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AMSR2-Z Series



SIP3

Aimtec's AMSR2-Z is a 2A Switching Regulator which is designed to be a plug and play alternative to the traditional 78xx series three-terminal linear regulators. The series features an ultra-wide input voltage range of 4.6-36V, 1.5mA ultra- low no load input current, continuous short-circuit protection, low ripple noise (max.: up to 50mV) and much more.

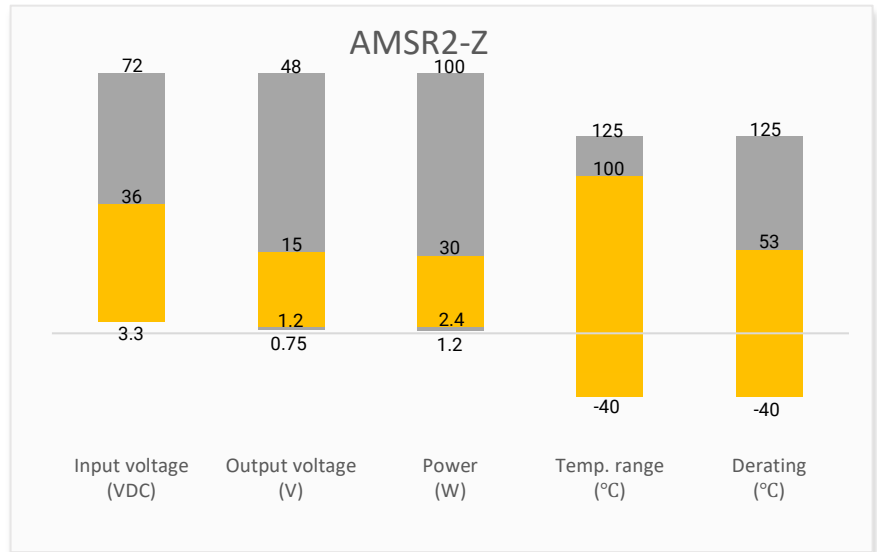
The new 2A series has operating temperature from -40°C to +100°C, meets EN62368 standard (Pending) and delivers efficiencies up to 96%, eliminating the need for a heat sink and cutting additional design space and installation cost. This series is suitable for use in applications such as industrial controls, IoT, medical, mining, railway and other related industries.

Features

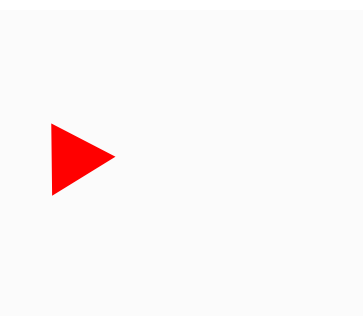


- Input Voltage up to 36V
- Operating Temp: -40 °C to +100 °C
- Ultra-low no load input current: 1.0mA typ.
- Low ripple & noise, up to 50mV max.
- Continuous short circuit protection
- Efficiency up to 96%

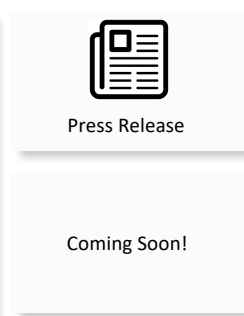
Summary



Training



Product Training Video
(click to open)



Application Notes

Applications



IoT



Industrial



Railway

Models & Specifications



Model	Input Voltage (VDC)	Output Voltage (VDC)	Full Load Input Current (mA)		Output Current max (A)	Maximum Capacitive Load (μF)	Efficiency (%) Typ.	
			Vin (Min)	Vin (Max)			Vin (Min)	Vin (Max)
			AMSR2-051.2Z	5 (3 – 5.5)				
AMSR2-051.5Z	5 (3 – 5.5)	1.5	1099	620	2	3700	91	88
AMSR2-051.8Z	5 (3 – 5.5)	1.8	1304	727	2	3300	92	90
AMSR2-052.5Z	5 (3.8 – 5.5)	2.5	1385	988	2	1800	95	92
AMSR2-241.2Z	24 (4.6 - 36)	1.2	621	89	2	2500	84	75
AMSR2-241.5Z	24 (4.6 - 36)	1.5	758	108	2	2000	86	77
AMSR2-241.8Z	24 (4.6 - 36)	1.8	900	127	2	1600	87	79
AMSR2-242.5Z	24 (4.6 - 36)	2.5	1221	167	2	1200	89	83
AMSR2-243.3Z	24 (4.75 - 36)	3.3	1527	213	2	900	91	86
AMSR2-2405Z	24 (6.5 - 36)	5	1637	312	2	600	94	89
AMSR2-246.5Z	24 (9 - 36)	6.5	1537	397	2	470	94	91
AMSR2-2409Z	24 (12 - 36)	9	1579	544	2	330	95	92
AMSR2-2412Z	24 (15 - 36)	12	1684	717	2	270	95	93
AMSR2-2415Z	24 (18 - 36)	15	1736	887	2	200	96	94

Input Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage range	5VDC Nominal		5.5	VDC
	24VDC Nominal		36	VDC
No-load input current	5VDC Nominal	0.5		mA
	24VDC Nominal	1		mA
Input reflected ripple current*		35		mA p-p
Absolute maximum rating	<100mS, 5VDC Nominal		6	VDC
	<100mS, 24VDC Nominal		40	VDC
Start-up time	Nominal input, constant resistive load	5		mS
Input filter	Capacitors			

* Measured with a simulated source inductance of 12μH and a source capacitor 10μF at nominal input under full load.

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy			±2	%
Line regulation			±0.5	%
Load regulation	0-100% load, 5VDC Nominal models		±1	%
	0-100% load, 24VDC Nominal, Vout ≤ 3.3V models		±1.5	%
	0-100% load, 24VDC Nominal, other models		±1	%
	10-100% load, 24VDC Nominal, all models		±1	%
Short circuit protection	Continuous, Auto recovery			

Ripple & Noise*	Vout ≤ 6.5V models		50	mV pk-pk
	others		75	mV pk-pk
Transient recovery time	Nominal input, 25% load step change	150		μS
Transient response deviation	Nominal input, 25% load step change		±3	%

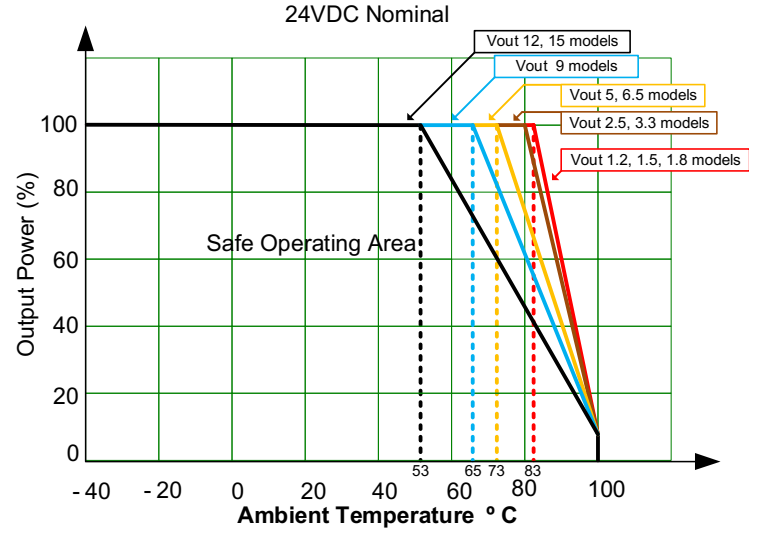
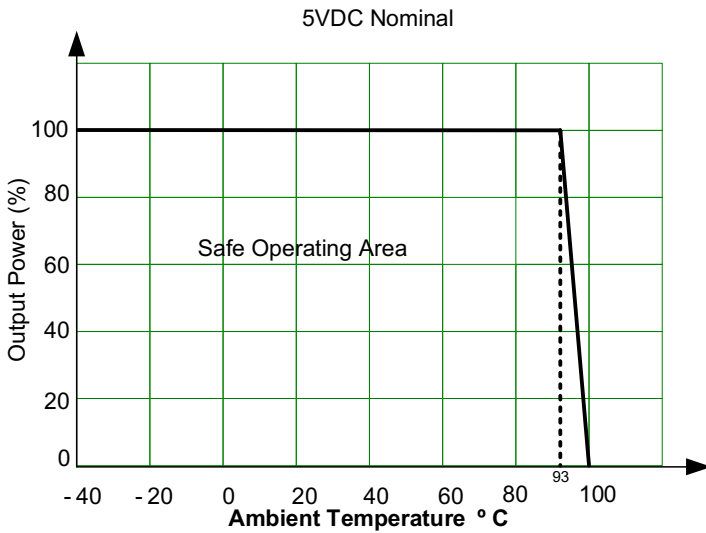
*20MHz bandwidth with a 0.1uF CC.

General Specifications				
Parameters	Conditions	Typical	Maximum	Units
Switching frequency	5VDC Nominal	1200		KHz
	24VDC Nominal	410		KHz
Operating temperature	See derating graph	-40 to +100		°C
Storage temperature		-55 to +125		°C
Maximum case temperature			105	°C
Temperature coefficient		±0.02		%/°C
Lead temperature	1.5mm away from case, maximum duration 10s		260	°C
Cooling	Free air convection (30-65LFM)			
Humidity	Non-condensing		95	% RH
Case material	Plastic (flammability to UL 94V-0)			
Weight		2.4		g
Dimensions (L x W x H)	0.55 x 0.30 x 0.40 inches (14.00 x 7.50 x 10.10 mm)			
MTBF	5VDC Nominal	> 16 000 000 hrs (MIL-HDBK -217F, t=+25°C)		
	24VDC Nominal	> 2 600 000 hrs (MIL-HDBK -217F, t=+25°C)		

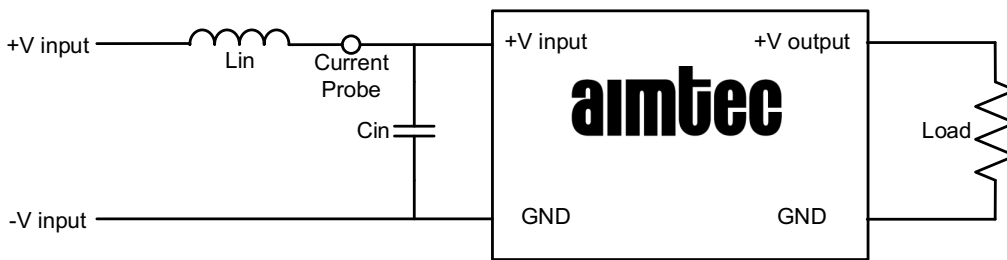
All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.

Safety Specifications		
Parameters		
Standards	Design to meet IEC/EN 60950-1 and 62368-1	
	EMI - Conducted and radiated emission	EN55032, CLASS B with recommended circuit
	Electrostatic Discharge Immunity	IEC 61000-4-2, Criteria A
	RF, Electromagnetic Field Immunity	IEC 61000-4-3, Criteria A
	Electrical Fast Transient/Burst Immunity	IEC 61000-4-4, Criteria A with recommended circuit
	Surge Immunity	IEC 61000-4-5, Criteria A with recommended circuit
	RF, Conducted Disturbance Immunity	IEC 61000-4-6, Criteria A
	Power Frequency Magnetic Field Immunity	IEC 61000-4-8, Criteria A

Derating

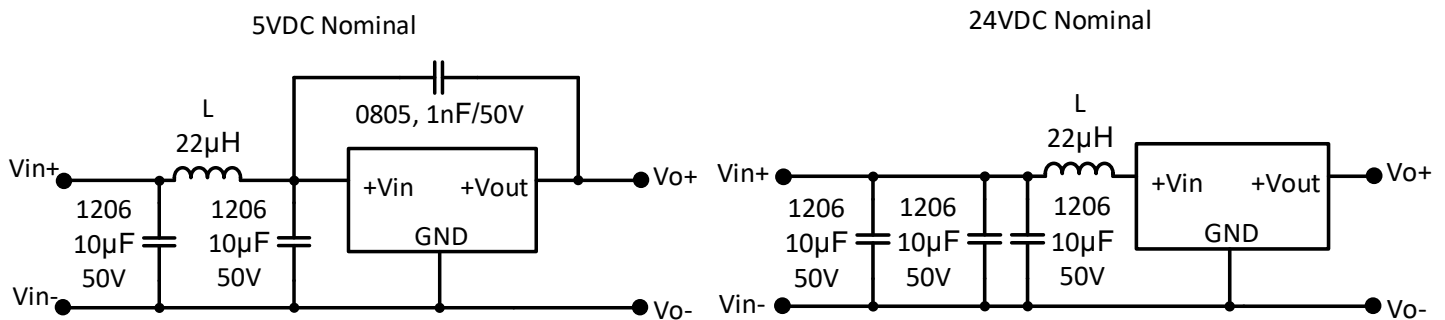


Input Reflected Ripple Current

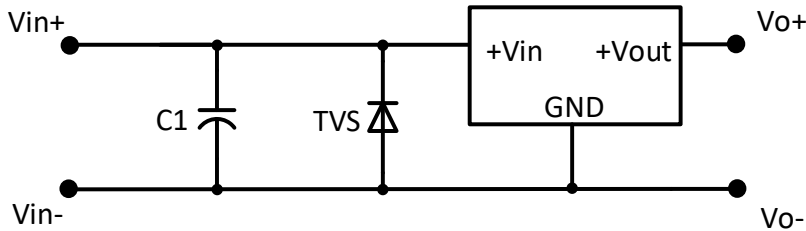


Lin: 12 μ H / Cin: 10 μ F, ESR<1.0 Ω at 100KHz

EMI Application Circuit

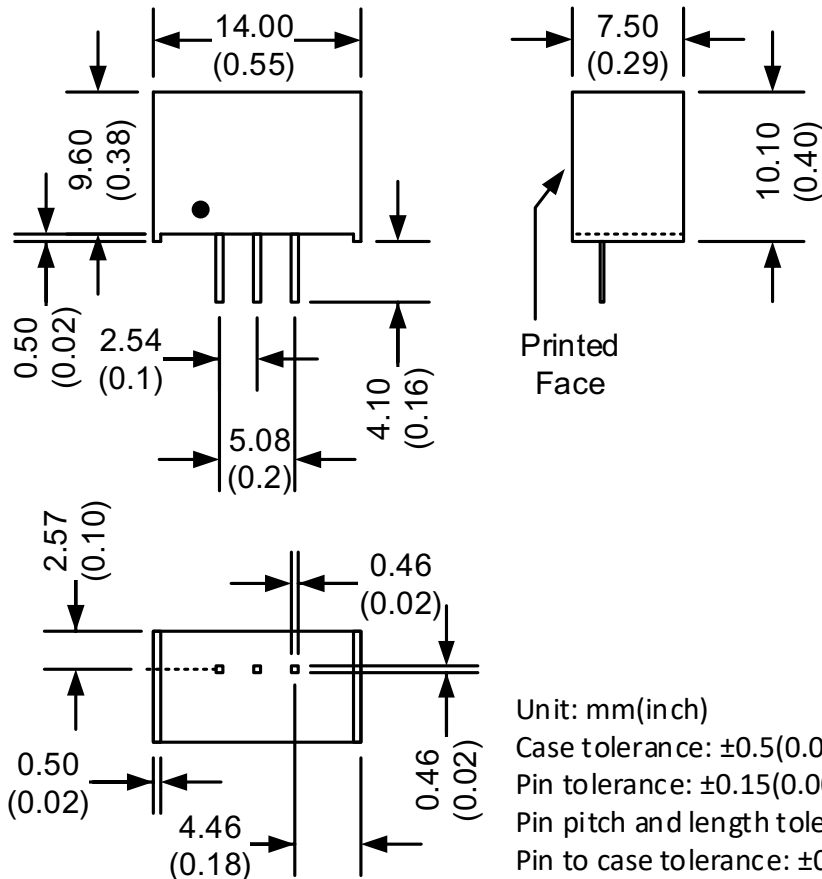


EFT & Surge Application Circuit



	C1	TVS
5VDC Nominal	3300μF/10V	3KW, 6.0V
24VDC Nominal	220μF/100V	3KW, 36V

Dimensions



Pin Output Specifications	
Pin	Positive output
1	+V Input
2	GND
3	+V Output

NOTE: 1. Datasheets are updated as needed and as such, specifications are subject to change without notice. Once printed or downloaded, datasheets are no longer controlled by Aimtec; refer to www.aimtec.com for the most current product specifications. 2. Product labels shown, including safety agency certifications on labels, may vary based on the date manufactured. 3. Mechanical drawings and specifications are for reference only. 4. All specifications are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified. 5. Aimtec may not have conducted destructive testing or chemical analysis on all internal components and chemicals at the time of publishing this document. CAS numbers and other limited information are considered proprietary and may not be available for release. 6. This product is not designed for use in critical life support systems, equipment used in hazardous environments, nuclear control systems or other such applications which necessitate specific safety and regulatory standards other the ones listed in this datasheet. 7. Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.