AMSRL1-Z

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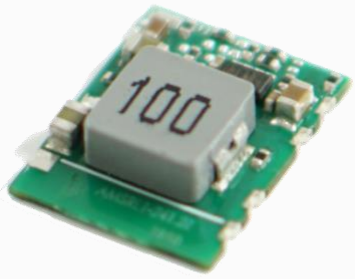


SMD

Aimtec's AMSRL1-Z series was developed to appeal to customers thanks to its compact size and high efficiency. Continuing this trend, Aimtec is proud to announce a new 1A non-isolated switching regulator, the AMSRL1-Z series, to better meet the market demand.
The new AMSRL1-Z series is a compact open frame design measuring 15.2 x 11.8 x 3.6mm with ultra-low height profile ideal for SMD soldering. The series feature an ultra-wide input voltage range of 3-36V, continuous short-circuit & over-temperature protection and low ripple noise (typ.: 50mV). These models target a diverse range of applications such as industrial control, IoT, grid power, instrumentation, mining, and other related industries where limited board space is a key concern. The new 1A series can accommodate operating temperature from -40°C to +105°C and offer conversion efficiency up to 94%.

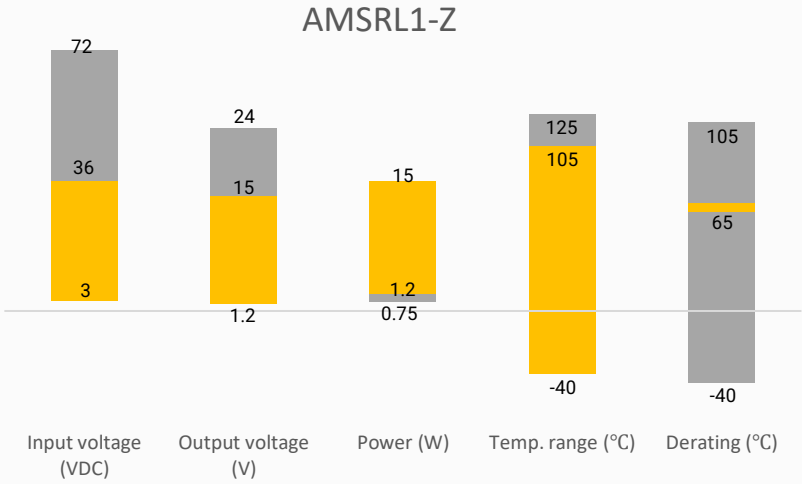
Features

- Wide Input Range: 3VDC - 36VDC
- Operating Temp: -40 °C to +105 °C
- Low ripple & noise, up to 50mV(p-p)
- Output short circuit, over-temperature protection
- Regulated Output
- SMD type package

RoHS

3yr Warranty

Summary



Training

Product Training Video (click to open)

Press Release

Coming Soon!

Application Notes

Applications

Power Grid

Industrial

Telecom

Instrumentation

Models & Specifications

Single Output								
Model	Input Voltage (VDC)	Output Voltage (VDC)	Input Current Max (mA)		Output Current Max (mA)	Maximum Capacitive Load (µF)	Efficiency (%) Full Load	
			No Load	Full Load			Vin (Min)	Vin (Max)
AMSRL1-051.2Z	5 (3 ~ 5.5)	1.2	0.4	442	1000	330	90.5	90.5
AMSRL1-051.5Z	5 (3 ~ 5.5)	1.5	0.4	544	1000	330	92	92
AMSRL1-051.8Z	5 (3 ~ 5.5)	1.8	0.4	649	1000	330	92.5	92.5
AMSRL1-052.5Z	5 (3.8 ~ 5.5)	2.5	0.4	697	1000	330	94.5	94
AMSRL1-241.2Z	24 (4.6 ~ 36)	1.2	1.5	300	1000	330	87	72
AMSRL1-241.5Z	24 (4.6 ~ 36)	1.5	1.5	367	1000	330	89	76
AMSRL1-241.8Z	24 (4.6 ~ 36)	1.8	1.5	433	1000	330	90.5	79
AMSRL1-242.5Z	24 (4.6 ~ 36)	2.5	1.5	588	1000	330	92.5	83
AMSRL1-243.3Z	24 (4.75 ~ 36)	3.3	1.5	740	1000	330	94	86.5
AMSRL1-2405Z	24 (6.5 ~ 36)	5	1.5	806	1000	330	95.5	89.5
AMSRL1-246.5Z	24 (9 ~ 36)	6.5	1.5	765	1000	330	94.5	90
AMSRL1-2409Z	24 (12 ~ 36)	9	1.5	786	1000	330	95.5	92
AMSRL1-2412Z	24 (15 ~ 36)	12	1.5	843	1000	330	95	93
AMSRL1-2415Z	24 (18 ~ 36)	15	1.5	869	1000	330	96	94

Note: Use suffix "TR" for tape & reel packing (ex. AMSRL1-2415ZTR).

Input Specification					
Parameters	Conditions		Typical	Maximum	Units
Voltage range	See models table				VDC
Filter	Capacitance Filter				
Absolute maximum rating	100ms	5VDC input models		6	VDC
		24VDC input models		40	VDC
Start up time			5		ms
Input reflected ripple current			35		mA pk-pk
On/Off Control	ON – 2 to 5Vdc or open circuit OFF – 0 to 0.4Vdc or pin10 connected to "-V Input" OFF idle current : 5VDC input models 0.3mA max / 24VDC input models 0.8mA max				

Output Specification					
Parameters	Conditions		Typical	Maximum	Units
Voltage accuracy				±2.0	%
Output voltage adjustability (Trim)	1.2VDC output model only support Vadj up			±10	%
Line regulation	Full load, main input range			±0.2	%
Load regulation	10 ~ 100% load			±0.6	%
Short circuit protection	Continuous, Auto recovery				
Temperature coefficient	Full load			±0.02	%/°C
Ripple & Noise*	20MHz bandwidth	Output < 7.5VDC		50	mV pk-pk
		Output > 7.5VDC		75	
Transient recovery time	50% load step change		250		µS

Transient response deviation	50% load step change	Output < 4VDC		±5	%
		Output > 4VDC		±3	

* Ripple and Noise are measured at 20MHz bandwidth by using a 0.1µF (M/C) and 10µF (E/C) parallel capacitor and typical input with full load

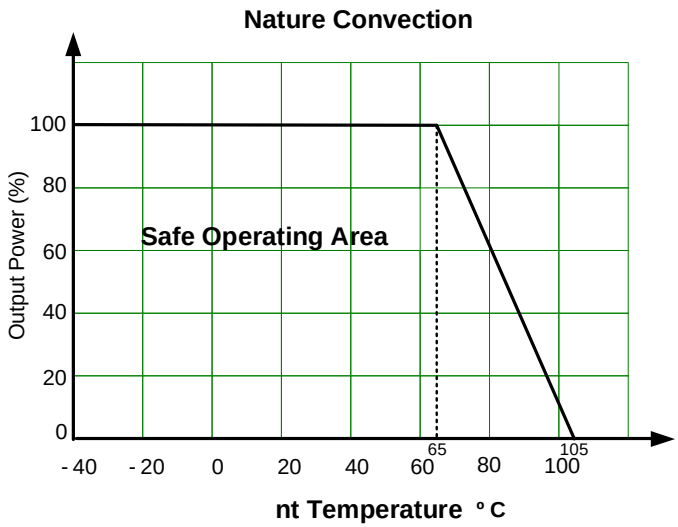
General Specifications

Parameters	Conditions		Typical	Maximum	Units
Switching frequency	100% load	5VDC input models	1.2		MHz
		24VDC input models	410		KHz
Operating temperature	See derating graph		-40 to +105		ºC
Storage temperature			-55 to +125		ºC
Over temperature protection	Internal IC junction		150		ºC
Maximum case temperature				95	ºC
Reflow temperature	10 sec.			245	ºC
Lead-free reflow solder process	IPC/JEDEC J-STD-020D.1				
Moisture sensitivity level (MSL)	IPC/JEDEC J-STD-020D.1		Level 1		
Cooling	Nature Convection (30~65 LFM)				
Humidity	Non-condensing			95	% RH
Weight	1.4				g
Dimensions (L x W x H)	0.60 x 0.47 x 0.15 inches, 15.20 x 11.80 x 3.60mm				

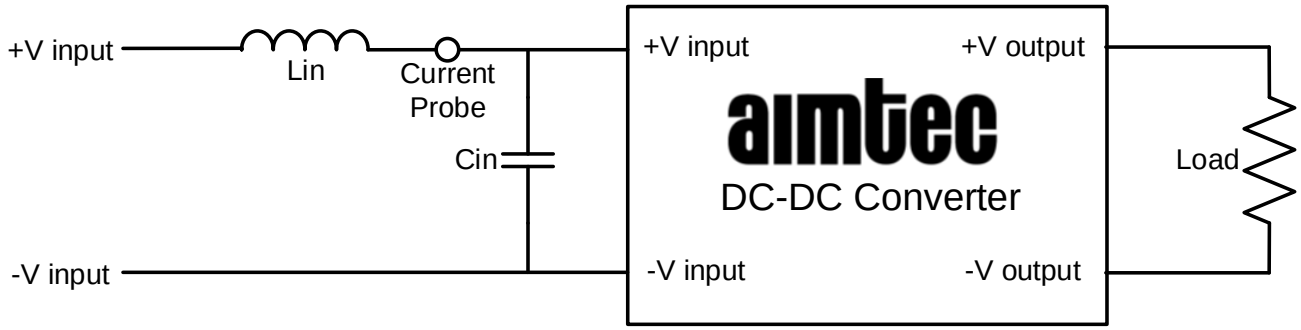
Safety Specifications

Parameters		
Standards	EMC - 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
	PFMF	IEC 61000-4-8 , Criteria A

Derating

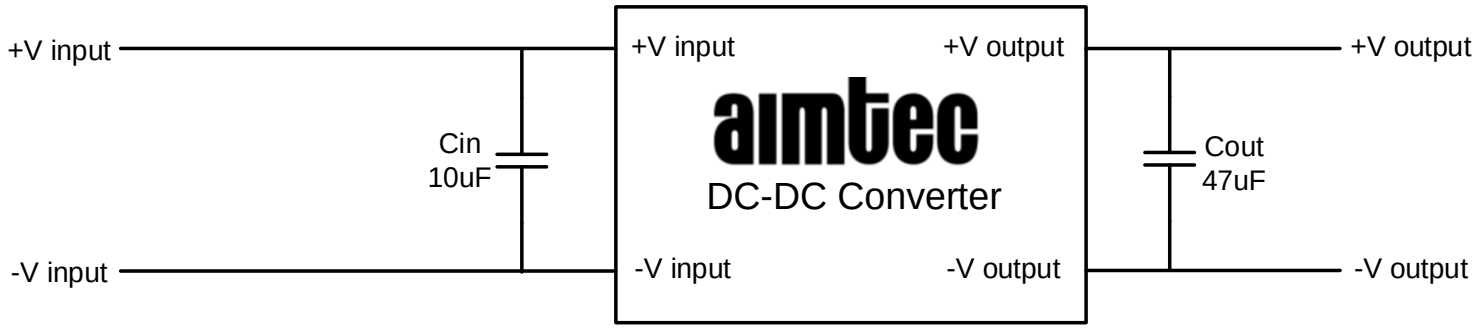


Input Reflected Ripple Current

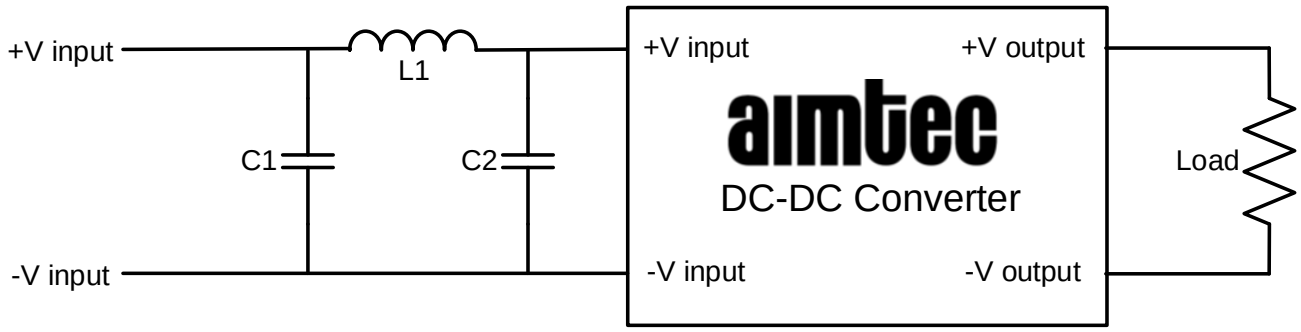


Lin : 12uH / Cin : 10uF,ESR<1.0Ω at 100KHz

Typical Application Circuit

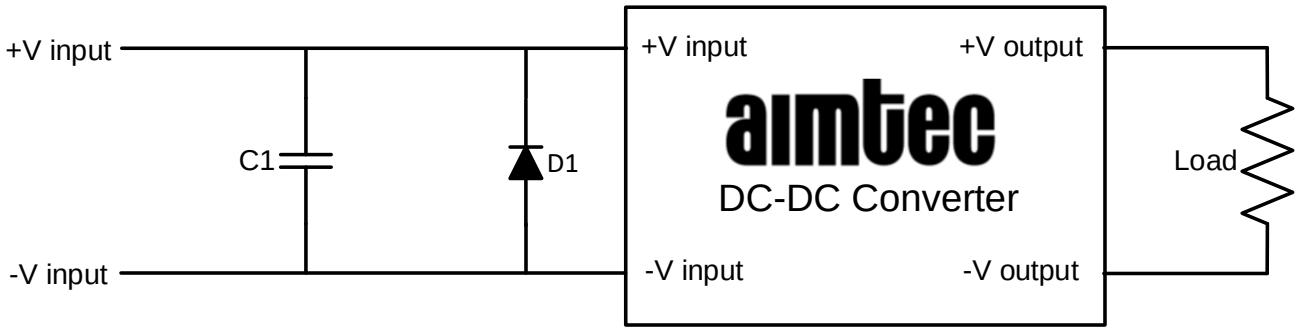


EMI Recommended Circuit



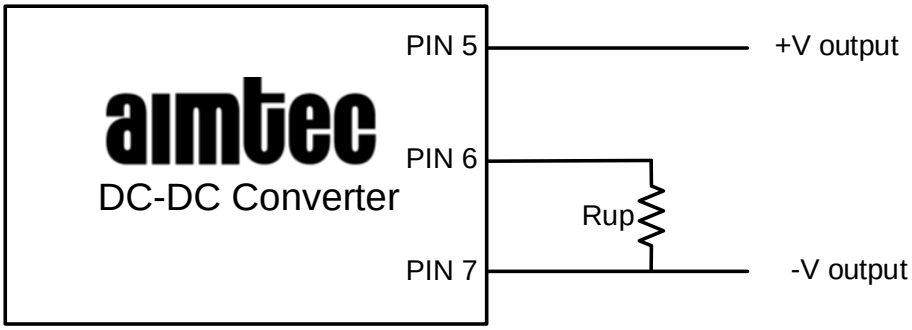
	C1	L1	Cin
AMSRL1-05XX	1206,10uF,50V	6.8uH	1206,10uF,50V
AMSRL1-24XX	1206,4.7uF,50V	33uH	1206,10uF,50V

EFT & Surge Recommended Circuit

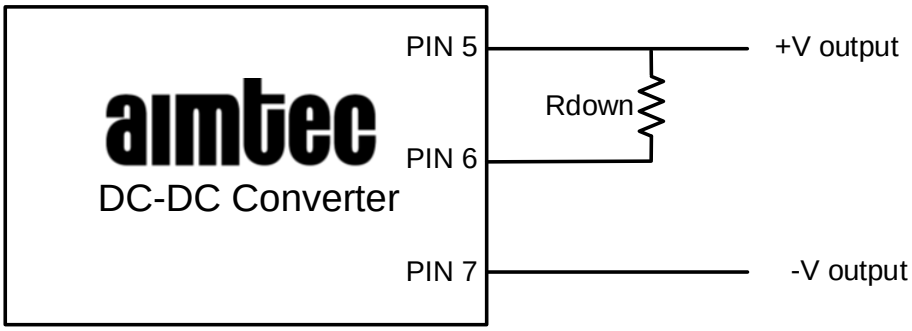


	C1	D1
AMSRL1-05XX	2200uF,50V,KY series	SMDJ 6.0A
AMSRL1-24XX	330uF,100V,KY series	SMDJ 36A

Output voltage adjustment

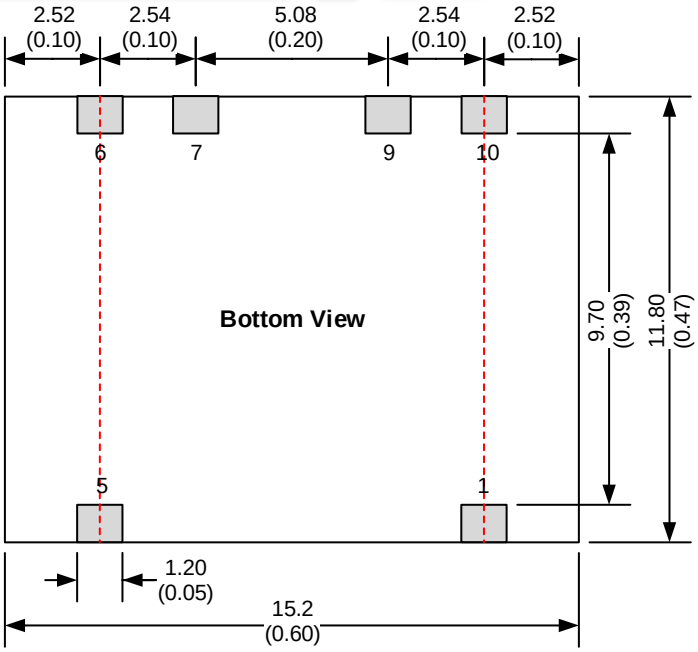


Pin 6 via a resistor to Pin 7(-Vout),Vo trim up.

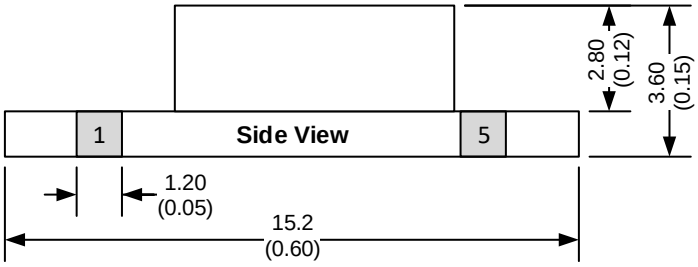


Pin 6 via a resistor to Pin 5(+Vout),Vo trim down.

Dimensions



Pin Out Specifications	
Pin	Single
1	+V Input
5	+V Output
6	Trim
7	-V Output
9	-V Input
10	ON/OFF



Notes:
All dimensions are typical in millimeters (inches).
Pin profile tolerance ±0.10 (±0.004)
Pin pitch tolerance ±0.25 (±0.01)
Stand-off tolerance ±0.50 (±0.02)

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