

## Series AM1L-FZ

### 1 Watt | DC-DC Converter



#### FEATURES:

- Single & Dual Models
- SMD Package
- Low Ripple & Noise
- High Efficiency up to 83%
- Operating Temperature -40°C to +95°C
- Input / Output Isolation of 1000 & 3000VDC
- Pin Compatible with Multiple Manufacturers
- RoHS Compliant



#### Models

##### Single output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Efficiency (%)
AM1L-0303S-FZ	2.97-3.63	3.3	300	1000	73
AM1L-0305S-FZ	2.97-3.63	5	200	1000	72
AM1L-0309S-FZ	2.97-3.63	9	111	1000	75
AM1L-0312S-FZ	2.97-3.63	12	84	1000	75
AM1L-0315S-FZ	2.97-3.63	15	67	1000	76
AM1L-0503S-FZ	4.5-5.5	3.3	300	1000	77
AM1L-0505S-FZ	4.5-5.5	5	200	1000	81
AM1L-0509S-FZ	4.5-5.5	9	111	1000	78
AM1L-0512S-FZ	4.5-5.5	12	84	1000	80
AM1L-0515S-FZ	4.5-5.5	15	67	1000	81
AM1L-1203S-FZ	10.8-13.2	3.3	300	1000	75
AM1L-1205S-FZ	10.8-13.2	5	200	1000	81
AM1L-1209S-FZ	10.8-13.2	9	111	1000	78
AM1L-1212S-FZ	10.8-13.2	12	84	1000	81
AM1L-1215S-FZ	10.8-13.2	15	67	1000	83
AM1L-1503S-FZ	13.5-16.5	3.3	300	1000	76
AM1L-1505S-FZ	13.5-16.5	5	200	1000	79
AM1L-1509S-FZ	13.5-16.5	9	111	1000	76
AM1L-1512S-FZ	13.5-16.5	12	84	1000	79
AM1L-1515S-FZ	13.5-16.5	15	67	1000	80
AM1L-2403S-FZ	21.6-26.4	3.3	300	1000	67
AM1L-2405S-FZ	21.6-26.4	5	200	1000	71
AM1L-2409S-FZ	21.6-26.4	9	111	1000	73
AM1L-2412S-FZ	21.6-26.4	12	84	1000	76
AM1L-2415S-FZ	21.6-26.4	15	67	1000	77
AM1L-0303SH30-FZ	2.97-3.63	3.3	300	3000	77
AM1L-0305SH30-FZ	2.97-3.63	5	200	3000	81
AM1L-0309SH30-FZ	2.97-3.63	9	111	3000	78
AM1L-0312SH30-FZ	2.97-3.63	12	84	3000	80
AM1L-0315SH30-FZ	2.97-3.63	15	67	3000	81
AM1L-0503SH30-FZ	4.5-5.5	3.3	300	3000	77
AM1L-0505SH30-FZ	4.5-5.5	5	200	3000	81
AM1L-0509SH30-FZ	4.5-5.5	9	111	3000	78
AM1L-0512SH30-FZ	4.5-5.5	12	84	3000	80
AM1L-0515SH30-FZ	4.5-5.5	15	67	3000	81
AM1L-1203SH30-FZ	10.8-13.2	3.3	300	3000	75
AM1L-1205SH30-FZ	10.8-13.2	5	200	3000	81
AM1L-1209SH30-FZ	10.8-13.2	9	111	3000	78
AM1L-1212SH30-FZ	10.8-13.2	12	84	3000	81
AM1L-1215SH30-FZ	10.8-13.2	15	67	3000	83
AM1L-1503SH30-FZ	13.5-16.5	3.3	300	3000	76
AM1L-1505SH30-FZ	13.5-16.5	5	200	3000	79
AM1L-1509SH30-FZ	13.5-16.5	9	111	3000	76
AM1L-1512SH30-FZ	13.5-16.5	12	84	3000	79
AM1L-1515SH30-FZ	13.5-16.5	15	67	3000	80
AM1L-2403SH30-FZ	21.6-26.4	3.3	300	3000	67
AM1L-2405SH30-FZ	21.6-26.4	5	200	3000	71
AM1L-2409SH30-FZ	21.6-26.4	9	111	3000	73
AM1L-2412SH30-FZ	21.6-26.4	12	84	3000	76
AM1L-2415SH30-FZ	21.6-26.4	15	67	3000	77

**Models**  
**Dual output**

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Efficiency (%)
AM1L-0303D-FZ	2.97-3.63	±3.3	±150	1000	68
AM1L-0305D-FZ	2.97-3.63	±5	±100	1000	70
AM1L-0309D-FZ	2.97-3.63	±9	±56	1000	74
AM1L-0312D-FZ	2.97-3.63	±12	±42	1000	76
AM1L-0315D-FZ	2.97-3.63	±15	±34	1000	74
AM1L-0503D-FZ	4.5-5.5	±3.3	±150	1000	74
AM1L-0505D-FZ	4.5-5.5	±5	±100	1000	71
AM1L-0509D-FZ	4.5-5.5	±9	±56	1000	78
AM1L-0512D-FZ	4.5-5.5	±12	±42	1000	78
AM1L-0515D-FZ	4.5-5.5	±15	±34	1000	81
AM1L-1203D-FZ	10.8-13.2	±3.3	±150	1000	72
AM1L-1205D-FZ	10.8-13.2	±5	±100	1000	73
AM1L-1209D-FZ	10.8-13.2	±9	±56	1000	79
AM1L-1212D-FZ	10.8-13.2	±12	±42	1000	81
AM1L-1215D-FZ	10.8-13.2	±15	±34	1000	83
AM1L-1503D-FZ	13.5-16.5	±3.3	±150	1000	72
AM1L-1505D-FZ	13.5-16.5	±5	±100	1000	76
AM1L-1509D-FZ	13.5-16.5	±9	±56	1000	76
AM1L-1512D-FZ	13.5-16.5	±12	±42	1000	78
AM1L-1515D-FZ	13.5-16.5	±15	±34	1000	78
AM1L-2403D-FZ	21.6-26.4	±3.3	±150	1000	66
AM1L-2405D-FZ	21.6-26.4	±5	±100	1000	76
AM1L-2409D-FZ	21.6-26.4	±9	±56	1000	78
AM1L-2412D-FZ	21.6-26.4	±12	±42	1000	80
AM1L-2415D-FZ	21.6-26.4	±15	±34	1000	75
AM1L-0303DH30-FZ	2.97-3.63	±3.3	±150	3000	68
AM1L-0305DH30-FZ	2.97-3.63	±5	±100	3000	70
AM1L-0309DH30-FZ	2.97-3.63	±9	±56	3000	74
AM1L-0312DH30-FZ	2.97-3.63	±12	±42	3000	76
AM1L-0315DH30-FZ	2.97-3.63	±15	±34	3000	74
AM1L-0503DH30-FZ	4.5-5.5	±3.3	±150	3000	74
AM1L-0505DH30-FZ	4.5-5.5	±5	±100	3000	71
AM1L-0509DH30-FZ	4.5-5.5	±9	±56	3000	78
AM1L-0512DH30-FZ	4.5-5.5	±12	±42	3000	78
AM1L-0515DH30-FZ	4.5-5.5	±15	±34	3000	81
AM1L-1203DH30-FZ	10.8-13.2	±3.3	±150	3000	72
AM1L-1205DH30-FZ	10.8-13.2	±5	±100	3000	73
AM1L-1209DH30-FZ	10.8-13.2	±9	±56	3000	79
AM1L-1212DH30-FZ	10.8-13.2	±12	±42	3000	81
AM1L-1215DH30-FZ	10.8-13.2	±15	±34	3000	83
AM1L-1503DH30-FZ	13.5-16.5	±3.3	±150	3000	72
AM1L-1505DH30-FZ	13.5-16.5	±5	±100	3000	76
AM1L-1509DH30-FZ	13.5-16.5	±9	±56	3000	76
AM1L-1512DH30-FZ	13.5-16.5	±12	±42	3000	78
AM1L-1515DH30-FZ	13.5-16.5	±15	±34	3000	78
AM1L-2403DH30-FZ	21.6-26.4	±3.3	±150	3000	66
AM1L-2405DH30-FZ	21.6-26.4	±5	±100	3000	76
AM1L-2409DH30-FZ	21.6-26.4	±9	±56	3000	78
AM1L-2412DH30-FZ	21.6-26.4	±12	±42	3000	80
AM1L-2415DH30-FZ	21.6-26.4	±15	±34	3000	75

NOTE 1: Add suffix "TR" to a part number when ordering in tape and reel package

NOTE 2: 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	3.0-3.6		VDC
	5	4.5-5.5		
	12	10.8-13.2		
	24	21.6-26.4		
Filter	Capacitor			
Start Up Time				ms
Absolute Maximum Rating	3.3V input models		-0.7 to 5	VDC
	5V input models		-0.7 to 7.5	
	12V input models		-0.7 to 15	
	24V input models		-0.7 to 30	
No Load Input Current		15	28	mA

### Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O Voltage	60sec		1000,3000	VDC
Resistance	500VDC	1000		MOhm
Capacitance	3.3V input model	16		pF
	5V input model	14/15(minimum 8)		
	12V input model	18(minimum 6/7)		
	24V input model	20(minimum 8)		

### Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage Accuracy	Nominal input	1	3	%
Voltage Balance (Dual Output Models)	Balanced Load		±1	%
Cross Regulation (Dual Output Models)	25% load on one output - 100% load on second load		5	%
Short Circuit Protection	Max 1 second			
Line Voltage Regulation	Per 1% of Vin Change		1.2	%
Load Voltage Regulation (Single)	Output current change from 20% to 100% max load	8	12	%
Load Voltage Regulation (Dual)	Output current change from 20% to 100% max load	9	12	%
Temperature Coefficient	Nominal Input	±0.01	±0.02	%/°C
Ripple & Noise	20MHz Bandwidth	100		mV p-p

### General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching Frequency	100% load	100(Min 70KHz)	150	KHz
Operating Temperature		-40 to +95		°C
Storage Temperature		-55 to +125		°C
Maximum Case Temperature			100	°C
Derating	No derating up to +95 °C			
Cooling	Free Air Convection			
Humidity			90	% RH
Case Material	Plastic (UL94-V0)			
Weight		1.6/2.1		g
Dimensions (L x W x H)	1KVdc isolation single output models: 0.54 x 0.45 x 0.31 inches 13.60 x 11.40 x 7.85 mm All other models :0.60 x 0.44 x 0.30 inches 15.20 x 11.40 x 7.60 mm			
MTBF	3000k hours			
Maximum Soldering Temperature	300 (1.5mm from case for 10 seconds)			°C

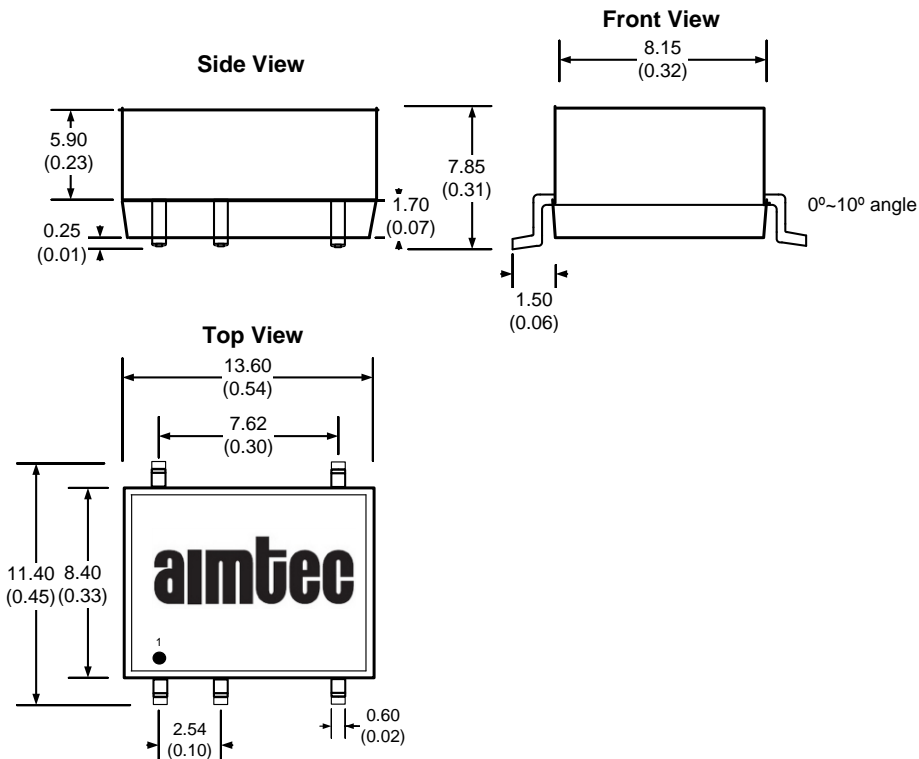
### Pin Out Specifications

Pin	1000VDC
	Single
1	-V Input
2	+V Input
3	No Pin
4	-V Output
5	+V Output
6	No Pin
7	No Pin
8	N.C

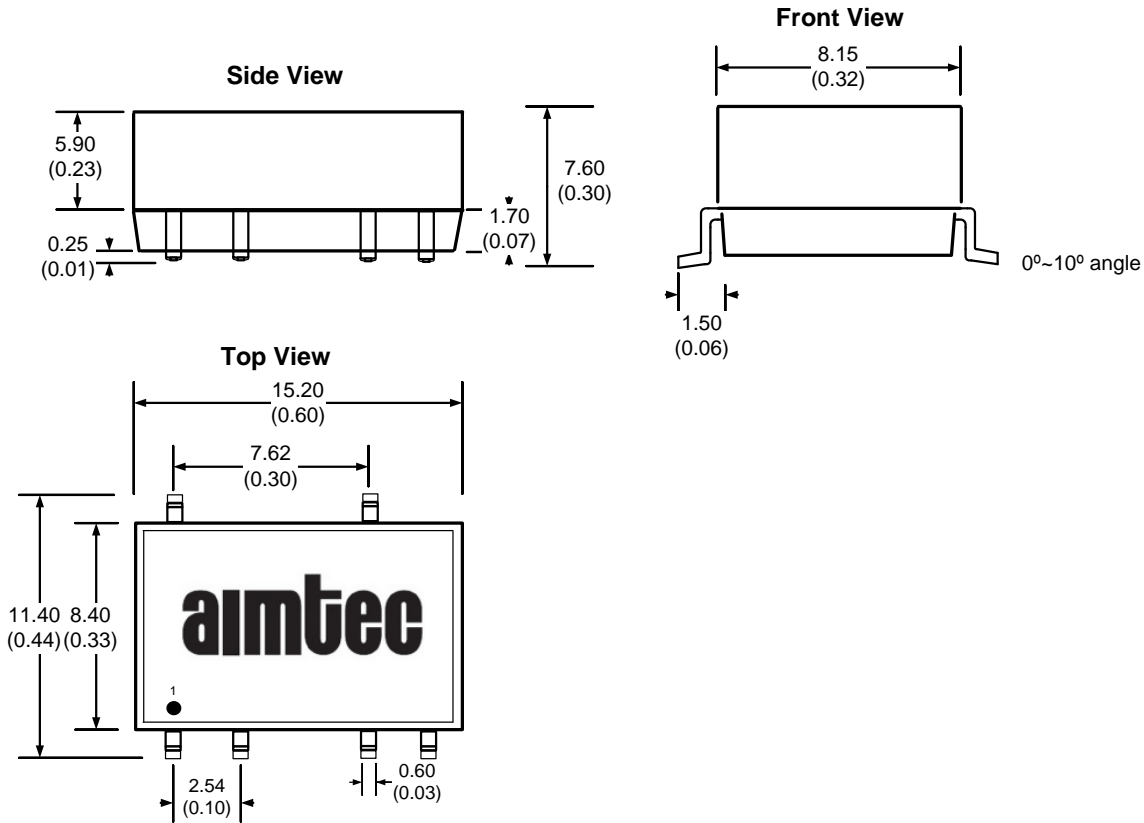
Pin	1000VDC	3000VDC	
	Dual	Single	Dual
1	-V Input	-V Input	-V Input
2	+V Input	+V Input	+V Input
3	No Pin	No Pin	No Pin
4	Common	-V Output	Common
5	-V Output	N.C.	-V Output
6	No Pin	No Pin	No Pin
7	+V Output	+V Output	+V Output
8	No Pin	No Pin	No Pin
9	No Pin	No Pin	No Pin
10	N.C.	N.C.	N.C.

### Dimensions

Single 1000Vdc Isolation



All other models



**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).