



Series AM15E-NZ

15 Watt | DC-DC Converter



FEATURES:

- Wide 2:1 input range
- High efficiency up to 90%
- Input Under Voltage lockout
- Over current, over voltage protection
- Remote On/Off Control
- Operating temperature -40°C to + 85°C
- Input / Output Isolation 1500VDC
- Continuous short circuit protection
- No load power consumption $\leq 0.12W$
- Output voltage adjustment

Models

Single output



Model	Input Voltage (V)	Max Input current FL/LL (mA)	Output Voltage (V)	Output Current max (A)	Capacitive load, max (μF)	Efficiency (%)
AM15E-2405S-NZ	18-36	718/75	5	3	4700	89
AM15E-2412S-NZ	18-36	718/10	12	1.25	1000	89
AM15E-2415S-NZ	18-36	718/10	15	1	820	89
AM15E-2424S-NZ	18-36	718/10	24	0.62	270	90
AM15E-4805S-NZ	36-75	363/30	5	3	3300	88
AM15E-4812S-NZ	36-75	363/10	12	1.25	1000	88
AM15E-4815S-NZ	36-75	363/10	15	1	680	89
AM15E-4824S-NZ	36-75	363/10	24	0.62	470	89

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	24	18-36		VDC
	48	36-75		
Filter	π (Pi) Network			
Startup time		10		ms
Absolute Maximum Rating	24 Vin	-0.7 - 50		VDC
	48 Vin	-0.7 - 100		
Peak Input Voltage time		1		s
Input Reflected ripple current		30		mA
Input Under Voltage lockout	24 Vin	14 - 15.5		VDC
	48 Vin	26 - 30		
Remote On/Off Control	On	3.5-12VDC or leave open		
	Off	0-1.2VDC or connect to GND, idle current 4-7mA		

Isolation Specifications

Parameters	Conditions	Typical	Rated	Units
Tested I/O voltage	1 min, <1mA		1500	VDC
Resistance		> 1000		MOhm
Capacitance	24 Vout, I/O, 100KHz/0.1V	2050		pF
	Others, I/O, 100KHz/0.1V	1050		

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	0-100% load	±1	±3	%
Short Circuit protection		Continuous, hiccup		
Short circuit restart		Auto Recovery		
Over Current protection		110 - 190		% of Iout
Over Voltage protection		110 - 160		% of Vout
Line voltage regulation	HL-LL	±0.2	±0.5	%
Load voltage regulation	0-100% load	±0.5	±1	%
Temperature coefficient			±0.03	%/°C
Ripple & Noise	At 20MHz Bandwidth, 5-100% load	50	100	mV p-p
Trim		10		% of Vout
Transient Recovery Time	25% Load Step Change	300	500	µs
Transient Deviation Response		±3	±5	%

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	270		KHz
Operating temperature	Derating above 75°C		-40 to +85	°C
Storage temperature			-55 to +125	°C
Maximum case temperature			100	°C
Cooling		Free air convection		
Humidity			95	%
Case material		Aluminum Alloy		
Potting material		UL94V-0 rated		
Weight	Pin mountable		26	g
Dimensions (L x W x H)	Pin mountable	2.00 x 1.00 x 0.46 inches	50.80 x 25.40 x 11.80 mm	
MTBF		> 1,000,000 hrs (MIL-HDBK -217F, Ground Benign, t=+25°C)		
Solder Temp Leads	1.5 mm from case 10 sec.		300	°C

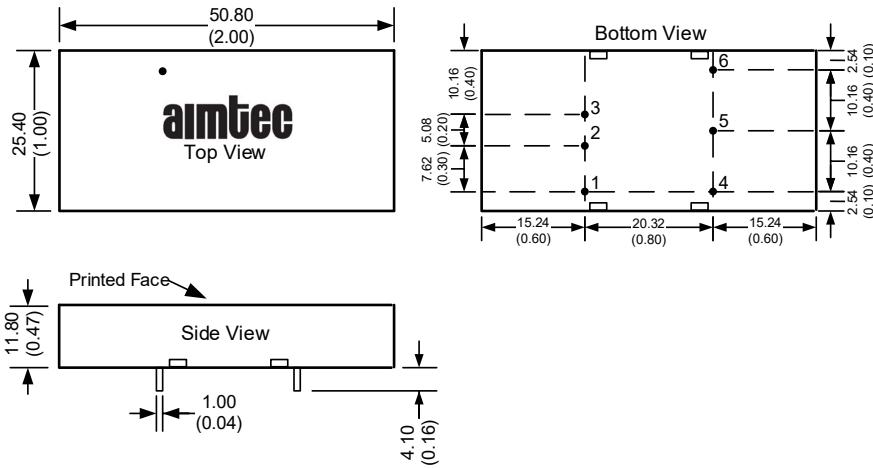
Environmental Specifications

Parameters		
Vibration	Test mode	10-55Hz
	Acceleration	10G, 30min one cycle, every axis tested

Safety Specifications

Parameters		
Approval	CE	
Standards	IEC/EN/60950-1, Designed to meet UL60950-1	
	EN 55032, class A (without external components), class B (with the recommended EMC circuit)	
	Electrostatic Discharge Immunity	IEC 61000-4-2, Contact ±4KV, Criteria B
	RF, Electromagnetic Field Immunity	IEC 61000-4-3, 10V/m, Criteria A
	Electrical Fast Transient / Burst Immunity	IEC 61000-4-4, ±2KV, Criteria B (with the recommended EMC circuit)
	Surge Immunity	IEC 61000-4-5, ±2KV, Criteria B (with the recommended EMC circuit)
	RF, Conducted Disturbance Immunity	IEC 61000-4-6, 3 Vrms, Criteria A
Voltage dips, Short Interruptions & Voltage variations Immunity	IEC 61000-4-29: 0-70%, Criteria B	

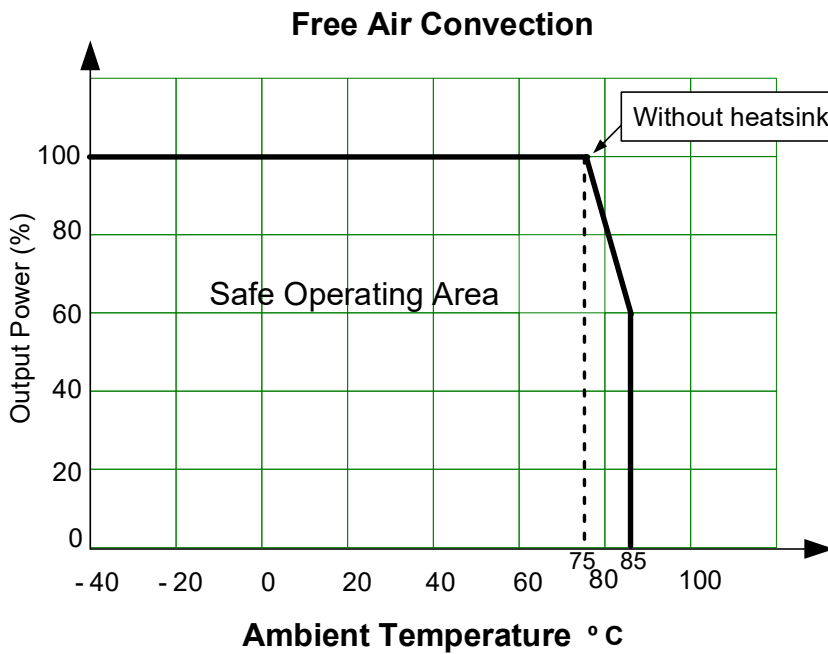
Dimensions:



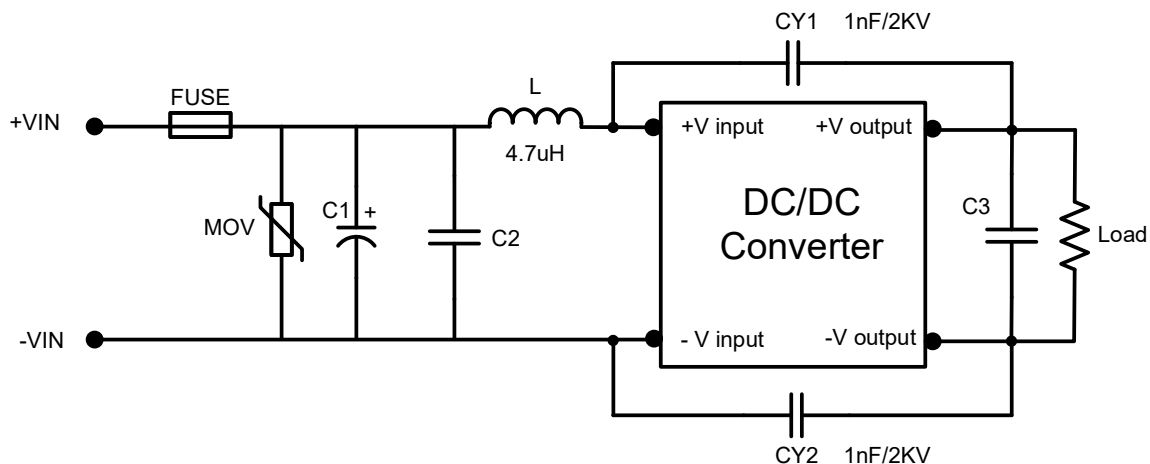
Pin	Single
1	On/Off Control
2	-Vin
3	+Vin
4	- Vout
5	Trim
6	+ Vout

Note:
Unit: mm (inch)
General tolerances: ± 0.50 (± 0.02)

Derating



EMC recommended filter



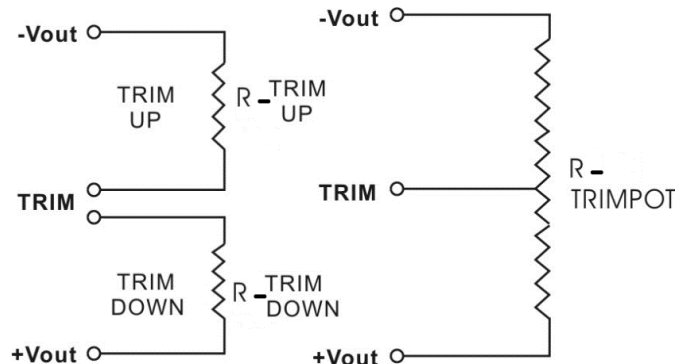
Model	MOV	C1	C2	C3
24 Vin	S20K30	330 μ F / 50V	1 μ F / 50V	470 μ F for 5V output 220 μ F for 12/15V output 100 μ F for 24V output
48 Vin	S14K60	330 μ F / 100V	1 μ F / 100V	

Trimming

Output voltage can be externally trimmed by utilizing the methods as shown below. Leave open if not used.

Fixed Resistor

Variable Potentiometer



AM15E-xx05S-NZ, xx=24 or 48

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	4.95	4.9	4.85	4.8	4.75	4.7	4.65	4.6	4.55	4.5
Rt down (K Ω)	105.181	52.154	31.997	21.378	14.823	10.373	7.155	4.719	2.811	1.277
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	5.05	5.1	5.15	5.2	5.25	5.3	5.35	5.4	5.45	5.5
Rt up (K Ω)	176.356	71.279	41.973	28.2	20.197	14.967	11.281	8.543	6.430	4.749

AM15E-xx12S-NZ, xx=24 or 48

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	11.88	11.76	11.64	11.52	11.4	11.28	11.16	11.04	10.92	10.8
Rt down (KΩ)	496.092	301.452	212.527	161.585	128.573	105.442	88.332	75.164	64.716	56.223
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	12.12	12.24	12.36	12.48	12.6	12.72	12.84	12.96	13.08	13.2
Rt up (KΩ)	706.435	158.92	83.879	54.075	38.077	28.095	21.274	16.317	12.552	9.595

AM15E-xx15S-NZ, xx=24 or 48

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	14.85	14.7	14.55	14.4	14.25	14.1	13.95	13.8	13.65	13.5
Rt down (KΩ)	634.883	400.637	288.514	222.759	179.537	148.96	126.187	108.569	94.532	83.087
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	15.15	15.3	15.45	15.6	15.75	15.9	16.05	16.2	16.35	16.5
Rt up (KΩ)	1460.099	192.574	96.642	61.354	43.016	31.781	24.191	18.721	14.59	11.361

AM15E-xx24S-NZ, xx=24 or 48

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	23.76	23.52	23.28	23.04	22.8	22.56	22.32	22.08	21.84	21.6
Rt down (KΩ)	1286.2	792.123	565.867	436.104	351.954	292.963	249.315	215.714	189.047	167.37
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	24.24	24.48	24.72	24.96	25.2	25.44	25.68	25.92	26.16	26.4
Rt up (KΩ)	816.889	179.914	94.338	60.464	42.307	30.988	23.257	17.64	13.376	10.027

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