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AM1PS-LPZ



The AM1PS-LPZ is a 1W DIP8 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 DIP8 design will surely benefit your new system design.

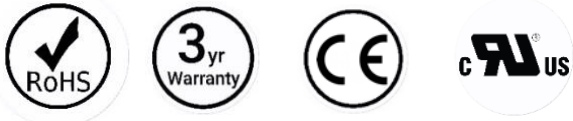
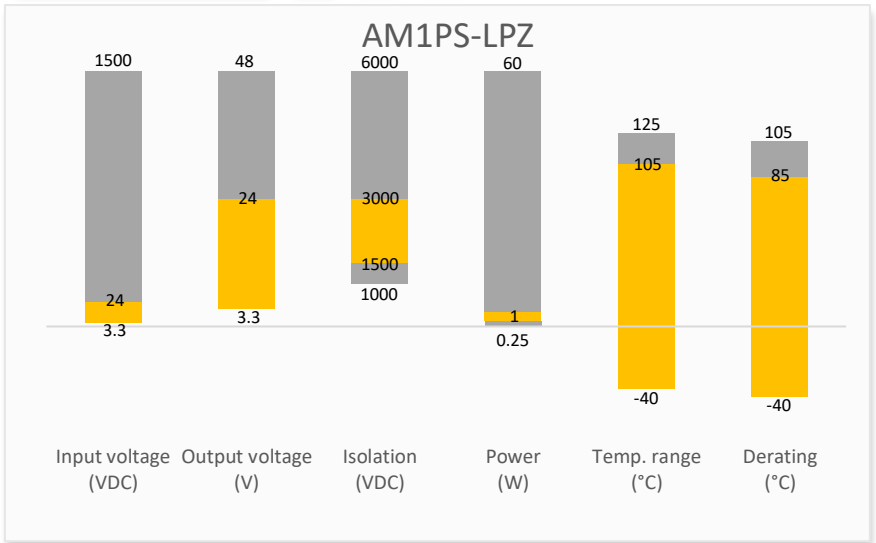
This new series offers great operating temperatures, from -40 to 105°C with full power up to 85°C. Also, an isolation of 1500VDC or 3000VDC for improved reliability and system safety as well as a great 3,500,000h MTBF come standard.

The AM1PS-LPZ is suitable for instrumentation, industrial controls, industrial applications, communication and IoT applications.

Features

- High I/O Isolation of 1500VDC or 3000VDC
- Continuous Short circuit protection
- Operating Temp: -40 °C to +105 °C
- Industry standard DIP8 pin-out
- Efficiency up to 89%
- Unregulated output

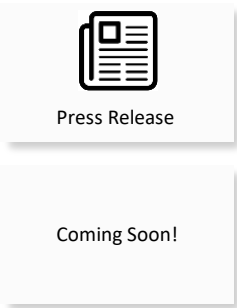
Summary



Training



Product Training Video  
(click to open)



Application Notes

Applications



## Models & Specifications



### Single Output

Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current Full   No load typ. (mA)	Output Current max   min (mA)*	Isolation (VDC)	Maximum capacitive Load (μF)	Efficiency Typ. (%)
AM1PS-0303SLPZ	3.3 (2.97-3.63)	3.3	356 / 10	303 / 30	1500	2400	82
AM1PS-0305SLPZ	3.3 (2.97-3.63)	5	356 / 10	200 / 20	1500	2400	83
AM1PS-0309SLPZ	3.3 (2.97-3.63)	9	356 / 10	111 / 12	1500	1000	84
AM1PS-0312SLPZ	3.3 (2.97-3.63)	12	356 / 10	84 / 9	1500	560	85
AM1PS-0315SLPZ	3.3 (2.97-3.63)	15	356 / 10	67 / 7	1500	560	85
AM1PS-0324SLPZ	3.3 (2.97-3.63)	24	356 / 10	42 / 4	1500	220	85
AM1PS-0503SLPZ	5 (4.5-5.5)	3.3	238 / 10	303 / 30	1500	2400	80
AM1PS-0505SLPZ*	5 (4.5-5.5)	5	238 / 10	200 / 20	1500	2400	84
AM1PS-0509SLPZ	5 (4.5-5.5)	9	238 / 10	111 / 12	1500	1000	86
AM1PS-0512SLPZ*	5 (4.5-5.5)	12	238 / 10	84 / 9	1500	560	89
AM1PS-0515SLPZ	5 (4.5-5.5)	15	238 / 10	67 / 7	1500	560	88
AM1PS-0524SLPZ	5 (4.5-5.5)	24	238 / 10	42 / 4	1500	220	88
AM1PS-1203SLPZ	12 (10.8-13.2)	3.3	95 / 10	303 / 30	1500	2400	83
AM1PS-1205SLPZ	12 (10.8-13.2)	5	95 / 10	200 / 20	1500	2400	86
AM1PS-1209SLPZ	12 (10.8-13.2)	9	95 / 10	111 / 12	1500	1000	89
AM1PS-1212SLPZ	12 (10.8-13.2)	12	95 / 10	84 / 9	1500	560	89
AM1PS-1215SLPZ	12 (10.8-13.2)	15	95 / 10	67 / 7	1500	560	89
AM1PS-1224SLPZ	12 (10.8-13.2)	24	95 / 10	42 / 5	1500	220	89
AM1PS-1503SLPZ	15 (13.5-16.5)	3.3	76 / 10	303 / 30	1500	2400	82
AM1PS-1505SLPZ	15 (13.5-16.5)	5	76 / 10	200 / 20	1500	2400	85
AM1PS-1509SLPZ	15 (13.5-16.5)	9	76 / 10	111 / 12	1500	1000	88
AM1PS-1512SLPZ	15 (13.5-16.5)	12	76 / 10	84 / 9	1500	560	89
AM1PS-1515SLPZ	15 (13.5-16.5)	15	76 / 10	67 / 7	1500	560	89
AM1PS-1524SLPZ	15 (13.5-16.5)	24	76 / 10	42 / 5	1500	220	89
AM1PS-2403SLPZ	24 (21.6-26.4)	3.3	47 / 10	303 / 30	1500	2400	84
AM1PS-2405SLPZ	24 (21.6-26.4)	5	47 / 10	200 / 20	1500	2400	87
AM1PS-2409SLPZ	24 (21.6-26.4)	9	47 / 10	111 / 12	1500	1000	89
AM1PS-2412SLPZ	24 (21.6-26.4)	12	47 / 10	84 / 9	1500	560	88
AM1PS-2415SLPZ	24 (21.6-26.4)	15	47 / 10	67 / 7	1500	560	89
AM1PS-2424SLPZ	24 (21.6-26.4)	24	47 / 10	42 / 5	1500	220	89
AM1PS-0303SH30LPZ	3.3 (2.97-3.63)	3.3	356 / 10	303 / 30	3000	2400	82
AM1PS-0305SH30LPZ	3.3 (2.97-3.63)	5	356 / 10	200 / 20	3000	2400	83
AM1PS-0309SH30LPZ	3.3 (2.97-3.63)	9	356 / 10	111 / 12	3000	1000	84
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AM1PS-2424SH30LPZ	24 (21.6-26.4)	24	47 / 10	42 / 5	3000	220	89

\* Performance will be degraded if the load is not within the output current range.

### Input Specification

Parameters	Conditions	Typical	Maximum	Units
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 output voltage tolerance			
Line regulation	Per 1% Vin change, 3.3Vout models	--	±1.5	%
	Per 1% Vin change, other models	--	±1.2	%
Load regulation	10-100% load, 3.3/5Vout models	10	15	%
	10-100% load, others	8	10	%
Ripple & Noise*	20MHz bandwidth	45	120	mV pk-pk
Temperature coefficient	Full load	±0.02	--	%/°C

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

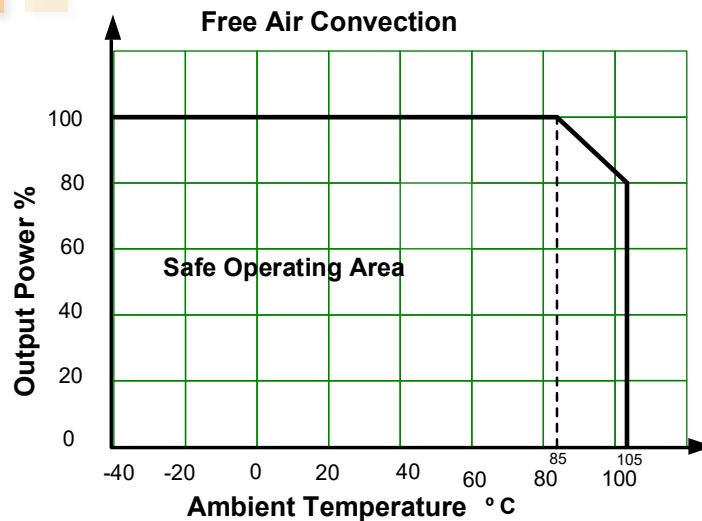
### Isolation Specification

Parameters	Conditions	Typical	Maximum	Units
Tested I/O voltage	60 sec, leakage ≤ 1mA, H30 models	>3000	--	VDC
	60 sec, leakage ≤ 1mA, other models	>1500	--	VDC
Resistance	500VDC	>1000	--	MΩ
Capacitance	100kHz/0.1V	20	--	pF

General Specifications				
Parameters	Conditions	Typical	Maximum	Units
Switching frequency	Full load, nominal input	220	--	KHz
Short circuit protection	Continuous, Auto recovery			
Operating temperature	With derating	-40 to +105	--	°C
Storage temperature		-55 to +125	--	°C
Case temperature rise	Ta = 25°C, Full load	25	--	°C
Manual soldering temperature	1.5mm away from case, duration ≤ 10sec	--	300	°C
Cooling	Free air convection			
Humidity	Non-condensing	>5	95	% RH
Vibration	10-150Hz, 5G, 0.75mm, along all axis			
Case material	Black plastic (flammability to UL 94V-0)			
Weight		1.8	--	g
Dimensions (L x W x H)		0.50 x 0.40 x 0.28 inches (12.70 x 10.10 x 7.00 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.				

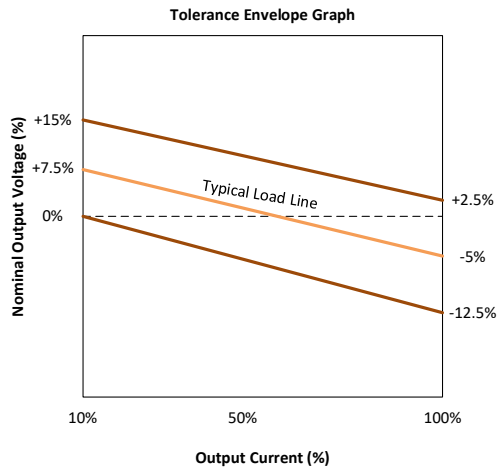
Safety Specifications		
Parameters		
Agency approvals	UL62368-1 models marked with * only	
Standards	Information technology equipment	Designed to meet UL/EN/IEC62368-1
	EMC - Conducted and radiated emission	CISPR32 / EN55032, class B with the recommended EMC circuit
	Electrostatic Discharge Immunity	EN/IEC 61000-4-2 Contact ±6kV, Air ±8kV, perf. Criteria B

## Derating

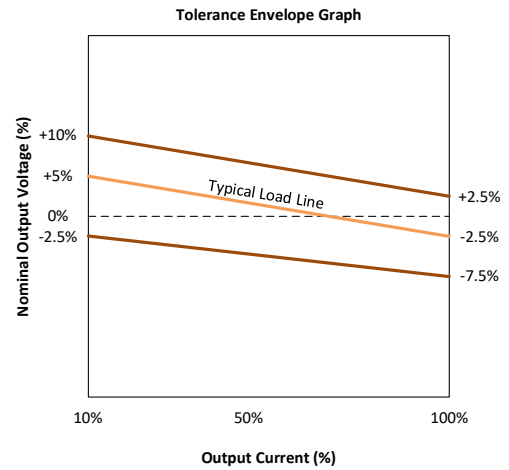


## Output voltage tolerance

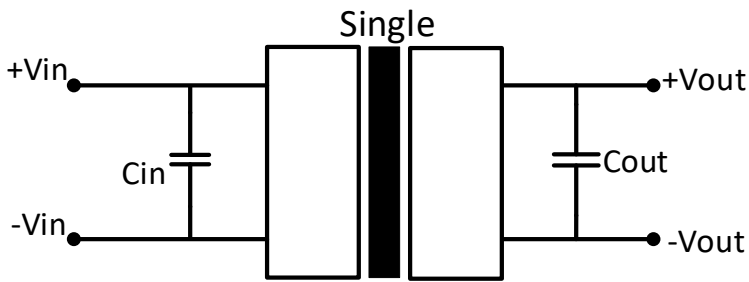
### 3.3Vout models



### Others



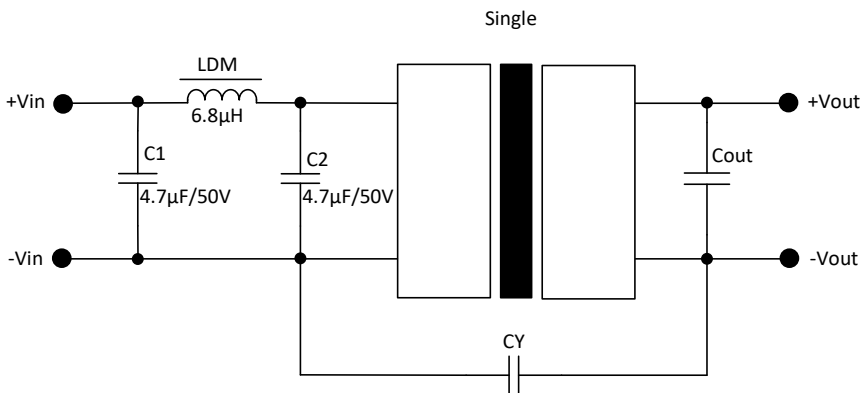
## Typical application circuit



Vin	Cin
3.3V	4.7μF, 16V
5V	4.7μF, 16V
12V	2.2μF, 25V
15V	1μF, 25V
24V	1μF, 50V

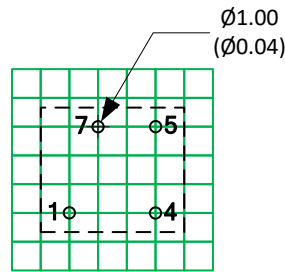
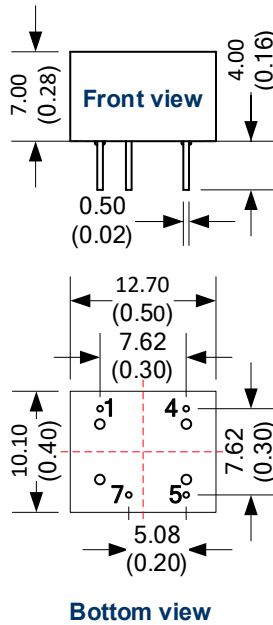
Vout	Cout
3.3V	10μF, 16V
5V	10μF, 16V
9V	4.7μF, 25V
12V	4.7μF, 25V
15V	1μF, 25V
24V	0.47μF, 50V

## Recommended EMC circuit



Models	CY
1500VDC	1nF/2KV
3000VDC	1nF/4KV

## Dimensions



Grid size: 2.54\*2.54mm

Note:  
Unit: mm(inch)  
General tolerance:  $\pm 0.50$  ( $\pm 0.02$ )  
Pin tolerance:  $\pm 0.10$  ( $\pm 0.004$ )

Pin Out Specifications	
Pin	Single output
1	-V Input
4	+V Input
5	+V Output
7	-V Output

**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).