

AMSRU-78EZ



Aimtec introduces the new AMSRU-78EZ, a 0.5A 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 9-90V, 1.5mA low no load input current, continuous short-circuit protection, low ripple noise (Max : 80mV).

The new AMSRU-78EZ has operating temperature from -40°C to +85°C, has delivers efficiencies up to 93%, 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, medical, mining, railway and other related industries.

## Features

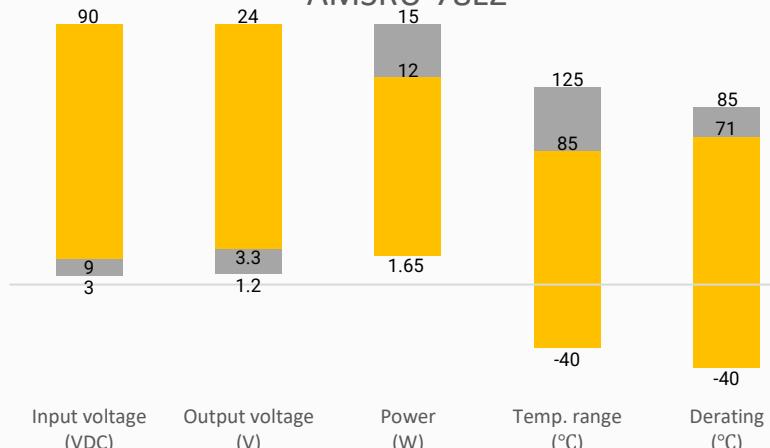


- Input Range: 9VDC – 90VDC
- Operating Temp: -40 °C to +85 °C
- Low ripple & noise, up to 80mV(p-p) Max.
- Efficiency up to 93%
- Output short circuit protection
- Regulated Output

## Summary



### AMSRU-78EZ



## Training



Press Release

Coming Soon!

Product Training Video  
(click to open)

Application Notes

## Applications



IoT



Industrial



Portable Equipment



Telecommunication

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## Models & Specifications



### Single Output

Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Current Max (mA)	Maximum Capacitive Load ( $\mu$ F)	Efficiency (%) Full Load Min / Max Vin
AMSRU-7803EZ	48 (9 ~ 90)	3.3	500	100	82 / 69
AMSRU-7805EZ	48 (9 ~ 90)	5	500	100	87 / 75
AMSRU-7806EZ	48 (9 ~ 90)	6.5	500	100	91 / 78
AMSRU-7809EZ	48 (14 ~ 90)	9	500	100	91 / 80
AMSRU-7812EZ	48 (18 ~ 90)	12	500	100	91 / 83
AMSRU-7815EZ	48 (20 ~ 90)	15	500	100	93 / 84
AMSRU-7824EZ	48 (36 ~ 90)	24	500	100	93 / 85
AMSRU-7803LEZ	48 (9 ~ 90)	3.3	500	100	82 / 69
AMSRU-7805LEZ	48 (9 ~ 90)	5	500	100	87 / 75
AMSRU-7806LEZ	48 (9 ~ 90)	6.5	500	100	91 / 78
AMSRU-7809LEZ	48 (14 ~ 90)	9	500	100	91 / 80
AMSRU-7812LEZ	48 (18 ~ 90)	12	500	100	91 / 83
AMSRU-7815LEZ	48 (20 ~ 90)	15	500	100	93 / 84
AMSRU-7824LEZ	48 (36 ~ 90)	24	500	100	93 / 85

Note: Adding a letter of "L" for L models with right angled leads. Ex: AMSRU-78xxLEZ

Input Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage range	See models table	--	--	VDC
No load input current	--	1.5	--	mA

Output Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	10 ~ 100% load, 3.3V output model	$\pm 3$	$\pm 4$	%
	10 ~ 100% load, others	--	$\pm 3$	%
Line regulation	Full load, 3.3/5/6.5V output models	--	$\pm 1.5$	%
	Full load, others	--	$\pm 2.5$	%
Load regulation	10 ~ 100% load	--	$\pm 2.0$	%
Ripple & Noise	20MHz bandwidth, full load	--	80	mV pk-pk
Transient recovery time	50% load step change	250	--	$\mu$ s

General Specifications				
Parameters	Conditions	Typical	Maximum	Units
Switching frequency	Full load	440	--	KHz
Short circuit protection	Continuous, Auto recovery			
Operating temperature	See derating graph	-40 to +85		°C
Storage temperature		-55 to +125		°C

Cooling	Free air convection			
Humidity	Non-condensing			
Case material	Non-conductive black plastic (UL94V-0 rated)			
Weight	4.0			
Dimensions (L x W x H)	0.69 x 0.45 x 0.34 inches, 17.50 x 11.50 x 8.50mm L models 0.75 x 0.45 x 0.34 inches, 19.00 x 11.50 x 8.50mm			
MTBF	> 5 000 000 hrs (MIL-HDBK -217F, t=+25°C) / Full Load			

## Safety Specifications

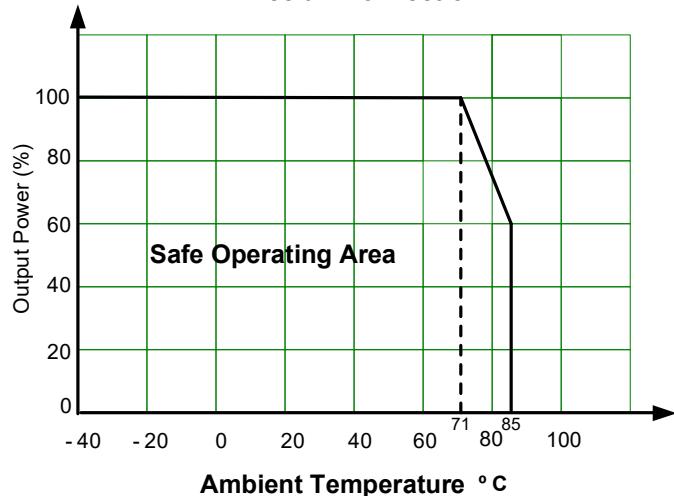
### Parameters

Standards	EMC - Conducted and radiated emission	CISPR32/EN55032, CLASS B with EMC recommended circuit
	Electrostatic Discharge Immunity	IEC 61000-4-2, Contact $\pm 4\text{KV}$ , Criteria B
	RF, Electromagnetic Field Immunity	IEC 61000-4-3, 10V/m, Criteria B
	Electrical Fast Transient/Burst Immunity	IEC 61000-4-4, 100KHz, $\pm 1\text{KV}$ , Criteria B
	Surge Immunity	IEC 61000-4-5, line to line $\pm 1\text{KV}$ , Criteria B
	RF, Conducted Disturbance Immunity	IEC 61000-4-6, 3Vr.m.s, Criteria B

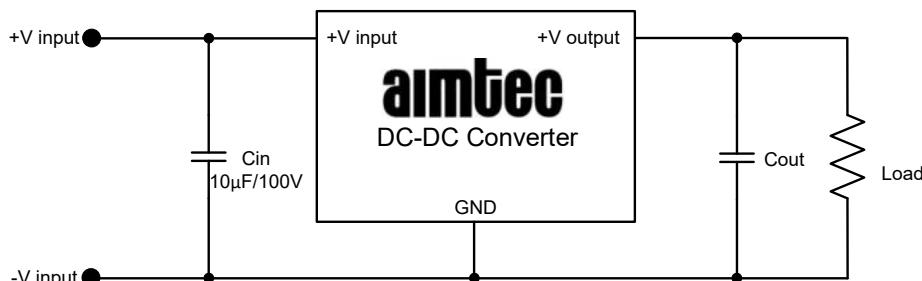
## Derating



Free air Convection



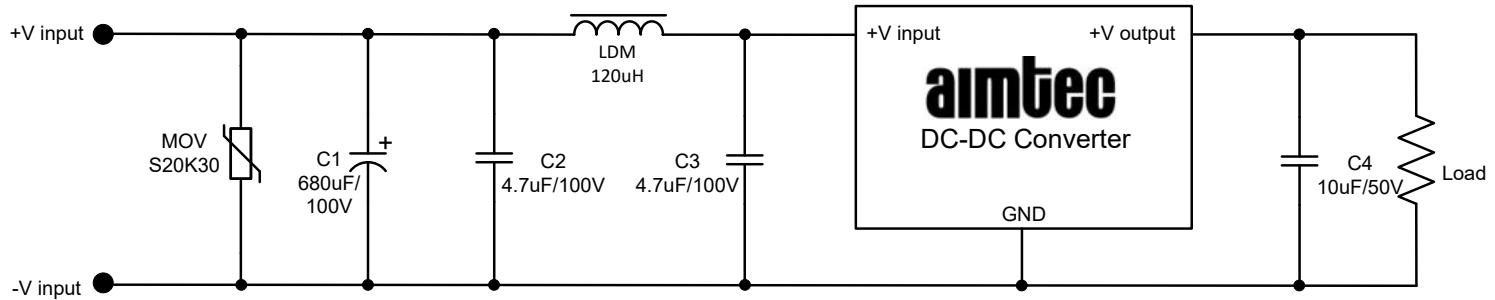
## Typical Application Circuit



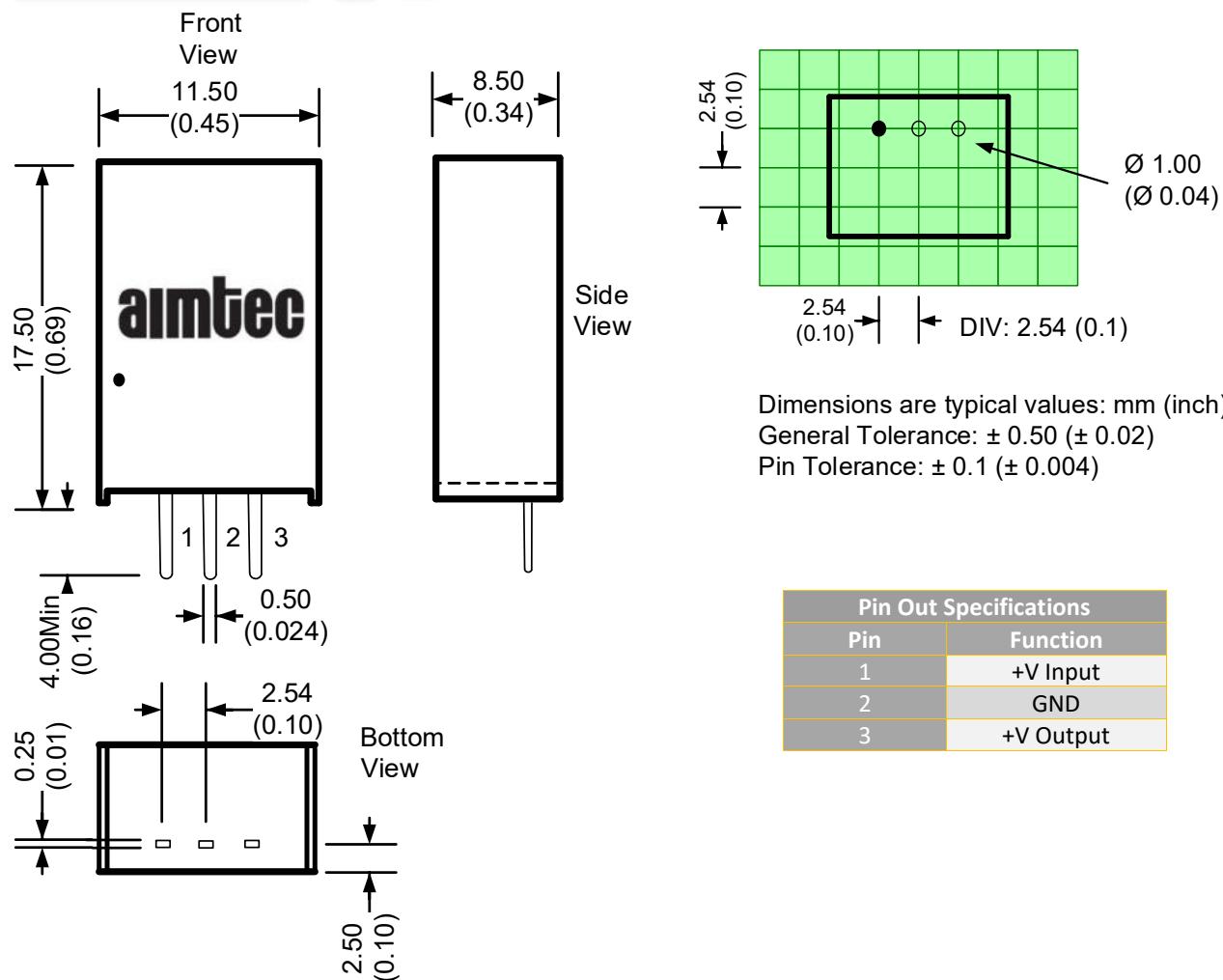
Model	Cout
3.3V/5V output	22 $\mu\text{F}$ / 10V
6.5V/9V output	22 $\mu\text{F}$ / 16V
12V/15V output	22 $\mu\text{F}$ / 25V
24V output	10 $\mu\text{F}$ / 50V

Note : It is recommended to use high frequency low resistance electrolytic capacitor.

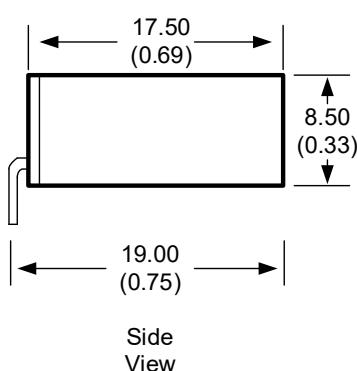
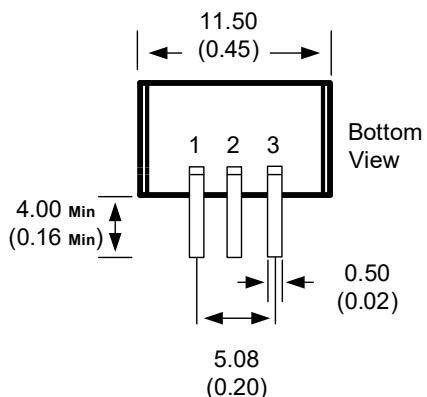
## EMC Recommended Circuit



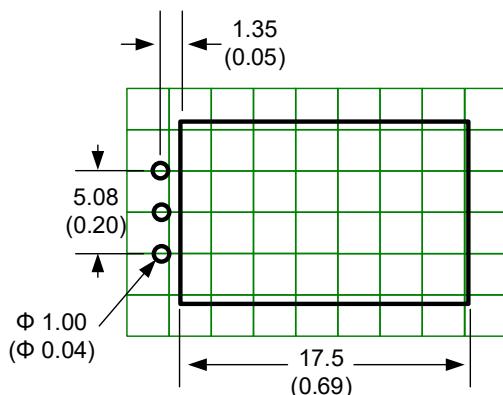
## Dimensions



## L Models



## Footprint



Pin Out Specifications	
Pin	Function
1	+V Input
2	GND
3	+V Output

Note:

Unit: mm(inch)

Pin diameter tolerance:  $\pm 0.25$  ( $\pm 0.001$ )

Pin distance tolerance:  $\pm 0.25$  ( $\pm 0.001$ )

General tolerance:  $\pm 0.5$  ( $\pm 0.02$ )

**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](http://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](http://www.aimtec.com).