

**FEATURES:**

- I/O Isolation 4200VDC
- Operating temperature -40°C to + 105°C
- Rated working voltage 250Vrms/400VDC
- SMD open frame package
- Efficiency up to 78%
- High MTBF of over 7Mh



### Models

#### Single output

| Model           | Input Voltage (V) | Output Voltage (V) | Output Current Max   Min (mA) |    | Input Current Full   No Load (mA) |    | Isolation (VDC) | Max Capacitive Load (uF) | Efficiency (%) |
|-----------------|-------------------|--------------------|-------------------------------|----|-----------------------------------|----|-----------------|--------------------------|----------------|
| AM1LO-0303SH421 | 2.97-3.63         | 3.3                | 303                           | 30 | 416                               | 50 | 4200            | 220                      | 73             |
| AM1LO-0305SH421 | 2.97-3.63         | 5                  | 200                           | 20 | 404                               | 50 | 4200            | 220                      | 75             |
| AM1LO-0503SH421 | 4.5-5.5           | 3.3                | 303                           | 30 | 274                               | 40 | 4200            | 220                      | 73             |
| AM1LO-0505SH421 | 4.5-5.5           | 5                  | 200                           | 20 | 264                               | 40 | 4200            | 220                      | 76             |

### Models

#### Dual output

| Model           | Input Voltage (V) | Output Voltage (V) | Output Current Max   Min (mA) |     | Input Current Full   No Load (mA) |    | Isolation (VDC) | Max Capacitive Load (uF) | Efficiency (%) |
|-----------------|-------------------|--------------------|-------------------------------|-----|-----------------------------------|----|-----------------|--------------------------|----------------|
| AM1LO-0303DH421 | 2.97-3.63         | ±3.3               | ±151                          | ±15 | 404                               | 50 | 4200            | ±100                     | 75             |
| AM1LO-0305DH421 | 2.97-3.63         | ±5                 | ±100                          | ±10 | 389                               | 50 | 4200            | ±100                     | 78             |
| AM1LO-0503DH421 | 4.5-5.5           | ±3.3               | ±151                          | ±15 | 267                               | 40 | 4200            | ±100                     | 75             |
| AM1LO-0505DH421 | 4.5-5.5           | ±5                 | ±100                          | ±10 | 257                               | 40 | 4200            | ±100                     | 78             |

NOTE: 1. Add suffix "TR" to a part number when ordering in tape and reel package.

NOTE: 2. 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.

### Input Specifications

| Parameters                     | Nominal                    | Typical              | Maximum | Units                                     |
|--------------------------------|----------------------------|----------------------|---------|-------------------------------------------|
| Voltage range                  | 3.3<br>5                   | 2.97-3.63<br>4.5-5.5 |         | VDC                                       |
| Filter                         | Capacitor                  |                      |         |                                           |
| Absolute Maximum Rating        | 3.3 Vin<br>5 Vin           | -0.7-5<br>-0.7-9     |         | VDC                                       |
| Peak Input Voltage time        |                            | 1                    |         | s                                         |
| Input Reflected Ripple Current | 3.3 & 5V Input             | 20                   |         | mA p-p                                    |
| External fuse                  | Recommended slow blow type |                      |         | 1A for 3.3V and 500mA for 5V input models |
| Startup time                   | Nominal Vin                | 20                   |         | ms                                        |

### Isolation Specifications

| Parameters         | Conditions | Typical | Rated | Units |
|--------------------|------------|---------|-------|-------|
| Tested I/O voltage | 60 sec     |         | 4200  | VDC   |
| Resistance         |            | >1000   |       | MOhm  |
| Capacitance        |            | 25      |       | pF    |

### Output Specifications

| Parameters               | Conditions          | Typical     | Maximum | Units    |
|--------------------------|---------------------|-------------|---------|----------|
| Voltage accuracy         | See tolerance chart |             |         |          |
| Short Circuit protection | Momentary, 0.5s     |             |         |          |
| Line voltage regulation  | For ±1% of Vin      |             | ±1.2    | % of Vin |
| Load voltage regulation  | 10% - 100% load     | 3.3V output | ±15     | %        |
|                          |                     | 5V output   | ±12     |          |
| Temperature coefficient  | 100% load           | ±0.03       |         | %/°C     |

|                 |                    |               |      |        |
|-----------------|--------------------|---------------|------|--------|
| Ripple & Noise* | 20MHz<br>Bandwidth | Single output | ±150 | mV p-p |
|                 |                    | Dual output   | ±120 |        |

\*Ripple and Noise measured with a 10uF EC and 0.1uF CC.

## General Specifications

| Parameters             | Conditions               | Typical                                         | Maximum                                | Units         |
|------------------------|--------------------------|-------------------------------------------------|----------------------------------------|---------------|
| Switching frequency    |                          | 50-80                                           |                                        | KHz           |
| Operating temperature  | With derating above +100 | -40 to +105                                     |                                        | °C            |
| Storage temperature    |                          | -55 to +125                                     |                                        | °C            |
| Cooling                |                          | Free air convection (30-65LFM)                  |                                        |               |
| Humidity               | Non-Condensing           |                                                 | 95                                     | % RH          |
| Base material          |                          | Non-conductive black plastic (UL94-V0)          |                                        |               |
| Weight                 | Single output models     |                                                 | 1.52                                   | g             |
|                        | Dual output models       |                                                 | 1.80                                   |               |
| Dimensions (L x W x H) | Single output models     |                                                 | 0.50 x 0.44 x 0.27 inches<br>x 6.85 mm | 12.70 x 11.20 |
|                        | Dual output models       |                                                 | 0.60 x 0.44 x 0.27 inches<br>x 6.85 mm | 15.24 x 11.20 |
| MTBF                   |                          | >7Mhrs (MIL-HDBK -217F, Ground Benign, t=+25°C) |                                        |               |
| Reflow temperature     | 10 sec max               |                                                 | 245                                    | °C            |

## Environmental Specifications

| Parameters |           |                  |
|------------|-----------|------------------|
| Vibration  | Test mode | Per MIL-STD-810F |

## Safety Specifications

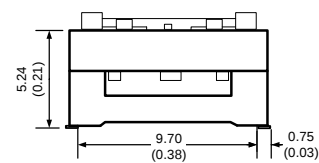
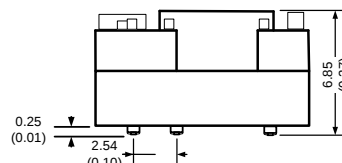
| Parameters |                                             |                                                              |
|------------|---------------------------------------------|--------------------------------------------------------------|
| Approval   | CE, UL, IEC/EN/UL60950-1 & IEC/EN/UL62368-1 |                                                              |
| Standards  | EMI - Conducted and radiated emission       | EN55032, class B (with the recommended EMI circuit)          |
|            | Electrostatic Discharge Immunity            | IEC 61000-4-2: Criteria A                                    |
|            | RF, Electromagnetic Field Immunity          | IEC 61000-4-3: Criteria A                                    |
|            | Electrical Fast Transient/Burst Immunity    | IEC 61000-4-4: Criteria A (with the recommended EMC circuit) |
|            | Surge Immunity                              | IEC 61000-4-5: Criteria A (with the recommended EMC circuit) |
|            | RF, Conducted Disturbance Immunity          | IEC 61000-4-6: Criteria A                                    |
|            | Power frequency Magnetic Field Immunity     | IEC 61000-4-8: Criteria A                                    |

## Pin Out Specifications

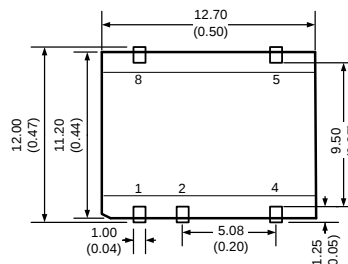
| Pin | Single    |
|-----|-----------|
| 1   | - V Input |
| 2   | + V Input |
| 4   | -V Output |
| 5   | +V Output |
| 8   | N.C.      |

## Dimensions Single output models

Side View



Top View



All dimensions are in mm (inch)  
Pin Tolerance: ±0.25mm (0.01inch)  
Case Tolerance: ±0.50mm (0.02inch)

Solder pad dimensions

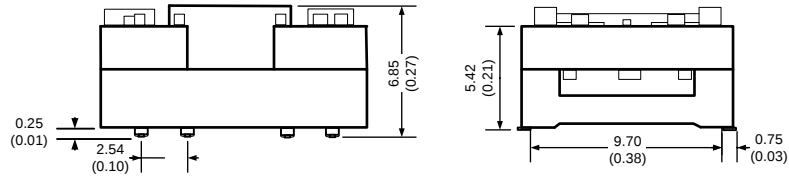
## Pin Out Specifications

| Pin | Dual      |
|-----|-----------|
| 1   | - V Input |
| 2   | + V Input |
| 4   | Common    |
| 5   | -V Output |
| 7   | +V Output |
| 10  | N.C.      |

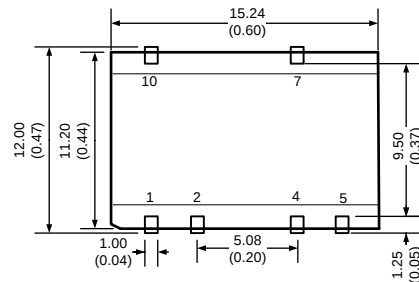
## Dimensions

### Dual output models

Side View



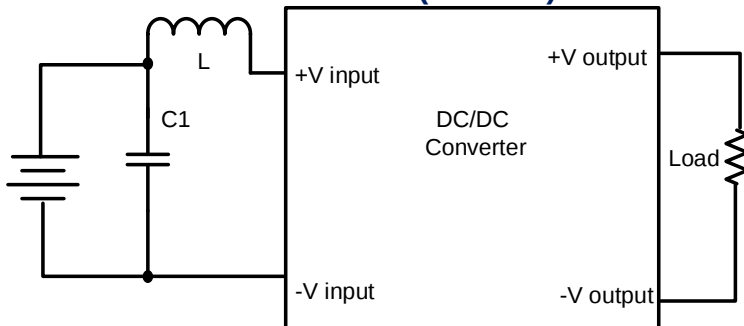
Top View



All dimensions are in mm (inch)  
Pin Tolerance:  $\pm 0.25\text{mm}$  (0.01inch)  
Case Tolerance:  $\pm 0.50\text{mm}$  (0.02inch)

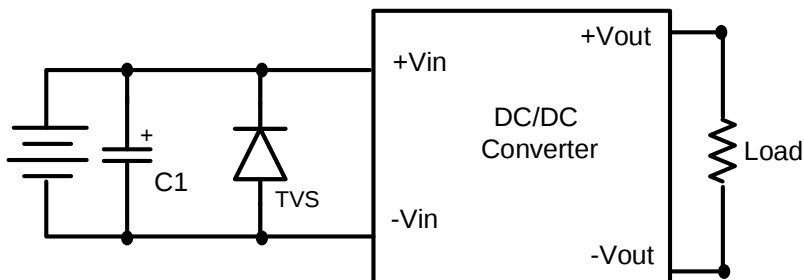
Solder pad dimensions

## EMI Recommended Circuit (Class B)



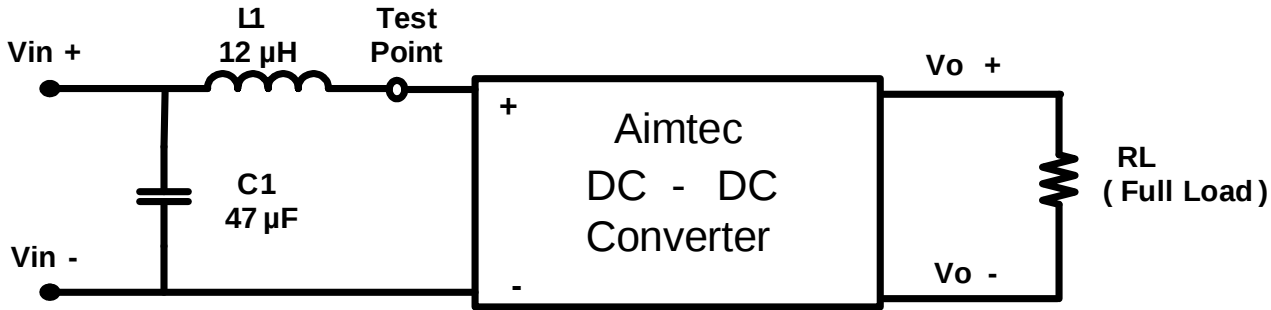
| C1                     | L                 |
|------------------------|-------------------|
| 22 $\mu\text{F}$ / 10V | 6.8 $\mu\text{H}$ |

## EMC Recommended Circuit



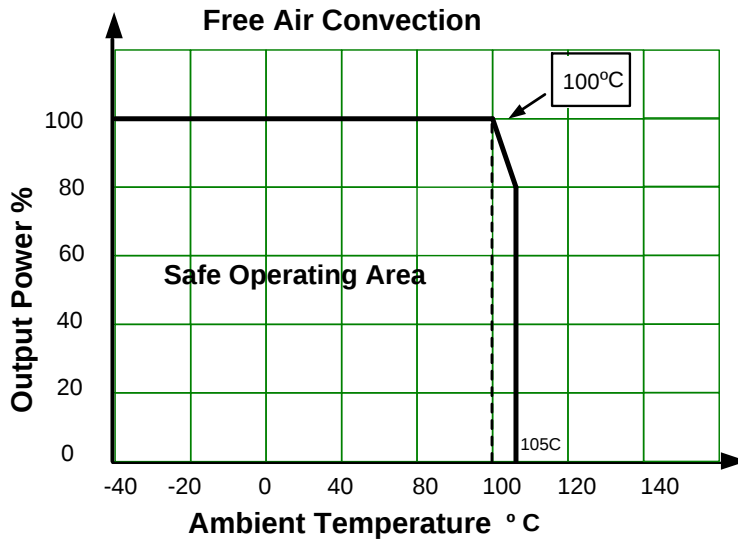
| C1                      | TVS |
|-------------------------|-----|
| 330 $\mu\text{F}$ / 50V | 9V  |

## Input Reflected Ripple Current Test Circuit



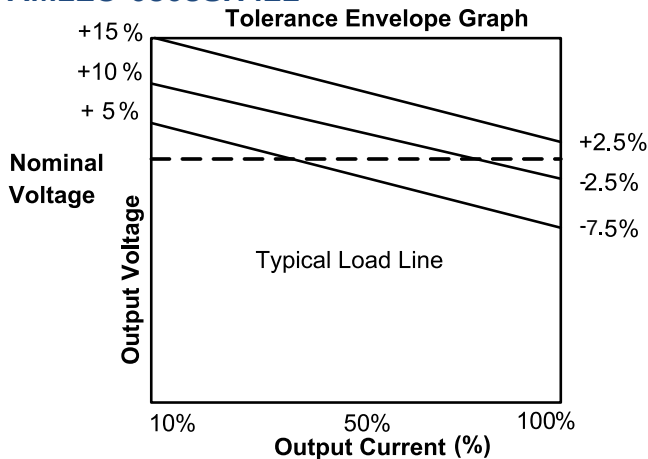
\* Tested at full load and nominal input  
C1 – ESR<1 $\Omega$  at 100KHz

## Derating

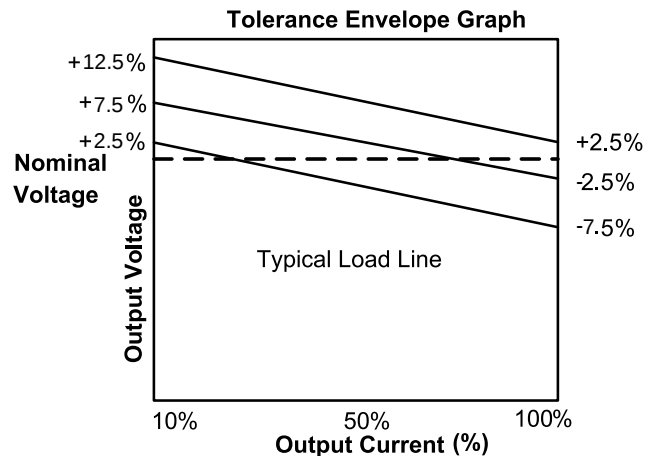


## Load Accuracy Tolerance Graph

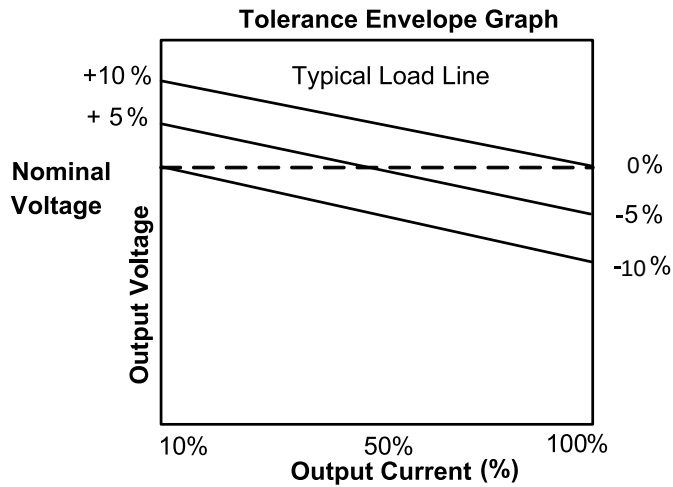
### AM1LO-0503SH421



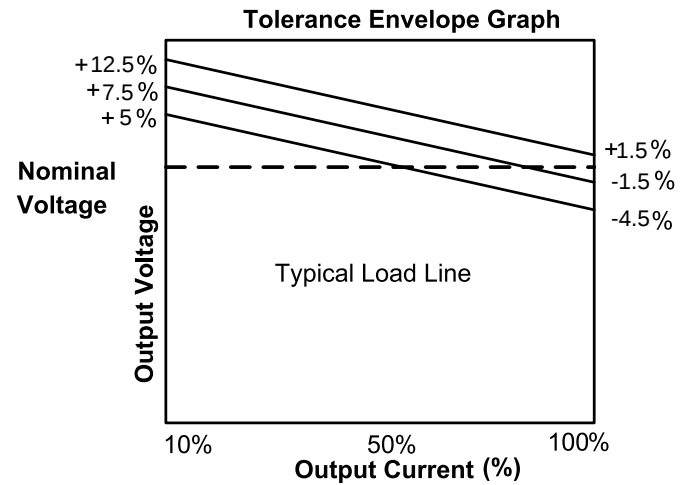
### AM1LO-0303SH421 & AM1LO-0505SH421



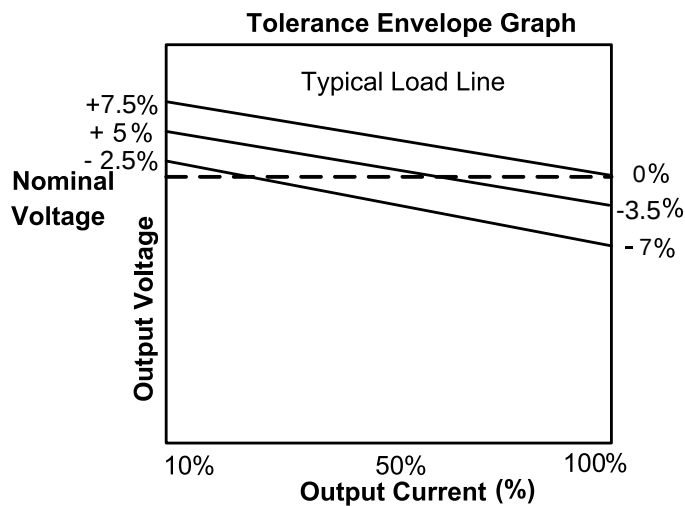
### AM1LO-0305SH421



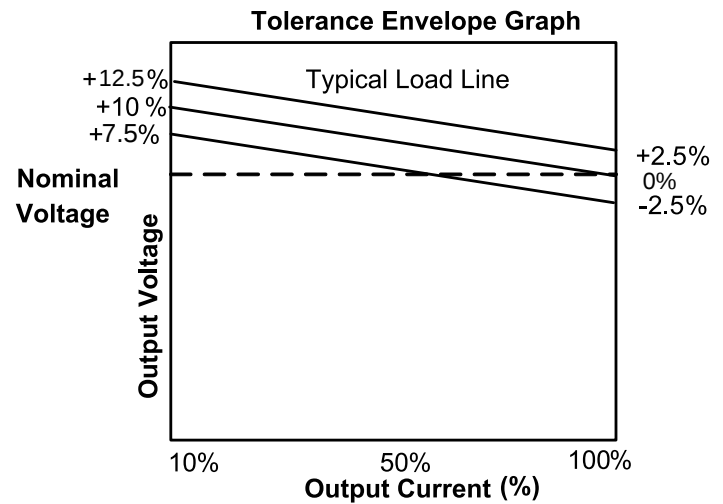
### AM1LO-0303DH421



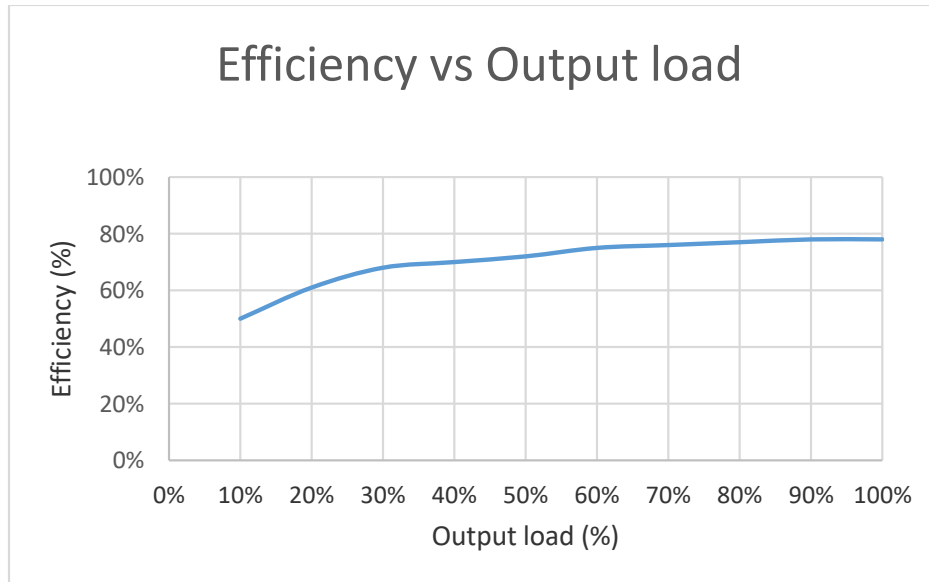
### AM1LO-0305DH421 & AM1LO-0505DH421



### AM1LO-0503DH421



## Typical 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).