

## Series AM1/2S-Z

### 0.5 Watt | DC-DC Converter



#### FEATURES:

- RoHS compliant
- 4 Pin SIP Package
- Low ripple and noise
- High efficiency up to 83%
- Operating temperature -40°C to + 85°C
- Input / Output isolation 1000 and 3000VDC
- Pin compatible with multiple manufacturers

#### Models Single output



Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Max Capacitive Load (µF)	Input Current Full Load   No Load (mA)		Efficiency (%)
AM1/2S-0303SZ	2.97-3.63	3.3	152	1000	100	205	20	76
AM1/2S-0305SZ	2.97-3.63	5	100	1000	100	216	25	70
AM1/2S-0307SZ	2.97-3.63	7.2	69	1000	100	216	25	70
AM1/2S-0309SZ	2.97-3.63	9	56	1000	100	216	25	70
AM1/2S-0312SZ	2.97-3.63	12	42	1000	100	201	25	72
AM1/2S-0315SZ	2.97-3.63	15	33	1000	100	208	25	73
AM1/2S-0318SZ	2.97-3.63	18	28	1000	100	208	25	73
AM1/2S-0324SZ	2.97-3.63	24	21	1000	100	208	25	73
AM1/2S-0503SZ	4.5-5.5	3.3	151.5	1000	100	132	20	76
AM1/2S-0505SZ	4.5-5.5	5	100	1000	100	121	13	83
AM1/2S-0507SZ	4.5-5.5	7.2	69.44	1000	100	134	15	75
AM1/2S-0509SZ	4.5-5.5	9	55.55	1000	100	128	15	78
AM1/2S-0512SZ	4.5-5.5	12	41.67	1000	100	127	18	79
AM1/2S-0515SZ	4.5-5.5	15	33.33	1000	100	130	22	77
AM1/2S-0518SZ	4.5-5.5	18	27.77	1000	100	127	20	79
AM1/2S-0524SZ	4.5-5.5	24	20.83	1000	100	134	25	75
AM1/2S-1203SZ	10.8-13.2	3.3	151.5	1000	100	58	15	72
AM1/2S-1205SZ	10.8-13.2	5	100	1000	100	54	10	78
AM1/2S-1207SZ	10.8-13.2	7.2	69.44	1000	100	57	15	73
AM1/2S-1209SZ	10.8-13.2	9	55.56	1000	100	57	15	73
AM1/2S-1212SZ	10.8-13.2	12	41.67	1000	100	58	20	72
AM1/2S-1215SZ	10.8-13.2	15	33.33	1000	100	61	20	69
AM1/2S-1218SZ	10.8-13.2	18	27.77	1000	100	61	15	68
AM1/2S-1224SZ	10.8-13.2	24	20.83	1000	100	59	15	71
AM1/2S-1503SZ	13.5-16.5	3.3	151.5	1000	100	44	10	75
AM1/2S-1505SZ	13.5-16.5	5	100	1000	100	43	8	78
AM1/2S-1507SZ	13.5-16.5	7.2	69.44	1000	100	44	12	75
AM1/2S-1509SZ	13.5-16.5	9	55.55	1000	100	44	12	75
AM1/2S-1512SZ	13.5-16.5	12	41.67	1000	100	44	10	77
AM1/2S-1515SZ	13.5-16.5	15	33.33	1000	100	48	15	70
AM1/2S-1518SZ	13.5-16.5	18	27.77	1000	100	51	12	66
AM1/2S-1524SZ	13.5-16.5	24	20.83	1000	100	51	10	66
AM1/2S-2403SZ	21.6-26.4	3.3	151.5	1000	100	31	8	69
AM1/2S-2405SZ	21.6-26.4	5	100	1000	100	29	8	73
AM1/2S-2407SZ	21.6-26.4	7.2	69.44	1000	100	30	10	70
AM1/2S-2409SZ	21.6-26.4	9	55.55	1000	100	30	10	71
AM1/2S-2412SZ	21.6-26.4	12	41.67	1000	100	30	8	71
AM1/2S-2415SZ	21.6-26.4	15	33.33	1000	100	29	10	73
AM1/2S-2418SZ	21.6-26.4	18	27.77	1000	100	29	10	73
AM1/2S-2424SZ	21.6-26.4	24	20.83	1000	100	29	10	72
AM1/2S-4803SZ	43.2-52.8	3.3	151.5	1000	100	17	6	60
AM1/2S-4805SZ	43.2-52.8	5	100	1000	100	16	6	66
AM1/2S-4807SZ	43.2-52.8	7.2	69.44	1000	100	17	6	60
AM1/2S-4809SZ	43.2-52.8	9	55.55	1000	100	17	6	62
AM1/2S-4812SZ	43.2-52.8	12	41.67	1000	100	17	6	64
AM1/2S-4815SZ	43.2-52.8	15	33.33	1000	100	17	6	62
AM1/2S-4818SZ	43.2-52.8	18	27.77	1000	100	17	6	62
AM1/2S-4824SZ	43.2-52.8	24	20.83	1000	100	18	10	61

AM1/2S-0303SH30Z	2.97-3.63	3.3	152	3000	100	205	20	76
AM1/2S-0305SH30Z	2.97-3.63	5	100	3000	100	216	25	70
AM1/2S-0307SH30Z	2.97-3.63	7.2	69	3000	100	216	25	70
AM1/2S-0309SH30Z	2.97-3.63	9	56	3000	100	216	25	70
AM1/2S-0312SH30Z	2.97-3.63	12	42	3000	100	201	25	72
AM1/2S-0315SH30Z	2.97-3.63	15	33	3000	100	208	25	73
AM1/2S-0318SH30Z	2.97-3.63	18	28	3000	100	208	25	73
AM1/2S-0324SH30Z	2.97-3.63	24	21	3000	100	208	25	73
AM1/2S-0503SH30Z	4.5-5.5	3.3	151.5	3000	100	132	20	76
AM1/2S-0505SH30Z	4.5-5.5	5	100	3000	100	121	13	83
AM1/2S-0507SH30Z	4.5-5.5	7.2	69.44	3000	100	134	15	75
AM1/2S-0509SH30Z	4.5-5.5	9	55.55	3000	100	128	15	78
AM1/2S-0512SH30Z	4.5-5.5	12	41.67	3000	100	127	18	79
AM1/2S-0515SH30Z	4.5-5.5	15	33.33	3000	100	130	22	77
AM1/2S-0518SH30Z	4.5-5.5	18	27.77	3000	100	127	20	79
AM1/2S-0524SH30Z	4.5-5.5	24	20.83	3000	100	134	25	75
AM1/2S-1203SH30Z	10.8-13.2	3.3	151.5	3000	100	58	15	72
AM1/2S-1205SH30Z	10.8-13.2	5	100	3000	100	54	10	78
AM1/2S-1207SH30Z	10.8-13.2	7.2	69.44	3000	100	57	15	73
AM1/2S-1209SH30Z	10.8-13.2	9	55.56	3000	100	57	15	73
AM1/2S-1212SH30Z	10.8-13.2	12	41.67	3000	100	58	20	72
AM1/2S-1215SH30Z	10.8-13.2	15	33.33	3000	100	61	20	69
AM1/2S-1218SH30Z	10.8-13.2	18	27.77	3000	100	61	15	68
AM1/2S-1224SH30Z	10.8-13.2	24	20.83	3000	100	59	15	71
AM1/2S-1503SH30Z	13.5-16.5	3.3	151.5	3000	100	44	10	75
AM1/2S-1505SH30Z	13.5-16.5	5	100	3000	100	43	8	78
AM1/2S-1507SH30Z	13.5-16.5	7.2	69.44	3000	100	44	12	75
AM1/2S-1509SH30Z	13.5-16.5	9	55.55	3000	100	44	12	75
AM1/2S-1512SH30Z	13.5-16.5	12	41.67	3000	100	44	10	77
AM1/2S-1515SH30Z	13.5-16.5	15	33.33	3000	100	48	15	70
AM1/2S-1518SH30Z	13.5-16.5	18	27.77	3000	100	51	12	66
AM1/2S-1524SH30Z	13.5-16.5	24	20.83	3000	100	51	10	66
AM1/2S-2403SH30Z	21.6-26.4	3.3	151.5	3000	100	31	8	69
AM1/2S-2405SH30Z	21.6-26.4	5	100	3000	100	29	8	73
AM1/2S-2407SH30Z	21.6-26.4	7.2	69.44	3000	100	30	10	70
AM1/2S-2409SH30Z	21.6-26.4	9	55.55	3000	100	30	10	71
AM1/2S-2412SH30Z	21.6-26.4	12	41.67	3000	100	30	8	71
AM1/2S-2415SH30Z	21.6-26.4	15	33.33	3000	100	29	10	73
AM1/2S-2418SH30Z	21.6-26.4	18	27.77	3000	100	29	10	73
AM1/2S-2424SH30Z	21.6-26.4	24	20.83	3000	100	29	10	72
AM1/2S-4803SH30Z	43.2-52.8	3.3	151.5	3000	100	17	6	60
AM1/2S-4805SH30Z	43.2-52.8	5	100	3000	100	16	6	66
AM1/2S-4807SH30Z	43.2-52.8	7.2	69.44	3000	100	17	6	60
AM1/2S-4809SH30Z	43.2-52.8	9	55.55	3000	100	17	6	62
AM1/2S-4812SH30Z	43.2-52.8	12	41.67	3000	100	17	6	64
AM1/2S-4815SH30Z	43.2-52.8	15	33.33	3000	100	17	6	62
AM1/2S-4818SH30Z	43.2-52.8	18	27.77	3000	100	17	6	62
AM1/2S-4824SH30Z	43.2-52.8	24	20.83	3000	100	18	10	61

## 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		
	48	43.2-52.8		
Filter	Capacitor			
Turn on Transient process time			25	ms
Startup time		200		ms

Absolute Maximum Rating	3.3 Vin	0-6	VDC
	5 Vin	0-7	
	12 Vin	0-15	
	15 Vin	0-18	
	24 Vin	0-28	
	48 Vin	0-54	
Peak Input Voltage time		100	ms
Input reflected ripple current		20	mA p-p

### Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60sec		1000 and 3000	VDC
Resistance		> 1000		MOhm
Capacitance		60		pF

### Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		±3		%
Short Circuit protection		Momentary (1 sec)		
Line voltage regulation	For 1% change of Vin	±1.2		% of Vin
Load voltage regulation	Load 20 – 100%	±10		%
Load voltage regulation 3.3Vout model	Load 20 – 100%	±20		%
Temperature coefficient		±0.02		%/°C
Ripple & Noise	At 20MHz Bandwidth	100		mV p-p
Rising time		50		ms

### General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load, variable	80		KHz
Operating temperature	Full Load without Derating	-40 to +85		°C
Storage temperature		-40 to +125		°C
Max Case temperature			100	°C
Cooling		Free air convection		
Humidity			95	%
Case material		Non-conductive black plastic UL94-VO		
Weight	Others	1.5		g
	48Vin models	1.9		g
Dimensions (L x W x H)	Others	0.46 x 0.24 x 0.4 inches	11.68 x 6.00 x 10.15 mm	
	48Vin models	0.46 x 0.30 x 0.4 inches	11.68 x 7.50 x 10.15 mm	
MTBF		>1 121 000 hrs(MIL-HDBK -217F, Ground Benign, t=+25°C)		

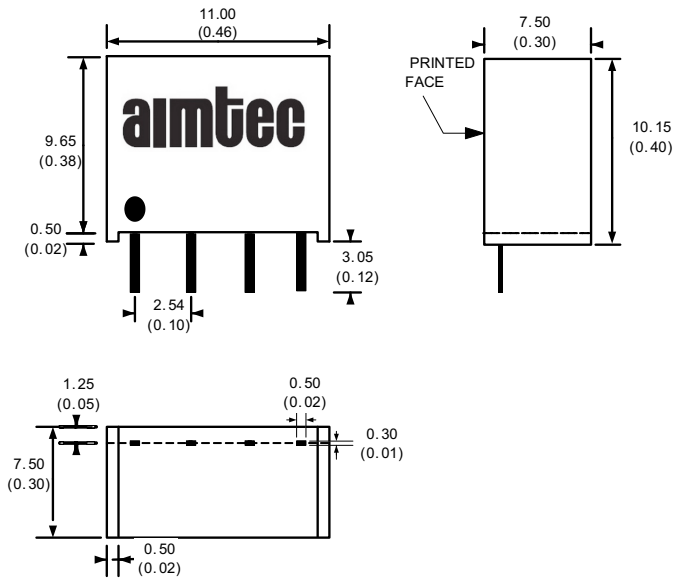
NOTE: All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

### Safety Specifications

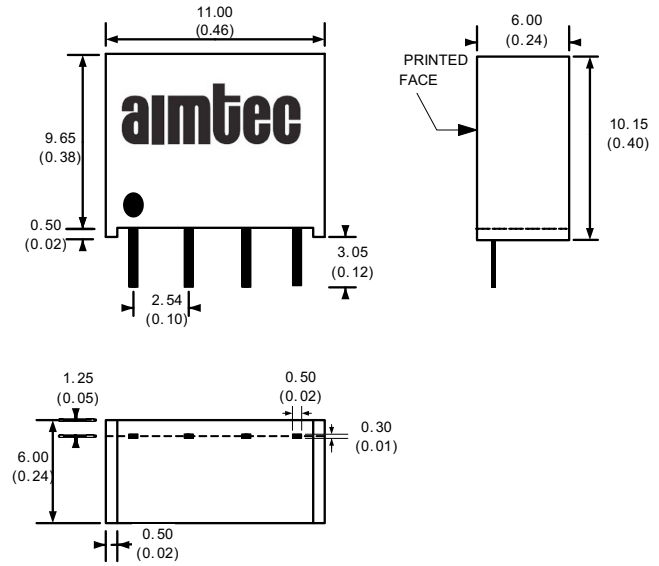
Standards	
Agency approvals	CE
Safety	IEC60950-1 (designed to meet)
	EN55032, class B, with the referenced EMI filtering circuit,
	IEC61000-4-2 (ESD), criteria A
	IEC61000-4-3 (Radiated immunity), criteria A
	IEC61000-4-4 (EFT), criteria A
	IEC61000-4-5 (Surge), criteria A
	IEC61000-4-6 (CS), criteria A
	IEC61000-4-8 (PFMF), criteria A

## Dimensions

Models with Vin 48V



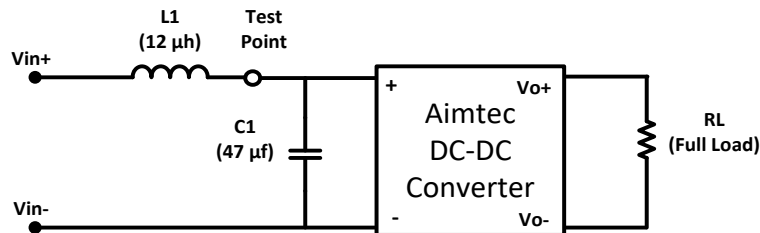
Other models



## Pin Out Specifications

Pin	Single
1	- V Input
2	+V Input
3	- V Output
4	+V Output

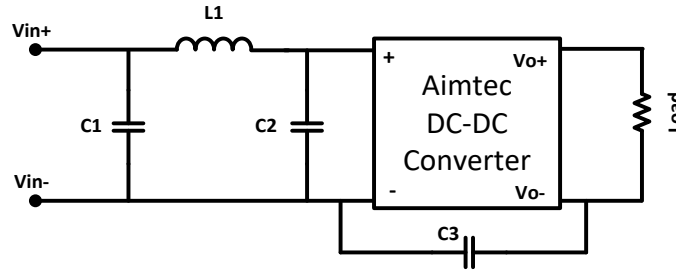
## Input Reflected Ripple Test Circuit



\* Tested at full load, and nominal input

### EMI Filtering

To meet conducted emissions, the following circuit is recommended with the external components as noted in the table below.



Model	C1	L1	C2	C3
3.3 & 5 Vin	2.2 $\mu$ F / 100V	18 $\mu$ H		
12 & 15 Vin	2.2 $\mu$ F / 100V	18 $\mu$ H		
24 Vin	2.2 $\mu$ F / 100V	18 $\mu$ H	2.2 $\mu$ F / 100V	470pF / 2KV
48 Vin	10 $\mu$ F / 100V*	18 $\mu$ H	2.2 $\mu$ F / 100V	470pF / 2KV

\* - Electrolytic Capacitor Type

Additionally, in order to meet IEC 61000-4-4 and 61000-4-5 and external capacitor is recommended (ex. Nippon KY series of size 470 $\mu$ F / 100V).

**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 than 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).