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AM1LS-LPVZ



SMD

The new AM1LS-LPVZ is a DC/DC converter that offers much greater cost effectiveness due to material normalization and production automation which increases the reliability and performance of this new component. Offering a commercial input voltage range of 3.3-24VDC and an output voltage range from 3.3-24V, this series will offer many benefits to your new system design.

This new series offers great operating temperatures, from -40°C to 105°C with full power up to 85°C. It also features an isolation of 3000VDC for improved reliability and system safety. Furthermore, a higher MTBF of 3,500,000h and output short circuit protection (OSCP) come standard with the series.

The AM1LS-LPVZ is suitable for information technology, instrumentation, industrial applications, communication and civil applications.

Features

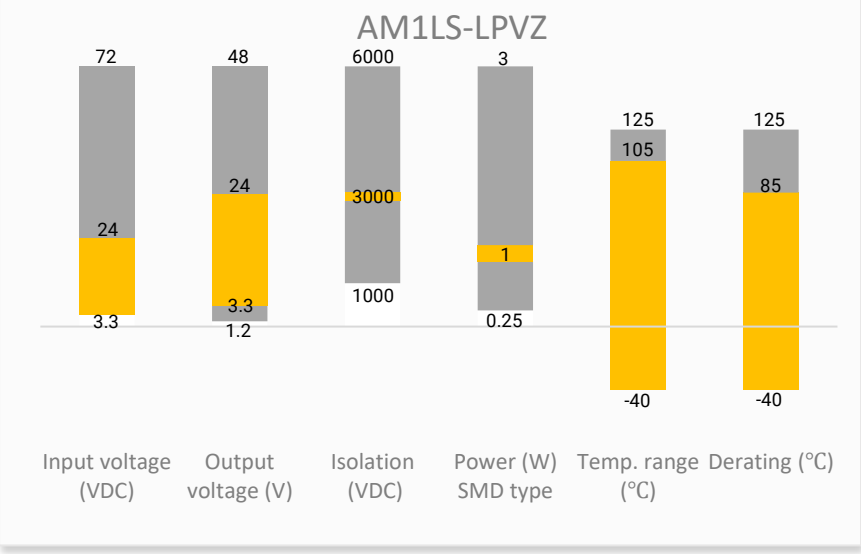
- No load input current as low as 3mA
- Operating Temp: -40 °C to +105 °C
- High I/O isolation voltage: 3000 VDC
- Output short circuit protection
- High efficiency up to 89%
- SMD type package, Industry standard pin-out

RoHS

3yr Warranty

CE

Summary



Training



Product Training Video (click to open)

Press Release

Coming Soon!

Application Notes

Applications

IoT

Industrial

Telecom

Instrumentation

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Models & Specifications

Single Output							
Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current Max (mA) Full Load	Output Current (mA) Full Load	Isolation (VDC)	Maximum Capacitive Load (µF)	Efficiency Full Load Typ. (%)
AM1LS-0303SH30LPVZ	3.3 (2.97-3.63)	3.3	365	303	3000	2400	82
AM1LS-0305SH30LPVZ	3.3 (2.97-3.63)	5	365	200	3000	2400	83
AM1LS-0309SH30LPVZ	3.3 (2.97-3.63)	9	365	111	3000	1000	84
AM1LS-0312SH30LPVZ	3.3 (2.97-3.63)	12	365	84	3000	560	85
AM1LS-0315SH30LPVZ	3.3 (2.97-3.63)	15	365	67	3000	560	85
AM1LS-0324SH30LPVZ	3.3 (2.97-3.63)	24	365	42	3000	220	85
AM1LS-0503SH30LPVZ	5 (4.5-5.5)	3.3	238	303	3000	2400	80
AM1LS-0505SH30LPVZ	5 (4.5-5.5)	5	238	200	3000	2400	84
AM1LS-0509SH30LPVZ	5 (4.5-5.5)	9	238	111	3000	1000	86
AM1LS-0512SH30LPVZ	5 (4.5-5.5)	12	238	84	3000	560	89
AM1LS-0515SH30LPVZ	5 (4.5-5.5)	15	238	67	3000	560	88
AM1LS-0524SH30LPVZ	5 (4.5-5.5)	24	238	42	3000	220	88
AM1LS-1203SH30LPVZ	12 (10.8-13.2)	3.3	97	303	3000	2400	83
AM1LS-1205SH30LPVZ	12 (10.8-13.2)	5	97	200	3000	2400	86
AM1LS-1209SH30LPVZ	12 (10.8-13.2)	9	97	111	3000	1000	89
AM1LS-1212SH30LPVZ	12 (10.8-13.2)	12	97	84	3000	560	89
AM1LS-1215SH30LPVZ	12 (10.8-13.2)	15	97	67	3000	560	89
AM1LS-1224SH30LPVZ	12 (10.8-13.2)	24	97	42	3000	220	89
AM1LS-1503SH30LPVZ	15 (13.5-16.5)	3.3	78	303	3000	2400	82
AM1LS-1505SH30LPVZ	15 (13.5-16.5)	5	78	200	3000	2400	85
AM1LS-1509SH30LPVZ	15 (13.5-16.5)	9	78	111	3000	1000	88
AM1LS-1512SH30LPVZ	15 (13.5-16.5)	12	78	84	3000	560	89
AM1LS-1515SH30LPVZ	15 (13.5-16.5)	15	78	67	3000	560	89
AM1LS-1524SH30LPVZ	15 (13.5-16.5)	24	78	42	3000	220	89
AM1LS-2403SH30LPVZ	24 (21.6-26.4)	3.3	48	303	3000	2400	84
AM1LS-2405SH30LPVZ	24 (21.6-26.4)	5	48	200	3000	2400	87
AM1LS-2409SH30LPVZ	24 (21.6-26.4)	9	48	111	3000	1000	89
AM1LS-2412SH30LPVZ	24 (21.6-26.4)	12	48	84	3000	560	88
AM1LS-2415SH30LPVZ	24 (21.6-26.4)	15	48	67	3000	560	89
AM1LS-2424SH30LPVZ	24 (21.6-26.4)	24	48	42	3000	220	89

Dual Output							
Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current Max (mA) Full Load	Output Current (mA) Full Load	Isolation (VDC)	Maximum Capacitive Load (µF)	Efficiency Full Load Typ. (%)
AM1LS-0303DH30LPVZ	3.3 (2.97-3.63)	±3.3	365	±152	3000	1000	82
AM1LS-0305DH30LPVZ	3.3 (2.97-3.63)	±5	365	±100	3000	1000	83
AM1LS-0503DH30LPVZ	5 (4.5-5.5)	±3.3	238	±152	3000	1000	80
AM1LS-0505DH30LPVZ	5 (4.5-5.5)	±5	238	±100	3000	1000	84
AM1LS-0509DH30LPVZ	5 (4.5-5.5)	±9	238	±56	3000	470	86
AM1LS-0512DH30LPVZ	5 (4.5-5.5)	±12	238	±42	3000	220	89
AM1LS-0515DH30LPVZ	5 (4.5-5.5)	±15	238	±34	3000	220	88
AM1LS-0524DH30LPVZ	5 (4.5-5.5)	±24	238	±21	3000	220	88

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AM1LS-1203DH30LPVZ	12 (10.8-13.2)	±3.3	97	±152	3000	1000	83
AM1LS-1205DH30LPVZ	12 (10.8-13.2)	±5	97	±100	3000	1000	86
AM1LS-1207DH30LPVZ	12 (10.8-13.2)	±7.5	97	±67	3000	470	86
AM1LS-1209DH30LPVZ	12 (10.8-13.2)	±9	97	±56	3000	470	89
AM1LS-1212DH30LPVZ	12 (10.8-13.2)	±12	97	±42	3000	220	89
AM1LS-1215DH30LPVZ	12 (10.8-13.2)	±15	97	±34	3000	220	89
AM1LS-1224DH30LPVZ	12 (10.8-13.2)	±24	97	±21	3000	220	89
AM1LS-1503DH30LPVZ	15 (13.5-16.5)	±3.3	78	±152	3000	1000	82
AM1LS-1505DH30LPVZ	15 (13.5-16.5)	±5	78	±100	3000	1000	85
AM1LS-1509DH30LPVZ	15 (13.5-16.5)	±9	78	±56	3000	470	88
AM1LS-1512DH30LPVZ	15 (13.5-16.5)	±12	78	±42	3000	220	89
AM1LS-1515DH30LPVZ	15 (13.5-16.5)	±15	78	±34	3000	220	89
AM1LS-1524DH30LPVZ	15 (13.5-16.5)	±24	78	±21	3000	220	89
AM1LS-2403DH30LPVZ	24 (21.6-26.4)	±3.3	48	±152	3000	1000	84
AM1LS-2405DH30LPVZ	24 (21.6-26.4)	±5	48	±100	3000	1000	87
AM1LS-2409DH30LPVZ	24 (21.6-26.4)	±9	48	±56	3000	470	89
AM1LS-2412DH30LPVZ	24 (21.6-26.4)	±12	48	±42	3000	220	88
AM1LS-2415DH30LPVZ	24 (21.6-26.4)	±15	48	±34	3000	220	89
AM1LS-2424DH30LPVZ	24 (21.6-26.4)	±24	48	±21	3000	220	89

Input Specification

Parameters	Conditions	Typical	Maximum	Units
Input current	No load	3~18		mA
Filter	Capacitor			
Absolute maximum rating	Maximum duration 1s, 3.3Vin	> -0.7	5	VDC
	Maximum duration 1s, 5Vin	> -0.7	9	VDC
	Maximum duration 1s, 12Vin	> -0.7	18	VDC
	Maximum duration 1s, 15Vin	> -0.7	21	VDC
	Maximum duration 1s, 24Vin	> -0.7	30	VDC
Input reflected ripple current		15		mA

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	See Typical Characteristic			
Line regulation	Per 1% Vin change, 3.3Vout models		±1.5	%
	Per 1% Vin change, Others		±1.2	%
Load regulation	10-100% load, 3.3/5Vout models	10	20	%
	10-100% load, 9/12/15Vout models	8	15	%
	10-100% load, other models	6	10	%
Temperature coefficient	Full load	±0.03		%/ °C
Ripple & Noise	20MHz bandwidth	45	120	mV pk-pk
Minimum load*		10		%

*** Operating with less than 10% of rated load will not cause permanent damage to the converters, but the performance data may not fall into the specifications, and reliable operating is not assured.**

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Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested I/O voltage	60 sec, 1mA max	>3000		VDC
Resistance	Input to output resistance at 500Vdc	>1000		MOhm
Capacitance	Input to output, 100KHz/0.1V	20		pF

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	Full load, nominal input voltage	220		KHz
Operating temperature	See derating graph	-40 to +105		°C
Storage temperature		-55 to +125		°C
Case temperature rise	Ambient temp 25°C	25		°C
Reflow Temperature	Maximum duration ≤60s over 217°C.		245	°C
Short circuit protection	Continuous, auto-recovery			
Cooling	Free air convection			
Vibration	10-150Hz, 5G, 0.75mm, along all axis			
Humidity	Non-condensing	>5	95	% RH
Case material	Heat resistant black Plastic (flammability to UL 94V-0)			
Weight		1.3		g
Dimensions (L x W x H)	0.60 x 0.45 x 0.29inches (15.24 x 11.40 x 7.25mm)			
MTBF	> 3 500 000 hrs (MIL-HDBK -217F, t=+25°C) / Full Load			
Moisture sensitivity level (MSL)	IPC/JEDEC J-STD-020D.1	Level 1		

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.

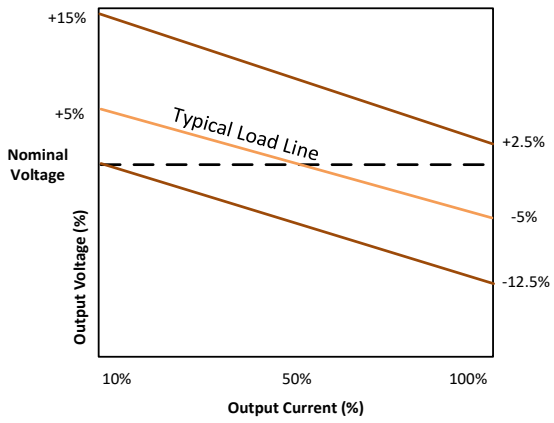
Safety Specifications

Parameters		
Standards	Designed to meet UL/EN/IEC 62368-1	
	EMC - Conducted and radiated emission	CISPR32/EN55032, Class B with the recommended EMC circuit
	Electrostatic Discharge Immunity	IEC/EN 61000-4-2 Air ±8KV, Contact ±4KV, Criteria B

Typical Characteristic

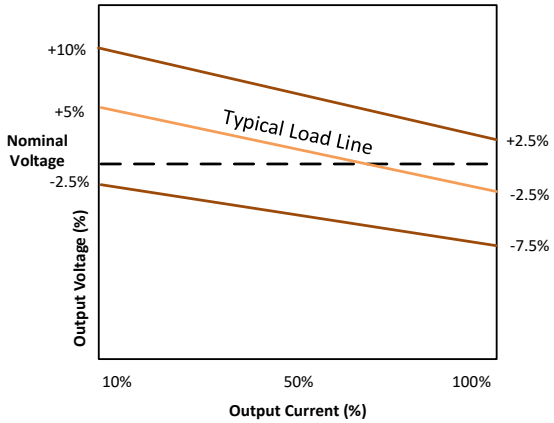
3.3Vout models

Tolerance Envelope Graph



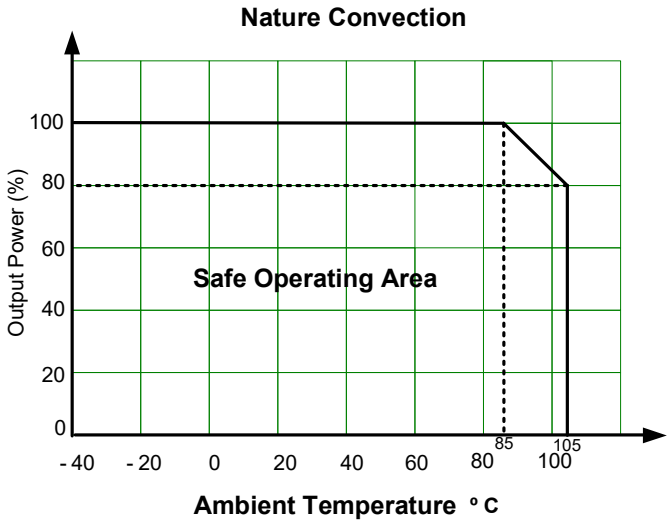
Others

Tolerance Envelope Graph

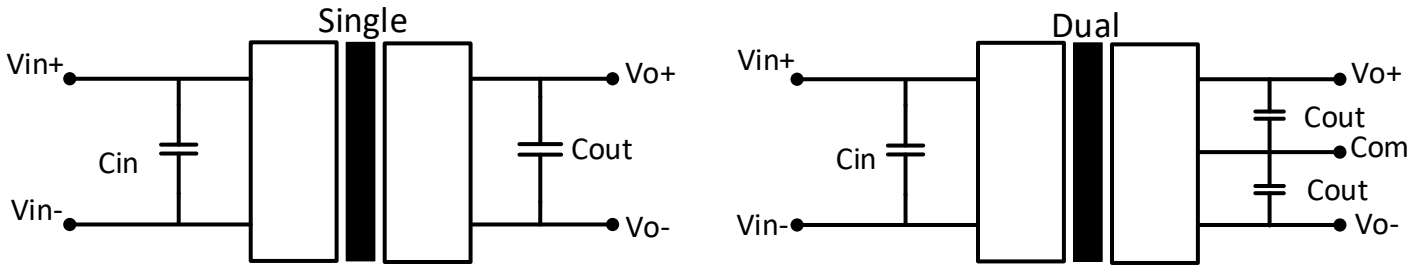


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Derating



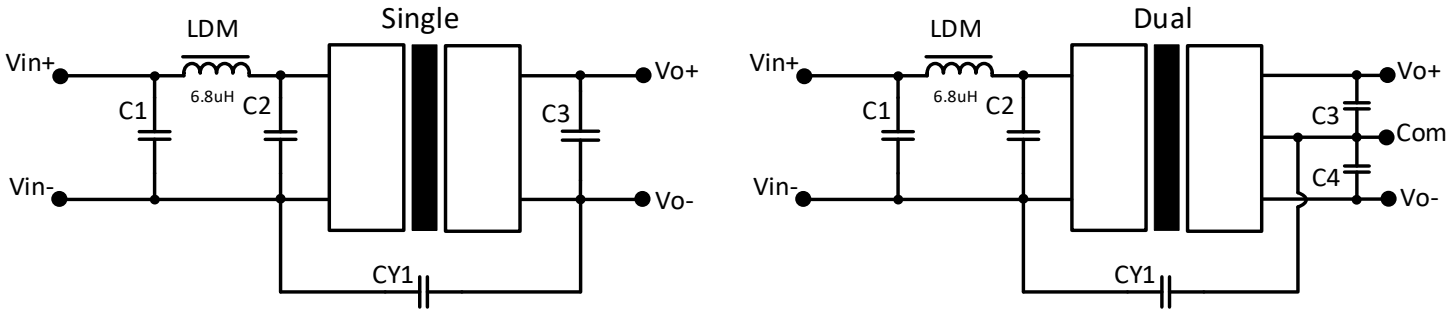
Typical Application Circuit



	Cin	Vout	Cout
3.3V	4.7μF/16V	3.3V	10μF/16V
5V	4.7μF/16V	5V	10μF/16V
12V	2.2μF/25V	9V	4.7μF/25V
15V	1μF/25V	12V	4.7μF/25V
24V	1μF/50V	15V	1μF/25V
		24V	0.47μF/50V

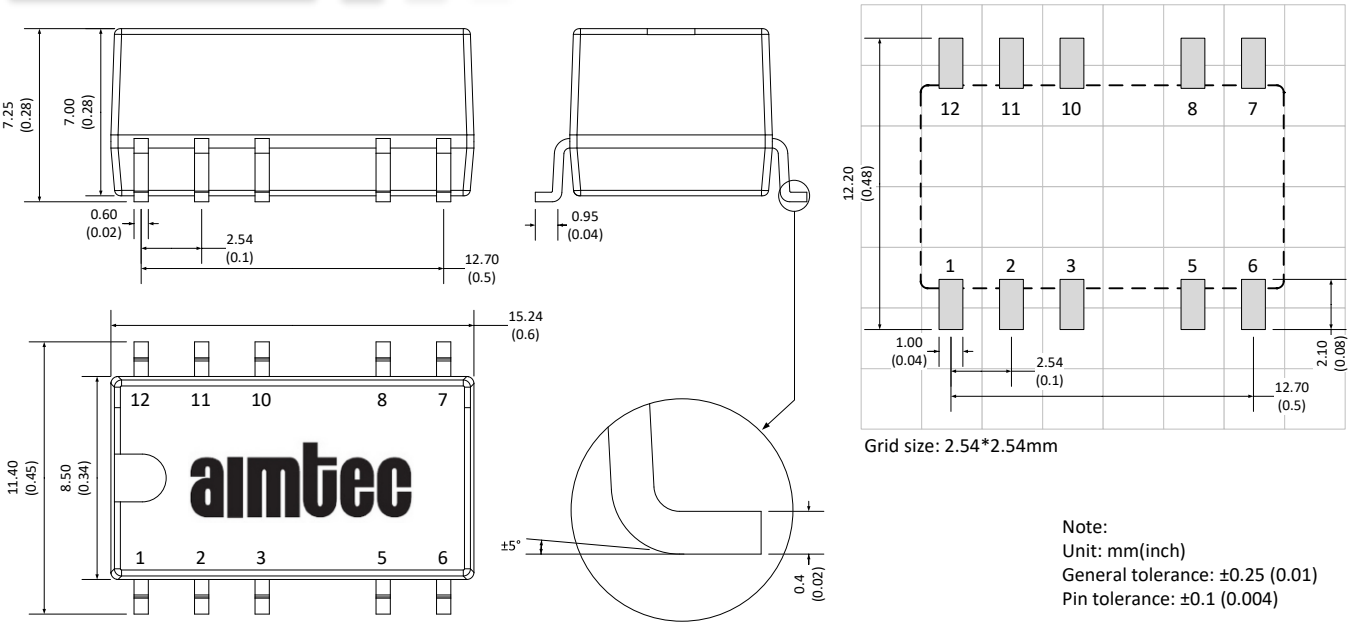
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EMC Recommended Circuit



C1/C2	C3/C4	CY1
4.7μF/50V	Refer to Cout in typical circuit	1nF/4kV

Dimensions



Grid size: 2.54*2.54mm

Note:
Unit: mm(inch)
General tolerance: ±0.25 (0.01)
Pin tolerance: ±0.1 (0.004)

Pin Out Specifications		
Pin	Single	Dual
1	-V Input	-V Input
2	+V Input	+V Input
5	-V Output	Common
6	NC	-V Output
8	+V Output	+V Output
Other Pins	NC	NC
NC: Pin to be isolated from circuitry		

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