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AM1LS-EZ



SMD Package

The AM1LS-EZ is a 1W 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 3.3-24VDC as well as an output voltage of 3.3-24V. This compact SMD design will surely benefit your new system design.

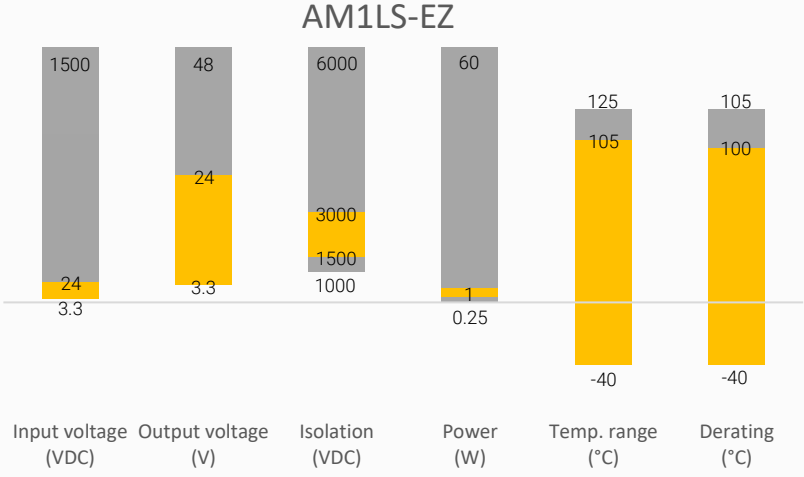
This new series offers great operating temperatures, from -40 to 105°C with full power up to 100°C. Also, an isolation of 1500VDC & 3000VDC for improved reliability and system safety as well as a great 3,500,000h MTBF come standard.

The AM1LS-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: 7.1mm
- Compact footprint and high-power Density
- Efficiency up to 87%
- Unregulated output

Summary



Training

Product Training Video (click to open)

Press Release

Coming Soon!

Application Notes

Applications



IoT | Industrial | Telecom | Portable Equipment

Model & Specifications

Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max (mA)	Isolation (VDC)	Maximum capacitive Load (µF)	Efficiency Typ. (%)
AM1LS-0303SEZ	3.3 (2.97-3.63)	3.3	303	1500	2400	76
AM1LS-0305SEZ	3.3 (2.97-3.63)	5	200	1500	2400	82
AM1LS-0309SEZ	3.3 (2.97-3.63)	9	112	1500	1000	83
AM1LS-0312SEZ	3.3 (2.97-3.63)	12	84	1500	470	84
AM1LS-0315SEZ	3.3 (2.97-3.63)	15	67	1500	330	84
AM1LS-0324SEZ	3.3 (2.97-3.63)	24	42	1500	100	85
AM1LS-0503SEZ	5 (4.5-5.5)	3.3	303	1500	2400	76
AM1LS-0505SEZ	5 (4.5-5.5)	5	200	1500	2400	82
AM1LS-0509SEZ	5 (4.5-5.5)	9	112	1500	1000	83
AM1LS-0512SEZ	5 (4.5-5.5)	12	84	1500	470	84
AM1LS-0515SEZ	5 (4.5-5.5)	15	67	1500	330	84
AM1LS-0524SEZ	5 (4.5-5.5)	24	42	1500	100	85
AM1LS-0903SEZ	9 (8.1-9.9)	3.3	303	1500	2400	76
AM1LS-0905SEZ	9 (8.1-9.9)	5	200	1500	2400	82
AM1LS-0909SEZ	9 (8.1-9.9)	9	112	1500	1000	83
AM1LS-0912SEZ	9 (8.1-9.9)	12	84	1500	470	84
AM1LS-0915SEZ	9 (8.1-9.9)	15	67	1500	330	84
AM1LS-0924SEZ	9 (8.1-9.9)	24	42	1500	100	85
AM1LS-1203SEZ	12 (9.6-14.4)	3.3	303	1500	2400	78
AM1LS-1205SEZ	12 (9.6-14.4)	5	200	1500	2400	82
AM1LS-1209SEZ	12 (9.6-14.4)	9	112	1500	1000	85
AM1LS-1212SEZ	12 (9.6-14.4)	12	84	1500	680	85
AM1LS-1215SEZ	12 (9.6-14.4)	15	67	1500	330	87
AM1LS-1224SEZ	12 (9.6-14.4)	24	42	1500	220	85
AM1LS-1503SEZ	15 (12-18)	3.3	303	1500	2400	78
AM1LS-1505SEZ	15 (12-18)	5	200	1500	2400	82
AM1LS-1509SEZ	15 (12-18)	9	112	1500	1000	85
AM1LS-1512SEZ	15 (12-18)	12	84	1500	680	85
AM1LS-1515SEZ	15 (12-18)	15	67	1500	330	87
AM1LS-1524SEZ	15 (12-18)	24	42	1500	220	85
AM1LS-2403SEZ	24 (19.2-28.8)	3.3	303	1500	2400	78
AM1LS-2405SEZ	24 (19.2-28.8)	5	200	1500	2400	82
AM1LS-2409SEZ	24 (19.2-28.8)	9	112	1500	1000	85
AM1LS-2412SEZ	24 (19.2-28.8)	12	84	1500	680	85
AM1LS-2415SEZ	24 (19.2-28.8)	15	67	1500	330	87
AM1LS-2424SEZ	24 (19.2-28.8)	24	42	1500	220	85
AM1LS-0303SH30EZ	3.3 (2.97-3.63)	3.3	303	3000	2400	76
AM1LS-0305SH30EZ	3.3 (2.97-3.63)	5	200	3000	2400	82
AM1LS-0309SH30EZ	3.3 (2.97-3.63)	9	112	3000	1000	83
AM1LS-0312SH30EZ	3.3 (2.97-3.63)	12	84	3000	470	84
AM1LS-0315SH30EZ	3.3 (2.97-3.63)	15	67	3000	330	84
AM1LS-0324SH30EZ	3.3 (2.97-3.63)	24	42	3000	100	85
AM1LS-0503SH30EZ	5 (4.5-5.5)	3.3	303	3000	2400	76
AM1LS-0505SH30EZ	5 (4.5-5.5)	5	200	3000	2400	82

AM1LS-0509SH30EZ	5 (4.5-5.5)	9	112	3000	1000	83
AM1LS-0512SH30EZ	5 (4.5-5.5)	12	84	3000	470	84
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AM1LS-2403SH30EZ	24 (19.2-28.8)	3.3	303	3000	2400	78
AM1LS-2405SH30EZ	24 (19.2-28.8)	5	200	3000	2400	82
AM1LS-2409SH30EZ	24 (19.2-28.8)	9	112	3000	1000	85
AM1LS-2412SH30EZ	24 (19.2-28.8)	12	84	3000	680	85
AM1LS-2415SH30EZ	24 (19.2-28.8)	15	67	3000	330	87
AM1LS-2424SH30EZ	24 (19.2-28.8)	24	42	3000	220	85

Note: Use suffix "TR" for tape & reel packing (ex. AM1LS-0505SEZTR).

Input Specification

Parameters	Conditions	Typical	Maximum	Units
Filter	Capacitor			
Voltage rating	Vo, Io Nom @Vin: 3.3V,5V,9V	±10		VDC
	Vo, Io Nom @ Vin:12V,15V,24V	±20		VDC
Absolute maximum rating	1 sec, max @Vin: 3.3V	-0.7 ~ 5		VDC
	1 sec, max @Vin: 5V	-0.7 ~ 9		VDC
	1 sec, max @Vin: 9V	-0.7 ~ 15		VDC
	1 sec, max @Vin: 12V	-0.7 ~ 18		VDC
	1 sec, max @Vin: 15V	-0.7 ~ 21		VDC
	1 sec, max @Vin: 24V	-0.7 ~ 30		VDC
Input reflected ripple current			15	

Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested I/O voltage	60 sec, leakage ≤ 0.5mA	>1500	--	VDC
	60 sec, leakage ≤ 0.5mA for H30 models	>3000	--	VDC
Resistance	500VDC	>1000	--	MΩ
Capacitance	I/O 100kHz/0.1V	20	--	pF

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	100% load	--	±5	%
Line regulation	Per 1% Vin change	1.2	--	%
Load regulation	10-100% load, 3.3Vout models	15	20	%
	10-100% load, 5Vout models	10	15	%
	10-100% load, 9Vout models	8	10	%
	10-100% load, 12Vout models	7	10	%
	10-100% load, 15Vout models	6	10	%
	10-100% load, 24Vout models	5	10	%
Ripple & Noise*	24Vout models	50	100	mV pk-pk
	Others	30	75	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

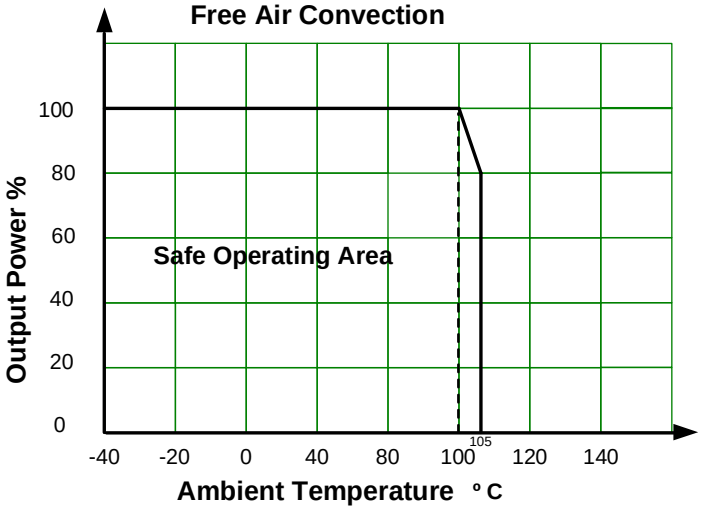
Parameters	Conditions	Typical	Maximum	Units
Switching frequency	Full load, nominal input, 3.3Vin models	215	--	KHz
	Full load, nominal input, 5Vin models	370	--	KHz
	Full load, nominal input, others	250	--	KHz
Short circuit protection	Continuous, Self-recovery			
Operating temperature	With derating at 100°C	-40 to +105	--	°C
Storage temperature	--	-55 to +125	--	°C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Case material	Black plastic (flammability to UL 94V-0)			
Weight	24Vin models, 24Vout models	1.28	--	g
	Others	1.2	--	g
Dimensions (L x W x H)	24Vin models, 24Vout models	0.50 x 0.44 x 0.28 inches (12.80 x 11.10 x 7.10 mm)		
	Others	0.50 x 0.44 x 0.25 inches (12.70 x 11.05 x 6.25 mm)		
MTBF	3 500 000 hrs (MIL-HDBK -217F, t=+25ºC) / 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.

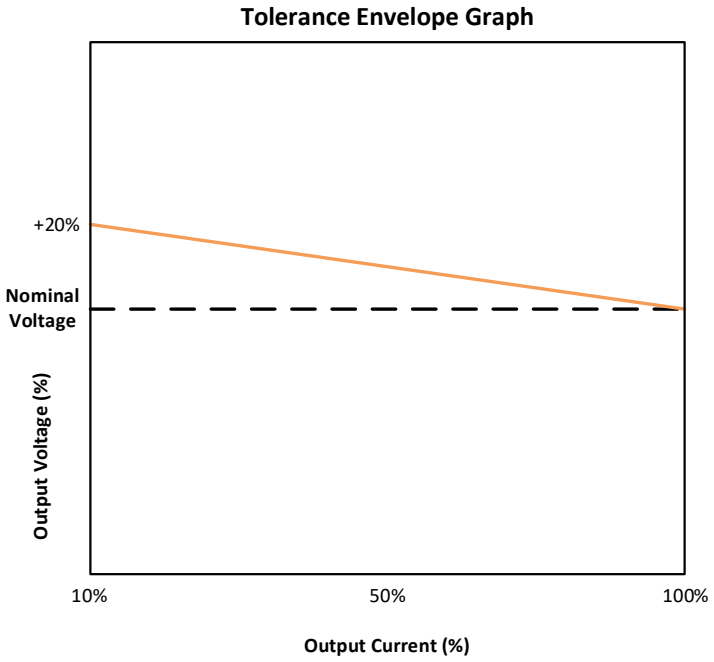
Safety Specifications

Parameters		
Agency approval	IEC/EN/UL 62368-1	
Standards	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

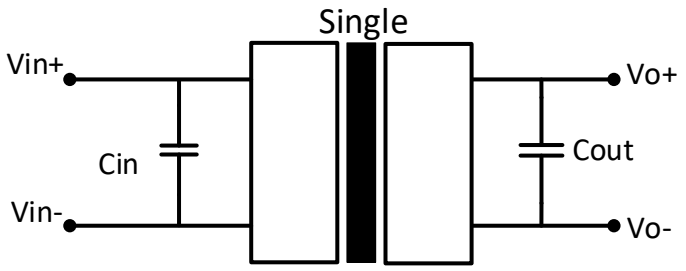
Derating



Output voltage tolerance

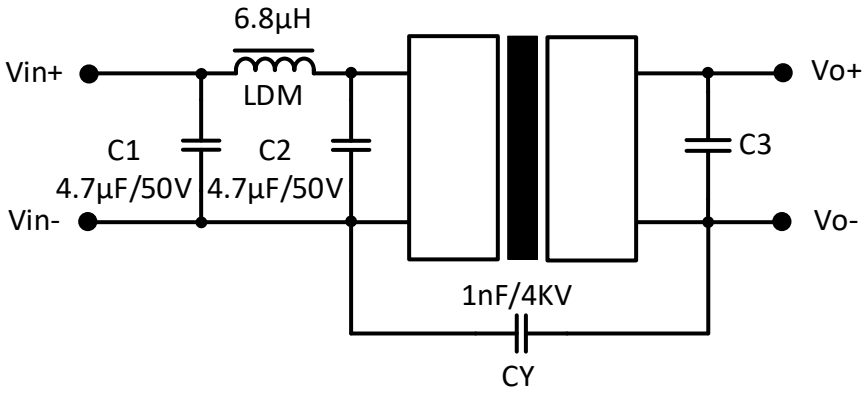


Typical application circuit



Vin	Cin	Vout	Cout
3.3V	4.7µF/25V	3.3V	10µF/16V
5V	4.7µF/25V	5V	10µF/16V
9V	4.7µF/25V	9V	2.2µF/16V
12V	2.2µF/25V	12V	2.2µF/25V
15V	2.2µF/25V	15V	1µF/25V
24V	1µF/50V	24V	1µF/50V

EMI Recommended circuit

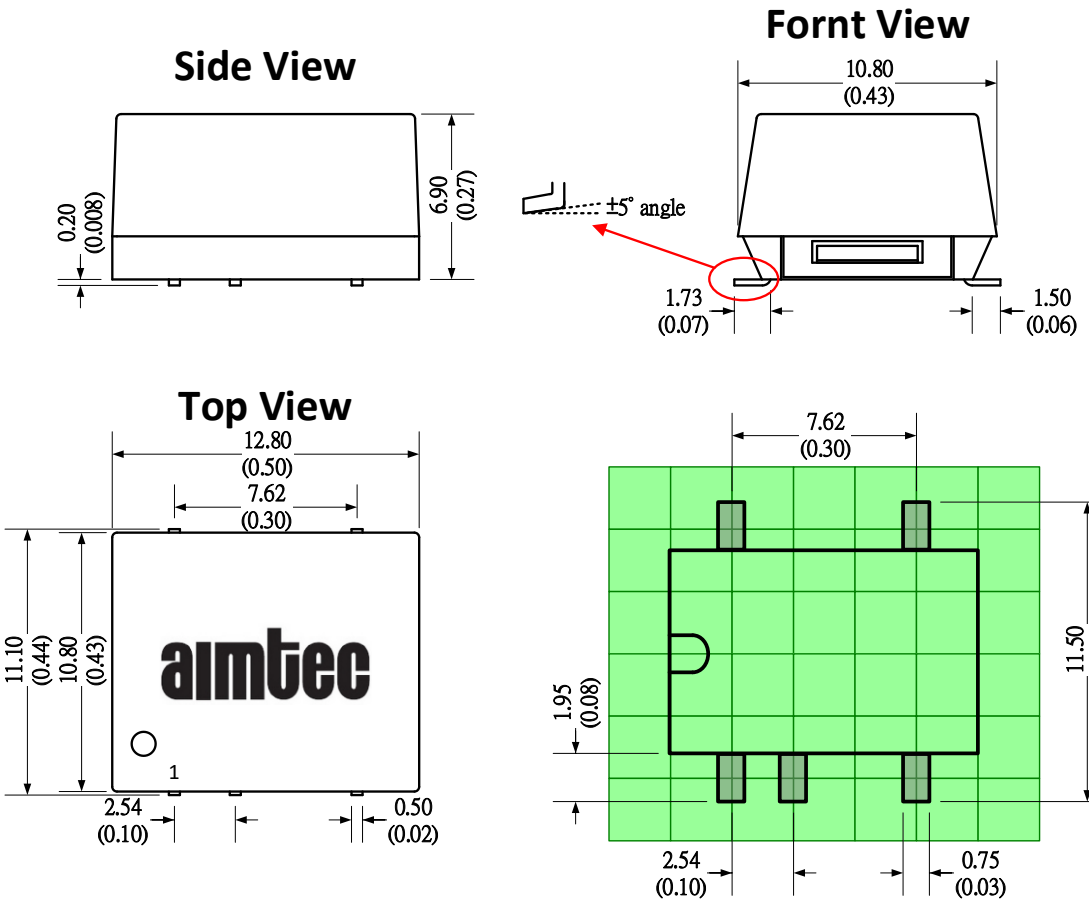


C3: Refer to Cout in typical circuit.

Dimensions

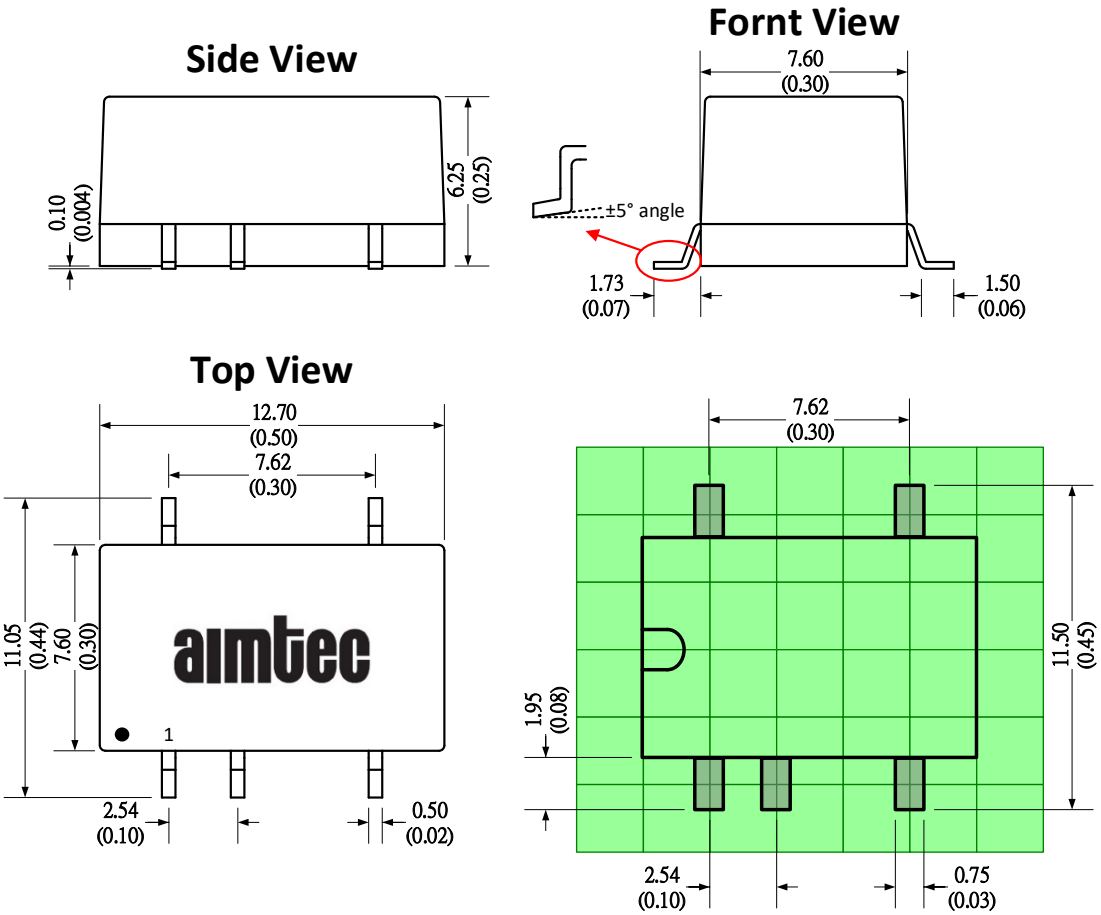
For 24Vin models and for 24Vout models

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)

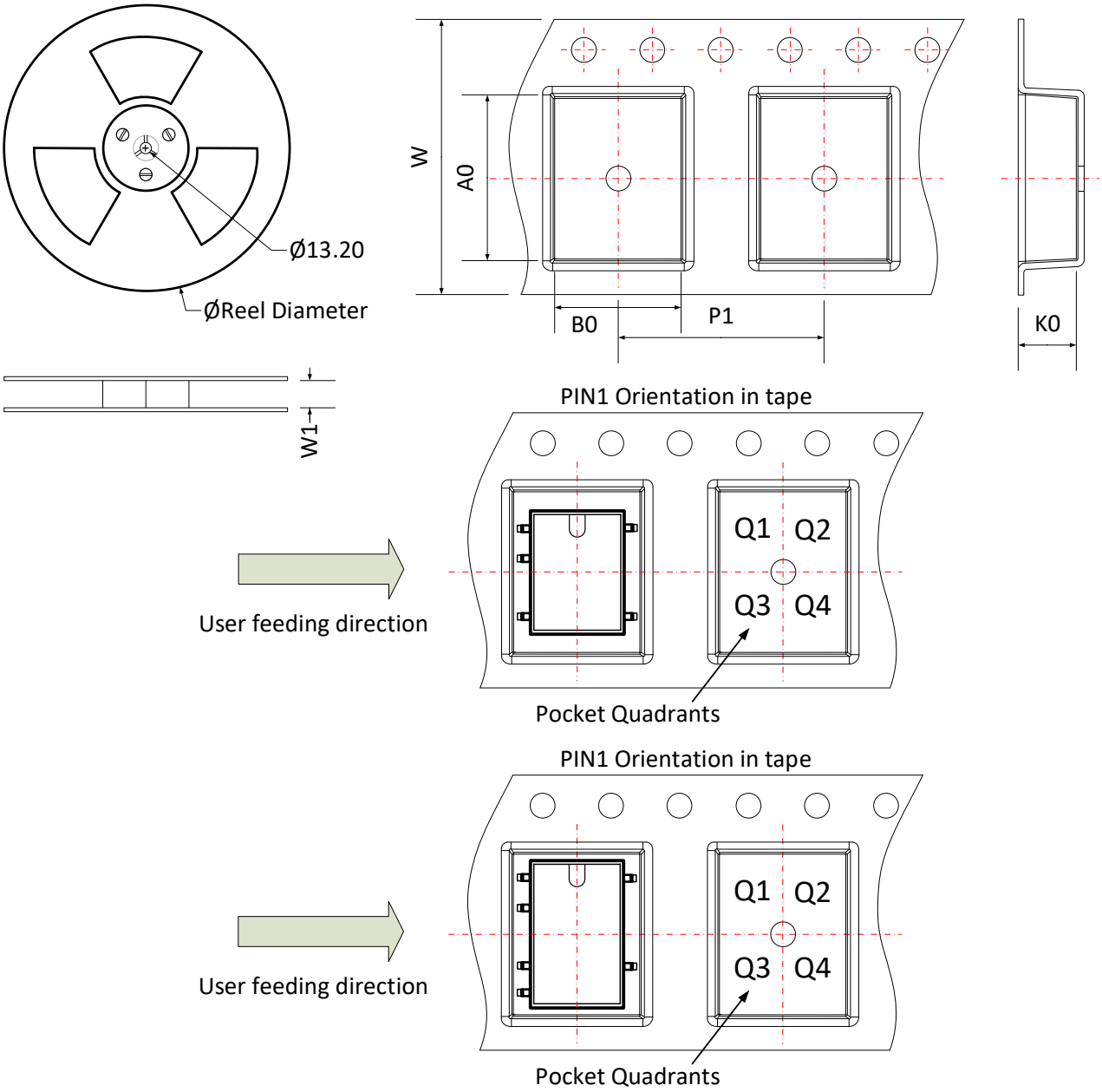
Other models



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
AM1LS-EZ Single output	SMD	5	500	330.0	24.4	13.5	12.0	7.0	16.0	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 the ones listed in this datasheet. **7.** Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.