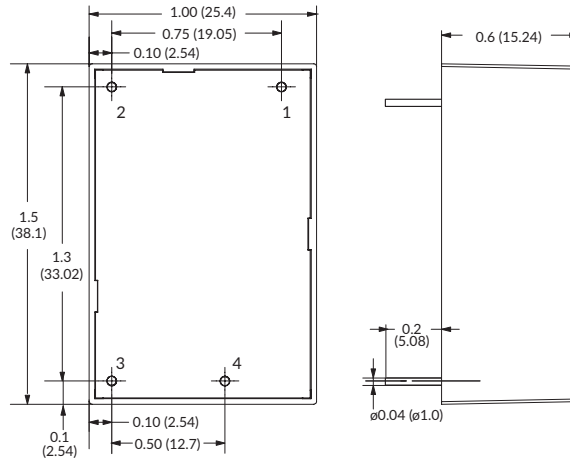
| Phenomenon       | Standard                 | Test Level | Notes & Conditions  |
|------------------|--------------------------|------------|---|
| Conducted        | EN55032                  | Class B    | If output is connected to ground, please contact applications engineering for further information |
| Radiated         | EN55032                  | Class B    |   |
| Harmonic Current | EN61000-3-2, EN61000-3-3 | Class A    |   |

## EMC: Immunity

| Phenomenon             | Standard     | Test Level      | Criteria | Notes & Conditions |
|------------------------|--------------|-----------------|----------|--------------------|
| ESD Immunity           | EN61000-4-2  | 3               | A        |                    |
| Radiated Immunity      | EN61000-4-3  | 10 V/m, 80%     | A        |                    |
| EFT/Burst              | EN61000-4-4  | 3               | A        |                    |
| Surge                  | EN61000-4-5  | 3               | A        | Line to line       |
| Conducted              | EN61000-4-6  | 10Vrms          | A        |                    |
| Magnetic Fields        | EN61000-4-8  | 10A/m           | A        |                    |
| Dips and Interruptions | EN61000-4-11 | 30% for 10ms    | A        |                    |
|                        |              | 60% for 100ms   | B        |                    |
|                        |              | 100% for 5000ms | B        |                    |

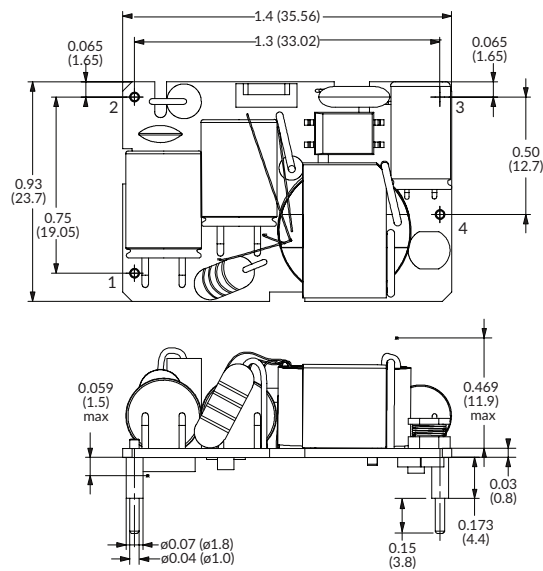
## Mechanical Details

### ECE10



| Pin | Function |
|-----|----------|
| 1   | ACN      |
| 2   | ACL      |
| 3   | -Vout    |
| 4   | +Vout    |

### ECE10-P



#### Notes:

1. All dimensions in inches (mm).
2. Weight: ECE10: 0.053lbs (24g), ECE10-P: 0.031lbs (14g)
3. Pin 1, 2 Size is 0.024" (0.6mm) DIA 0.002" (0.05mm) Pin 3, 4, 5 Size is 0.02" (0.5mm) DIA 0.002" (0.05mm)

4. Tolerances: x.xx =  $\pm 0.02$  (x.x =  $\pm 0.5$ ), x.xxx =  $\pm 0.01$  (x.xx =  $\pm 0.25$ )







## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

 [View ECE10US24 on WIN SOURCE](#)

 [XP Power Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

-  Global Sourcing Solution
-  Obsolete Management
-  Cost Control Management
-  Shortage Management
-  Alternative Solution
-  Excess Inventory Management