



Your Power Partner

Series AM1P-Z

1 Watt | DC-DC Converter



FEATURES:

- RoHS compliant
- 8 Pin DIP Package
- Low ripple and noise
- High efficiency up to 83%
- Operating temperature -40°C to + 85°C
- Input / Output Isolation 1000 & 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 (uF)	Input Current Full Load No Load (mA)		Efficiency (%)
AM1P-0503SZ	4.5-5.5	3.3	300	1000	220	256	16	78
AM1P-0505SZ	4.5-5.5	5	200	1000	220	253	15	79
AM1P-0507SZ	4.5-5.5	7.2	140	1000	220	241	16	83
AM1P-0509SZ	4.5-5.5	9	110	1000	220	253	25	79
AM1P-0512SZ	4.5-5.5	12	83	1000	220	296	25	81
AM1P-0515SZ	4.5-5.5	15	67	1000	220	244	25	82
AM1P-0518SZ	4.5-5.5	18	56	1000	220	241	25	83
AM1P-0524SZ	4.5-5.5	24	42	1000	220	293	28	82
AM1P-1203SZ	10.8-13.2	3.3	300	1000	220	108	15	77
AM1P-1205SZ	10.8-13.2	5	200	1000	220	105	16	79
AM1P-1207SZ	10.8-13.2	7.2	140	1000	220	100	16	83
AM1P-1209SZ	10.8-13.2	9	110	1000	220	105	15	79
AM1P-1212SZ	10.8-13.2	12	83	1000	220	125	8	80
AM1P-1215SZ	10.8-13.2	15	67	1000	220	105	17	79
AM1P-1218SZ	10.8-13.2	18	56	1000	220	103	15	81
AM1P-1224SZ	10.8-13.2	24	42	1000	220	127	25	79
AM1P-2403SZ	21.6-26.4	3.3	300	1000	220	89	15	75
AM1P-2405SZ	21.6-26.4	5	200	1000	220	83	10	80
AM1P-2407SZ	21.6-26.4	7.2	140	1000	220	88	12	76
AM1P-2409SZ	21.6-26.4	9	110	1000	220	85	10	78
AM1P-2412SZ	21.6-26.4	12	83	1000	220	98	13	82
AM1P-2415SZ	21.6-26.4	15	67	1000	220	83	15	80
AM1P-2418SZ	21.6-26.4	18	56	1000	220	85	12	78
AM1P-2424SZ	21.6-26.4	24	42	1000	220	99	10	81
AM1P-4803SZ	43.2-52.8	3.3	300	1000	220	53	8	79
AM1P-4805SZ	43.2-52.8	5	200	1000	220	53	8	79
AM1P-4807SZ	43.2-52.8	7.2	140	1000	220	56	10	74
AM1P-4809SZ	43.2-52.8	9	110	1000	220	53	7	79
AM1P-4812SZ	43.2-52.8	12	83	1000	220	63	8	80
AM1P-4815SZ	43.2-52.8	15	67	1000	220	52	8	80
AM1P-4818SZ	43.2-52.8	18	56	1000	220	51	8	82
AM1P-4824SZ	43.2-52.8	24	42	1000	220	61	9	82
AM1P-0503SH30Z	4.5-5.5	3.3	300	3000	220	256	16	78
AM1P-0505SH30Z	4.5-5.5	5	200	3000	220	253	15	79
AM1P-0507SH30Z	4.5-5.5	7.2	140	3000	220	241	16	83
AM1P-0509SH30Z	4.5-5.5	9	110	3000	220	253	25	79
AM1P-0512SH30Z	4.5-5.5	12	83	3000	220	296	25	81
AM1P-0515SH30Z	4.5-5.5	15	67	3000	220	244	25	82
AM1P-0518SH30Z	4.5-5.5	18	56	3000	220	241	25	83
AM1P-0524SH30Z	4.5-5.5	24	42	3000	220	293	28	82
AM1P-1203SH30Z	10.8-13.2	3.3	300	3000	220	108	15	77
AM1P-1205SH30Z	10.8-13.2	5	200	3000	220	105	16	79
AM1P-1207SH30Z	10.8-13.2	7.2	140	3000	220	100	16	83
AM1P-1209SH30Z	10.8-13.2	9	110	3000	220	105	15	79
AM1P-1212SH30Z	10.8-13.2	12	83	3000	220	125	8	80
AM1P-1215SH30Z	10.8-13.2	15	67	3000	220	105	17	79
AM1P-1218SH30Z	10.8-13.2	18	56	3000	220	103	15	81
AM1P-1224SH30Z	10.8-13.2	24	42	3000	220	127	25	79

Models

Single output (continued)

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Max Capacitive Load (uF)	Input Current Full Load No Load (mA)		Efficiency (%)
AM1P-2403SH30Z	21.6-26.4	3.3	300	3000	220	89	15	75
AM1P-2405SH30Z	21.6-26.4	5	200	3000	220	83	10	80
AM1P-2407SH30Z	21.6-26.4	7.2	140	3000	220	88	12	76
AM1P-2409SH30Z	21.6-26.4	9	110	3000	220	85	10	78
AM1P-2412SH30Z	21.6-26.4	12	83	3000	220	98	13	82
AM1P-2415SH30Z	21.6-26.4	15	67	3000	220	83	15	80
AM1P-2418SH30Z	21.6-26.4	18	56	3000	220	85	12	78
AM1P-2424SH30Z	21.6-26.4	24	42	3000	220	99	10	81
AM1P-4803SH30Z	43.2-52.8	3.3	300	3000	220	53	8	79
AM1P-4805SH30Z	43.2-52.8	5	200	3000	220	53	8	79
AM1P-4807SH30Z	43.2-52.8	7.2	140	3000	220	56	10	74
AM1P-4809SH30Z	43.2-52.8	9	110	3000	220	53	7	79
AM1P-4812SH30Z	43.2-52.8	12	83	3000	220	63	8	80
AM1P-4815SH30Z	43.2-52.8	15	67	3000	220	52	8	80
AM1P-4818SH30Z	43.2-52.8	18	56	3000	220	51	8	82
AM1P-4824SH30Z	43.2-52.8	24	42	3000	220	61	9	82

Models

Dual output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Max Capacitive Load	Input Current Full Load No Load (mA)		Efficiency (%)
AM1P-0503DZ	4.5-5.5	±3.3	±150	1000	±100	299	15	67
AM1P-0505DZ	4.5-5.5	±5	±100	1000	±100	270	20	74
AM1P-0507DZ	4.5-5.5	±7.2	±70	1000	±100	260	15	77
AM1P-0509DZ	4.5-5.5	±9	±55	1000	±100	260	20	77
AM1P-0512DZ	4.5-5.5	±12	±42	1000	±100	300	22	80
AM1P-0515DZ	4.5-5.5	±15	±34	1000	±100	247	20	81
AM1P-0518DZ	4.5-5.5	±18	±28	1000	±100	244	22	82
AM1P-0524DZ	4.5-5.5	±24	±21	1000	±100	300	20	85
AM1P-1203DZ	10.8-13.2	±3.3	±150	1000	±100	121	10	70
AM1P-1205DZ	10.8-13.2	±5	±100	1000	±100	110	7	72
AM1P-1207DZ	10.8-13.2	±7.2	±70	1000	±100	109	15	71
AM1P-1209DZ	10.8-13.2	±9	±55	1000	±100	109	15	76
AM1P-1212DZ	10.8-13.2	±12	±42	1000	±100	123	12	80
AM1P-1215DZ	10.8-13.2	±15	±34	1000	±100	102	10	80
AM1P-1218DZ	10.8-13.2	±18	±28	1000	±100	103	15	76
AM1P-1224DZ	10.8-13.2	±24	±21	1000	±100	125	20	78
AM1P-2403DZ	21.6-26.4	±3.3	±150	1000	±100	60	5	70
AM1P-2405DZ	21.6-26.4	±5	±100	1000	±100	56	6	74
AM1P-2407DZ	21.6-26.4	±7.2	±70	1000	±100	55	6	76
AM1P-2409DZ	21.6-26.4	±9	±55	1000	±100	56	7	75
AM1P-2412DZ	21.6-26.4	±12	±42	1000	±100	62	5	81
AM1P-2415DZ	21.6-26.4	±15	±34	1000	±100	51	5	81
AM1P-2418DZ	21.6-26.4	±18	±28	1000	±100	53	7	78
AM1P-2424DZ	21.6-26.4	±24	±21	1000	±100	64	7	78

Models

Dual Separated Output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Max Capacitive Load (uF)	Input Current Full Load No Load (mA)		Efficiency (%)
AM1P-050303DZ	4.5-5.5	3.3 / 3.3	150 / 150	1000	220	299	15	67
AM1P-050505DZ	4.5-5.5	5 / 5	100 / 100	1000	220	247	20	81

Models

Dual Separated Output (continued)

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Isolation (VDC)	Max Capacitive Load (uF)	Input Current Full Load No Load (mA)		Efficiency (%)
AM1P-050707DZ	4.5-5.5	7.2 / 7.2	70 / 70	1000	220	260	16	75
AM1P-050909DZ	4.5-5.5	9 / 9	55 / 55	1000	220	253	15	78
AM1P-051212DZ	4.5-5.5	12 / 12	42 / 42	1000	220	300	20	80
AM1P-051515DZ	4.5-5.5	15 / 15	34 / 34	1000	220	247	20	80
AM1P-051818DZ	4.5-5.5	18 / 18	28 / 28	1000	220	247	20	78
AM1P-052424DZ	4.5-5.5	24 / 24	21 / 21	1000	220	320	25	78
AM1P-120303DZ	10.8-13.2	3.3 / 3.3	150 / 150	1000	220	111	15	70
AM1P-120305DZ	10.8-13.2	5 / 5	100 / 100	1000	220	111	10	72
AM1P-120707DZ	10.8-13.2	7.2 / 7.2	70 / 70	1000	220	107	10	71
AM1P-120909DZ	10.8-13.2	9 / 9	55 / 55	1000	220	105	10	76
AM1P-121212DZ	10.8-13.2	12 / 12	42 / 42	1000	220	125	15	80
AM1P-121515DZ	10.8-13.2	15 / 15	34 / 34	1000	220	104	13	80
AM1P-121818DZ	10.8-13.2	18 / 18	28 / 28	1000	220	107	20	76
AM1P-122424DZ	10.8-13.2	24 / 24	21 / 21	1000	220	128	20	78
AM1P-240303DZ	21.6-26.4	3.3 / 3.3	150 / 150	1000	220	53	5	76
AM1P-240305DZ	21.6-26.4	5 / 5	100 / 100	1000	220	50	8	72
AM1P-240707DZ	21.6-26.4	7.2 / 7.2	70 / 70	1000	220	53	5	73
AM1P-240909DZ	21.6-26.4	9 / 9	55 / 55	1000	220	54	8	77
AM1P-241212DZ	21.6-26.4	12 / 12	42 / 42	1000	220	63	6	82
AM1P-241515DZ	21.6-26.4	15 / 15	34 / 34	1000	220	54	6	82
AM1P-241818DZ	21.6-26.4	18 / 18	28 / 28	1000	220	56	13	75
AM1P-242424DZ	21.6-26.4	24 / 24	21 / 21	1000	220	65	5	80

Input Specifications

Parameters	Nominal	Typical	Maximum	Units
Voltage range	5	4.5-5.5		VDC
	12	10.8-13.2		
	24	21.6-26.4		
	48	43.2-52.8		
Filter	Capacitor			
Turn on Transient process time			25	ms
Start up time		200		ms
Absolute Maximum Rating	5 Vin	0-7		VDC
	12 Vin	0-15		
	24 Vin	0-28		
	48 Vin	0-54		
Peak Input Voltage time		100		ms

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	60 sec		1000 all models, 3000 (single output)	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 (Single)	For 1% change of Vin	±1.2		%
Line voltage regulation (Dual)	For 1% change of Vin	±1.2		%
Load voltage regulation (Single)	Load 20 – 100%	±10		%
Load voltage regulation (Single) 3.3V output model	Load 20 – 100%	±20		%

Output Specifications (continued)

Parameters	Conditions	Typical	Maximum	Units
Load voltage regulation (Dual)	Load 20 – 100%	±10		%
Load voltage regulation (Dual) 3.3V output 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	80		KHz
Operating temperature	Full Load without Derating	-40 to+85		°C
Storage temperature		-55 to +125		°C
Max Case temperature			90	°C
Cooling	Free air convection			
Humidity			90	%
Case material	Non-conductive black plastic			
Weight		1.8		g
Dimensions (L x W x H)	0.50 x 0.40 x 0.27 inches		12.70 x 10.16 x 6.85 mm	
MTBF	>1 191 000 hrs (MIL-HDBK -217F, Ground Benign, t=+25°C)			

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

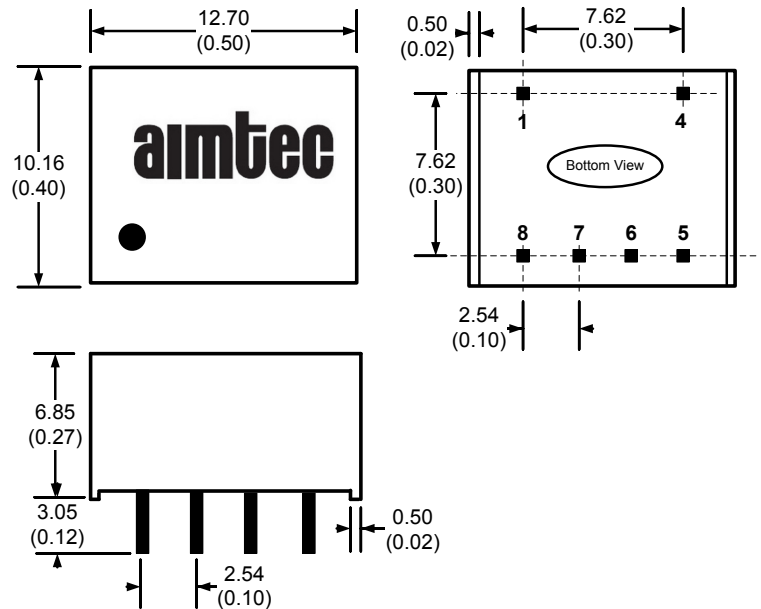
Safety Specifications

Parameters	
Agency approvals	CE
Standards	EN55022 (Radiated Emissions) class B
	EN55024 (Noise Immunity), IEC61000-4-2(ESD)
	IEC61000-4-3(Radiated immunity)

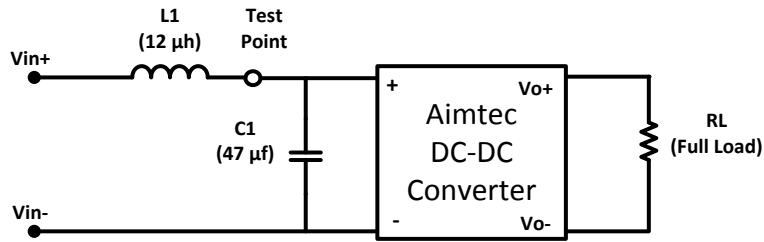
Pin Out Specifications

Pin	1000 and 3000 VDC		1000 VDC
	Single	Dual	Dual Separated
1	- V Input	- V Input	- V Input
4	+ V Input	+ V Input	+ V Input
5	+ V Output	+ V Output	+ V1 Output
6	No pin	No pin	- V1 Output
7	- V Output	Common	+ V2 Output
8	No pin	- V Output	- V2 Output

Dimensions



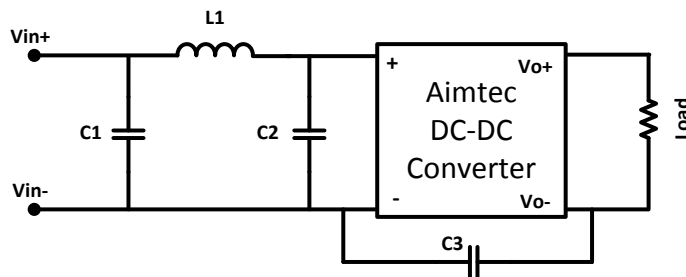
Input Reflected Ripple Test Circuit



* 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.

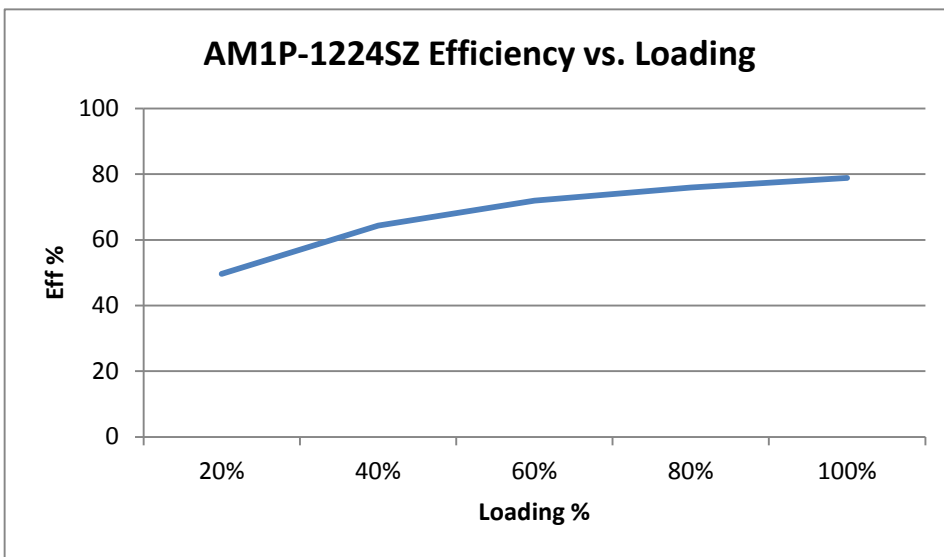
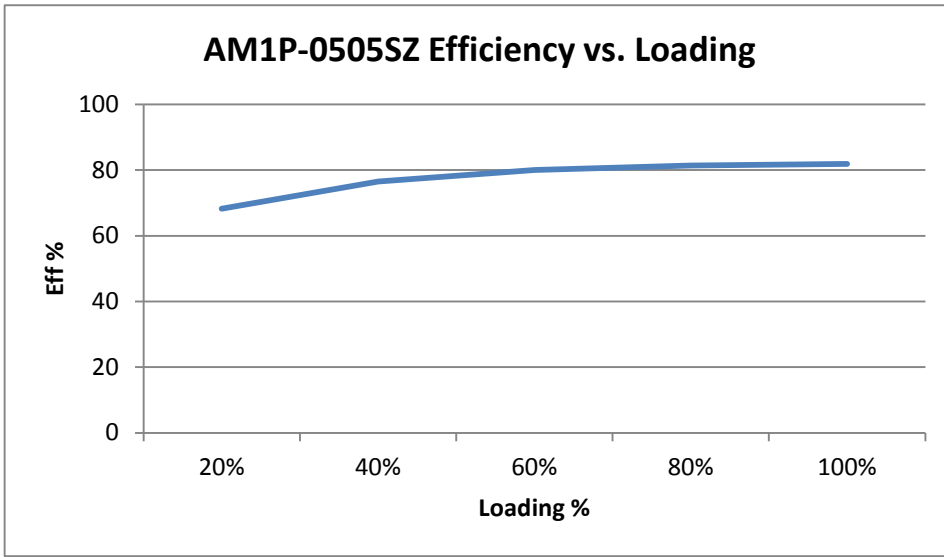


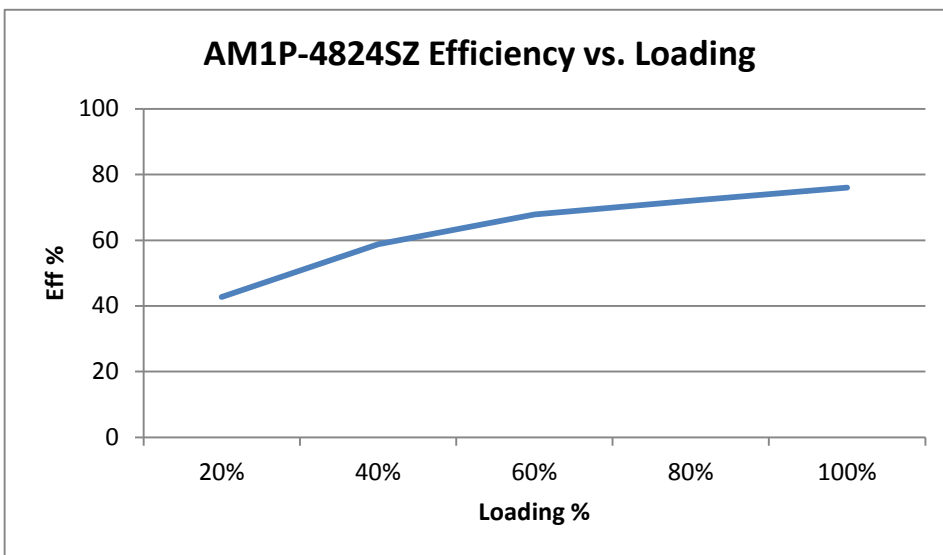
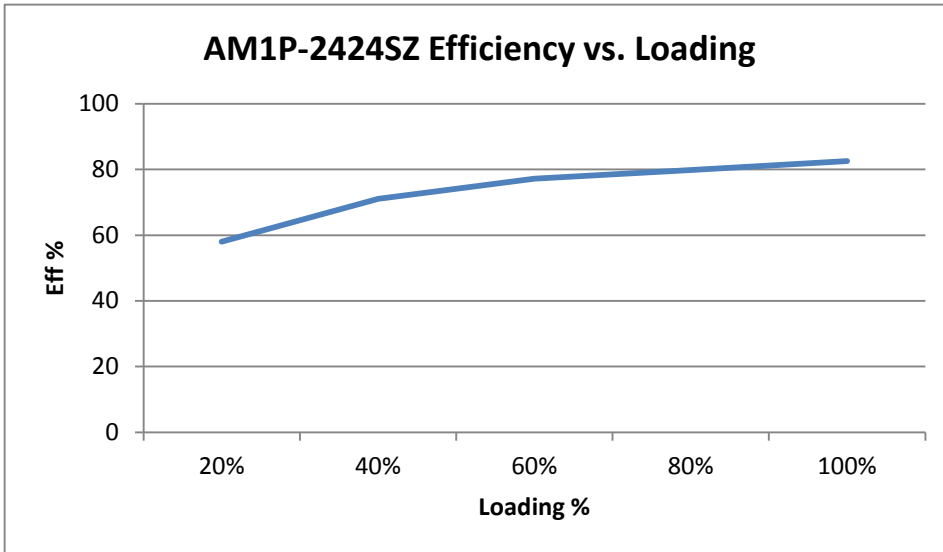
Model	C1	L1	C2	C3
5 Vin	2.2 μF / 100V	18 μH		
12 Vin	2.2 μF / 100V	18 μH		
24 Vin	2.2 μF / 100V	18 μH	2.2 μF / 100V	470pF / 2KV
48 Vin	10 μF / 100V*	18 μH	2.2 μF / 100V	470pF / 2KV

* - 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 μF / 100V).

Typical Efficiency Chart Examples





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