aimtec
Your Power Partner

Series AM1A-Z

1 Watt | DC-DC Converter



FEATURES:

- RoHS compliant
- Regulated output voltage
- Low ripple and noise
- High efficiency up to 81%
- No Minimum Load Required
- Operating temperature -40°C to + 85°C
- Input / Output Isolation 1500 VDC
- Pin compatible with multiple manufacturers
- 6 pin SIP package
- Wide 2:1 Input Range

Models
Single output

Model	Input Voltage (VDC)	Low line Input current FL (mA)	Input Current FL | No Load (mA)		Output Voltage (VDC)	Output Current (mA)	Isolation (VDC)	Max Capacitive Load (uF)	Efficiency (Full load) (%)
AM1A-0505SZ	4.5 - 9	289	263	35	5	200	1500	1680	76
AM1A-0512SZ	4.5 - 9	278	253	35	12	83	1500	820	79
AM1A-0515SZ	4.5 - 9	275	250	35	15	67	1500	680	80
AM1A-0524SZ	4.5 - 9	275	250	35	24	42	1500	470	80
AM1A-1205SZ	9 - 18	141	107	20	5	200	1500	1680	78
AM1A-1212SZ	9 - 18	138	105	20	12	83	1500	820	80
AM1A-1215SZ	9 - 18	136	103	20	15	67	1500	680	81
AM1A-1224SZ	9 - 18	138	105	20	24	42	1500	470	80
AM1A-2405SZ	18 - 36	71	54	10	5	200	1500	1680	78
AM1A-2412SZ	18 - 36	68	52	10	12	83	1500	820	80
AM1A-2415SZ	18 - 36	69	52	10	15	67	1500	680	80
AM1A-2424SZ	18 - 36	68	52	10	24	42	1500	470	81
AM1A-4805SZ	36 - 75	36	28	7	5	200	1500	1680	76
AM1A-4812SZ	36 - 75	35	27	7	12	83	1500	820	78
AM1A-4815SZ	36 - 75	34	27	7	15	67	1500	680	78
AM1A-4824SZ	36 - 75	34	27	7	24	42	1500	470	77

FL= Full Load

Models
Dual output

Model	Input Voltage (VDC)	Low line Input current FL (mA)	Input Current FL | No Load (mA)		Output Voltage (VDC)	Output Current (mA)	Isolation (VDC)	Max Capacitive Load (uF)	Efficiency (Full load) (%)
AM1A-0512DZ	4.5 - 9	285	259	35	±12	±42	1500	±470	77
AM1A-0515DZ	4.5 - 9	282	254	35	±15	±33	1500	±330	79
AM1A-1212DZ	9 - 18	138	106	20	±12	±42	1500	±470	79
AM1A-1215DZ	9 - 18	138	105	20	±15	±33	1500	±330	80
AM1A-2412DZ	18 - 36	69	52	10	±12	±42	1500	±470	80
AM1A-2415DZ	18 - 36	70	53	10	±15	±33	1500	±330	79
AM1A-4812DZ	36 - 75	34	27	7	±12	±42	1500	±470	77
AM1A-4815DZ	36 - 75	35	27	7	±15	±33	1500	±330	77

FL= Full Load

Input Specifications

Parameters	Nominal	Typical	Maximum	Units
Voltage range	5 12 15 24	4.5 – 9 9 - 18 18 - 36 36 - 75		VDC
Filter		Capacitor		
Turn on Transient process time		1		ms
Startup time		50		ms
Absolute Maximum Rating	5 Vin 12 Vin 15 Vin 24 Vin	0-15 0-25 0-50 0-100		VDC

Peak Input Voltage time		100		ms
Input Reflected Ripple Current	See application circuit	35		mA pk-pk
Transient Recovery time	25% load step change	500		µs
Transient Response Deviation	25% load step change	±3		%

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60 sec		1500	VDC
Resistance		> 1000		MOhm
Capacitance		70		pF

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		±2		%
Short Circuit protection	Continuous with auto recovery			
Line voltage regulation (Single)		±0.2		%
Load voltage regulation (Single)	0% to 100% load	±1.0		%
Load voltage regulation (Dual)	0% to 100% load	±2.0		%
Cross Regulation (Dual)	25% to 100% coupled to full load	±5		%
Temperature coefficient		±0.02		%/ºC
Ripple & Noise*	At 20MHz Bandwidth	50		mV p-p

*Measured with a 1µF ceramic capacitor.

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	150 - 550		KHz
Max Case temperature			+105	ºC
Operating temperature	Full Load without Derating	-40 to +85		ºC
Storage temperature		-55 to +125		ºC
Derating	Not Required			
Cooling	Free air convection			
Humidity			95	%
Case material	Non conductive black plastic			
Weight		3.0		g
Dimensions (L x W x H)		0.67 x 0.30 x 0.43 inch	17.0 x 7.62 x 11.0 mm	
MTBF	>2,800,000 hrs (MIL-HDBK -217F, Ground Benign, t=+25ºC)			

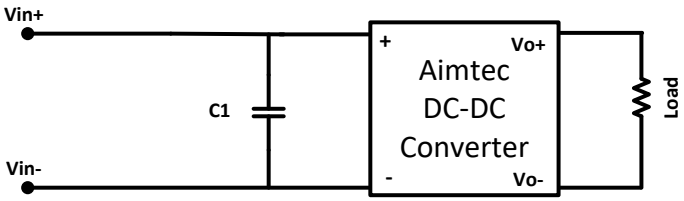
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified

Safety Specifications

Parameters	
Agency Approval & Safety	CE, UL
Standard	UL60950-1, UL62368-1 EN 55032, Class A (external reference circuit below) IEC 61000-4-2: 2008 IEC 61000-4-3: 2010 IEC 61000-4-4: 2012* IEC 61000-4-5: 2005* IEC 61000-4-6: 2008 IEC 61000-4-8: 2009

*External filter capacitor for 5Vin 330µF/100V EEC & all other models 220µF/100V EEC

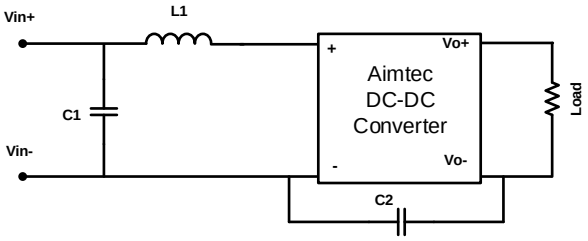
Recommended Surge Protective Circuit



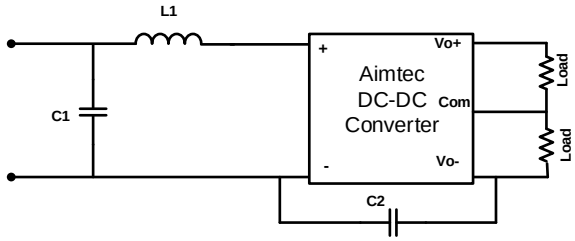
C1: 5V input models = 330 µF / 100V, all other models = 220 µF / 100V

Recommended Circuits for Conducted Emissions

Single Output

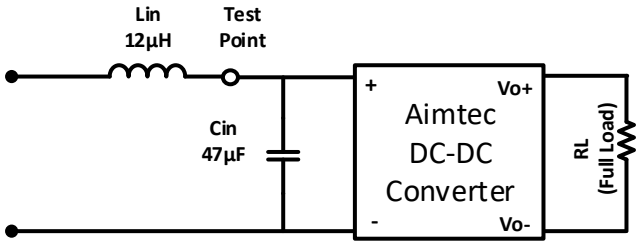


Dual Output



Model	C1	L1	C2
5 Vin	MLCC 4.7 µF / 50V	4.7 µH	MLCC 220pF / 3kV
12 Vin	MLCC 4.7 µF / 50V	4.7 µH	MLCC 220pF / 3kV
24 Vin	MLCC 4.7 µF / 50V	18 µH	MLCC 220pF / 3kV
48 Vin	MLCC 4.7 µF / 100V	18 µH	MLCC 220pF / 3kV

Input Reflected Ripple Test Circuit

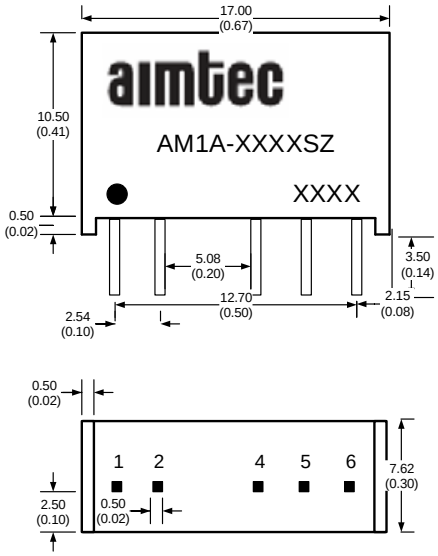


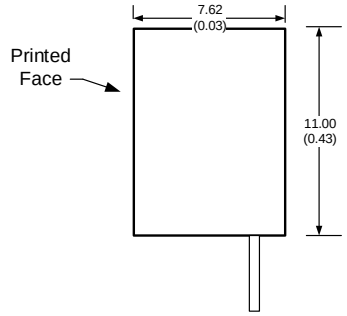
* Tested at full load, and nominal input

Pin Out Specifications

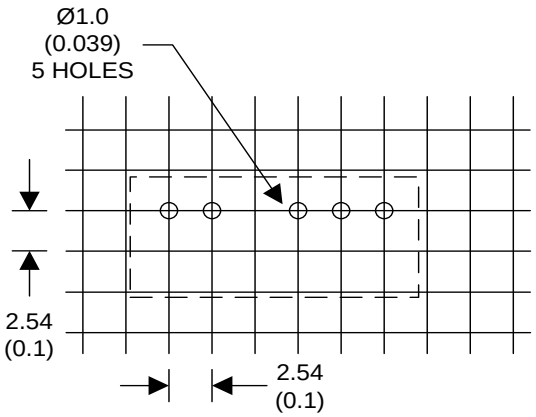
Pin	Single	Dual
1	- V Input	- V Input
2	+ V Input	+ V Input
4	+ V Output	+ V Output
5	No pin	Common
6	- V Output	- V Output

Dimensions





NOTE: Unit mm [inch]
Pin tolerances: 0.10mm [0.004inch]
General tolerances: 0.25mm [0.010inch]



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 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.