



FEATURES:

- Wide 2:1 Input Range
- 1600 VDC I/O Isolation
- Adjustable Output Voltage
- Soft Start
- Over Current & Over Voltage Protection
- Efficiency up to 93%
- Temperature Range -40°C to +85°C
- Remote On/Off Function
- Continuous Short Circuit Protection
- No Minimum Load Required

Models
Single output



| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Maximum Capacitive Load (µF) | Efficiency (%) |
|--------------|-------------------|--------------------|------------------------|------------------------------|----------------|
| AM20E-1203SZ | 9-18 | 3.3 | 5.5 | 10000 | 90 |
| AM20E-1205SZ | 9-18 | 5 | 4 | 6800 | 92 |
| AM20E-1212SZ | 9-18 | 12 | 1.67 | 1000 | 90 |
| AM20E-1215SZ | 9-18 | 15 | 1.33 | 680 | 90 |
| AM20E-2403SZ | 18-36 | 3.3 | 5.5 | 10000 | 91 |
| AM20E-2405SZ | 18-36 | 5 | 4 | 6800 | 93 |
| AM20E-2412SZ | 18-36 | 12 | 1.67 | 1000 | 91 |
| AM20E-2415SZ | 18-36 | 15 | 1.33 | 680 | 91 |
| AM20E-4803SZ | 36-75 | 3.3 | 5.5 | 10000 | 91 |
| AM20E-4805SZ | 36-75 | 5 | 4 | 6800 | 93 |
| AM20E-4812SZ | 36-75 | 12 | 1.67 | 1000 | 91 |
| AM20E-4815SZ | 36-75 | 15 | 1.33 | 680 | 91 |

Models
Dual output

| Model | Input Voltage (V) | Output Voltage (V) | Output Current max (A) | Maximum Capacitive Load (µF) | Efficiency (%) |
|--------------|-------------------|--------------------|------------------------|------------------------------|----------------|
| AM20E-1212DZ | 9-18 | ±12 | ±0.835 | ±470 | 89 |
| AM20E-1215DZ | 9-18 | ±15 | ±0.665 | ±330 | 89 |
| AM20E-2412DZ | 18-36 | ±12 | ±0.835 | ±470 | 90 |
| AM20E-2415DZ | 18-36 | ±15 | ±0.665 | ±330 | 90 |
| AM20E-4812DZ | 36-75 | ±12 | ±0.835 | ±470 | 90 |
| AM20E-4815DZ | 36-75 | ±15 | ±0.665 | ±330 | 89 |

Input Specifications

| Parameters | Nominal | Typical | Maximum | Units |
|--------------------------------|--|------------------------|-----------------|--------|
| Voltage range | | 9-18 18-36 36-75 | | VDC |
| Filter | π (Pi) Network | | | |
| Start up time | | 20 | | ms |
| Absolute Maximum Rating | 12 Vin 24 Vin 48 Vin | | 36 50 100 | VDC |
| Peak Input Voltage time | | | 100 | ms |
| On/Off Control | ON : 3.0 to 12Vdc or open circuit ; OFF: 0 to 1.2Vdc or short pin2 and pin 1 OFF: Idle current: 5mA typ | | | |
| Under Voltage Lockout | 12 Vin 24 Vin 48 Vin | 8.6 17.8 33.5 | | VDC |
| Input Reflected Ripple Current | | 20 | | mA p-p |

Isolation Specifications

| Parameters | Conditions | Typical | Rated | Units |
|-----------------------------|------------|---------|-------|-------|
| Tested voltage Input/Output | 3 sec | | 1600 | VDC |
| Case / Input & Output | | 1600 | | VDC |
| Resistance | | >1000 | | MOhm |
| Capacitance | | 1200 | | pF |

Output Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|---------------------------------------|---|---------|---------|--------|
| Voltage accuracy | | ±1 | | % |
| Voltage balance (Dual Output Models) | Balanced Load | ±1 | | % |
| Cross Regulation (Dual Output Models) | 25% load on one output - 100% load on second load | ±5 | | % |
| Over voltage protection | Zener diode clamp | | | |
| Over current protection | 140% of Full Load | | | |
| Short Circuit protection | Continuous | | | |
| Short circuit restart | Auto-Recovery | | | |
| Line voltage regulation | HL-LL | ±0.2 | | % |
| Load voltage regulation (Single) | From 0% load to 100% load | ±0.5 | | % |
| Load voltage regulation (Dual) | Balanced Load | ±1 | | % |
| Ripple & Noise | 20MHz Bandwidth With 1uF ceramic capacitor | 75 | | mV p-p |
| Voltage adjustment range (single) | | | ±10 | % |
| Transient Recovery Time | 25% load step change (75%-50%-25% of Io | 250 | | uS |
| Transient Recovery Deviation | 25% load step change (75%-50%-25% of Io | ±3 | | % |

General Specifications

| Parameters | Conditions | Typical | Maximum | Units |
|---------------------------|---|-------------------------|---------|-------|
| Switching frequency | 100% load | 330 | | KHz |
| Operating temperature | | -40 to +85 | | °C |
| Storage temperature | | -40 to +125 | | °C |
| Maximum case temperature | | | 100 | °C |
| Temperature coefficient | | ±0.02 | | %/°C |
| Derating | Above +70°C | 3.3 | | %/°C |
| Cooling | Free Air Convection | | | |
| Humidity | | | 95 | % RH |
| Case material | Nickel-coated Copper | | | |
| Base material | Non-conductive Black Plastic(UL94V-0 rated) | | | |
| Potting material | Epoxy (UL94V-0 rated) | | | |
| Weight | | 30 | | g |
| Dimensions (L x W x H) | 2.00 x 1.00 x 0.40 inches | 50.80 x 25.40 x 10.16mm | | |
| MTBF | >684,000 hrs (MIL-HDBK -217F, Ground Benign, t=+25°C) | | | |
| Max Soldering temperature | 1.5mm from case, 10 sec. max. | | 260 | °C |

NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

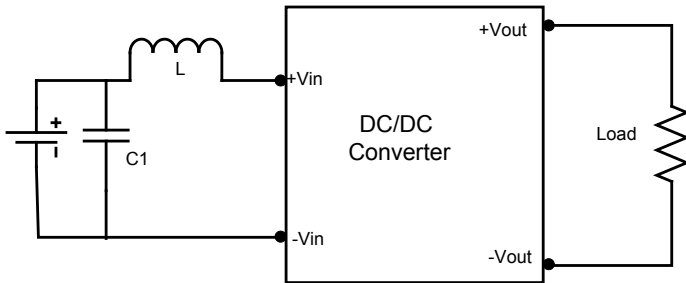
Safety Specifications

| Parameters | |
|---|---|
| Agency Approvals | CE |
| Standards | EN55022 Class A (see note A) |
| | EN61000-4-2 Perf. Criteria B |
| | EN61000-4-3 Perf. Criteria A |
| | EN61000-4-4 Perf. Criteria B (see note B) |
| | EN61000-4-5 Perf. Criteria B (see note B) |
| | EN61000-4-6 Perf. Criteria A |
| | EN61000-4-8 Perf. Criteria A |
| NOTE: also designed to meets IEC/EN 60950-1 | |

Note A: Input filter components (C1, L, see circuit below) are used to help meet conducted emissions requirement for the module. These components should be mounted as close as possible to the module; and all leads should be minimized to decrease radiated noise.

Note B: An external filter capacitor is required if the module has to meet EN61000-4-4 and EN61000-4-5. The filter capacitor suggested value of 220uF/100V.

Test Circuits Conducted Emissions



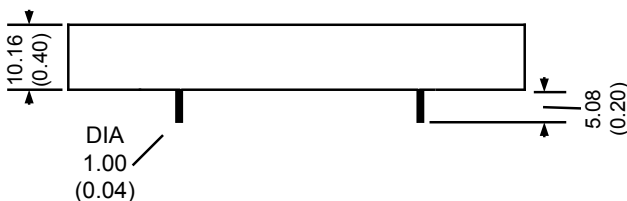
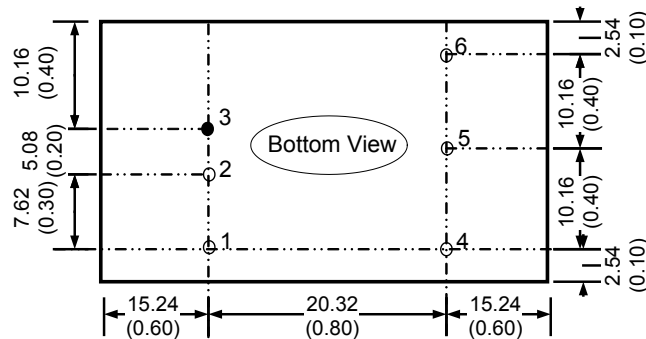
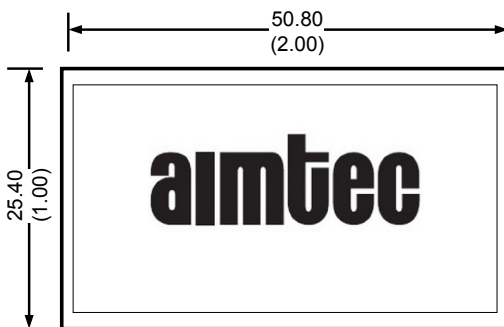
External parts table

| Model | C1 | L |
|--------------|-------|------|
| AM20E-12XXXZ | 330uF | 12uH |
| AM20E-24XXXZ | 220uF | 12uH |
| AM20E-48XXXZ | 220uF | 12uH |

Pin Out Specifications

| Pin | Single | Dual |
|-----|----------------|----------------|
| 1 | On/Off Control | On/Off Control |
| 2 | - V Input | - V Input |
| 3 | + V Input | + V Input |
| 4 | - V Output | - V Output |
| 5 | Trim | Common |
| 6 | + V Output | + V Output |

Dimensions



Notes:
All dimensions are typical
in millimeters (inches).
Tolerance ± 0.25 (± 0.01)

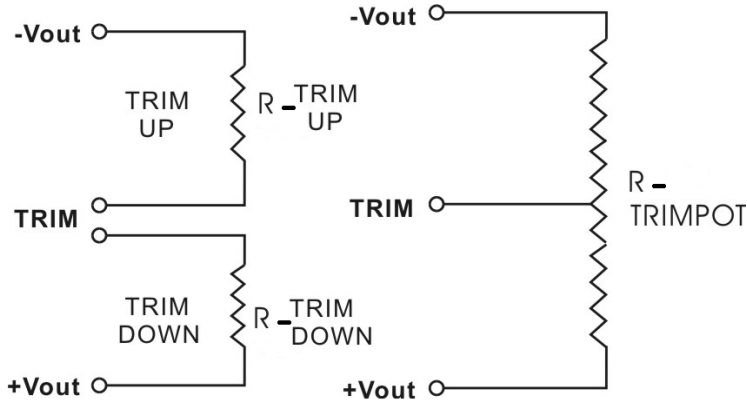
Pin diameter: 1.0 ± 0.05 (0.04 ± 0.002)
Pin pitch tolerance: ± 0.35 (± 0.014)
Case Tolerance: ± 0.5 (± 0.02)

Trimming

Output voltage on single output models can be externally trimmed by utilizing the methods as shown below

Fixed Resistor

Variable Potentiometer



Trim Table

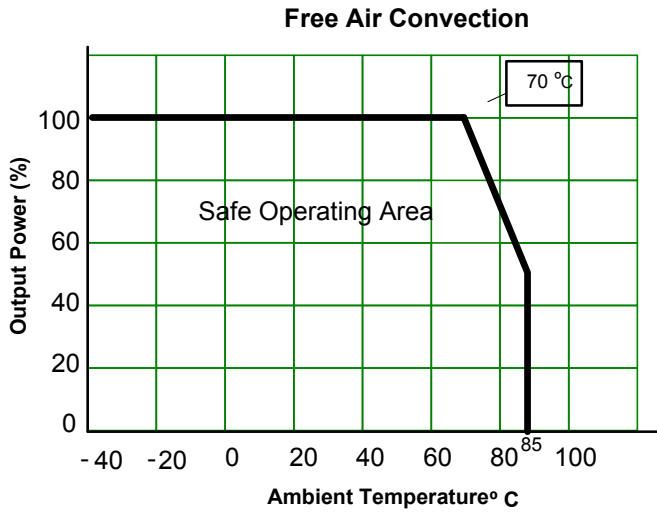
| AM20E(W)-xx03SZ | | | | | | | | | | | |
|-----------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|-------|
| Trim down | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | % |
| Vout= | 3.267 | 3.234 | 3.201 | 3.168 | 3.135 | 3.102 | 3.069 | 3.036 | 3.003 | 2.970 | Volts |
| Rtrim-down | 315.932 | 172.257 | 112.528 | 79.806 | 59.153 | 44.930 | 34.539 | 26.616 | 20.374 | 15.330 | KOhms |
| Trim up | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 | 6.000 | 7.000 | 8.000 | 9.000 | 10.000 | % |
| Vout= | 3.333 | 3.366 | 3.399 | 3.432 | 3.465 | 3.498 | 3.531 | 3.564 | 3.597 | 3.630 | Volts |
| Rtrim-up | 544.612 | 184.034 | 103.305 | 67.715 | 47.676 | 34.824 | 25.880 | 19.297 | 14.249 | 10.255 | KOhms |

| AM20E(W)-xx05SZ | | | | | | | | | | | |
|-----------------|---------|---------|--------|--------|--------|--------|--------|--------|--------|--------|-------|
| Trim down | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | % |
| Vout= | 4.950 | 4.900 | 4.850 | 4.800 | 4.750 | 4.700 | 4.650 | 4.600 | 4.550 | 4.500 | Volts |
| Rtrim-down | 230.566 | 106.182 | 64.301 | 43.281 | 30.643 | 22.207 | 16.177 | 11.651 | 8.129 | 5.310 | KOhms |
| Trim up | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 | 6.000 | 7.000 | 8.000 | 9.000 | 10.000 | % |
| Vout= | 5.050 | 5.100 | 5.150 | 5.200 | 5.250 | 5.300 | 5.350 | 5.400 | 5.450 | 5.500 | Volts |
| Rtrim-up | 244.547 | 113.776 | 70.631 | 49.142 | 36.274 | 27.707 | 21.592 | 17.010 | 13.447 | 10.598 | KOhms |

| AM20E(W)-xx12SZ | | | | | | | | | | | |
|-----------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|-------|
| Trim down | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | % |
| Vout= | 11.880 | 11.760 | 11.640 | 11.520 | 11.400 | 11.280 | 11.160 | 11.040 | 10.920 | 10.800 | Volts |
| Rtrim-down | 327.351 | 142.100 | 83.928 | 55.470 | 38.591 | 27.418 | 19.477 | 13.542 | 8.939 | 5.264 | KOhms |
| Trim up | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 | 6.000 | 7.000 | 8.000 | 9.000 | 10.000 | % |
| Vout= | 12.120 | 12.240 | 12.360 | 12.480 | 12.600 | 12.720 | 12.840 | 12.960 | 13.080 | 13.200 | Volts |
| Rtrim-up | 371.425 | 183.645 | 117.623 | 83.929 | 63.489 | 49.767 | 39.919 | 32.508 | 26.728 | 22.094 | KOhms |

| AM20E(W)-xx15SZ | | | | | | | | | | | |
|-----------------|---------|---------|---------|--------|--------|--------|--------|--------|--------|--------|-------|
| Trim down | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | % |
| Vout= | 14.850 | 14.700 | 14.550 | 14.400 | 14.250 | 14.100 | 13.950 | 13.800 | 13.650 | 13.500 | Volts |
| Rtrim-down | 433.811 | 174.916 | 100.946 | 65.907 | 45.468 | 32.077 | 22.625 | 15.596 | 10.165 | 5.842 | KOhms |
| Trim up | 1.000 | 2.000 | 3.000 | 4.000 | 5.000 | 6.000 | 7.000 | 8.000 | 9.000 | 10.000 | % |
| Vout= | 15.150 | 15.300 | 15.450 | 15.600 | 15.750 | 15.900 | 16.050 | 16.200 | 16.350 | 16.500 | Volts |
| Rtrim-up | 347.293 | 178.523 | 115.235 | 82.084 | 61.683 | 47.863 | 37.882 | 30.336 | 24.430 | 19.682 | KOhms |

Derating



NOTE: **1.** Datasheets are updated as needed and as such, specifications are subject to change without notice. Once printed or downloaded, datasheets are no longer controlled by Aimtec; refer to www.aimtec.com for the most current product specifications. **2.** Product labels shown, including safety agency certifications on labels, may vary based on the date manufactured. **3.** Mechanical drawings and specifications are for reference only. **4.** All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. **5.** Aimtec may not have conducted destructive testing or chemical analysis on all internal components and chemicals at the time of publishing this document. CAS numbers and other limited information are considered proprietary and may not be available for release. **6.** This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet. **7.** Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.