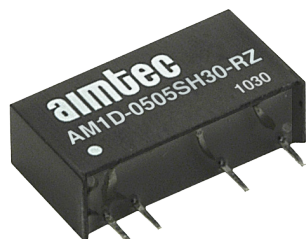


Series AM1D-RZ

1 Watt | DC-DC Converter



FEATURES:

- RoHS compliant
- High efficiency up to 89%
- Low profile plastic package
- 7 pin SIP package
- Operating temperature -40°C to + 85°C
- Short circuit protection
- Pin compatible with multiple manufacturers
- Input / Output Isolation 1000 and 3000VDC



Models

Single output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Input Current Full Load No Load (mA)		Max Capacitive Load (uF)	Efficiency %
AM1D-0505S-RZ	4.5-5.5	5	200	1000	230	20	220	84
AM1D-0509S-RZ	4.5-5.5	9	111	1000	230	30	220	86
AM1D-0512S-RZ	4.5-5.5	12	83	1000	228	20	100	87
AM1D-0515S-RZ	4.5-5.5	15	66	1000	228	20	100	87
AM1D-1205S-RZ	10.8-13.2	5	200	1000	98	15	220	84
AM1D-1209S-RZ	10.8-13.2	9	111	1000	95	15	220	86
AM1D-1212S-RZ	10.8-13.2	12	83	1000	94	15	100	88
AM1D-1215S-RZ	10.8-13.2	15	66	1000	94	15	100	88
AM1D-1505S-RZ	13.6-16.5	5	200	1000	78	10	220	84
AM1D-1509S-RZ	13.6-16.5	9	111	1000	76	10	220	86
AM1D-1512S-RZ	13.6-16.5	12	83	1000	76	10	100	87
AM1D-1515S-RZ	13.6-16.5	15	66	1000	75	10	100	89
AM1D-2405S-RZ	21.6-26.4	5	200	1000	51	7	220	83
AM1D-2409S-RZ	21.6-26.4	9	111	1000	49	7	220	86
AM1D-2412S-RZ	21.6-26.4	12	83	1000	48	7	100	87
AM1D-2415S-RZ	21.6-26.4	15	66	1000	48	7	100	87
AM1D-4805S-RZ	43.6-52.8	5	200	1000	27	5	220	79
AM1D-4809S-RZ	43.6-52.8	9	111	1000	26	5	220	82
AM1D-4812S-RZ	43.6-52.8	12	83	1000	26	5	100	82
AM1D-4815S-RZ	43.6-52.8	15	66	1000	26	5	100	81
AM1D-0505SH30-RZ	4.5-5.5	5	200	3000	230	20	220	84
AM1D-0509SH30-RZ	4.5-5.5	9	111	3000	230	30	220	86
AM1D-0512SH30-RZ	4.5-5.5	12	83	3000	228	20	100	87
AM1D-0515SH30-RZ	4.5-5.5	15	66	3000	228	20	100	87
AM1D-1205SH30-RZ	10.8-13.2	5	200	3000	98	15	220	84
AM1D-1209SH30-RZ	10.8-13.2	9	111	3000	95	15	220	86
AM1D-1212SH30-RZ	10.8-13.2	12	83	3000	94	15	100	88
AM1D-1215SH30-RZ	10.8-13.2	15	66	3000	94	15	100	88
AM1D-1505SH30-RZ	13.6-16.5	5	200	3000	78	10	220	84
AM1D-1509SH30-RZ	13.6-16.5	9	111	3000	76	10	220	86
AM1D-1512SH30-RZ	13.6-16.5	12	83	3000	76	10	100	87
AM1D-1515SH30-RZ	13.6-16.5	15	66	3000	75	10	100	89
AM1D-2405SH30-RZ	21.6-26.4	5	200	3000	51	7	220	83
AM1D-2409SH30-RZ	21.6-26.4	9	111	3000	49	7	220	86
AM1D-2412SH30-RZ	21.6-26.4	12	83	3000	48	7	100	87
AM1D-2415SH30-RZ	21.6-26.4	15	66	3000	48	7	100	87
AM1D-4805SH30-RZ	43.6-52.8	5	200	3000	27	5	220	79
AM1D-4809SH30-RZ	43.6-52.8	9	111	3000	26	5	220	82
AM1D-4812SH30-RZ	43.6-52.8	12	83	3000	26	5	100	82
AM1D-4815SH30-RZ	43.6-52.8	15	66	3000	26	5	100	81

Models

Dual output

Model	Input Voltage (V)	Output Voltage (V)	Output Current Max (mA)	Isolation (VDC)	Input Current Full Load No Load (mA)		Max Capacitive Load (uF)	Efficiency (%)
AM1D-0505D-RZ	4.5-5.5	±5	±100	1000	230	20	±100	84
AM1D-0509D-RZ	4.5-5.5	±9	±55	1000	230	30	±100	86
AM1D-0512D-RZ	4.5-5.5	±12	±41	1000	228	20	±47	87
AM1D-0515D-RZ	4.5-5.5	±15	±33	1000	228	20	±47	88
AM1D-1205D-RZ	10.8-13.2	±5	±100	1000	98	15	±100	85
AM1D-1209D-RZ	10.8-13.2	±9	±55	1000	95	15	±100	86
AM1D-1212D-RZ	10.8-13.2	±12	±41	1000	94	15	±47	89
AM1D-1215D-RZ	10.8-13.2	±15	±33	1000	94	15	±47	89
AM1D-1505D-RZ	13.6-16.5	±5	±100	1000	78	10	±100	85
AM1D-1509D-RZ	13.6-16.5	±9	±55	1000	76	10	±100	87
AM1D-1512D-RZ	13.6-16.5	±12	±41	1000	76	10	±47	87
AM1D-1515D-RZ	13.6-16.5	±15	±33	1000	75	10	±47	89
AM1D-2405D-RZ	21.6-26.4	±5	±100	1000	51	7	±100	84
AM1D-2409D-RZ	21.6-26.4	±9	±55	1000	49	7	±100	87
AM1D-2412D-RZ	21.6-26.4	±12	±41	1000	48	7	±47	87
AM1D-2415D-RZ	21.6-26.4	±15	±33	1000	48	7	±47	87
AM1D-4805D-RZ	43.6-52.8	±5	±100	1000	27	5	±100	80
AM1D-4809D-RZ	43.6-52.8	±9	±55	1000	26	5	±100	82
AM1D-4812D-RZ	43.6-52.8	±12	±41	1000	26	5	±47	82
AM1D-4815D-RZ	43.6-52.8	±15	±33	1000	26	5	±47	82
AM1D-0505DH30-RZ	4.5-5.5	±5	±100	3000	230	20	±100	84
AM1D-0509DH30-RZ	4.5-5.5	±9	±55	3000	230	30	±100	86
AM1D-0512DH30-RZ	4.5-5.5	±12	±41	3000	228	20	±47	87
AM1D-0515DH30-RZ	4.5-5.5	±15	±33	3000	228	20	±47	88
AM1D-1205DH30-RZ	10.8-13.2	±5	±100	3000	98	15	±100	85
AM1D-1209DH30-RZ	10.8-13.2	±9	±55	3000	95	15	±100	86
AM1D-1212DH30-RZ	10.8-13.2	±12	±41	3000	94	15	±47	89
AM1D-1215DH30-RZ	10.8-13.2	±15	±33	3000	94	15	±47	89
AM1D-1505DH30-RZ	13.6-16.5	±5	±100	3000	78	10	±100	85
AM1D-1509DH30-RZ	13.6-16.5	±9	±55	3000	76	10	±100	87
AM1D-1512DH30-RZ	13.6-16.5	±12	±41	3000	76	10	±47	87
AM1D-1515DH30-RZ	13.6-16.5	±15	±33	3000	75	10	±47	89
AM1D-2405DH30-RZ	21.6-26.4	±5	±100	3000	51	7	±100	84
AM1D-2409DH30-RZ	21.6-26.4	±9	±55	3000	49	7	±100	87
AM1D-2412DH30-RZ	21.6-26.4	±12	±41	3000	48	7	±47	87
AM1D-2415DH30-RZ	21.6-26.4	±15	±33	3000	48	7	±47	87
AM1D-4805DH30-RZ	43.6-52.8	±5	±100	3000	27	5	±100	80
AM1D-4809DH30-RZ	43.6-52.8	±9	±55	3000	26	5	±100	82
AM1D-4812DH30-RZ	43.6-52.8	±12	±41	3000	26	5	±47	82
AM1D-4815DH30-RZ	43.6-52.8	±15	±33	3000	26	5	±47	82

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	5	4.5-5.5		VDC
	12	10.8-13.2		
	15	13.6-16.5		
	24	21.6-26.4		
	48	43.6-52.8		
Filter	Capacitor			

Input Specifications (continued)

Parameters	Nominal	Typical	Maximum	Units
Voltage range	5	4.5-5.5		VDC
	12	10.8-13.2		
	15	13.6-16.5		
	24	21.6-26.4		
	48	43.6-52.8		
Filter	Capacitor			
Absolute Maximum Rating	5 Vin	9		VDC
	12 Vin	18		
	15 Vin	20		
	24 Vin	30		
	48 Vin	54		
Peak Input Voltage time		100		ms
Input Reflected Ripple Current	5 & 12Vin	20		mA p-p
	15 Vin	30		
	24Vin	40		
	48	50		

Isolation Specifications

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

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy		±3		%
Voltage balance (Dual Output model)	Balanced Load	±1		%
Short Circuit protection		Momentary (1 sec)		
Line voltage regulation	For 1.0% of Vin	±1.2		%
Load voltage regulation	load 10~100%	±6		%
Temperature coefficient		±0.02		%/°C
Ripple & Noise	At 20MHz Bandwidth	50		mV p-p

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	70		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 (UL94V-0 rated)			
Weight		2.3		g
Dimensions (L x W x H)		0.76 x 0.24 x 0.37 inch	19.50 x 6.00 x 9.50 mm	
MTBF		>2 000 000 hrs (MIL-HDBK -217F, Ground Benign, t=+25°C)		

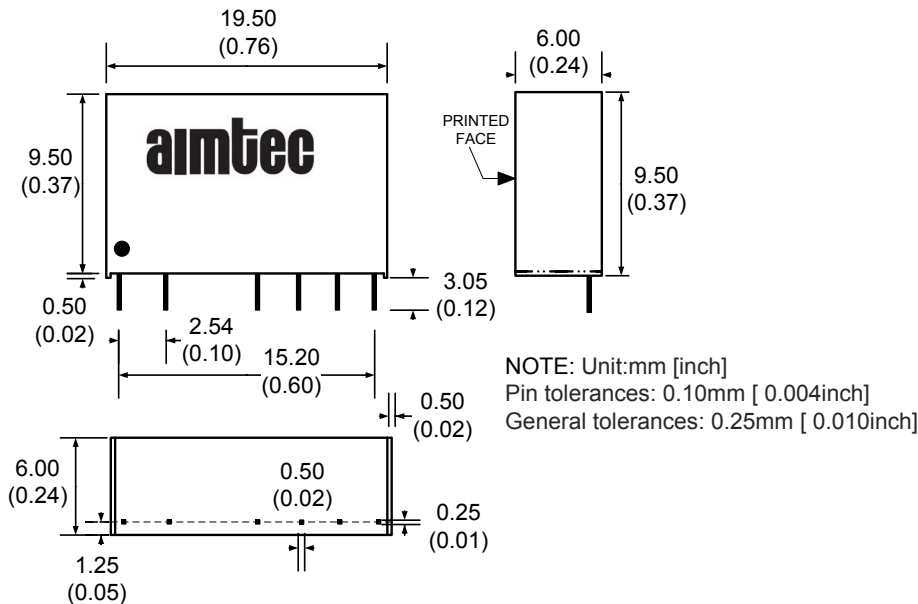
Safety Specifications

Parameters	
Agency Approval	CE
Standards	EN55022: 2006 + A1: 2007, Class B
	EN55024: 1998 + A1: 2001 + A2:2003
	IEC61000-4-2:2008
	IEC61000-4-3: 2006 + A1: 2007
	IEC61000-4-4, 2004
	IEC61000-4-6: 2008
	IEC61000-4-8: 1993 + A1:2000

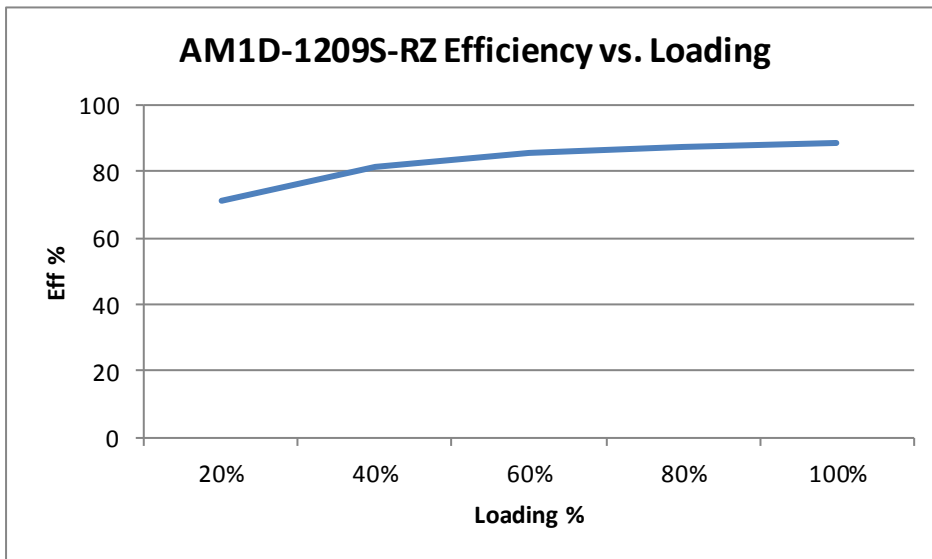
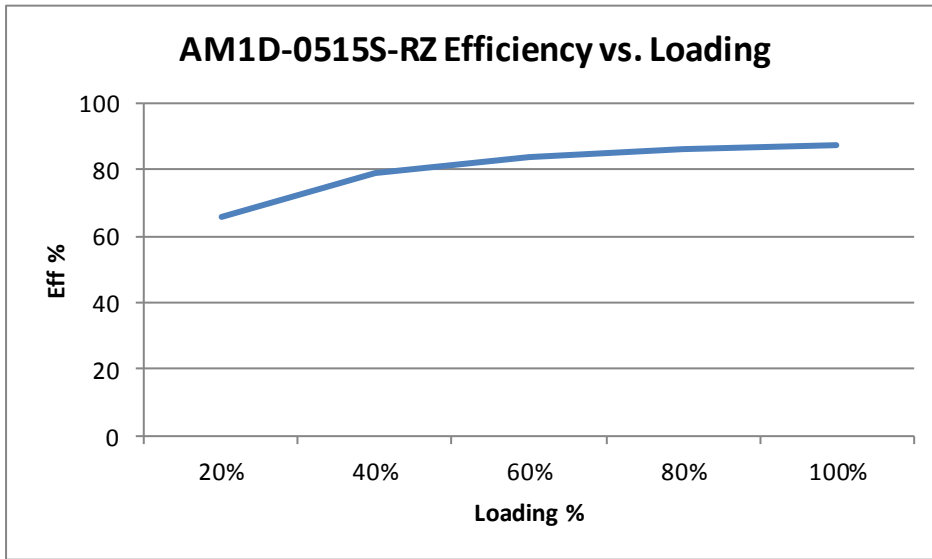
Pin Out Specifications

Pin	1000VDC		3000VDC	
	Single	Dual	Single	Dual
1	+ V Input	+ V Input	+ V Input	+ V Input
2	- V Input	- V Input	- V Input	- V Input
4	- V Output	- V Output	No pin	No pin
5	No pin	Common	- V Output	- V Output
6	+ V Output	+ V Output	No pin	Common
7	No pin	No pin	+ V Output	+ V Output

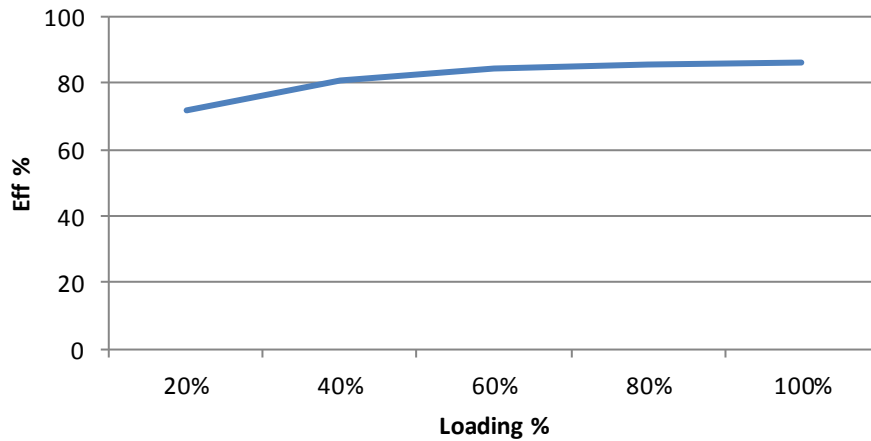
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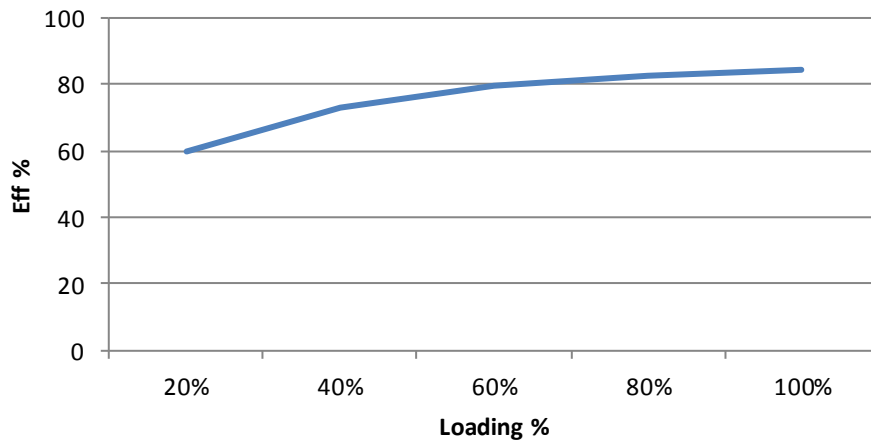
Typical Efficiency Chart Examples



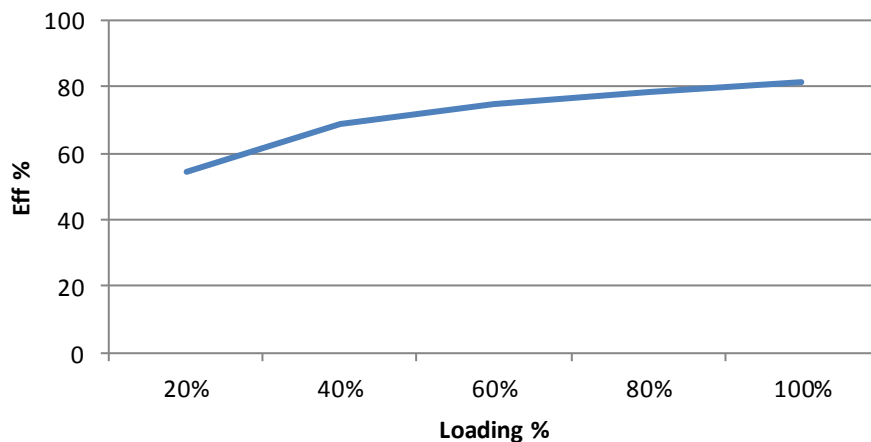
AM1D-1505S-RZ Efficiency vs. Loading



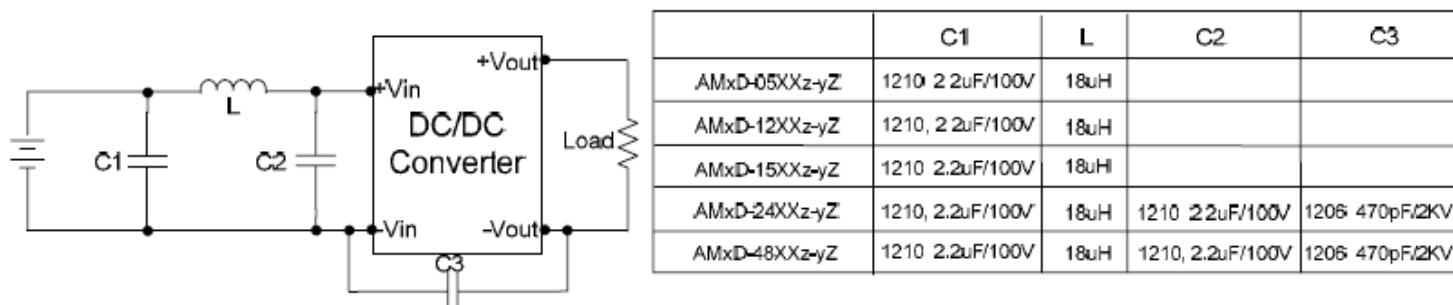
AM1D-2409S-RZ Efficiency vs. Loading



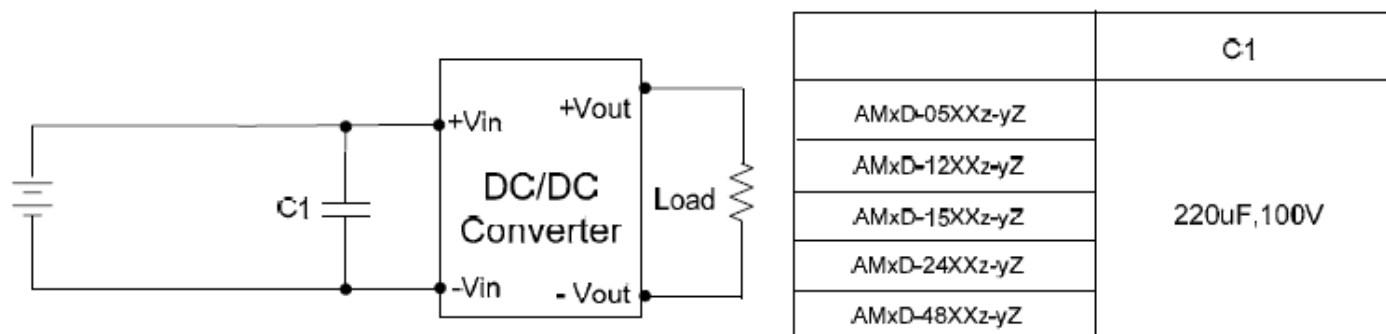
AM1D-4805S-RZ Efficiency vs. Loading



Conducted Emissions



EFT



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