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AMSR3-EZ

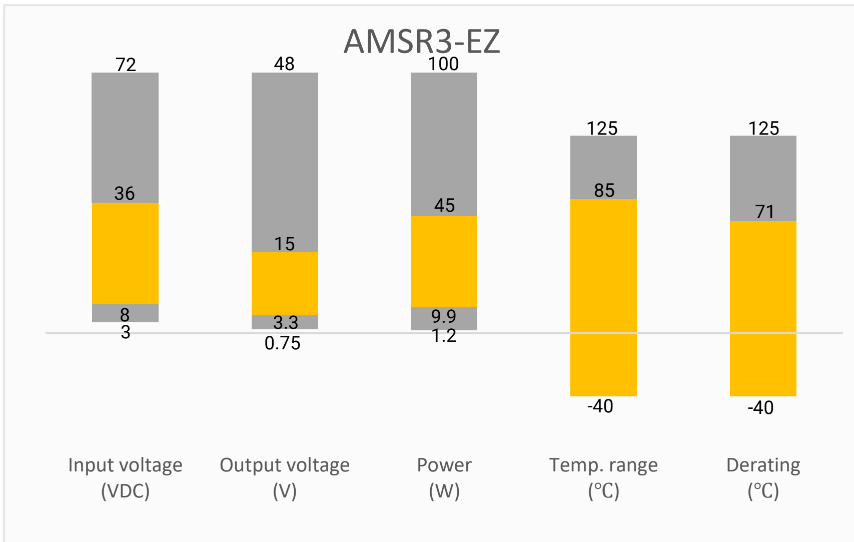
Aimtec's AMSR3-EZ is a 3A Switching Regulator which is designed to be hardware engineer friendly. The series features an ultra-wide input voltage range of 8-36V, 2mA ultra-low no-load input current, continuous short-circuit protection, low ripple noise (max.: up to 100mV) and much more.

The 3A series has an operating temperature from -40°C to +85°C, meets EN55032 standard and delivers efficiencies up to 97%, eliminating the need for a heat sink, which cuts design space and installation costs. This series is suitable for use in applications such as industrial controls, IoT, instrument, telecom and other related industries.

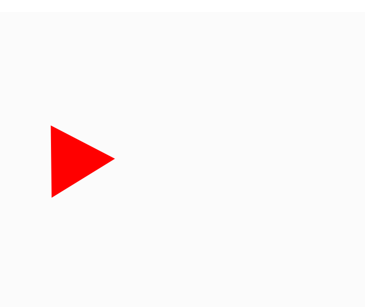
Features

- Input Voltage up to 36V
- Operating Temp: -40 °C to +85 °C
- Ultra-low no load input current: 2mA typ.
- Low ripple & noise, up to 100mV max.
- Continuous short circuit protection
- Efficiency up to 97%

Summary



Training



Press Release

Coming Soon!

Product Training Video
(click to open)

Application Notes

Applications

IoT

Industrial

Models & Specifications

Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max (A)	Maximum Capacitive Load (µF)	Efficiency (%) Typ.	
					Vin (Min) @Full load	Vin (Max) @Full load
AMSR3-3.3EZ	24 (8 - 36)	3.3	3	1000	90	83
AMSR3-5EZ	24 (8 - 36)	5	3	680	93	89
AMSR3-6.5EZ	24 (10 - 36)	6.5	3	330	94	90
AMSR3-9EZ	24 (13 - 36)	9	3	330	95	91
AMSR3-12EZ	24 (16 - 36)	12	3	680	97	93
AMSR3-15EZ	24 (19 - 36)	15	3	680	97	94

Input Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage range	24VDC Nominal		36	VDC
No-load input current		2		mA
Ctrl	Module ON	Ctrl pin open or pulled high (TTL 4.5 ~ 14VDC)		
	Module OFF	Ctrl pin pulled low to GND (0 ~ 0.8VDC)		

Output Specification

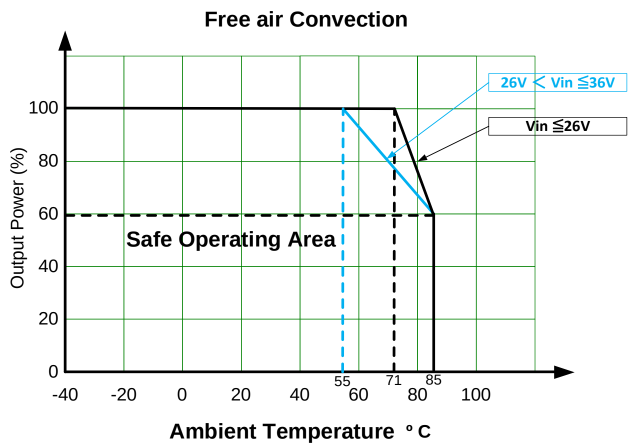
Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	0 – 100% load	±2	±3	%
Line regulation	Full load		±1	%
Load regulation	10-100% load	±0.4	±1	%
Short circuit protection	Continuous, Auto recovery			
Ripple & Noise	20MHz bandwidth		100	mV pk-pk
Transient response setting time	50% load step change	0.25		ms

General Specifications

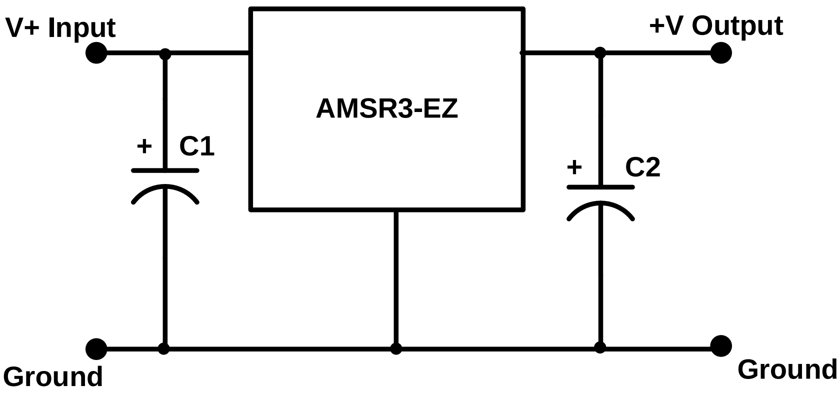
Parameters	Conditions	Typical	Maximum	Units
Switching frequency		300		KHz
Operating temperature	See derating graph	-40 to +85		°C
Storage temperature		-55 to +125		°C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Case material	Black plastic (flammability to UL 94V-0)			
Weight		11.4		g
Dimensions (L x W x H)	1.27 x 0.36 x 0.58 inches (32.15 x 9.05 x 14.85 mm)			
MTBF	> 5 000 000 hrs (MIL-HDBK-217F, t=+25°C)			
All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.				

Safety Specifications		
Parameters		
Standards	EMI - Conducted and radiated emission	CISPR32/EN55032, CLASS A CISPR32/EN55032, CLASS B (with EMC recommended 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 ±1KV, Criteria B
	Surge Immunity	IEC 61000-4-5 L-L ±1KV, Criteria B
	RF, Conducted Disturbance Immunity	IEC 61000-4-6 3Vr.m.s, Criteria A

Derating

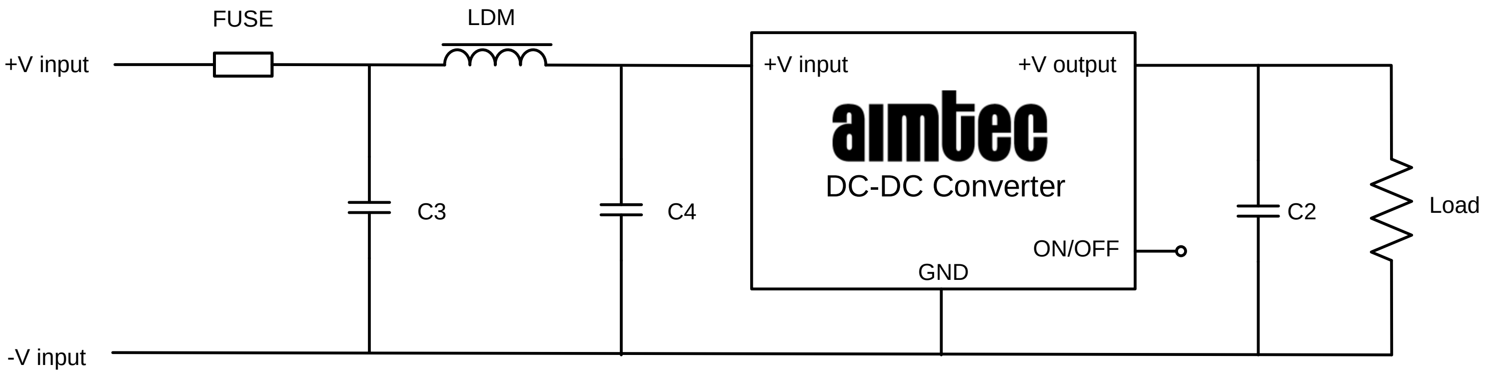


Typical Application Circuit



Model	C1	C2
3.3 & 5V output models	10uF/100V	22uF/10V
6.5 & 9V output models		22uF/16V
12V & 15V output models		22uF/25V

EMC Recommended Circuit

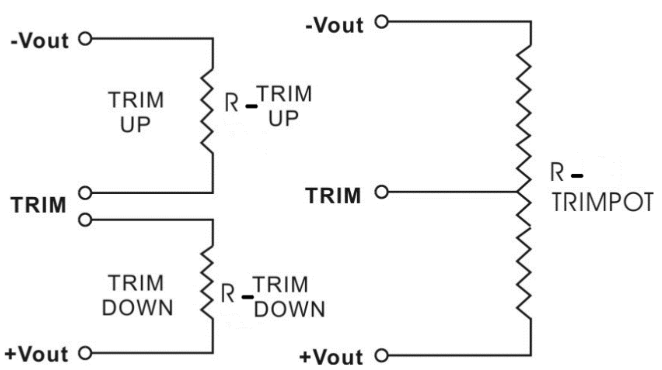


	EMI	EMS
Fuse	Choose according to actual input current	
C3	100uF/50V	
LDM	22uH	
C4	100uF/50V	680uF/50V
C2	Refer to typical application circuit	

Trimming

Output voltage can be externally trimmed by utilizing the methods as shown below

Fixed Resistor **Variable Potentiometer**



Leave open if not used.

3.3V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	3.267	3.234	3.201	3.168	3.135	3.102	3.069	3.036	3.003	2.970
Rt down (KΩ)	--	--	--	--	--	--	--	4469.986	774.879	414.284
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	3.333	3.366	3.399	3.432	3.465	3.498	3.531	3.564	3.597	3.630
Rt up (KΩ)	29.467	25.433	22.147	19.419	17.118	15.150	13.449	11.964	10.655	9.493

5V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	4.950	4.900	4.850	4.800	4.750	4.700	4.680	4.600	4.550	4.500
Rt down (KΩ)	1303.690	808.217	580.143	449.000	363.825	304.053	284.854	225.703	198.636	176.626
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	5.060	5.100	5.150	5.200	5.250	5.300	5.350	5.400	5.450	5.500
Rt up (KΩ)	864.286	323.818	178.308	121.143	90.603	71.600	58.636	49.226	42.085	36.481

6.5V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	6.435	6.37	6.305	6.24	6.175	6.11	6.045	5.98	5.915	5.85
Rt down (KΩ)	3751.125	1749.936	1129.385	827.152	648.307	530.098	446.157	383.471	334.873	296.094
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	6.565	6.63	6.695	6.76	6.825	6.89	6.955	7.02	7.085	7.15
Rt up (KΩ)	425.941	218.455	144.785	107.043	84.098	68.675	57.595	49.251	42.741	37.520

9V Output

Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	8.910	8.820	8.730	8.640	8.550	8.460	8.370	8.280	8.190	8.100
Rt down (KΩ)	6957.516	2884.141	1801.222	1299.854	1010.738	822.637	690.483	592.547	517.062	457.103
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	9.090	9.180	9.270	9.360	9.450	9.540	9.630	9.720	9.810	9.900
Rt up (KΩ)	380.184	208.731	141.958	106.419	84.352	69.318	58.416	50.149	43.664	38.442

12V Output

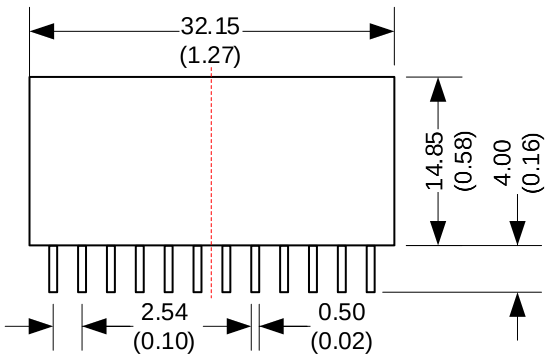
Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	11.880	11.760	11.640	11.520	11.400	11.280	11.160	11.040	10.920	10.800
Rt down (KΩ)	7277.565	3502.372	2286.417	1686.096	1328.317	1090.794	921.621	795.006	696.684	618.125
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	12.120	12.240	12.360	12.480	12.600	12.720	12.840	12.960	13.080	13.200
Rt up (KΩ)	466.303	233.932	153.948	113.464	89.015	72.648	60.924	52.114	45.250	39.752

15V Output

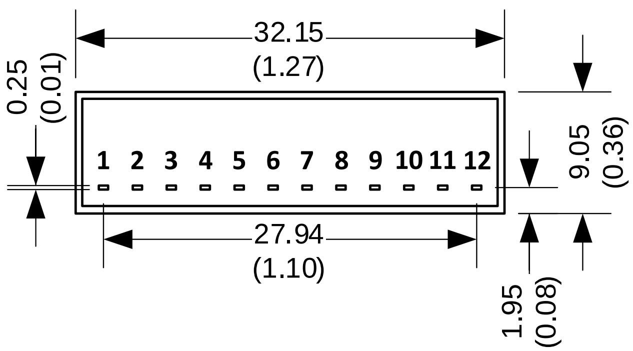
Trim down %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	14.850	14.700	14.550	14.400	14.250	14.100	13.950	13.800	13.650	13.500
Rt down (KΩ)	10756.404	5198.681	3400.000	2510.435	1979.783	1627.292	1376.136	1188.108	1042.065	925.356
Trim up %	1	2	3	4	5	6	7	8	9	10
Vout (VDC)	15.150	15.300	15.450	15.600	15.750	15.900	16.050	16.200	16.350	16.500
Rt up (KΩ)	552.474	277.158	182.792	135.106	106.333	87.082	73.298	62.941	54.875	48.415

Dimensions

Front View



Bottom View



Pin Output Specifications	
Pin	**Positive output**
1	Ctrl (ON/OFF)
2,3,4	+V Input
5,6,7,8	GND
9,10,11	+V Output
12	Trim

Notes:
All dimensions are typical in millimeters (inches).
Pin diameter tolerances : ±0.05 (±0.002)
General tolerance : ±0.25 (±0.01)