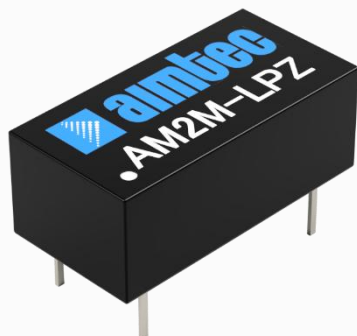


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AM2M-LPZ



DIP14 Package

The AM2M-LPZ is a 2W DIP14 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 DIP14 design will surely benefit your new system design.

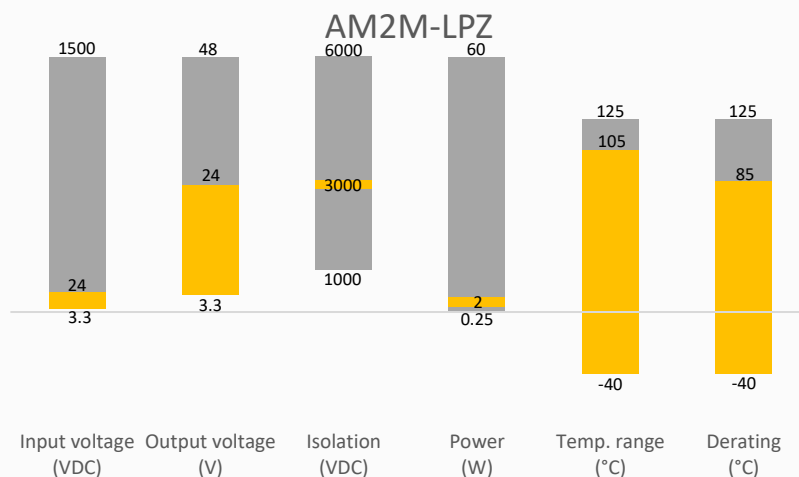
This new series offers great operating temperatures, from -40 to 105°C with full power up to 85°C. Also, an isolation of 3000VDC for improved reliability and system safety as well as a great 3,500,000h MTBF come standard.

The AM2M-LPZ is suitable for instrumentation, industrial controls, industrial applications, communication and IoT applications.

Features

- High I/O Isolation of 3000VDC
- Continuous Short circuit protection
- Operating Temp: -40 °C to +105 °C
- Industry standard DIP14 pin-out
- Efficiency up to 90%
- Unregulated output

Summary



Training



Product Training Video
(click to open)



Press Release

Coming Soon!

Application Notes

Applications



IoT



Industrial



Telecom



Portable Equipment

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. (%)
AM2M-0303SH30LPZ	3.3 (2.97-3.63)	3.3	768 / 4	400 / 40	3000	2400	82
AM2M-0305SH30LPZ	3.3 (2.97-3.63)	5	768 / 4	400 / 40	3000	2400	83
AM2M-0309SH30LPZ	3.3 (2.97-3.63)	9	768 / 4	222 / 22	3000	1000	84
AM2M-0312SH30LPZ	3.3 (2.97-3.63)	12	768 / 4	167 / 17	3000	820	85
AM2M-0503SH30LPZ	5 (4.5-5.5)	3.3	506 / 4	400 / 40	3000	2400	83
AM2M-0505SH30LPZ	5 (4.5-5.5)	5	506 / 4	400 / 40	3000	2400	85
AM2M-0509SH30LPZ	5 (4.5-5.5)	9	506 / 4	222 / 22	3000	1000	85
AM2M-0512SH30LPZ	5 (4.5-5.5)	12	506 / 4	167 / 17	3000	820	86
AM2M-0515SH30LPZ	5 (4.5-5.5)	15	506 / 4	133 / 13	3000	680	87
AM2M-0524SH30LPZ	5 (4.5-5.5)	24	506 / 4	83 / 8	3000	560	88
AM2M-1203SH30LPZ	12 (10.8-13.2)	3.3	208 / 4	400 / 40	3000	2400	84
AM2M-1205SH30LPZ	12 (10.8-13.2)	5	208 / 4	400 / 40	3000	2400	85
AM2M-1209SH30LPZ	12 (10.8-13.2)	9	208 / 4	222 / 23	3000	1000	86
AM2M-1212SH30LPZ	12 (10.8-13.2)	12	208 / 4	167 / 17	3000	820	87
AM2M-1215SH30LPZ	12 (10.8-13.2)	15	208 / 4	133 / 13	3000	680	88
AM2M-1224SH30LPZ	12 (10.8-13.2)	24	208 / 4	83 / 8	3000	560	89
AM2M-1503SH30LPZ	15 (13.5-16.5)	3.3	167 / 4	400 / 40	3000	2400	84
AM2M-1505SH30LPZ	15 (13.5-16.5)	5	167 / 4	400 / 40	3000	2400	85
AM2M-1509SH30LPZ	15 (13.5-16.5)	9	167 / 4	222 / 22	3000	1000	86
AM2M-1512SH30LPZ	15 (13.5-16.5)	12	167 / 4	167 / 17	3000	820	87
AM2M-1515SH30LPZ	15 (13.5-16.5)	15	167 / 4	133 / 13	3000	680	88
AM2M-1524SH30LPZ	15 (13.5-16.5)	24	167 / 4	83 / 8	3000	560	89
AM2M-2403SH30LPZ	24 (21.6-26.4)	3.3	104 / 4	400 / 40	3000	2400	84
AM2M-2405SH30LPZ	24 (21.6-26.4)	5	104 / 4	400 / 40	3000	2400	86
AM2M-2409SH30LPZ	24 (21.6-26.4)	9	104 / 4	222 / 22	3000	1000	87
AM2M-2412SH30LPZ	24 (21.6-26.4)	12	104 / 4	167 / 17	3000	820	88
AM2M-2415SH30LPZ	24 (21.6-26.4)	15	104 / 4	133 / 13	3000	680	89
AM2M-2424SH30LPZ	24 (21.6-26.4)	24	104 / 4	83 / 8	3000	560	90

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

Dual 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. (%)
AM2M-0503DH30LPZ	5 (4.5-5.5)	±3.3	506 / 4	±303 / ±30	3000	±1000	83
AM2M-0505DH30LPZ	5 (4.5-5.5)	±5	506 / 4	±200 / ±20	3000	±1000	85
AM2M-0509DH30LPZ	5 (4.5-5.5)	±9	506 / 4	±111 / ±11	3000	±560	85
AM2M-0512DH30LPZ	5 (4.5-5.5)	±12	506 / 4	±83 / ±8	3000	±560	86
AM2M-0515DH30LPZ	5 (4.5-5.5)	±15	506 / 4	±67 / ±7	3000	±220	87
AM2M-0524DH30LPZ	5 (4.5-5.5)	±24	506 / 4	±42 / ±4	3000	±100	87
AM2M-1203DH30LPZ	12 (10.8-13.2)	±3.3	208 / 4	±303 / ±30	3000	±1000	84
AM2M-1205DH30LPZ	12 (10.8-13.2)	±5	208 / 4	±200 / ±20	3000	±1000	85

AM2M-1209DH30LPZ	12 (10.8-13.2)	±9	208 / 4	±111 / ±11	3000	±560	86
AM2M-1212DH30LPZ	12 (10.8-13.2)	±12	208 / 4	±83 / ±8	3000	±560	87
AM2M-1215DH30LPZ	12 (10.8-13.2)	±15	208 / 4	±67 / ±7	3000	±220	88
AM2M-1224DH30LPZ	12 (10.8-13.2)	±24	208 / 4	±42 / ±4	3000	±100	86
AM2M-1505DH30LPZ	15 (13.5-16.5)	±5	167 / 4	±200 / ±20	3000	±1000	85
AM2M-1509DH30LPZ	15 (13.5-16.5)	±9	167 / 4	±111 / ±11	3000	±560	86
AM2M-1512DH30LPZ	15 (13.5-16.5)	±12	167 / 4	±83 / ±8	3000	±560	87
AM2M-1515DH30LPZ	15 (13.5-16.5)	±15	167 / 4	±67 / ±7	3000	±220	88
AM2M-2403DH30LPZ	24 (21.6-26.4)	±3.3	104 / 4	±303 / ±30	3000	±1000	84
AM2M-2405DH30LPZ	24 (21.6-26.4)	±5	104 / 4	±200 / ±20	3000	±1000	86
AM2M-2409DH30LPZ	24 (21.6-26.4)	±9	104 / 4	±111 / ±11	3000	±560	87
AM2M-2412DH30LPZ	24 (21.6-26.4)	±12	104 / 4	±83 / ±8	3000	±560	88
AM2M-2415DH30LPZ	24 (21.6-26.4)	±15	104 / 4	±67 / ±7	3000	±220	89
AM2M-2424DH30LPZ	24 (21.6-26.4)	±24	104 / 4	±42 / ±4	3000	±100	86

* 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

Isolation Specification

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

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	See output voltage tolerance	10	16	%
Line regulation	Per 1% Vin change, 3.3Vout models		±1.5	%
	Per 1% Vin change, other models		±1.2	%
Load regulation	10-100% load, 3.3Vout models	14	20	%
	10-100% load, 5Vout models	10	15	%
	10-100% load, 9Vout models	9	15	%
	10-100% load, 12Vout models	8	15	%
	10-100% load, 15Vout models	7	15	%
	10-100% load, 24Vout models	6	15	%
Ripple & Noise*		60	150	mV pk-pk
Temperature coefficient			±0.03	%/°C

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

General Specifications

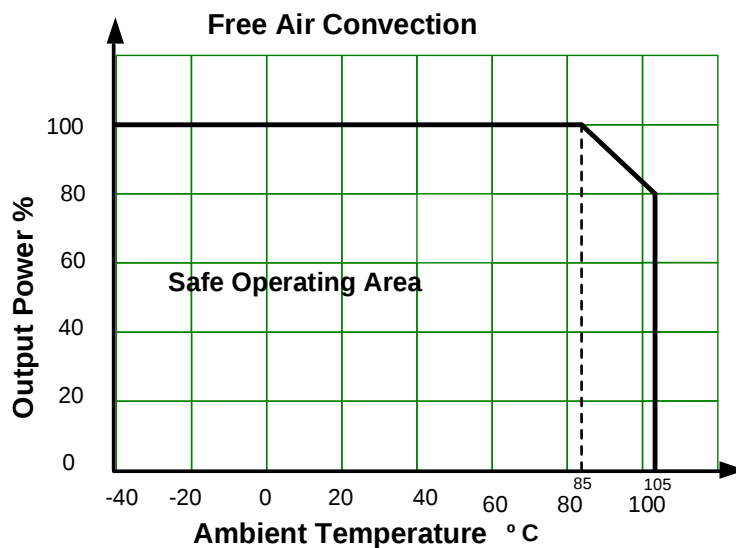
Parameters	Conditions	Typical	Maximum	Units
Switching frequency	Full load, nominal input	220		KHz
Short circuit protection	Continuous, Auto recovery			
Operating temperature	With derating	-40 to +105		°C
Storage temperature		-55 to +125		°C
Case temperature rise	Ambient temperature at 25°C	25		°C
Manual 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		2.4		g
Dimensions (L x W x H)	0.77 x 0.39 x 0.32 inches (19.50 x 9.80 x 8.00 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

Standards	Information technology Equipment	Design to meet IEC/EN/UL62368-1
	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

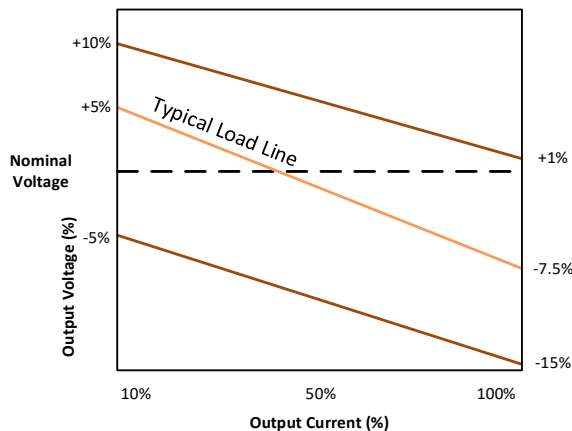
Derating



Output voltage tolerance

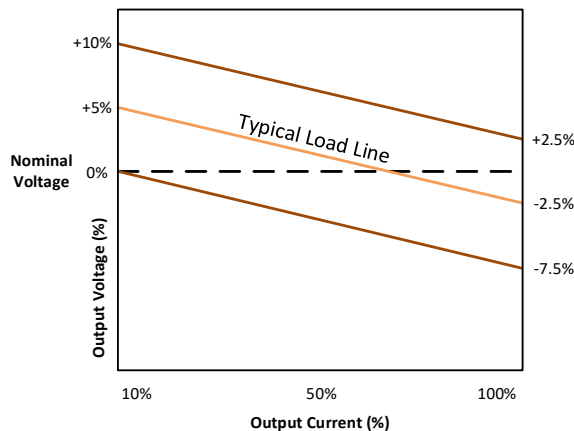
3.3Vout models

Tolerance Envelope Graph

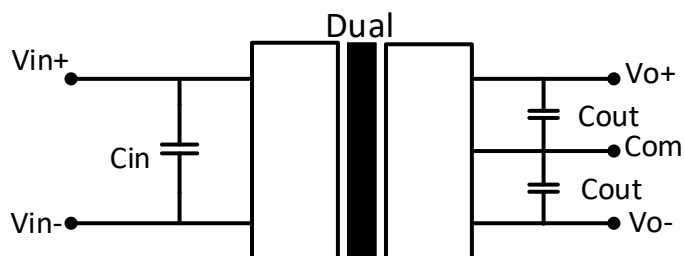
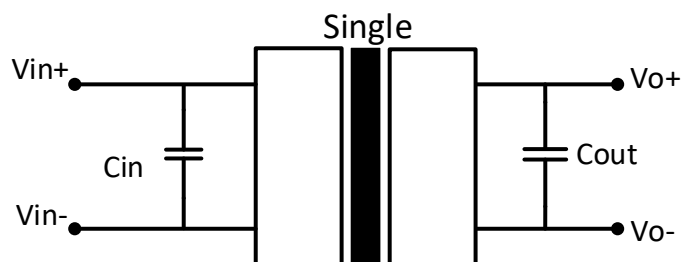


Others

Tolerance Envelope Graph

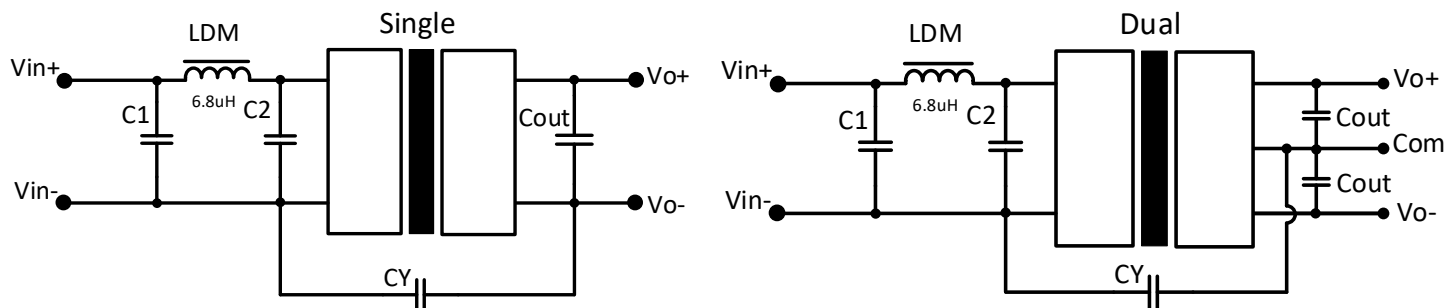


Typical application circuit



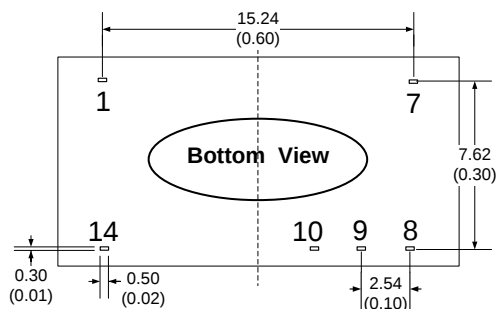
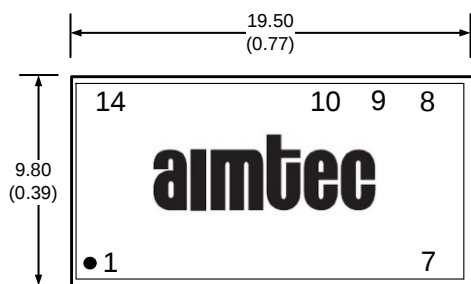
Vin	Cin	Single output models		Dual output models	
		Vout	Cout	Vout	Cout
3.3V	4.7μF/16V	3.3V	10μF/16V	±3.3V	4.7μF/16V
5V	4.7μF/16V	5V	10μF/16V	±5V	4.7μF/16V
12V	2.2μF/25V	9V	2.2μF/25V	±9V	1μF/25V
15V	2.2μF/25V	12V	2.2μF/25V	±12V	1μF/25V
24V	1μF/50V	15V	2.2μF/25V	±15V	1μF/25V
-	-	24V	1μF/50V	±24V	0.47μF/50V

Recommended EMI circuit

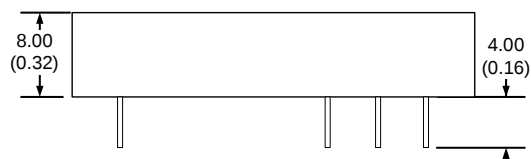


Vin	C1/C2	Vout	CY	Cout
All input	4.7 μ F/50V	All output	1nF/4kVdc	Refer to Cout in typical circuit

Dimensions



Side View



Pin Out Specifications		
Pin	Single output	Dual output
1	-V Input	-V Input
7	NC	NC
8	+V Output	+V Output
9	No pin	Com
10	-V Output	-V Output
11	No pin	No pin
14	+V Input	+V Input

Dimensions are in mm (inch)
Pin Pitch Tolerance: ± 0.10 mm (± 0.004 inch)
Case Tolerance: ± 0.50 mm (± 0.02 inch)

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