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AMSRU-78JZ



Aimtec introduces the new AMSRU-78JZ, a 0.5A Switching Regulator which is designed to be a plug and play alternative to the traditional 78xx series three-terminal linear regulators.

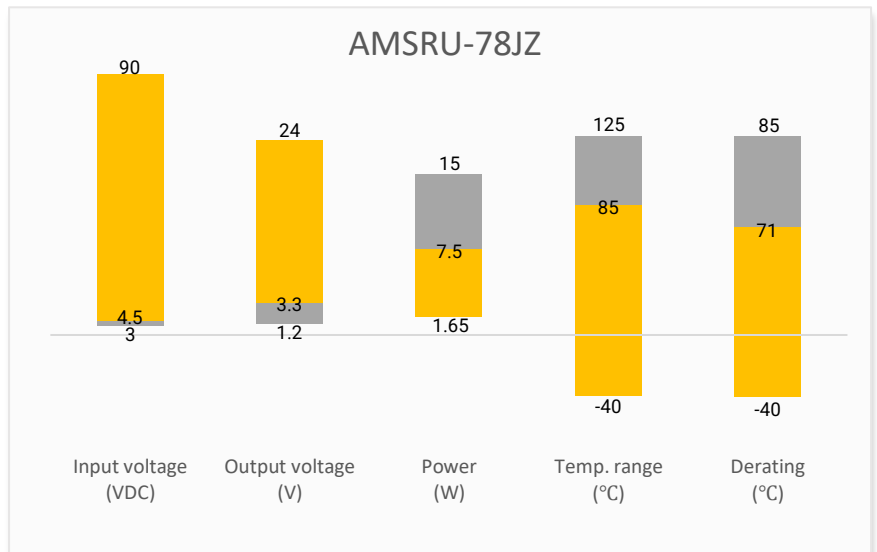
The series features an ultra-wide input voltage range of 9-90V, 1.5mA low no load input current, continuous short-circuit protection, low ripple noise (typ.: 40mV) and much more.

The new AMSRU-78JZ series 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.

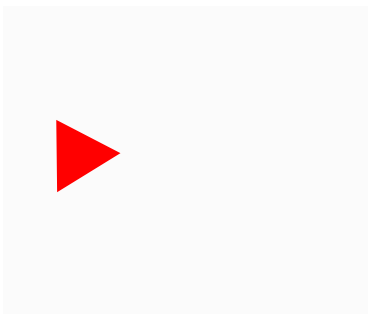
Features

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

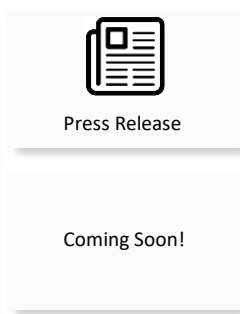
Summary



Training



Product Training Video
(click to open)



Application Notes

Applications



IoT



Industrial



Portable Equipment



Telecommunication

Models & Specifications

Single Output					
Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Current Max (mA)	Maximum Capacitive Load (μF)	Efficiency (%) Full Load
AMSRU-7803JZ	48 (9 ~ 90)	3.3	500	100	82
AMSRU-7805JZ	48 (9 ~ 90)	5	500	100	87
AMSRU-7806JZ	48 (9 ~ 90)	6.5	500	100	91
AMSRU-7809JZ	48 (14 ~ 90)	9	500	100	91
AMSRU-7812JZ	48 (18 ~ 90)	12	500	100	91
AMSRU-7815JZ	48 (20 ~ 90)	15	500	100	93
AMSRU-7824JZ	48 (36 ~ 90)	24	300	100	93
AMSRU-7803LJZ	48 (9 ~ 90)	3.3	500	100	82
AMSRU-7805LJZ	48 (9 ~ 90)	5	500	100	87
AMSRU-7806LJZ	48 (9 ~ 90)	6.5	500	100	91
AMSRU-7809LJZ	48 (14 ~ 90)	9	500	100	91
AMSRU-7812LJZ	48 (18 ~ 90)	12	500	100	91
AMSRU-7815LJZ	48 (20 ~ 90)	15	500	100	93
AMSRU-7824LJZ	48 (36 ~ 90)	24	300	100	93

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

Input Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage range	See models table			VDC
No load input current			1.5	mA
Filter	Capacitance filter			
Reverse polarity at input	Avoid / Not protected			

Output Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	10 ~ 100% input, 3.3V output model	± 3.5	± 4.5	%
	10 ~ 100% input, Others	± 2.0	± 3	%
Line regulation	Full load, 3.3V output model	± 0.6	± 1.5	%
	Full load, Others	± 0.6	± 1.2	%
Load regulation	10 ~ 100% load	± 1.0	± 2.0	%
Short circuit protection	Continuous, Auto recovery			
Temperature coefficient			± 0.03	%/°C
Ripple & Noise*	20MHz bandwidth, full load	40	80	mV pk-pk
Transient recovery time	25% load step change	200	1000	μS
Transient response deviation	25% load step change	± 0.4	± 1.5	%

General Specifications				
Parameters	Conditions	Typical	Maximum	Units
Switching frequency *	Full load	300		KHz
Operating temperature	See derating graph	-40 to +85		°C
Storage temperature		-55 to +125		°C
Pin soldering temperature	Soldering spot is 1.5mm away from case, 10 sec max		300	°C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Case material	Non-conductive black plastic (UL94V-0 rated)			
Weight		3.8		g
Dimensions (L x W x H)		0.45 x 0.35 x 0.69 inches, 11.50 x 9.00 x 17.50mm		
	L models	0.75 x 0.45 x 0.35 inches, 19.00 x 11.50 x 9.00mm		
MTBF	> 2 000 000 hrs (MIL-HDBK -217F, t=+25°C) / Full Load			

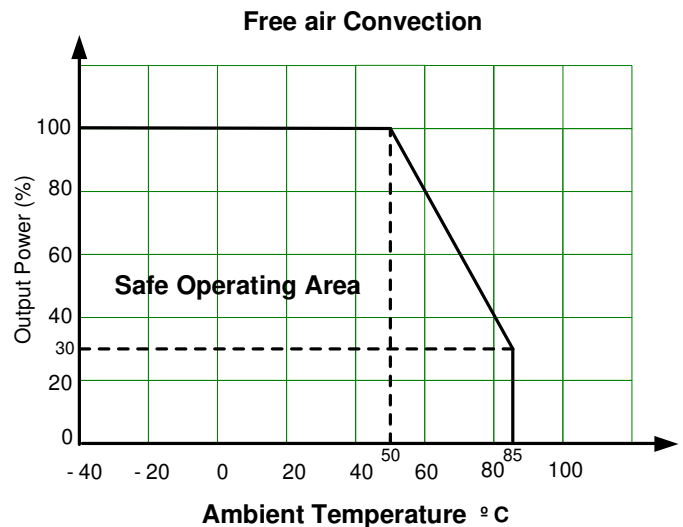
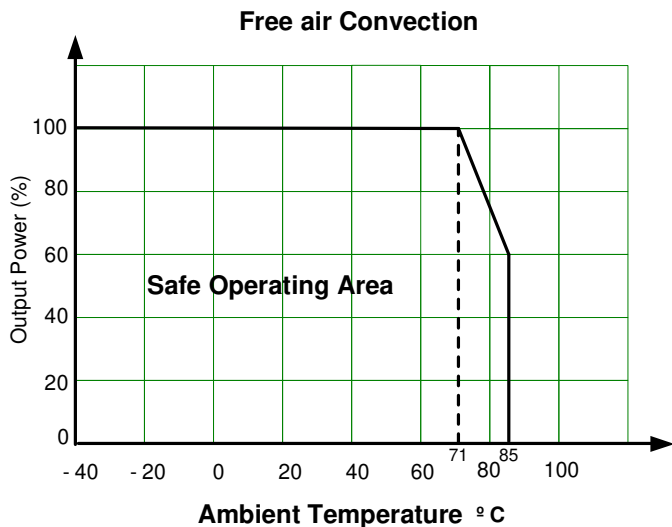
*Different output voltage with different switching frequency.

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

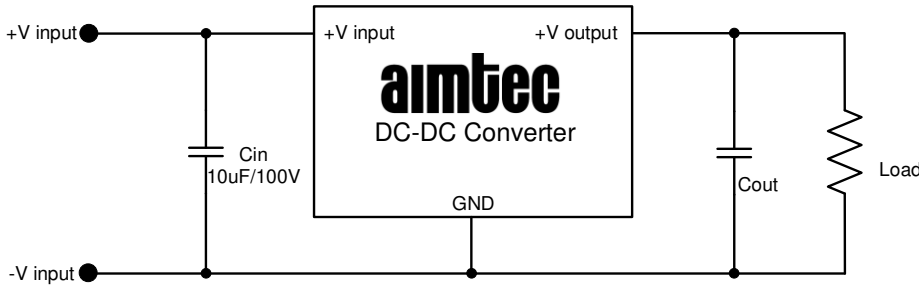
Derating

For 24V output model($V_{in}:36\sim60V$)
Others model normally V_{in}

For 24V output model($V_{in} \geq 60V$)



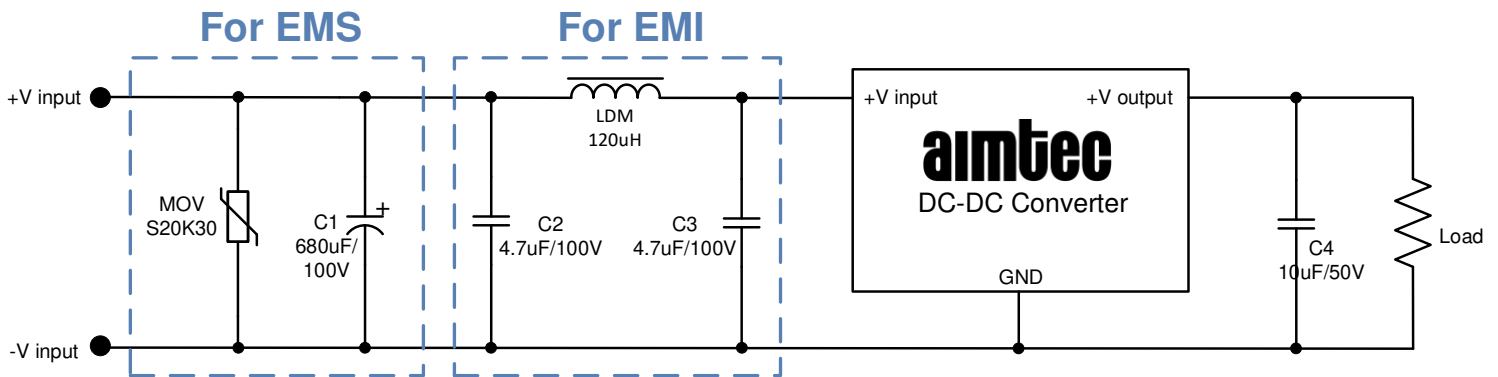
Typical Application Circuit



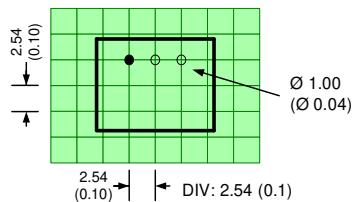
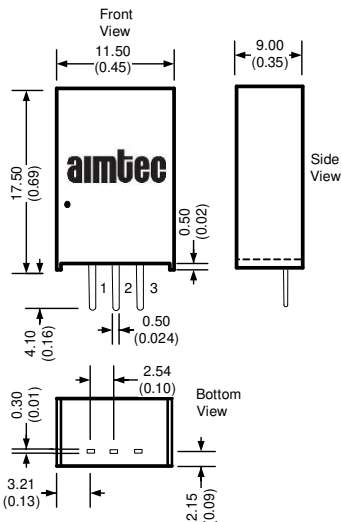
Model	C_{out}
3.3V/5V/6.5V output	22 μ F / 10V
9V output	22 μ F / 16V
12V/15V output	22 μ F / 25V
24V output	10 μ F / 50V

- Note :**
- For input voltage exceeding 80Vdc, an input capacitor of 22 μ F/100V is required.
 - For certain applications, increased values and/or tantalum or low ESR electrolytic capacitors may also be used instead.

EMC Recommended Circuit



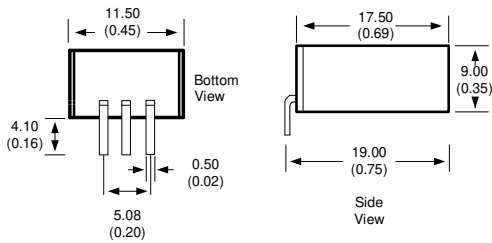
Dimensions



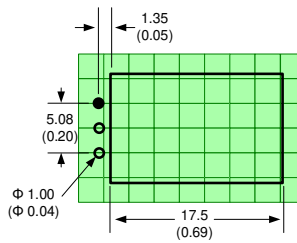
Dimensions are typical values: mm (inch)
General Tolerance: ± 0.50 (± 0.02)
Pin Tolerance: ± 0.1 (± 0.004)

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

L Models



Footprint



Dimensions are typical values: mm (inch)
General Tolerance: ± 0.50 (± 0.02)
Pin Tolerance: ± 0.1 (± 0.004)

Pin Out Specifications

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

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