

Series AM9G-Z

9 Watt | DC-DC Converter



FEATURES:

- SIP8 Metal Case Package
- High Efficiency up to 90%
- On / Off Control
- Input Under Voltage Lockout
- Operating Temperature -40°C to +85°C
- Continuous Short Circuit Protection
- Input / Output Isolation 1600VDC
- Over Voltage and Over Current Protection



Models Single Output

Model	Input Voltage (V)	Output Voltage (V)	Output Current Max (mA)	Isolation (VDC)	Input Current Full No Load (mA)		Capacitor Load (μF)	Efficiency (%)
AM9G-1203SZ	9-18	3.3	2000	1600	679	15	2600	81
AM9G-1205SZ	9-18	5	1600	1600	784	15	1300	85
AM9G-1209SZ	9-18	9	1000	1600	862	15	800	87
AM9G-1212SZ	9-18	12	750	1600	852	15	560	88
AM9G-1215SZ	9-18	15	600	1600	843	15	470	89
AM9G-1224SZ	9-18	24	375	1600	843	15	200	89
AM9G-2403SZ	18-36	3.3	2000	1600	344	15	2600	80
AM9G-2405SZ	18-36	5	1600	1600	392	15	1300	85
AM9G-2409SZ	18-36	9	1000	1600	426	15	800	88
AM9G-2412SZ	18-36	12	750	1600	421	15	560	89
AM9G-2415SZ	18-36	15	600	1600	417	15	470	90
AM9G-2424SZ	18-36	24	375	1600	417	15	200	90
AM9G-4803SZ	36-75	3.3	2000	1600	168	10	2600	82
AM9G-4805SZ	36-75	5	1600	1600	196	10	1300	85
AM9G-4809SZ	36-75	9	1000	1600	213	10	800	88
AM9G-4812SZ	36-75	12	750	1600	211	10	560	89
AM9G-4815SZ	36-75	15	600	1600	211	10	470	89
AM9G-4824SZ	36-75	24	375	1600	211	10	200	89

Models Dual output

Model	Input Voltage (V)	Output Voltage (V)	Output Current Max (mA)	Isolation (VDC)	Input Current Full No Load (mA)		Capacitor Load (μF)	Efficiency (%)
AM9G-1205DZ	9-18	±5	±800	1600	784	15	±800	85
AM9G-1212DZ	9-18	±12	±375	1600	852	15	±390	88
AM9G-1215DZ	9-18	±15	±300	1600	843	15	±200	89
AM9G-2405DZ	18-36	±5	±800	1600	388	15	±800	86
AM9G-2412DZ	18-36	±12	±375	1600	421	15	±390	89
AM9G-2415DZ	18-36	±15	±300	1600	431	15	±200	87
AM9G-4805DZ	36-75	±5	±800	1600	194	10	±800	86
AM9G-4812DZ	36-75	±12	±375	1600	216	10	±390	87
AM9G-4815DZ	36-75	±15	±300	1600	216	10	±200	87

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	12 24 48	9-18 18-36 36-75		VDC
Filter	Capacitor			
Transient recovery time	100% - 25% load, 25% load step change	250		μs
Transient Response deviation	100% - 25% load, 25% load step change, 3.3 & 5Vout 100% - 25% load, 25% load step change, Others		±5 ±3	%
Startup time		50		ms
Absolute Maximum Rating	12 Vin 24 Vin		25 50	VDC

	48 Vin		100	
Peak Input Voltage Time			100	ms
Input Reflected Ripple Current*			30	mA p-p
On / Off Control	ON – high impedance or open; OFF – 2-4mA input current through 1K Ω (standby 2.5mA typ.)			
Under Voltage lockout	12 (ON/OFF) 24(ON/OFF) 48(ON/OFF)	8.9 / 7 16 / 13 33 / 30		VDC

* The input reflected ripple current should be measured with connected 12 μ H inductor and 47 μ F input capacitor (ESR<1 Ω at 100 KHz)

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60 sec		1600	VDC
Case / Input or Output	60 sec		1000	VDC
Resistance		> 1000		MOhm
Capacitance			50	pF

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy			± 1	%
Cross Regulation (Dual)	1 st output 25% to 100%, 2 nd output 100%		± 5	%
Short Circuit protection	Continuous			
Short Circuit restart	Auto recovery			
Line voltage regulation	LL~HL		± 0.2	%
Load voltage regulation (Single)	0-100% load, 3.3 Vin 0-100% load, others		± 1 ± 0.5	%
Load voltage regulation (Dual)	0-100% balanced load		± 1	%
Over Voltage protection		130		%
Over Current protection		150		%
Temperature coefficient		± 0.02		%/ $^{\circ}$ C
Ripple & Noise*	At 20MHz Bandwidth		75	mV p-p

* Measured with a 1 μ F CC and a 10 μ F EC.

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load, 12 & 24Vin models 100% load, 48Vin models	400 500		KHz
Operating temperature	Refer Derating Curve	-40 to +85		$^{\circ}$ C
Storage temperature		-55 to +125		$^{\circ}$ C
Max Case temperature			+100	$^{\circ}$ C
Cooling	Free air convection (30 – 65 LFM)			
Humidity			5 - 95	%
Case material	Copper			
Potting material	Epoxy (UL94V-0 rated)			
Pin Material	C5191R-H Solder coated			
Weight		7.3		g
Dimensions (L x W x H)	0.86 x 0.38 x 0.44 inch	21.85 x 9.60 x 11.20 mm		
MTBF	>900,000 hrs (MIL-HDBK -217F, Ground Benign, t=+25 $^{\circ}$ C)			
Maximum soldering temp.	1.5mm from case for 10 sec max		260	$^{\circ}$ C

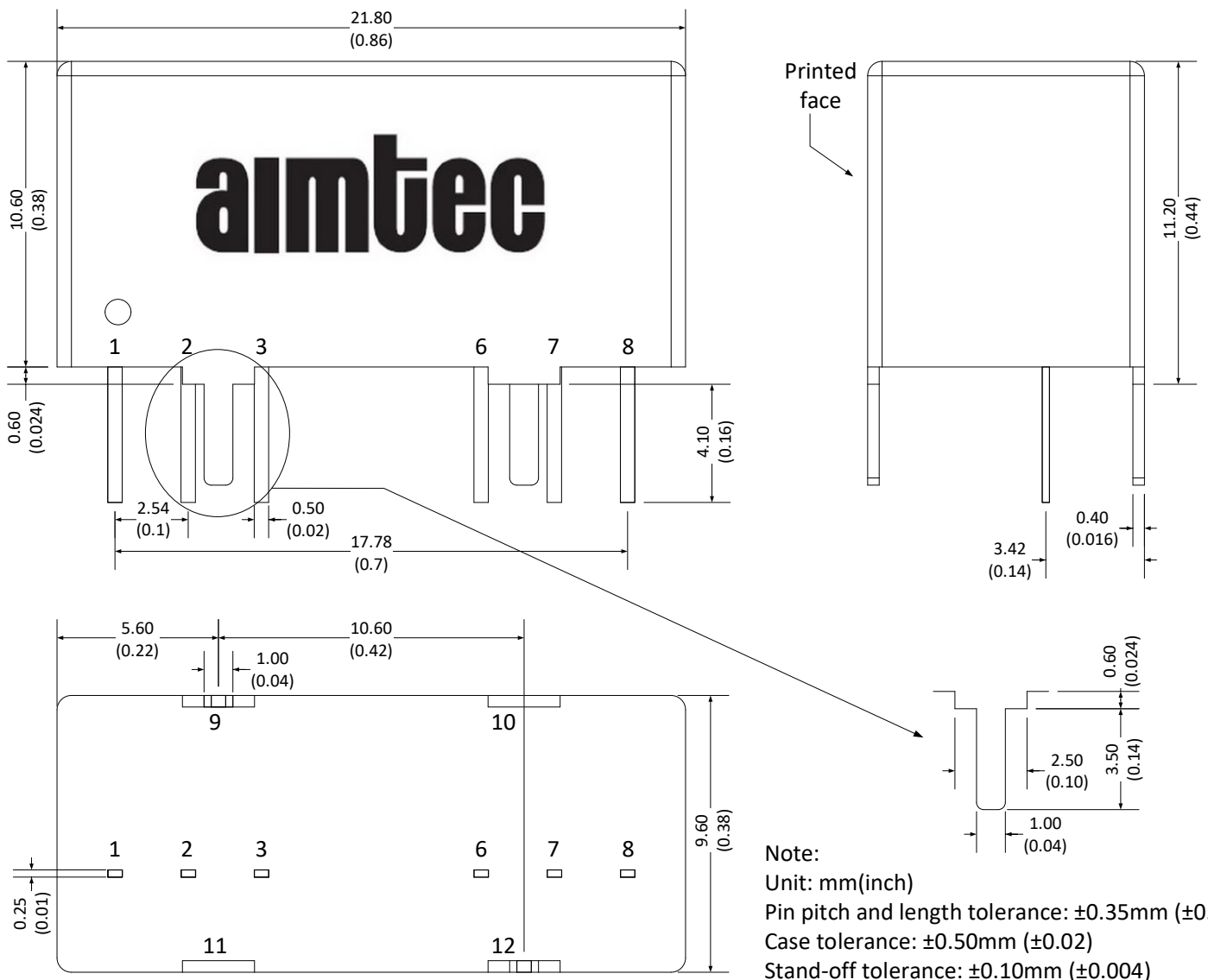
Safety Specifications

Parameters	
Standards	EN55032 Class A (external class A circuit required)
	IEC61000-4-2, Perf. Criteria B
	IEC61000-4-3, Perf. Criteria A
	IEC61000-4-4, Perf. Criteria A (external EFT/Surge circuit required)
	IEC61000-4-5, Perf. Criteria A (external EFT/Surge circuit required)
	IEC61000-4-6, Perf. Criteria A
	IEC61000-4-8, Perf. Criteria A
	NOTE: designed to meet IEC/EN/UL 60950-1, 62368-1

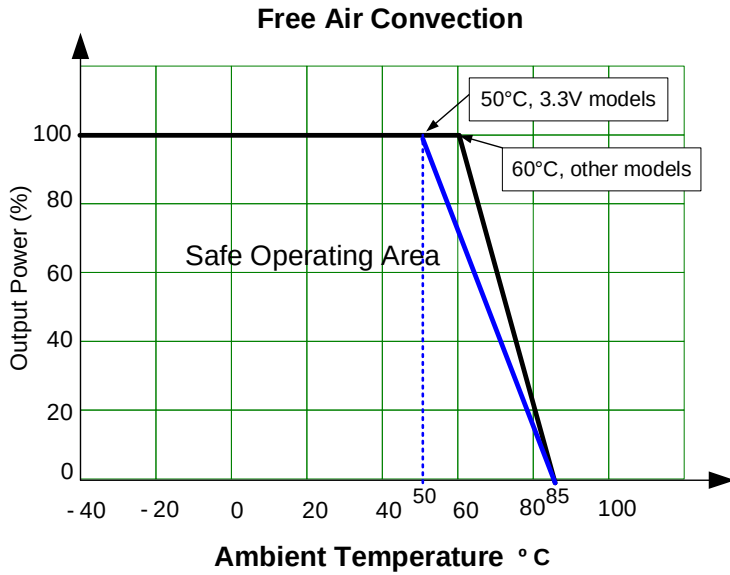
Pin Out Specifications

Pin	1600 VDC	
	Single	Dual
1	- V Input	- V Input
2	+ V Input	+ V Input
3	On/Off Control	On/Off Control
6	+ V Output	+ V Output
7	- V Output	Common
8	N.C.	- V Output
9	Case	Case
10	Stand-off	Stand-off
11	Stand-off	Stand-off
12	Case	Case

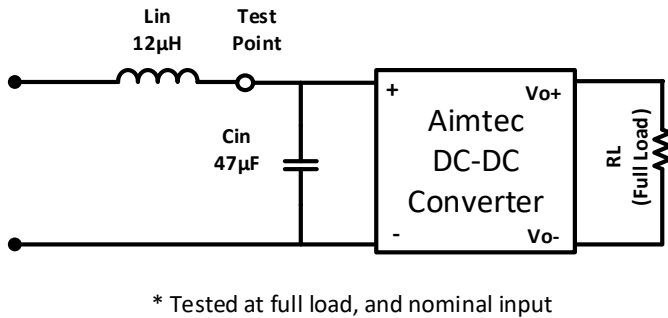
Dimensions



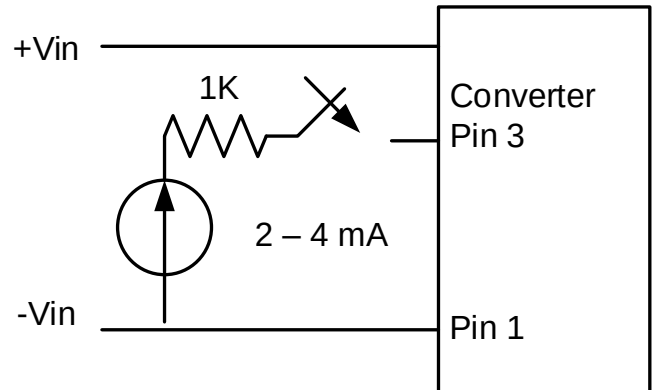
Derating



Input Reflected Ripple Test Circuit

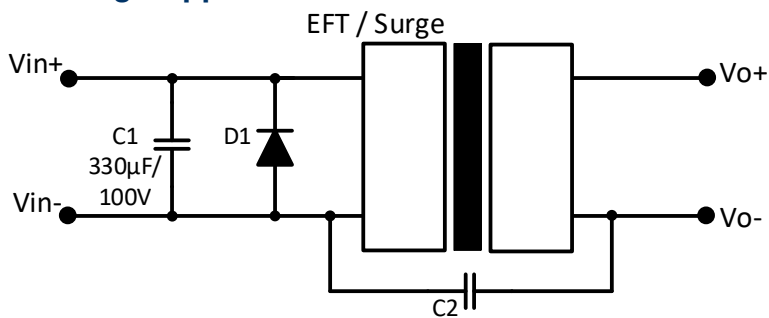


Control ON/OFF pin connection example



NOTE: The voltage could be applied through a limiting resistor. The converter is turned on when the external switching circuit is open

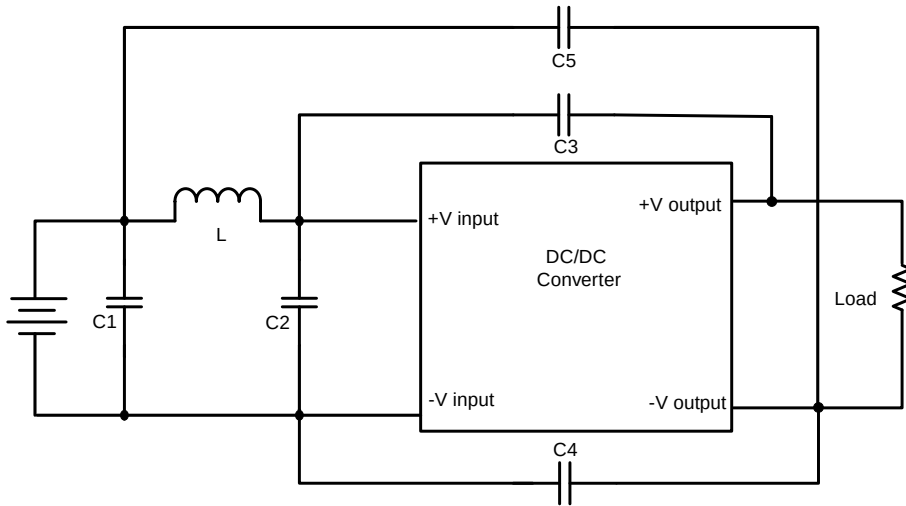
EFT/Surge Application circuit



Vin	C2	D1
12VDC	-	TVS, 3kW, 26V
24VDC	-	TVS, 3kW, 70V
48VDC	1000pF/3KV	TVS, 3kW, 120V

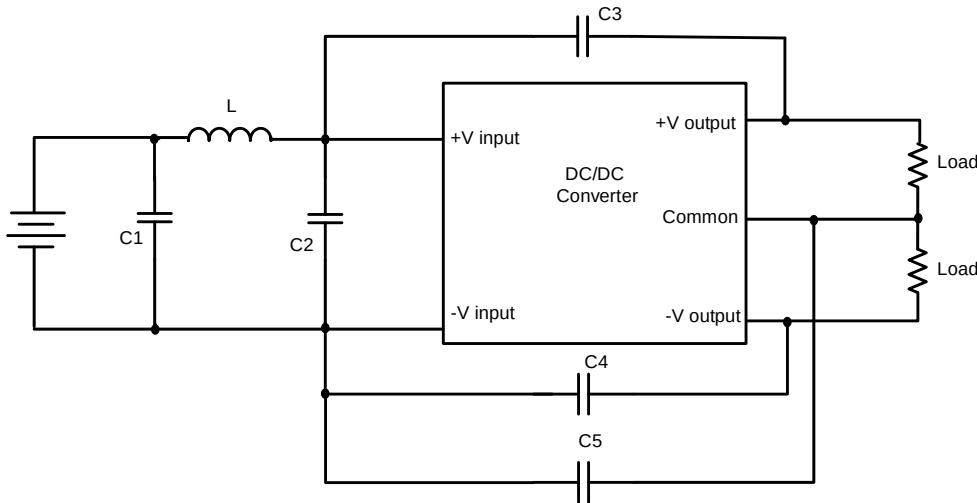
Class A EMI, external filter

Single output models



Vin	C1	C2	C3, C4	C5	L
12VDC	10 μ F/35V	-	1nF/3KV	-	3.3 μ H
24VDC	4.7 μ F/100V	4.7 μ F/100V	1nF/3KV	-	10 μ H
48VDC	4.7 μ F/100V	4.7 μ F/100V	1nF/3KV	220pF/3KV	10 μ H

Dual output models



Vin	C1	C2	C3, C4	C5	L
12VDC	10 μ F/35V	-	1nF/3KV	-	3.3 μ H
24VDC	4.7 μ F/100V	4.7 μ F/100V	1nF/3KV	-	10 μ H
48VDC	4.7 μ F/100V	4.7 μ F/100V	1nF/3KV	220pF/3KV	10 μ H

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