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AM2LS-EZ



SMD Package

The AM2LS-EZ is a 2W SMD DC/DC converter that offers great cost savings thanks to an improved manufacturing process. It also features excellent reliability and performance while offering a standard input voltage range of 5-24VDC as well as an output voltage of 3.3-24V. This compact SMD design will surely benefit your new system design.

This new series offers great operating temperatures, from -40 to 105°C with full power up to 85°C. Also, an isolation of 1500VDC & 3000VDC for improved reliability and system safety as well as a great 3,500,000h MTBF come standard.

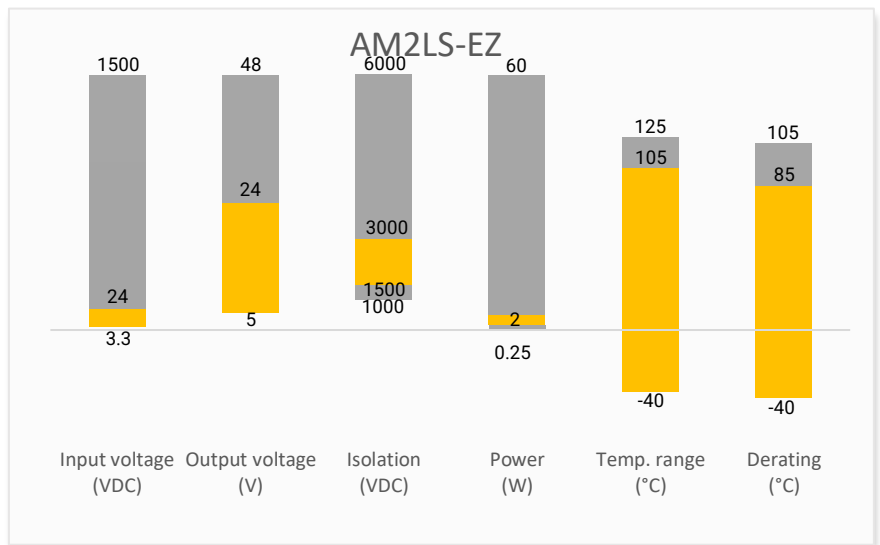
The AM2LS-EZ is suitable for instrumentation, industrial control, industrial applications, communication and IoT applications.

Features

- High I/O Isolation 1500VDC & 3000VDC
- Continuous Short circuit protection
- Operating Temp: -40 °C to +105 °C
- Low profile case height: 6.25mm
- Compact footprint and high-power Density
- Efficiency up to 89%
- Unregulated output
- Made in Taiwan



Summary



Training



Product Training Video
(click to open)



Press Release

Coming Soon!

Application Notes

Applications



IoT



Industrial



Telecom



Portable Equipment

Models & Specifications



| Model | Input Voltage (VDC) | Output Voltage (VDC) | Output Current max (mA) | Isolation (VDC) | Maximum capacitive Load (μF) | Efficiency Typ. (%) |
|------------------|---------------------|----------------------|-------------------------|-----------------|------------------------------|---------------------|
| AM2LS-0503SEZ | 5 (4.5-5.5) | 3.3 | 600 | 1500 | 2400 | 78 |
| AM2LS-0505SEZ | 5 (4.5-5.5) | 5 | 400 | 1500 | 2400 | 85 |
| AM2LS-0509SEZ | 5 (4.5-5.5) | 9 | 223 | 1500 | 820 | 87 |
| AM2LS-0512SEZ | 5 (4.5-5.5) | 12 | 167 | 1500 | 470 | 87 |
| AM2LS-0515SEZ | 5 (4.5-5.5) | 15 | 133 | 1500 | 220 | 88 |
| AM2LS-0524SEZ | 5 (4.5-5.5) | 24 | 84 | 1500 | 100 | 89 |
| AM2LS-1203SEZ | 12 (10.8-13.2) | 3.3 | 600 | 1500 | 2400 | 80 |
| AM2LS-1205SEZ | 12 (10.8-13.2) | 5 | 400 | 1500 | 2400 | 85 |
| AM2LS-1209SEZ | 12 (10.8-13.2) | 9 | 223 | 1500 | 820 | 87 |
| AM2LS-1212SEZ | 12 (10.8-13.2) | 12 | 167 | 1500 | 470 | 87 |
| AM2LS-1215SEZ | 12 (10.8-13.2) | 15 | 133 | 1500 | 220 | 88 |
| AM2LS-1224SEZ | 12 (10.8-13.2) | 24 | 84 | 1500 | 100 | 89 |
| AM2LS-1503SEZ | 15 (13.5-16.5) | 3.3 | 600 | 1500 | 2400 | 80 |
| AM2LS-1505SEZ | 15 (13.5-16.5) | 5 | 400 | 1500 | 2400 | 85 |
| AM2LS-1509SEZ | 15 (13.5-16.5) | 9 | 223 | 1500 | 820 | 87 |
| AM2LS-1512SEZ | 15 (13.5-16.5) | 12 | 167 | 1500 | 470 | 87 |
| AM2LS-1515SEZ | 15 (13.5-16.5) | 15 | 133 | 1500 | 220 | 88 |
| AM2LS-1524SEZ | 15 (13.5-16.5) | 24 | 84 | 1500 | 100 | 89 |
| AM2LS-2403SEZ | 24 (21.6-26.4) | 3.3 | 600 | 1500 | 2400 | 80 |
| AM2LS-2405SEZ | 24 (21.6-26.4) | 5 | 400 | 1500 | 2400 | 85 |
| AM2LS-2409SEZ | 24 (21.6-26.4) | 9 | 223 | 1500 | 820 | 87 |
| AM2LS-2412SEZ | 24 (21.6-26.4) | 12 | 167 | 1500 | 470 | 87 |
| AM2LS-2415SEZ | 24 (21.6-26.4) | 15 | 133 | 1500 | 220 | 88 |
| AM2LS-2424SEZ | 24 (21.6-26.4) | 24 | 84 | 1500 | 100 | 89 |
| AM2LS-0503SH30EZ | 5 (4.5-5.5) | 3.3 | 600 | 3000 | 2400 | 78 |
| AM2LS-0505SH30EZ | 5 (4.5-5.5) | 5 | 400 | 3000 | 2400 | 85 |
| AM2LS-0509SH30EZ | 5 (4.5-5.5) | 9 | 223 | 3000 | 820 | 87 |
| AM2LS-0512SH30EZ | 5 (4.5-5.5) | 12 | 167 | 3000 | 470 | 87 |
| AM2LS-0515SH30EZ | 5 (4.5-5.5) | 15 | 133 | 3000 | 220 | 88 |
| AM2LS-0524SH30EZ | 5 (4.5-5.5) | 24 | 84 | 3000 | 100 | 89 |
| AM2LS-1203SH30EZ | 12 (10.8-13.2) | 3.3 | 600 | 3000 | 2400 | 80 |
| AM2LS-1205SH30EZ | 12 (10.8-13.2) | 5 | 400 | 3000 | 2400 | 85 |
| AM2LS-1209SH30EZ | 12 (10.8-13.2) | 9 | 223 | 3000 | 820 | 87 |
| AM2LS-1212SH30EZ | 12 (10.8-13.2) | 12 | 167 | 3000 | 470 | 87 |
| AM2LS-1215SH30EZ | 12 (10.8-13.2) | 15 | 133 | 3000 | 220 | 88 |
| AM2LS-1224SH30EZ | 12 (10.8-13.2) | 24 | 84 | 3000 | 100 | 89 |
| AM2LS-1503SH30EZ | 15 (13.5-16.5) | 3.3 | 600 | 3000 | 2400 | 80 |
| AM2LS-1505SH30EZ | 15 (13.5-16.5) | 5 | 400 | 3000 | 2400 | 85 |
| AM2LS-1509SH30EZ | 15 (13.5-16.5) | 9 | 223 | 3000 | 820 | 87 |
| AM2LS-1512SH30EZ | 15 (13.5-16.5) | 12 | 167 | 3000 | 470 | 87 |
| AM2LS-1515SH30EZ | 15 (13.5-16.5) | 15 | 133 | 3000 | 220 | 88 |
| AM2LS-1524SH30EZ | 15 (13.5-16.5) | 24 | 84 | 3000 | 100 | 89 |
| AM2LS-2403SH30EZ | 24 (21.6-26.4) | 3.3 | 600 | 3000 | 2400 | 80 |
| AM2LS-2405SH30EZ | 24 (21.6-26.4) | 5 | 400 | 3000 | 2400 | 85 |
| AM2LS-2409SH30EZ | 24 (21.6-26.4) | 9 | 223 | 3000 | 820 | 87 |

| | | | | | | |
|------------------|----------------|----|-----|------|-----|----|
| AM2LS-2412SH30EZ | 24 (21.6-26.4) | 12 | 167 | 3000 | 470 | 87 |
| AM2LS-2415SH30EZ | 24 (21.6-26.4) | 15 | 133 | 3000 | 220 | 88 |
| AM2LS-2424SH30EZ | 24 (21.6-26.4) | 24 | 84 | 3000 | 100 | 89 |

Note: Use suffix "TR" for tape & reel packing (ex. AM2LS-0505SEZTR).

| Input Specification | | | | |
|---------------------|------------|---------|---------|-------|
| Parameters | Conditions | Typical | Maximum | Units |
| Filter | Capacitor | | | |

| Isolation Specification | | | | |
|-------------------------|---|---------|---------|------------|
| Parameters | Conditions | Typical | Maximum | Units |
| Tested I/O voltage | 60 sec, leakage \leq 0.5mA | >1500 | -- | VDC |
| | 60 sec, leakage \leq 0.5mA for H30 models | >3000 | -- | VDC |
| Resistance | 500VDC | >1000 | -- | M Ω |
| Capacitance | I/O 100kHz/0.1V | 20 | -- | pF |

| Output Specification | | | | |
|----------------------|------------------------------|---------|---------|----------|
| Parameters | Conditions | Typical | Maximum | Units |
| Voltage accuracy | 100% load | -- | \pm 5 | % |
| Line regulation | Per 1% Vin change | 1.2 | -- | % |
| Load regulation | 10-100% load, 3.3Vout models | | 20 | % |
| | 10-100% load, 5Vout models | 8 | 15 | % |
| | 10-100% load, 9Vout models | 6 | 10 | % |
| | 10-100% load, 12Vout models | 5 | 10 | % |
| | 10-100% load, 15Vout models | 4 | 10 | % |
| | 10-100% load, 24Vout models | 3 | 10 | % |
| Ripple & Noise* | | 75 | 150 | mV pk-pk |
| Minimum load** | -- | 10 | -- | % |

* Ripple and Noise are measured at 20MHz bandwidth. Please refer to the application note for specific details.

** If the required power is less than 1% of the rated converter output, connect a bleeder resistor in parallel with the load to satisfy the minimum load requirement.

| General Specifications | | | | |
|--------------------------|---|---|---------|-------|
| Parameters | Conditions | Typical | Maximum | Units |
| Switching frequency | Full load, nominal input, 5Vin models | 215 | -- | KHz |
| | Full load, nominal input, others | 250 | -- | KHz |
| Short circuit protection | Continuous | | | |
| Operating temperature | With derating at 85°C | -40 to +105 | -- | °C |
| Storage temperature | -- | -55 to +125 | -- | °C |
| Cooling | Free air convection | | | |
| Humidity | Non-condensing | | 95 | % RH |
| Case material | DAP | | | |
| Weight | 24V input/output models | 1.28 | -- | g |
| | Others | 1.2 | -- | g |
| Dimensions | 24V input/output models | 0.51 x 0.43 x 0.27 inches (12.80 x 10.8 x 6.9 mm) | | |
| | Others | 0.50 x 0.30 x 0.25 inches (12.70 x 7.6 x 6.25 mm) | | |
| MTBF | 3 500 000 hrs (MIL-HDBK -217F, t=+25°C) / Full Load | | | |

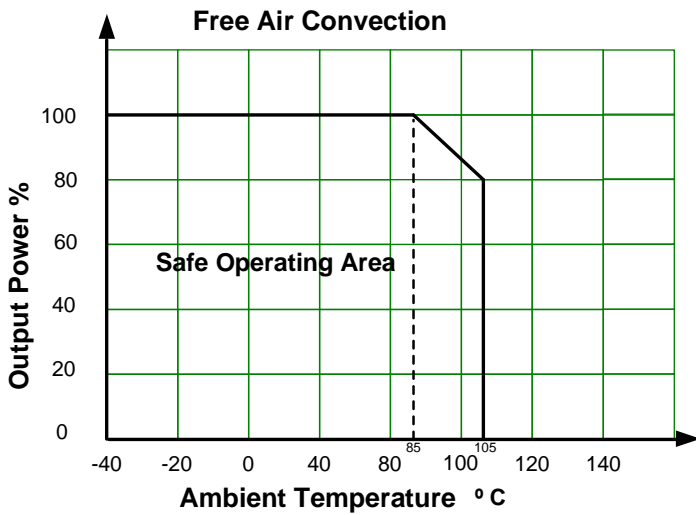
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Safety Specifications

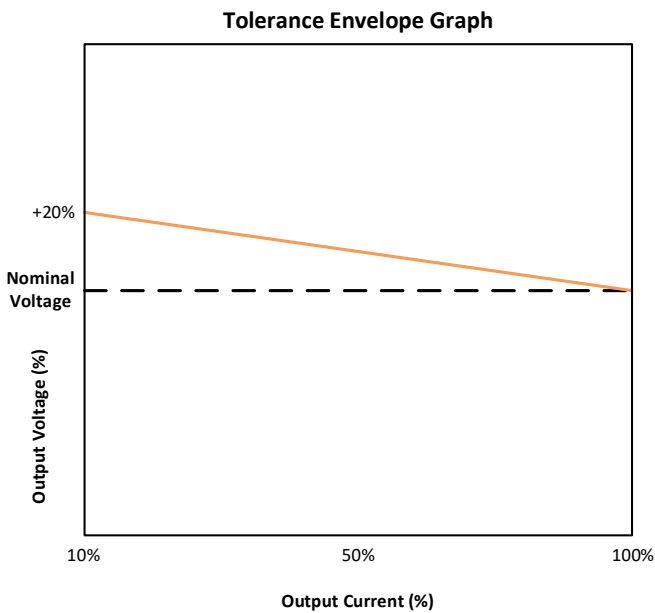
Parameters

| | | |
|-----------|---------------------------------------|---|
| Standards | Information technology Equipment | Design to meet IEC/EN/UL 62368-1 |
| | EMC - Conducted and radiated emission | CISPR32 / EN55032, class B with the recommended EMI circuit |
| | Electrostatic Discharge Immunity | IEC 61000-4-2 Air ±8KV, Contact ±6KV, Criteria B |

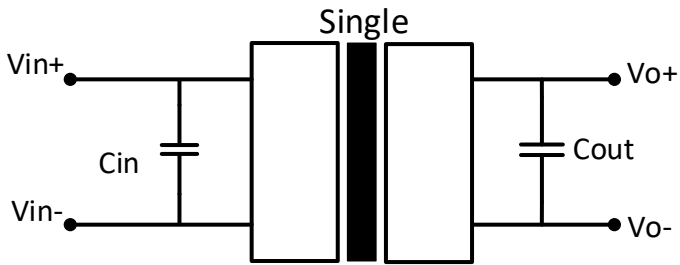
Derating



Output voltage tolerance

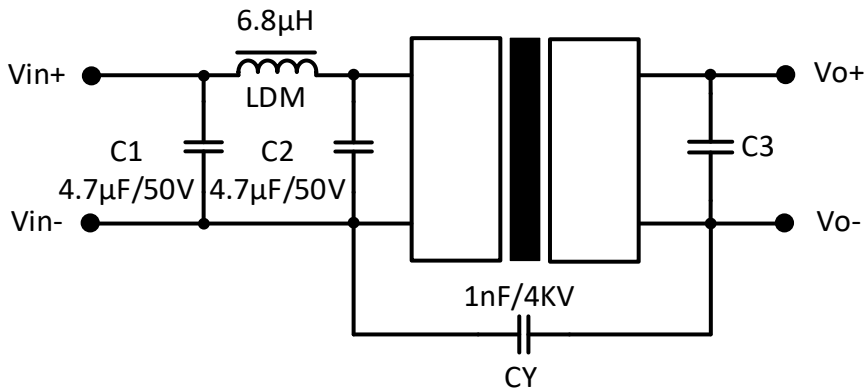


Typical application circuit



| Vin | Cin | Vout | Cout |
|-----|-----------------|------|-----------------|
| 5V | 4.7 μ F/25V | 5V | 10 μ F/16V |
| 12V | 2.2 μ F/25V | 9V | 2.2 μ F/16V |
| 15V | 2.2 μ F/25V | 12V | 2.2 μ F/25V |
| 24V | 1 μ F/50V | 15V | 1 μ F/25V |
| | | 24V | 1 μ F/50V |

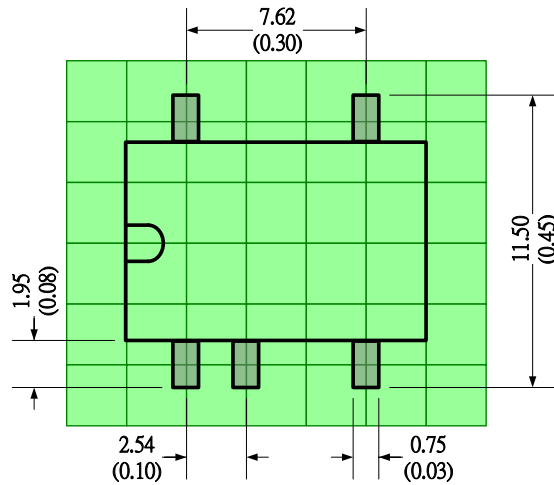
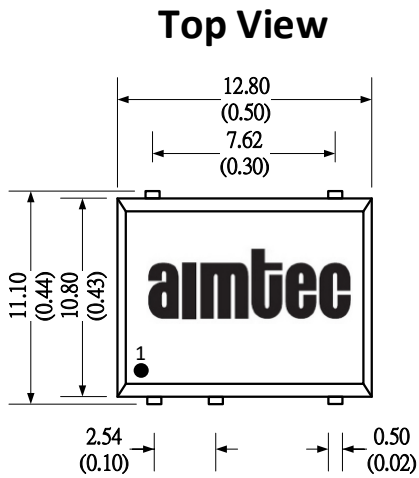
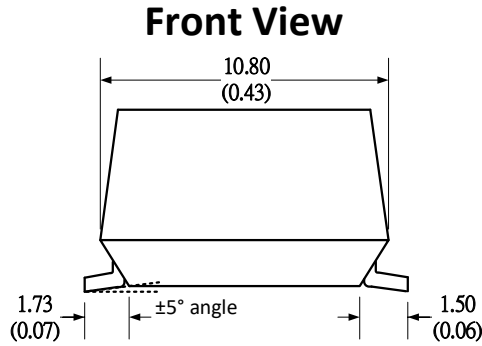
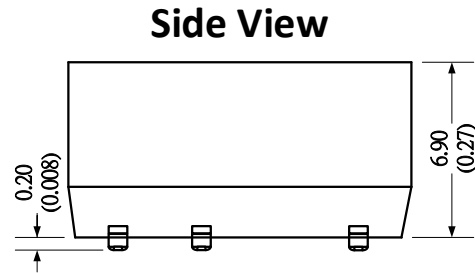
EMI Recommended circuit



C3: Refer to Cout in typical circuit.

Dimensions

For 24Vin/Vout models



| Pin Out Specifications | |
|------------------------|-----------|
| Pin | Single |
| 1 | -V Input |
| 2 | +V Input |
| 3 | - |
| 4 | -V Output |
| 5 | +V Output |
| 6 | - |
| 7 | - |
| 8 | NC |

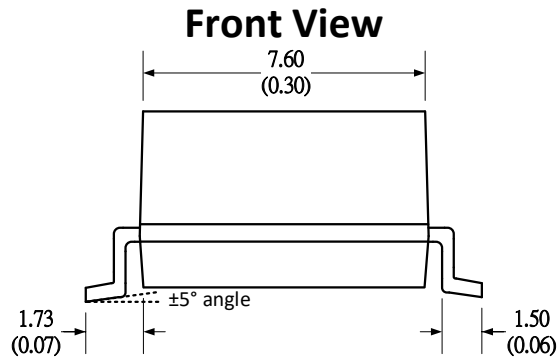
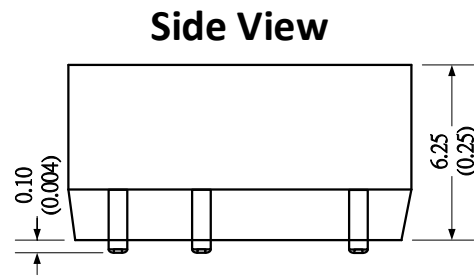
Note:

Unit: mm(inch)

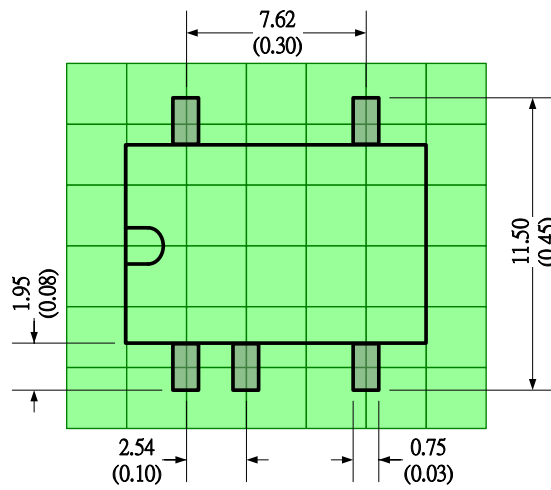
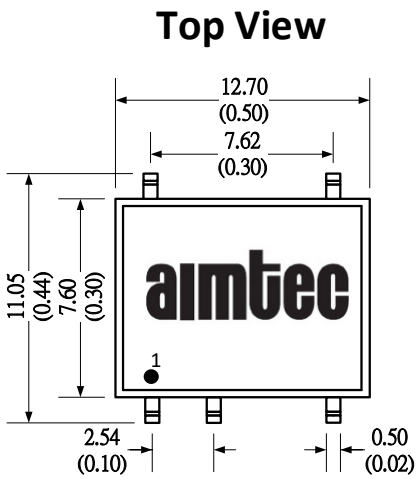
General tolerance: ±0.25 (0.01)

Pin tolerance: ±0.1 (0.004)

Other models



| Pin Out Specifications | |
|------------------------|-----------|
| Pin | Single |
| 1 | -V Input |
| 2 | +V Input |
| 3 | - |
| 4 | -V Output |
| 5 | +V Output |
| 6 | - |
| 7 | - |
| 8 | NC |



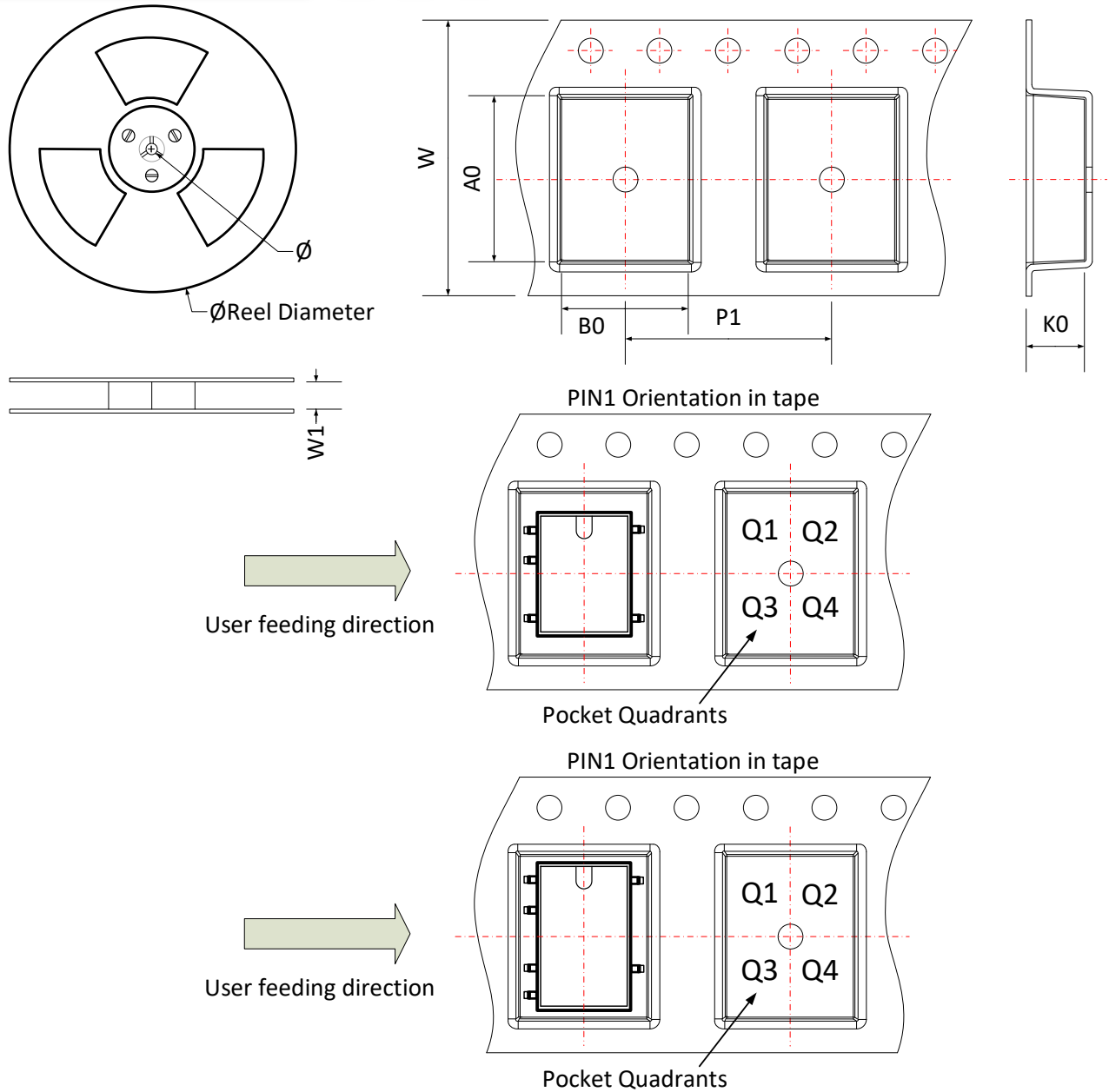
Note:

Unit: mm(inch)

General tolerance: ± 0.25 (0.01)

Pin tolerance: ± 0.1 (0.004)

Packing Information



| Device | Package Type | Pin | MPQ | Reel Diameter (mm) | Reel Width W1 (mm) | A0 | B0 | K0 | P1 | W | P1 Quadrant |
|------------------------|--------------|-----|-----|--------------------|--------------------|------|-------|-----|------|------|-------------|
| AM2LS-EZ Single output | SMD | 5 | 350 | | | 13.3 | 12.36 | 7.6 | 20.0 | 24.0 | Q1 |

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 label shown, including safety agency certifications on label, 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 chemical 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 than the ones listed in this datasheet. **7.** Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.