

Series AM1M-NZ

1 Watt | DC-DC Converter



FEATURES:

- Low Profile DIP14 case
- 1.5 and 3K VDC I/O Isolation
- Continuous Short circuit protection
- Operating Temperature: -40°C to +105°C
- High Power Density
- Low Isolation Capacitance



Models Single output

Model	Input Voltage (V)	Max Input Current Full/No Load (mA)	Output Voltage (V)	Full load Output Max Current (mA)	Isolation (VDC)	Maximum Capacitive Load (μF)	Efficiency (%)
AM1M-0505S-NZ	4.5-5.5	250/25	5	200	1500	220	74
AM1M-0512S-NZ *	4.5-5.5	271/30	12	83	1500	220	77
AM1M-0515S-NZ *	4.5-5.5	271/30	15	67	1500	220	76
AM1M-1205S-NZ	10.8-13.2	115/15	5	200	1500	220	73
AM1M-0303SH30-NZ	2.97-3.63	420/30	3.3	303	3000	220	72
AM1M-0503SH30-NZ	4.5-5.5	256/20	3.3	303	3000	220	75
AM1M-0505SH30-NZ	4.5-5.5	256/20	5	200	3000	220	80
AM1M-0512SH30-NZ	4.5-5.5	256/20	12	83	3000	220	80
AM1M-0515SH30-NZ	4.5-5.5	256/20	15	67	3000	220	81
AM1M-1205SH30-NZ	10.8-13.2	106/15	5	200	3000	220	80
AM1M-1212SH30-NZ	10.8-13.2	106/15	12	83	3000	220	80
AM1M-1215SH30-NZ	10.8-13.2	106/15	15	67	3000	220	81
AM1M-1515SH30-NZ	13.5-16.5	84/10	15	67	3000	220	80
AM1M-2405SH30-NZ	21.6-26.4	54/7	5	200	3000	220	79

* Models will be discontinued by December 31st, 2017 (EOL date). For new designs, please see new generation models of **AM1MR-NZ** series.

Models Dual output

Model	Input Voltage (V)	Max Input Current Full/No Load (mA)	Output Voltage (V)	Full load Output Max Current (mA)	Isolation (VDC)	Maximum Capacitive Load (μF)	Efficiency (%)
AM1M-0505D-NZ	4.5-5.5	256/25	±5	±100	1500	100	80
AM1M-0509D-NZ	4.5-5.5	256/25	±9	±56	1500	100	80
AM1M-0512D-NZ	4.5-5.5	256/25	±12	±42	1500	100	80
AM1M-0515D-NZ	4.5-5.5	256/25	±15	±34	1500	100	81
AM1M-0524D-NZ	4.5-5.5	256/25	±24	±21	1500	100	80
AM1M-1205D-NZ	10.8-13.2	106/15	±5	±100	1500	100	80
AM1M-1212D-NZ	10.8-13.2	106/15	±12	±42	1500	100	80
AM1M-1224D-NZ	10.8-13.2	106/15	±24	±21	1500	100	81
AM1M-1524D-NZ	13.5-16.5	82/12	±24	±21	1500	100	81
AM1M-2409D-NZ	21.6-26.4	54/7	±9	±56	1500	100	80
AM1M-2412D-NZ	21.6-26.4	54/7	±12	±42	1500	100	80
AM1M-2415D-NZ	21.6-26.4	54/7	±15	±34	1500	100	80
AM1M-0505DH30-NZ	4.5-5.5	256/20	±5	±100	3000	100	79
AM1M-0512DH30-NZ	4.5-5.5	256/20	±12	±42	3000	100	80
AM1M-0515DH30-NZ	4.5-5.5	256/20	±15	±34	3000	100	81
AM1M-1205DH30-NZ	10.8-13.2	106/15	±5	±100	3000	100	80
AM1M-2412DH30-NZ	21.6-26.4	54/7	±12	±42	3000	100	81
AM1M-2415DH30-NZ	21.6-26.4	54/7	±15	±34	3000	100	80

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.

Input Specifications

Parameters	Nominal	Typical	Maximum	Units
Voltage range	3.3	2.97-3.63		VDC
	5	4.5-5.5		
	12	10.8-13.2		
	15	13.5-16.5		
	24	21.6-26.4		
Absolute Max Input Voltage (100ms)	3.3V		-0.7 - 5	VDC
	5V		-0.7 - 9	
	12V		-0.7 - 18	
	15V		-0.7 - 21	
	24V		-0.7 - 30	
Filter	Capacitor			
Input reflected ripple current		15		mA p-p

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60 Sec, <1mA		1500, 3000	VDC
Isolation Resistance	500Vdc	>1000		MOhm
Isolation Capacitance	100KHz/0.1V	20		pF
	AM1M-0512S-NZ, AM1M-0515S-NZ, AM1M-1205S-NZ only	25		

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	See tolerance envelope graph			
Short Circuit protection	3.3Vin, 24Vin & 24Vout models	1s		
	Others	Continuous, Auto recovery		
Line voltage regulation	For Vin change of 1%		±1.2	% of Vin
	3.3Vout models, For Vin change of 1%		±1.5	
Load voltage regulation	10% to 100% load	±15		%
Temperature coefficient	Nominal input, 100% full load		±0.03	%/°C
Ripple & Noise	20MHz Bandwidth	60	150	mVp-p

NOTE: It is not recommended to have the outputs connected in parallel

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	100		KHz
	AM1M-0505S-NZ	100	300	
Operating temperature	Without derating up to 85°C	-40 to +105		°C
Storage temperature	-55 to +125			°C
Maximum case temperature			100	°C
Cooling	Free Air Convection			
Humidity			95	% RH
Case material	Black flame-retardant heat-proof plastic (UL94-V0)			
Weight	1.4*(Single output models)			g
	2.4*(Dual output & 3000VDC isolation models)			
Dimensions (L x W x H)	0.77 x 0.28 x 0.18 inches, 19.50 x 6.60 x 4.50 mm (Single output models)			
	0.79 x 0.39 x 0.28 inches, 20.00 x 10.00 x 7.00 mm (Dual output & 3000VDC isolation models)			
MTBF	>3,500,000 hours (MIL-HDBK -217F, Ground Benign, t=+25°C)			
Maximum Soldering Temperature	1.5mm from case for 10 seconds		300	°C

Safety Specifications

Parameters	
Standards	EN55022 Class B (see recommended circuit)
	IEC61000-4-2, Perf. Criteria B (ESD Contact +/- 6KV)

Pin Out Specifications

1500VDC Isolation	
Pin	Single
1	+Vin
2	-Vin
5	-Vout
6	+Vout
7	NC
8	NC
14	NC

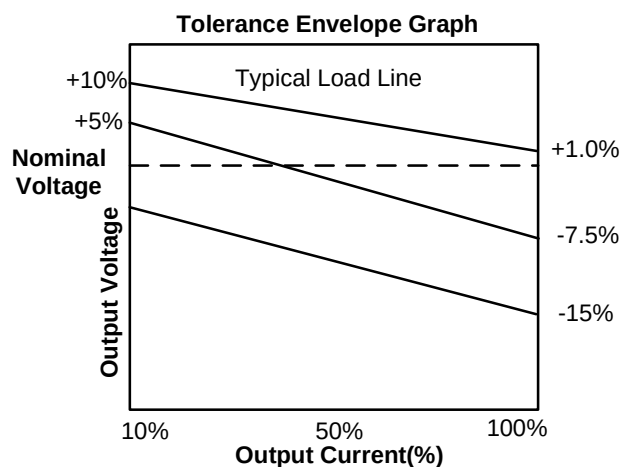
1500VDC Isolation	
Pin	Dual
1	-Vin
7	NC
8	Common
9	+Vout
11	-Vout
14	+Vin

3000VDC Isolation		
Pin	Single	Dual
1	-Vin	-Vin
7	NC	NC
8	+Vout	+Vout
9	No Pin	Common
10	-Vout	-Vout
14	+Vin	+Vin

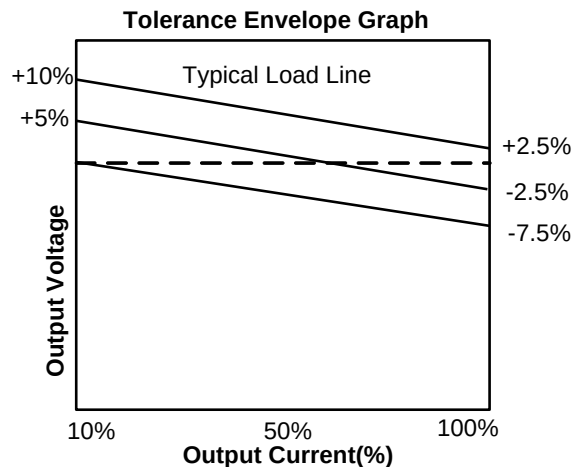
NC: not connected

Typical Characteristics

3.3V output models

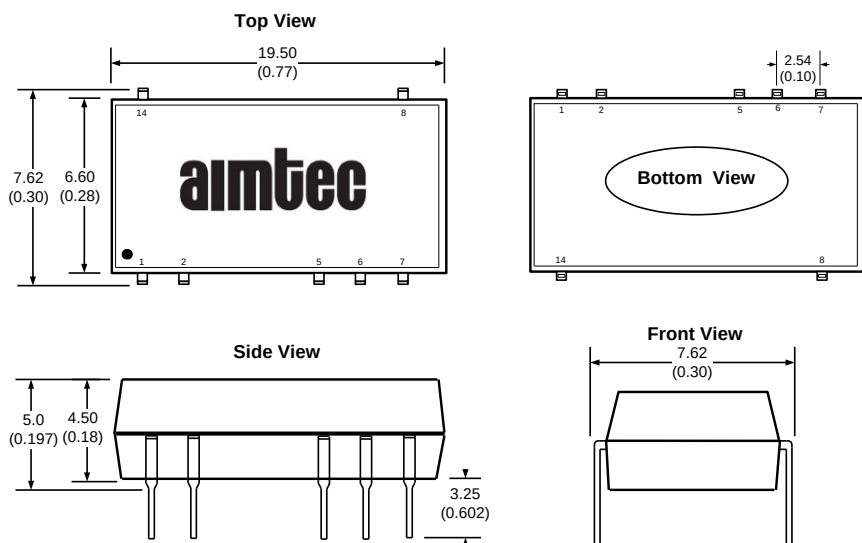


Others

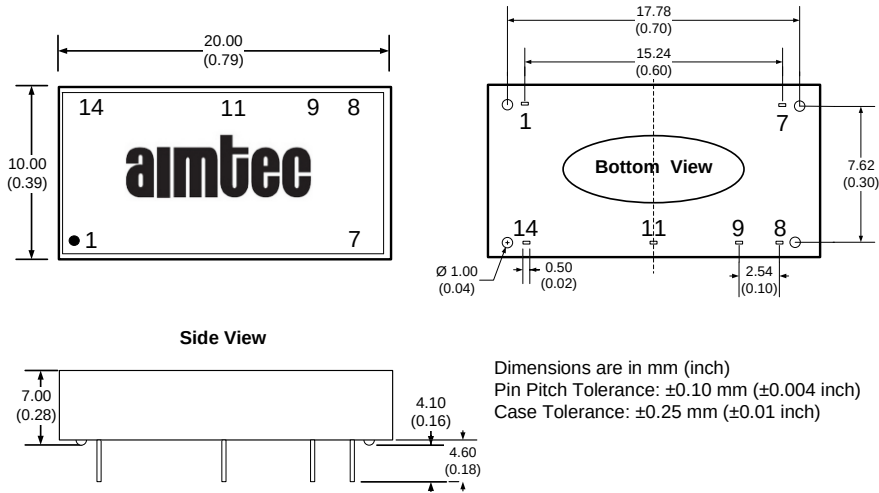


Dimensions

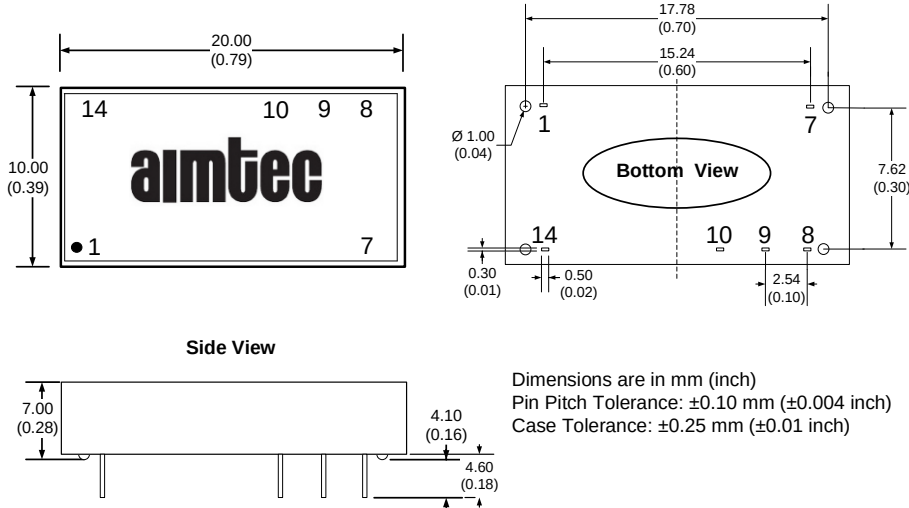
Single 1500VDC Isolated models



Dual 1500VDC Isolated models

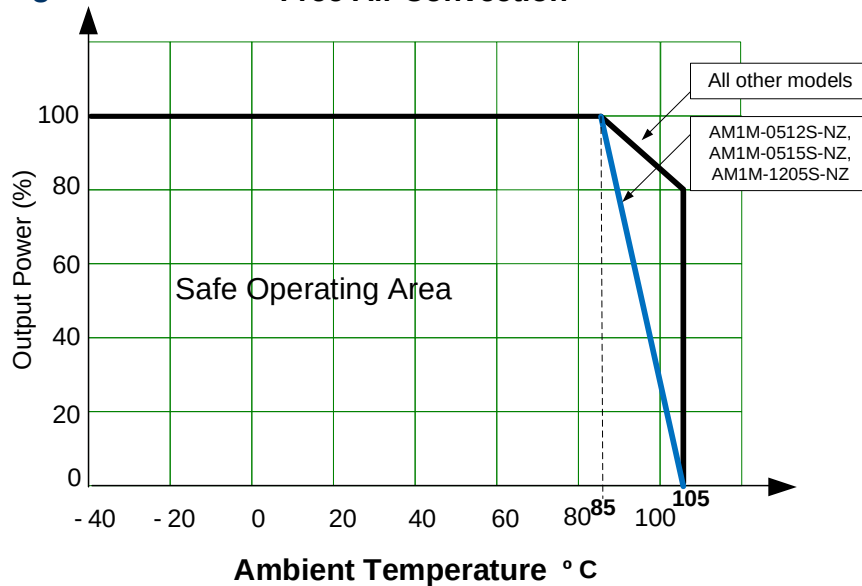


3000VDC Isolated models

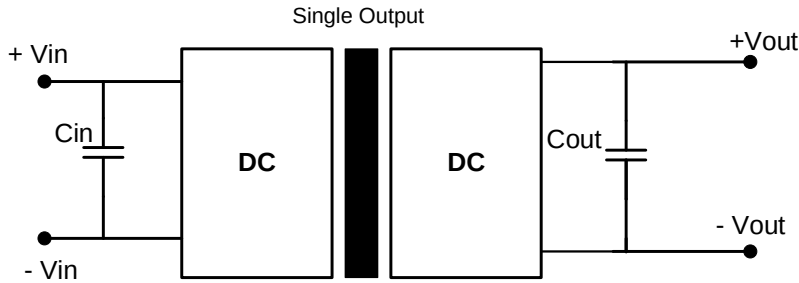


Derating

Free Air Convection

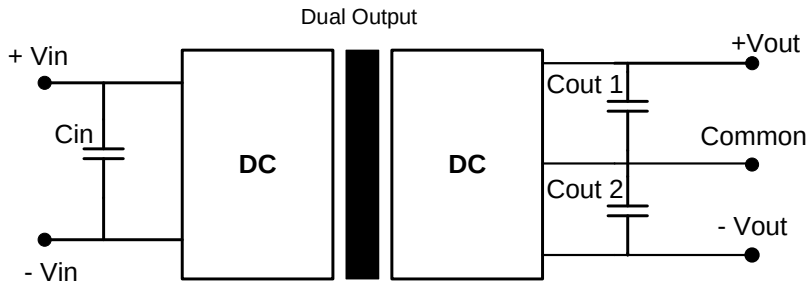


Typical application circuit



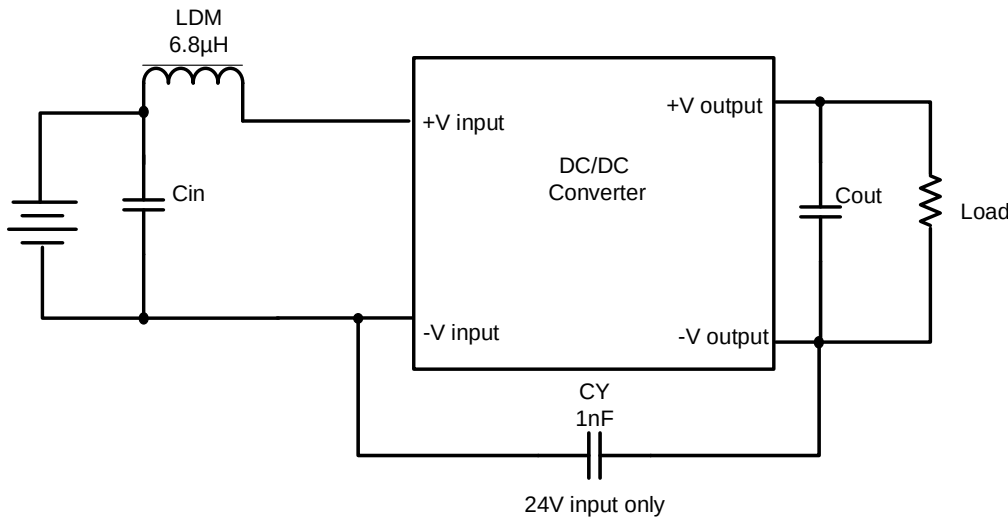
Vin (VDC)	Cin (uF)	Vout (VDC)	Cout (uF)
3.3/5	4.7	3.3/5	10
12/15	2.2	12	2.2
24	1	15	1

It is not recommended to connect any external capacitor in the application field when output loading is less than 0.5 watt.



Vin (VDC)	Cin (uF)	Vout (VDC)	Cout 1 & 2 (uF)
3.3/5	4.7	±5	4.7
12/15	2.2	±9/±12	1
24	1	±15/±24	0.47

EMI Recommended Circuit (Class B)



NOTE: Cin and Cout values are the same as referenced in the Application Circuit.

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