



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

## Specification

### Input

|                       |   |
|-----------------------|---|
| Input Voltage         | • 85-264 VAC (120-370 VDC) derate load from 100% at 90 VAC to 90% at 85 VAC |
| Input Frequency       | • 47-63 Hz  |
| Input Current         | • ECE20: 0.3 A rms at 230 VAC<br>ECE40: 0.5 A rms at 230 VAC                |
| Inrush Current        | • 20 A at 115 VAC, 40 A at 230 VAC, cold start at 25 °C                     |
| Power Factor          | • EN61000-3-2 Class A   |
| Earth Leakage Current | • Class II construction no earth  |
| No Load Input Power   | • <0.3 W  |
| Input Protection      | • ECE20: Internal T1 A/250 VAC fuse<br>ECE40: Internal T2 A/250 VAC fuse    |

### Output

|                          |   |
|--------------------------|---|
| Output Voltage           | • See tables  |
| Initial Set Accuracy     | • $\pm 1\%$   |
| Minimum Load             | • No minimum load required  |
| Start Up Delay           | • 2 s max   |
| Start Up Rise Time       | • 16 ms max   |
| Hold Up Time             | • 8 ms minimum at full load & 115 VAC   |
| Line Regulation          | • $\pm 0.5\%$ max   |
| Load Regulation          | • $\pm 1\%$ max, $\pm 2\%$ max for ECE40US03/05-S   |
| Transient Response       | • 4% max deviation, recovery to within 1% in 500 $\mu$ s for a 25% load change  |
| Ripple & Noise           | • 3.3-5 V versions: 60 mV pk-pk, 3.3-5 V 'ECE40-S' versions: 75 mV pk-pk (see note 5), all other models 1% pk-pk max 20 MHz bandwidth |
| Overvoltage Protection   | • 115-140% Vnom, 195-216% Vnom<br>ECE20US03 / ECE40US03   |
| Overload Protection      | • 110-180%  |
| Short Circuit Protection | • Trip and restart (hiccup mode)  |
| Temperature Coefficient  | • 0.05%/°C  |

### General

|                     |  |
|---------------------|--|
| Efficiency          | • See tables   |
| Isolation           | • 3000 VAC Input to Output                                       |
| Switching Frequency | • 70 kHz typical   |
| Power Density       | • ECE20: 9.97 W/In <sup>3</sup><br>ECE40: 7.82 W/In <sup>3</sup> |
| MTBF                | • >450 kHrs to MIL-HDBK-217F at 25 °C, GB                        |

### Environmental

|                       |  |
|-----------------------|--|
| Operating Temperature | • -25 °C to +70 °C, derate linearly from 100% at +50 °C to 50% at +70 °C |
| Cooling               | • Convection-cooled  |
| Operating Humidity    | • 95% RH, non-condensing   |
| Storage Temperature   | • -40 °C to +85 °C   |
| Operating Altitude    | • 3000 m   |
| Vibration             | • 2 g, 10 Hz to 500 Hz, 10 mins/cycle, 60 mins each cycle                |

### EMC & Safety

|                      |   |
|----------------------|---|
| Emissions            | • EN55022, level B conducted & radiated   |
| Harmonic Currents    | • EN61000-3-2, EN61000-3-3  |
| ESD Immunity         | • EN61000-4-2, level 3 Perf Criteria A  |
| Radiated Immunity    | • EN61000-4-3, 10 V/m 80% mod 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, 10 Vrms Perf Criteria A  |
| Magnetic Fields      | • EN61000-4-8, 10 A/m Perf Criteria A   |
| Dips & Interruptions | • EN61000-4-11, 30% for 10 ms, 60% for 100 ms, 100% for 5000 ms Perf Criteria A, B, B |
| Safety Approvals     | • EN60950-1, UL60950-1, CSA22.2 No. 234 per cUL                                       |

