aimtec
Your Power Partner

Series AM1DC-Z

1 Watt | DC-DC Converter

FEATURES:

- RoHS compliant SIP7 package
- High efficiency up to 81%
- I/O Isolation 6000 VDC
- Low isolation capacitance
- Physical clearance of Isolation barrier 2.5mm
- Safety barrier 100% production tested
- Rated working voltage of 250 Vrms
- Continuous Short Circuit Protection

RoHS CE

Models
Single output

Model	Input Voltage (V)	Output Voltage (V)	Output Current Max (mA)	Max Capacitive Load (uF)	Efficiency (%)
AM1DC-0503SH60Z	5	3.3	303	220	71
AM1DC-0505SH60Z	5	5	200	220	75
AM1DC-0509SH60Z	5	9	111.1	220	77
AM1DC-0512SH60Z	5	12	83.3	220	76
AM1DC-0515SH60Z	5	15	66.7	220	77
AM1DC-0903SH60Z	9	3.3	303	220	72
AM1DC-0905SH60Z	9	5	200	220	75
AM1DC-0909SH60Z	9	9	111.1	220	77
AM1DC-0912SH60Z	9	12	83.3	220	78
AM1DC-0915SH60Z	9	15	66.7	220	78
AM1DC-1203SH60Z	12	3.3	303	220	70
AM1DC-1205SH60Z	12	5	200	220	74
AM1DC-1209SH60Z	12	9	111.1	220	76
AM1DC-1212SH60Z	12	12	83.3	220	76
AM1DC-1215SH60Z	12	15	66.7	220	76
AM1DC-1503SH60Z	15	3.3	303	220	73
AM1DC-1505SH60Z	15	5	200	220	77
AM1DC-1509SH60Z	15	9	111.1	220	80
AM1DC-1512SH60Z	15	12	83.3	220	80
AM1DC-1515SH60Z	15	15	66.7	220	79
AM1DC-2403SH60Z	24	3.3	303	220	70
AM1DC-2405SH60Z	24	5	200	220	71
AM1DC-2409SH60Z	24	9	111.1	220	70
AM1DC-2412SH60Z	24	12	83.3	220	72
AM1DC-2415SH60Z	24	15	66.7	220	73

Models
Dual output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Max Capacitive Load (uF)	Efficiency (%)
AM1DC-0503DH60Z	5	±3.3	±151.5	±100	73
AM1DC-0505DH60Z	5	±5	±100	±100	75
AM1DC-0509DH60Z	5	±9	±55.6	±100	79
AM1DC-0512DH60Z	5	±12	±41.7	±100	77
AM1DC-0515DH60Z	5	±15	±33.3	±100	77
AM1DC-051509DH60Z	5	+15/-9	+33/-55	±100	76
AM1DC-0903DH60Z	9	±3.3	±151.5	±100	73
AM1DC-0905DH60Z	9	±5	±100	±100	77
AM1DC-0909DH60Z	9	±9	±55.6	±100	79
AM1DC-0912DH60Z	9	±12	±41.7	±100	77
AM1DC-0915DH60Z	9	±15	±33.3	±100	79
AM1DC-091509DH60Z	9	+15/-9	+33/-55	±100	78
AM1DC-1203DH60Z	12	±3.3	±151.5	±100	72
AM1DC-1205DH60Z	12	±5	±100	±100	73
AM1DC-1209DH60Z	12	±9	±55.6	±100	77

AM1DC-1212DH60Z	12	±12	±41.7	±100	74
AM1DC-1215DH60Z	12	±15	±33.3	±100	76

Models
Dual output (continued)

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Max Capacitive Load (uF)	Efficiency (%)
AM1DC-121509DH60Z	12	+15/-9	+33/-55	±100	76
AM1DC-1503DH60Z	15	±3.3	±151.5	±100	75
AM1DC-1505DH60Z	15	±5	±100	±100	79
AM1DC-1509DH60Z	15	±9	±55.6	±100	81
AM1DC-1512DH60Z	15	±12	±41.7	±100	80
AM1DC-1515DH60Z	15	±15	±33.3	±100	80
AM1DC-151509DH60Z	15	+15/-9	+33/-55	±100	84
AM1DC-2403DH60Z	24	±3.3	±151.5	±100	68
AM1DC-2405DH60Z	24	±5	±100	±100	69
AM1DC-2409DH60Z	24	±9	±55.6	±100	73
AM1DC-2412DH60Z	24	±12	±41.7	±100	72
AM1DC-2415DH60Z	24	±15	±33.3	±100	75
AM1DC-241509DH60Z	24	+15/-9	+33/-55	±100	74

*Output ripple and noise are measured without external connection of filtering capacitors. For reducing these values please refer to the recommended circuit below.

Input Specifications

Parameters	Nominal	Typical	Maximum	Units
Voltage range	5 9 12 15 24	4.5-5.5 8.1-9.9 10.8-13.2 13.5-16.5 21.6-26.4		VDC
Filter	Capacitor			
Turn on Transient process time	5 Vin 9 Vin 12 Vin 15 Vin 24 Vin	760 530 300 300 280		µs
Start up time	5 Vin 9 Vin 12 Vin 15 Vin 24 Vin	2.8 2.5 2.3 2.3 2.24		ms
Absolute Maximum Rating	5 Vin 9 Vin 12 Vin 15 Vin 24 Vin	0-7 0-12 0-15 0-18 0-28		VDC
Peak Input Voltage time			100	ms
Quiescent Current	5 Vin 9 Vin 12 Vin 15 Vin 24 Vin	40 30 20 15 10		mA
Rise time	5 Vin 9 Vin 12 Vin 15 Vin 24 Vin	180 190 200 190 180		µs
Input Reflected Ripple current	Thru 12µH inductor, 5Hz to 20MHz	20		mA rms

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage (rated for 1 min)	Flash tested for 3sec.		6000	VDC
Rated working voltage		250		V rms
Resistance		>1000		MOhm
Capacitance		10		pF

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		±3		%
Voltage balance (Dual output model)	Balanced Load	±1		%
Short Circuit protection	Continuous			
Short circuit restart	Auto recovery			
Line voltage regulation	For 1% change of V in	±1.2		%
Load voltage regulation	AM1DC-0503DH60Z AM1DC-1203SH60Z From 10 to 100% load	±12		%
	Other models, From 10 to 100% load	±10		
Temperature coefficient		±0.03		%/ºC
Ripple and Noise	20MHz Bandwidth		200	mV p-p

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load, depending of the model	20 - 50		KHz
Clearance Distance	Input to Output	2.5		mm
Operating temperature	Full Load without Derating	-40 to +85		ºC
Storage temperature		-40 to +125		ºC
Maximum case temperature			100	ºC
Cooling	Free air convection			
Humidity			95	% RH
Case material	Non-conductive black plastic, epoxy encapsulated (UL94V-0 rated)			
Soldering temperature	1.5mm from case for 10 sec.		260	ºC
Weight	4.3			g
Dimensions (L x W x H)	0.77 x 0.39 x 0.49 inches 19.50 x 9.80 x 12.50 mm			
MTBF	>2 390 000 hrs (MIL-HDBK-217 F at +25 ºC)			

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.

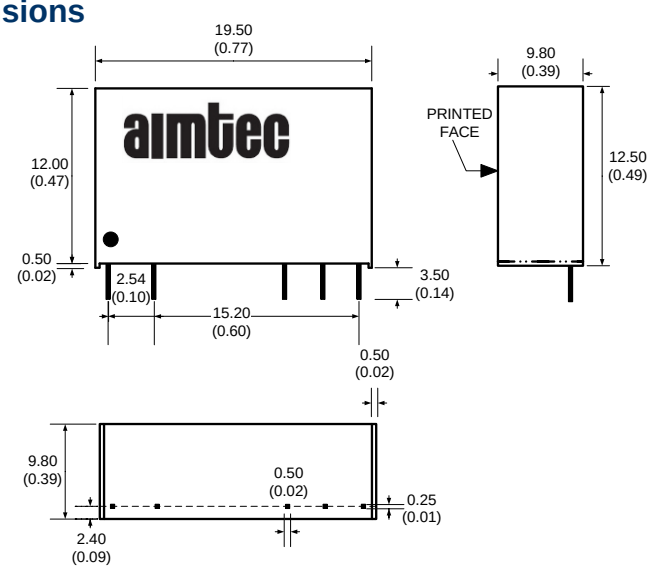
Safety Specifications

Parameters	
Standards	EN 55032, Class B IEC 61000-4-2: 2008, Criteria A IEC 61000-4-3: 2010, Criteria A IEC 61000-4-4: 2012, Criteria A IEC 61000-4-6: 2008, Criteria A IEC 61000-4-8: 2009, Criteria A Designed to meet IEC 60950-1: 2001

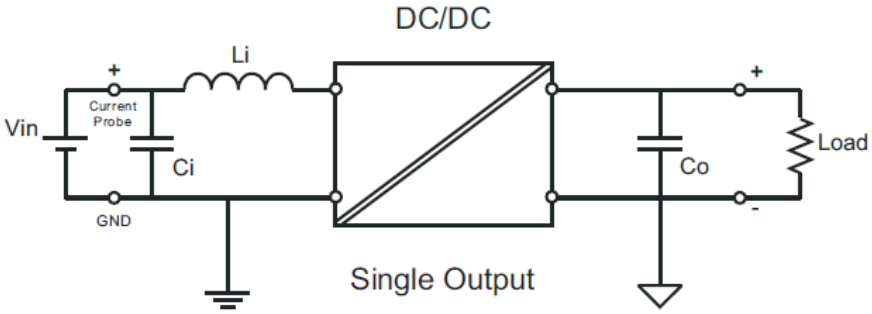
Pin Out Specifications

Pin	6000 VDC	
	Single	Dual
1	+ V Input	+ V Input
2	- V Input	- V Input
5	- V Output	- V Output
6	No pin	Common
7	+ V Output	+ V Output

Dimensions

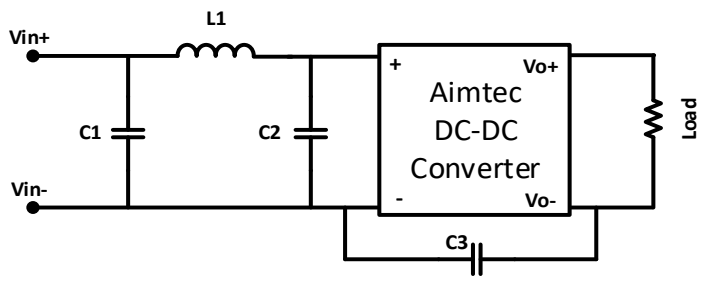


Recommended Application circuit for reducing the output ripple and noises:



Recommended Output Capacitor to reduce the converter's ripple and noises for single output models is 4.7µF to 100µF and for dual output models is 4.7µF to 68µF connected to both outputs.
Li with value of 12µH and Ci with value 10µF to 100µF are recommended to be connected to the input of the converter for EMI improvement.

EMI Filter Circuit Example



Vin	C1	L1	C2	C3
5, 9, 12, 15 V	2.2 µF / 100V	18 µH		
24 V	2.2 µF / 100V	18 µH	2.2 µF / 100V	470 pF / 2kV

*** Electrolytic type**

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