

**FEATURES:**

- RoHS compliant
- 12 Pin SIP Package
- Low ripple and noise
- High efficiency up to 72%
- Operating temperature -25°C to + 85°C
- Input / Output Isolation 1000, 3000 or 5200VDC
- Continuous Short Circuit Protection

**Models****Single output**

| Model          | Input Voltage (V) | Output Voltage (V) | Output Current Max (mA) | Capacitive Load, Max (μF) | Input Current Full   No Load (mA) |    | Isolation | Efficiency (%) |
|----------------|-------------------|--------------------|-------------------------|---------------------------|-----------------------------------|----|-----------|----------------|
| AM2F-0503SZ    | 4.5-5.5           | 3.3                | 500                     | 330                       | 559                               | 68 | 1000      | 59             |
| AM2F-0505SZ    | 4.5-5.5           | 5                  | 400                     | 330                       | 588                               | 45 | 1000      | 68             |
| AM2F-0507SZ    | 4.5-5.5           | 7.2                | 278                     | 330                       | 625                               | 90 | 1000      | 64             |
| AM2F-0509SZ    | 4.5-5.5           | 9                  | 222                     | 330                       | 563                               | 75 | 1000      | 71             |
| AM2F-0512SZ    | 4.5-5.5           | 12                 | 167                     | 330                       | 597                               | 80 | 1000      | 67             |
| AM2F-0515SZ    | 4.5-5.5           | 15                 | 134                     | 330                       | 571                               | 95 | 1000      | 70             |
| AM2F-0518SZ    | 4.5-5.5           | 18                 | 111                     | 330                       | 580                               | 95 | 1000      | 69             |
| AM2F-0524SZ    | 4.5-5.5           | 24                 | 83                      | 330                       | 597                               | 76 | 1000      | 67             |
| AM2F-1203SZ    | 10.8-13.2         | 3.3                | 500                     | 330                       | 250                               | 30 | 1000      | 55             |
| AM2F-1205SZ    | 10.8-13.2         | 5                  | 400                     | 330                       | 249                               | 20 | 1000      | 67             |
| AM2F-1207SZ    | 10.8-13.2         | 7.2                | 278                     | 330                       | 253                               | 30 | 1000      | 66             |
| AM2F-1209SZ    | 10.8-13.2         | 9                  | 222                     | 330                       | 253                               | 45 | 1000      | 66             |
| AM2F-1212SZ    | 10.8-13.2         | 12                 | 167                     | 330                       | 249                               | 45 | 1000      | 67             |
| AM2F-1215SZ    | 10.8-13.2         | 15                 | 134                     | 330                       | 245                               | 45 | 1000      | 68             |
| AM2F-1218SZ    | 10.8-13.2         | 18                 | 111                     | 330                       | 256                               | 50 | 1000      | 65             |
| AM2F-1224SZ    | 10.8-13.2         | 24                 | 83                      | 330                       | 231                               | 35 | 1000      | 72             |
| AM2F-2403SZ    | 21.6-26.4         | 3.3                | 500                     | 330                       | 127                               | 25 | 1000      | 54             |
| AM2F-2405SZ    | 21.6-26.4         | 5                  | 400                     | 330                       | 132                               | 25 | 1000      | 63             |
| AM2F-2407SZ    | 21.6-26.4         | 7.2                | 278                     | 330                       | 123                               | 22 | 1000      | 68             |
| AM2F-2409SZ    | 21.6-26.4         | 9                  | 222                     | 330                       | 117                               | 20 | 1000      | 71             |
| AM2F-2412SZ    | 21.6-26.4         | 12                 | 167                     | 330                       | 119                               | 20 | 1000      | 70             |
| AM2F-2415SZ    | 21.6-26.4         | 15                 | 134                     | 330                       | 124                               | 25 | 1000      | 67             |
| AM2F-2418SZ    | 21.6-26.4         | 18                 | 111                     | 330                       | 117                               | 20 | 1000      | 71             |
| AM2F-2424SZ    | 21.6-26.4         | 24                 | 83                      | 330                       | 116                               | 20 | 1000      | 72             |
|                |                   |                    |                         |                           |                                   |    |           |                |
| AM2F-0503SH30Z | 4.5-5.5           | 3.3                | 500                     | 330                       | 559                               | 68 | 3000      | 59             |
| AM2F-0505SH30Z | 4.5-5.5           | 5                  | 400                     | 330                       | 588                               | 45 | 3000      | 68             |
| AM2F-0507SH30Z | 4.5-5.5           | 7.2                | 278                     | 330                       | 625                               | 90 | 3000      | 64             |
| AM2F-0509SH30Z | 4.5-5.5           | 9                  | 222                     | 330                       | 563                               | 75 | 3000      | 71             |
| AM2F-0512SH30Z | 4.5-5.5           | 12                 | 167                     | 330                       | 597                               | 80 | 3000      | 67             |
| AM2F-0515SH30Z | 4.5-5.5           | 15                 | 134                     | 330                       | 571                               | 95 | 3000      | 70             |
| AM2F-0518SH30Z | 4.5-5.5           | 18                 | 111                     | 330                       | 580                               | 95 | 3000      | 69             |
| AM2F-0524SH30Z | 4.5-5.5           | 24                 | 83                      | 330                       | 597                               | 76 | 3000      | 67             |
| AM2F-1203SH30Z | 10.8-13.2         | 3.3                | 500                     | 330                       | 250                               | 30 | 3000      | 55             |
| AM2F-1205SH30Z | 10.8-13.2         | 5                  | 400                     | 330                       | 249                               | 20 | 3000      | 67             |
| AM2F-1207SH30Z | 10.8-13.2         | 7.2                | 278                     | 330                       | 253                               | 30 | 3000      | 66             |
| AM2F-1209SH30Z | 10.8-13.2         | 9                  | 222                     | 330                       | 253                               | 45 | 3000      | 66             |
| AM2F-1212SH30Z | 10.8-13.2         | 12                 | 167                     | 330                       | 249                               | 45 | 3000      | 67             |
| AM2F-1215SH30Z | 10.8-13.2         | 15                 | 134                     | 330                       | 245                               | 45 | 3000      | 68             |
| AM2F-1218SH30Z | 10.8-13.2         | 18                 | 111                     | 330                       | 256                               | 50 | 3000      | 65             |
| AM2F-1224SH30Z | 10.8-13.2         | 24                 | 83                      | 330                       | 231                               | 35 | 3000      | 72             |
| AM2F-2403SH30Z | 21.6-26.4         | 3.3                | 500                     | 330                       | 127                               | 25 | 3000      | 54             |
| AM2F-2405SH30Z | 21.6-26.4         | 5                  | 400                     | 330                       | 132                               | 25 | 3000      | 63             |
| AM2F-2407SH30Z | 21.6-26.4         | 7.2                | 278                     | 330                       | 123                               | 22 | 3000      | 68             |
| AM2F-2409SH30Z | 21.6-26.4         | 9                  | 222                     | 330                       | 117                               | 20 | 3000      | 71             |
| AM2F-2412SH30Z | 21.6-26.4         | 12                 | 167                     | 330                       | 119                               | 20 | 3000      | 70             |

## Models

### Single output (continued)

| Model          | Input Voltage (V) | Output Voltage (V) | Output Current Max (mA) | Capacitive Load, Max (μF) | Input Current Full   No Load (mA) |    | Isolation | Efficiency (%) |
|----------------|-------------------|--------------------|-------------------------|---------------------------|-----------------------------------|----|-----------|----------------|
| AM2F-2415SH30Z | 21.6-26.4         | 15                 | 134                     | 330                       | 124                               | 25 | 3000      | 67             |
| AM2F-2418SH30Z | 21.6-26.4         | 18                 | 111                     | 330                       | 117                               | 20 | 3000      | 71             |
| AM2F-2424SH30Z | 21.6-26.4         | 24                 | 83                      | 330                       | 116                               | 20 | 3000      | 72             |
| AM2F-0503SH52Z | 4.5-5.5           | 3.3                | 500                     | 330                       | 559                               | 68 | 5200      | 59             |
| AM2F-0505SH52Z | 4.5-5.5           | 5                  | 400                     | 330                       | 588                               | 45 | 5200      | 68             |
| AM2F-0507SH52Z | 4.5-5.5           | 7.2                | 278                     | 330                       | 625                               | 90 | 5200      | 64             |
| AM2F-0509SH52Z | 4.5-5.5           | 9                  | 222                     | 330                       | 563                               | 75 | 5200      | 71             |
| AM2F-0512SH52Z | 4.5-5.5           | 12                 | 167                     | 330                       | 597                               | 80 | 5200      | 67             |
| AM2F-0515SH52Z | 4.5-5.5           | 15                 | 134                     | 330                       | 571                               | 95 | 5200      | 70             |
| AM2F-0518SH52Z | 4.5-5.5           | 18                 | 111                     | 330                       | 580                               | 95 | 5200      | 69             |
| AM2F-0524SH52Z | 4.5-5.5           | 24                 | 83                      | 330                       | 597                               | 76 | 5200      | 67             |
| AM2F-1203SH52Z | 10.8-13.2         | 3.3                | 500                     | 330                       | 250                               | 30 | 5200      | 55             |
| AM2F-1205SH52Z | 10.8-13.2         | 5                  | 400                     | 330                       | 249                               | 20 | 5200      | 67             |
| AM2F-1207SH52Z | 10.8-13.2         | 7.2                | 278                     | 330                       | 253                               | 30 | 5200      | 66             |
| AM2F-1209SH52Z | 10.8-13.2         | 9                  | 222                     | 330                       | 253                               | 45 | 5200      | 66             |
| AM2F-1212SH52Z | 10.8-13.2         | 12                 | 167                     | 330                       | 249                               | 45 | 5200      | 67             |
| AM2F-1215SH52Z | 10.8-13.2         | 15                 | 134                     | 330                       | 245                               | 45 | 5200      | 68             |
| AM2F-1218SH52Z | 10.8-13.2         | 18                 | 111                     | 330                       | 256                               | 50 | 5200      | 65             |
| AM2F-1224SH52Z | 10.8-13.2         | 24                 | 83                      | 330                       | 231                               | 35 | 5200      | 72             |
| AM2F-2403SH52Z | 21.6-26.4         | 3.3                | 500                     | 330                       | 127                               | 25 | 5200      | 54             |
| AM2F-2405SH52Z | 21.6-26.4         | 5                  | 400                     | 330                       | 132                               | 25 | 5200      | 63             |
| AM2F-2407SH52Z | 21.6-26.4         | 7.2                | 278                     | 330                       | 123                               | 22 | 5200      | 68             |
| AM2F-2409SH52Z | 21.6-26.4         | 9                  | 222                     | 330                       | 117                               | 20 | 5200      | 71             |
| AM2F-2412SH52Z | 21.6-26.4         | 12                 | 167                     | 330                       | 119                               | 20 | 5200      | 70             |
| AM2F-2415SH52Z | 21.6-26.4         | 15                 | 134                     | 330                       | 124                               | 25 | 5200      | 67             |
| AM2F-2418SH52Z | 21.6-26.4         | 18                 | 111                     | 330                       | 117                               | 20 | 5200      | 71             |
| AM2F-2424SH52Z | 21.6-26.4         | 24                 | 83                      | 330                       | 116                               | 20 | 5200      | 72             |

## Input Specifications

| Parameters                     | Nominal                   | Typical                           | Maximum | Units  |
|--------------------------------|---------------------------|-----------------------------------|---------|--------|
| Voltage range                  | 5<br>12<br>24             | 4.5-5.5<br>10.8-13.2<br>21.6-25.4 |         | VDC    |
| Filter                         | Capacitor                 |                                   |         |        |
| Absolute Maximum Rating        | 5 Vin<br>12 Vin<br>24 Vin | 0-7<br>0-15<br>0-28               |         | VDC    |
| Peak Input Voltage time        |                           | 100                               |         | ms     |
| Input Reflected Ripple Current |                           | 20                                |         | mA p-p |

## Isolation Specifications

| Parameters         | Conditions | Typical | Rated               | Units |
|--------------------|------------|---------|---------------------|-------|
| Tested I/O voltage | 60 sec     |         | 1000, 3000, or 5200 | VDC   |
| Resistance         |            | > 1000  |                     | MOhm  |
| Capacitance        |            | 60      |                     | pF    |

## Output Specifications

| Parameters                          | Conditions    | Typical | Maximum | Units |
|-------------------------------------|---------------|---------|---------|-------|
| Voltage accuracy                    |               |         | ±2      | %     |
| Short Circuit protection            | Continuous    |         |         |       |
| Short Circuit restart               | Auto-recovery |         |         |       |
| Line voltage regulation             |               |         | ±0.5    | %     |
| Load voltage regulation             | Load 0 – 100% |         | ±0.5    | %     |
| Load voltage regulation 3.3V output | Load 0 – 100% |         | ±1.5    | %     |

|                         |                    |       |    |        |
|-------------------------|--------------------|-------|----|--------|
| Temperature coefficient |                    | ±0.02 |    | %/°C   |
| Ripple & Noise          | At 20MHz Bandwidth |       | 75 | mV p-p |

## General Specifications

| Parameters            | Conditions                                             | Typical                  | Maximum                | Units |
|-----------------------|--------------------------------------------------------|--------------------------|------------------------|-------|
| Switching frequency   | 100% load                                              | 50                       |                        | KHz   |
| Operating temperature | Derating above 71°C                                    | -25 to +85               |                        | °C    |
| Storage temperature   |                                                        | -40 to +125              |                        | °C    |
| Max Case temperature  |                                                        |                          | 100                    | °C    |
| Cooling               | Free air convection                                    |                          |                        | %     |
| Humidity              |                                                        |                          | 95                     | %     |
| Case material         | Plastic UL94-VO                                        |                          |                        |       |
| Weight                |                                                        | 7                        |                        | g     |
| Dimensions(L x W x H) |                                                        | 1.26 x 0.31 x 0.55inches | 32.00 x 8.00 x 14.00mm |       |
| MTBF                  | >1 120 000 hrs(MIL-HDBK -217F, Ground Benign, t=+25°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

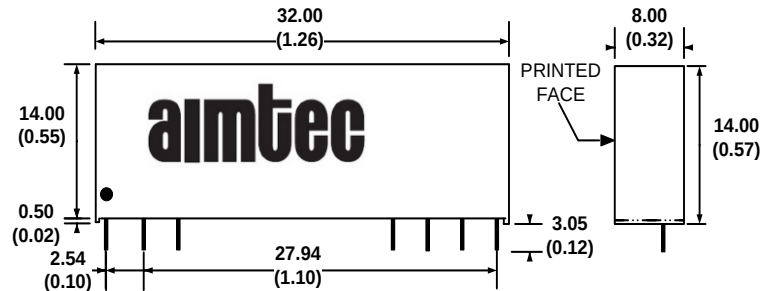
## Safety Specifications

| Standards |                                                                                 |
|-----------|---------------------------------------------------------------------------------|
| Safety    | Designed to meet IEC 60950-1                                                    |
|           | EN55032, class B, with the recommended EMI circuit                              |
|           | IEC61000-4-2(ESD) Criteria A                                                    |
|           | IEC61000-4-3(Radiated immunity) Criteria A                                      |
|           | IEC61000-4-4(EFT) Criteria A, with the recommended EFT/Surge external circuit   |
|           | IEC61000-4-5(Surge) Criteria A, with the recommended EFT/Surge external circuit |
|           | IEC61000-4-6(CS) Criteria A                                                     |
|           | IEC61000-4-8(PFMF) Criteria A                                                   |

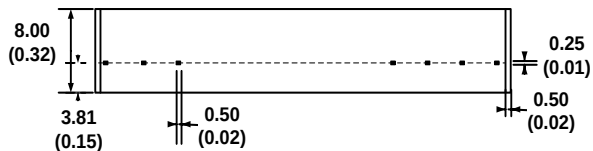
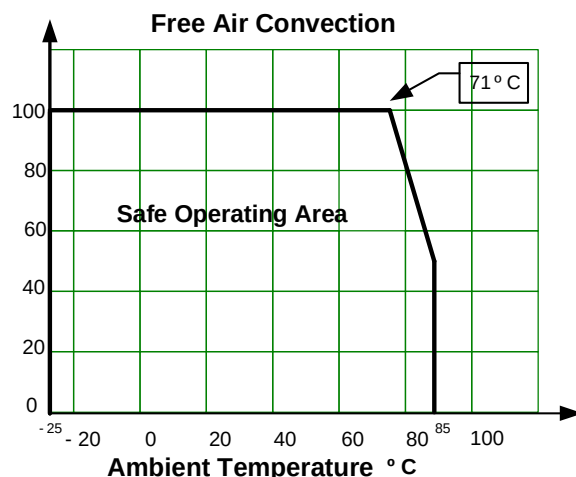
## Pin Out Specifications

| Pin | 1000VDC   | 3000 and 5200VDC |
|-----|-----------|------------------|
| 1   | +V Input  | +V Input         |
| 2   | N.C.      | -V Input         |
| 3   | N.C.      | N.C.             |
| 9   | N.C.      | N.C.             |
| 10  | -V Output | -V Output        |
| 11  | +V Output | +V Output        |
| 12  | -V Input  | N.C.             |

## Dimensions

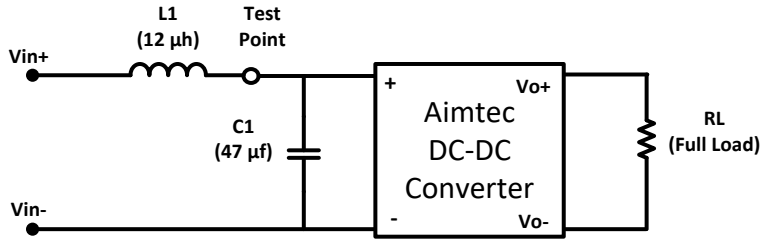


## Derating



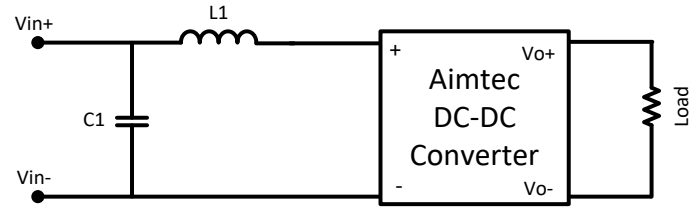
## Input Reflected Ripple Test Circuit

## Recommended EMI Filter Circuit

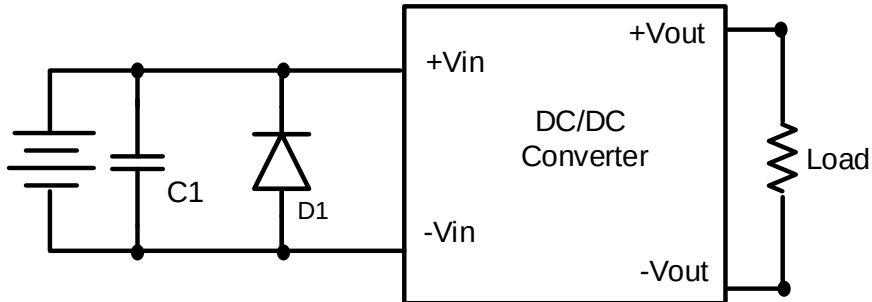


\* Tested at full load, and nominal input

### EFT/Surge Application circuit

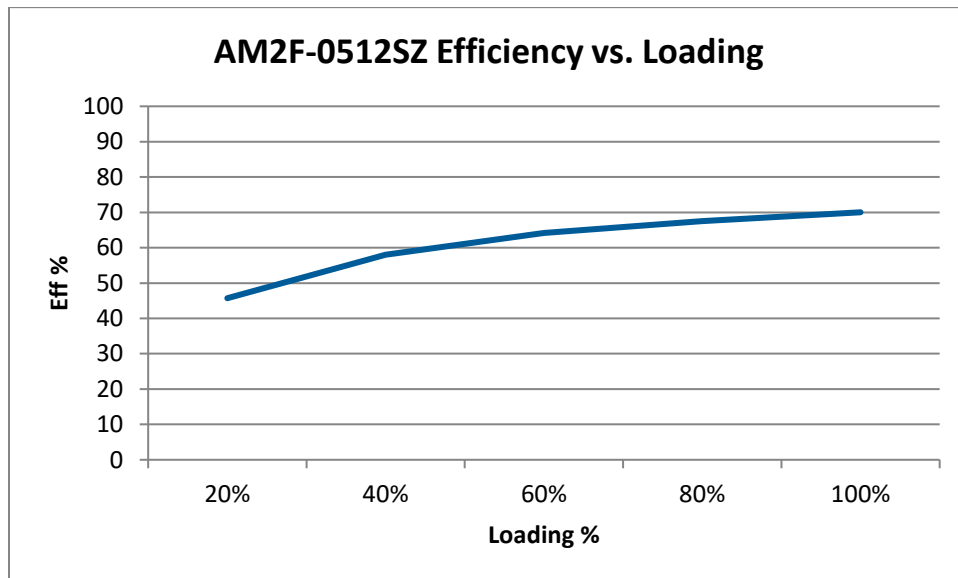


| C1               | L1         |
|------------------|------------|
| 220 $\mu$ F/100V | 12 $\mu$ H |

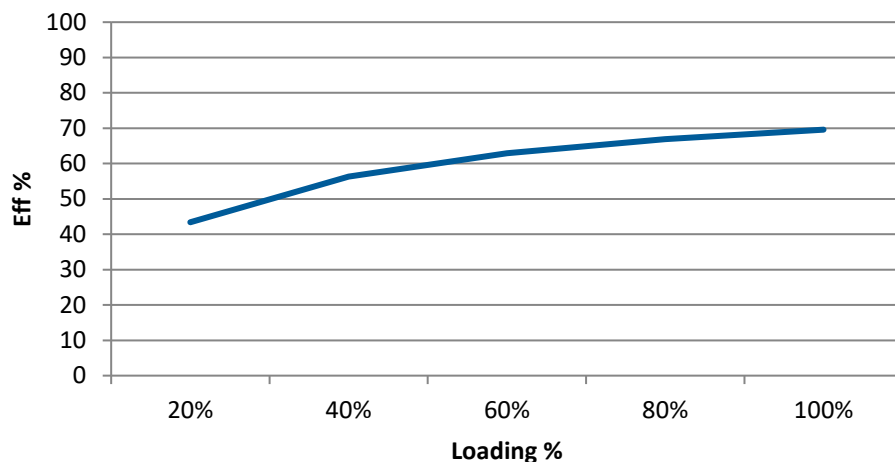


| Vin   | C1               | D1       |
|-------|------------------|----------|
| 5VDC  | 1000 $\mu$ F/50V | TVS, 9V  |
| 12VDC |                  | TVS, 14V |
| 24VDC |                  | TVS, 26V |

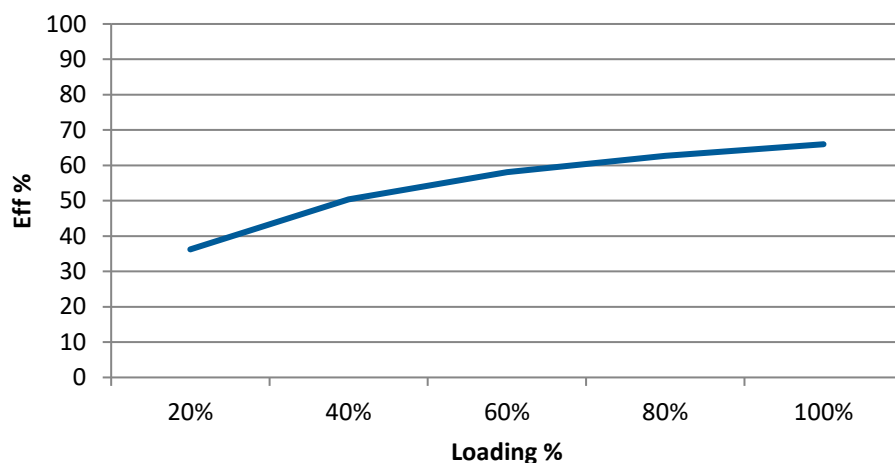
### Typical Efficiency Example Charts



**AM2F-1212SZ Efficiency vs. Loading**



**AM2F-2412SZ Efficiency vs. Loading**



**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](http://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](http://www.aimtec.com).