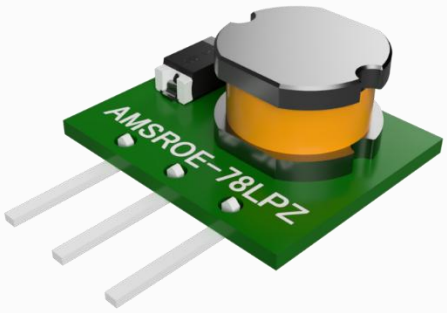
AMSROE-78LPZ

Click to ORDER samples



SIP3

The AMSROE-78LPZ series are high-efficiency, non-isolated switching regulators designed as pin-to-pin replacements for LM78-series linear regulators. Unlike conventional linear regulators, the AMSROE-78LPZ series achieves efficiencies of up to 95%, significantly reducing power loss and heat generation. As a result, no external heatsink is required in most applications.

These regulators support a wide input voltage range of 4.75 VDC to 36 VDC and operate reliably across an ambient temperature range of -40°C to +85°C. Built-in short-circuit protection feature enhances system reliability and safety.

The series also features an ultra-low no-load input current of only 0.2 mA, making it particularly well suited for battery-powered and energy-sensitive applications. With their high efficiency, compact footprint, and robust performance, AMSROE-78LPZ regulators are ideal for portable devices and other applications where energy savings, space optimization, and reliability are critical.

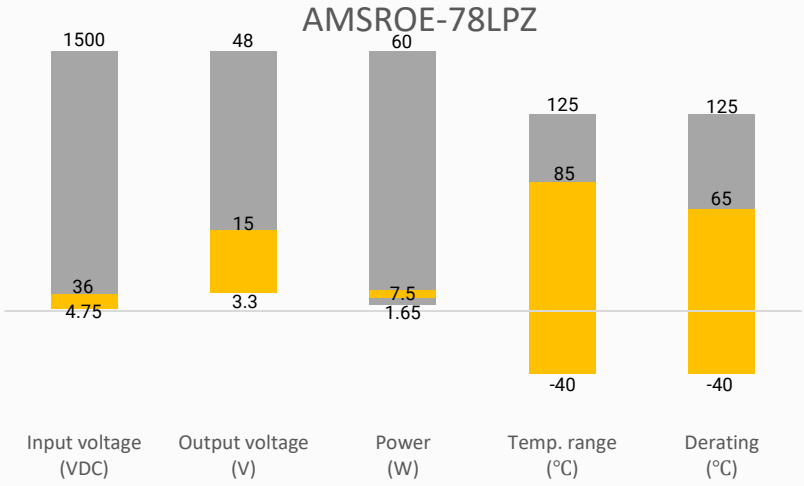
Features

- Input Range: 4.75VDC – 36VDC
- Operating Temp: -40 °C to +85 °C
- Low ripple & noise: 100mV(p-p) max.
- Efficiency up to 95%
- Low no load input current: 0.2mA typ.
- Output short circuit protection
- Open frame SIP3 package
- Regulated Output

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)	Output Current Max (mA)	Maximum Capacitive Load (µF)	Efficiency Typ. (%) Min. Vin	Efficiency Typ. (%) Max. Vin
AMSROE-783.3LPZ	24 (4.75~36) 12 (7~32)	3.3 -3.3	500 -300	680 330	85 73	76 72
AMSROE-7805LPZ	24 (6.5~36) 12 (7~31)	5 -5	500 -300	680 330	90 76	81 78
AMSROE-786.5LPZ	24 (8~36) 12 (7~29)	6.5 -6.5	500 -300	680 330	91 76	83 77
AMSROE-7809LPZ	24 (12~36) 12 (8~27)	9 -9	500 -150	680 330	93 83	87 77
AMSROE-7812LPZ	24 (15~36) 12 (8~24)	12 -12	500 -150	680 330	94 85	88 82
AMSROE-7815LPZ	24 (19~36) 12 (8~21)	15 -15	500 -150	680 330	95 80	90 79

Input Specification				
Parameters	Conditions	Typical	Maximum	Units
No load input current	Positive Out	0.2	1.5	mA
	Negative Out	1	10	mA
Input filter	Capacitor			

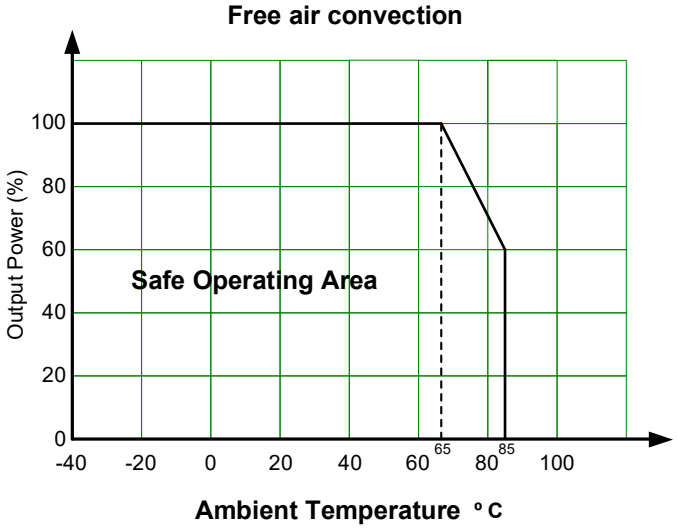
Output Specification				
Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	100% load, 3.3Vout model	± 2	± 4	%
	100% load, others	± 2	± 3	%
Line regulation	Vin = Min. to Max.	± 0.2	± 0.5	%
Load regulation	10~100% load, 3.3Vout model	± 0.5	± 1.5	%
	10~100% load, others	± 0.3	± 1	%
Transient Recovery Time	25% load step	0.2	1	mS
Transient Response Deviation	25% load step	± 50	± 250	mV
Temperature coefficient	-40~85°C	± 0.02		%/°C
Ripple & Noise*	10~100% load, others	50	100	mV pk-pk
Short circuit protection	Continuous, Auto recovery			

* Ripple and Noise are measured at 20MHz bandwidth using a 12" twisted-pair wire terminated with a parallel combination of a 0.1µF and a 47uF capacitor.

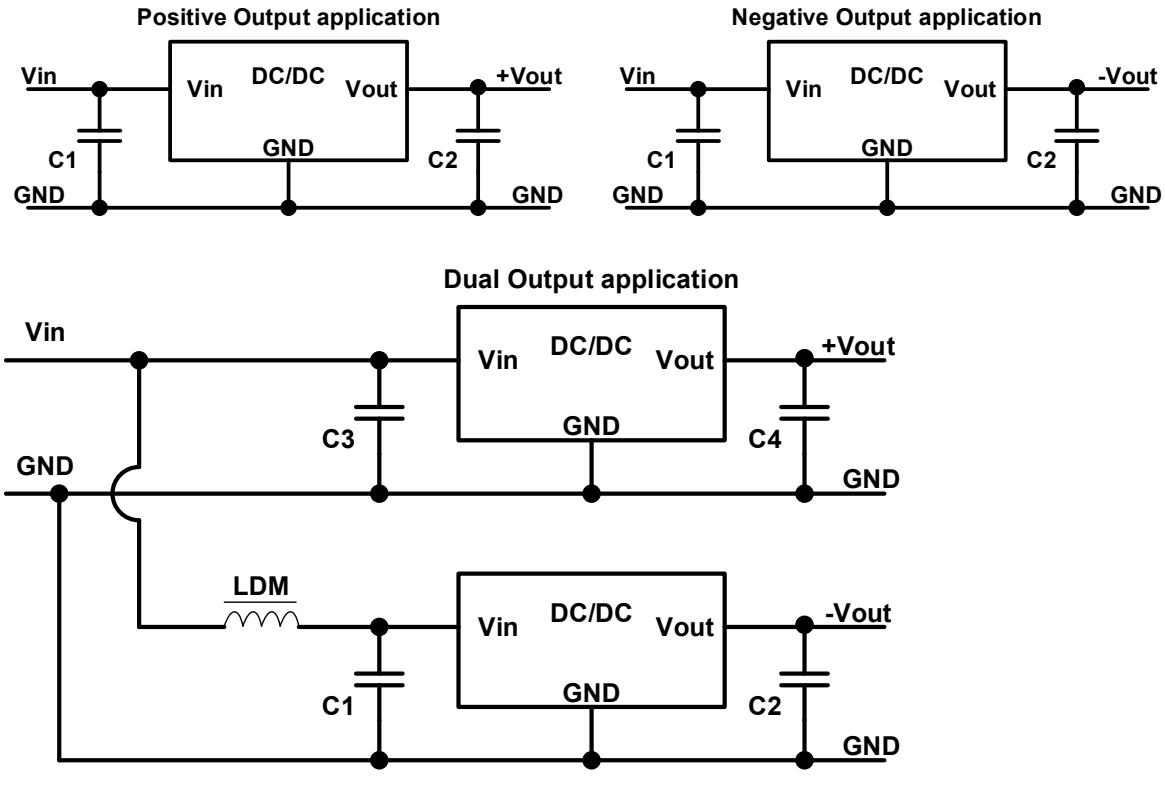
General Specifications				
Parameters	**Conditions**	**Typical**	**Maximum**	**Units**
Switching frequency	100% load	700		KHz
Operating temperature	See derating graph	-40 to +85		ºC
Storage temperature		-55 to +125		ºC
Storage humidity	Non-condensing	>5	95	% RH
Pin soldering temperature			300	°C
Cooling	Free air convection			
Vibration	10-150Hz, 5G, 0.75mm along X, Y and Z			
Weight		0.6		g
Dimensions (L x W x H)		0.40 x 0.24 x 0.34 inches (10.27 x 6.00 x 8.61 mm)		
MTBF	>2 000 000 hrs (MIL-HDBK -217F, t=+25ºC) / Full Load			
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.				

Safety Specifications		
Parameters		
Standards	Designed to meet IEC/EN/UL 62368-1	
	EMC - Conducted and radiated emission	CISPR32/EN55032, CLASS B with recommended EMC circuit
	Electrostatic Discharge Immunity	IEC/EN 61000-4-2 Contact ± 4KV, Criteria B
	RF, Electromagnetic Field Immunity	IEC/EN 61000-4-3 10V/m, Criteria A
	Electrical Fast Transient/Burst Immunity	IEC/EN 61000-4-4 ± 1KV, Criteria B with recommended EMC circuit
	Surge Immunity	IEC/EN 61000-4-5 Line to Line ± 1KV, Criteria B with recommended EMC circuit
	RF, Conducted Disturbance Immunity	IEC/EN 61000-4-6 3Vr.m.s, Criteria A

Derating



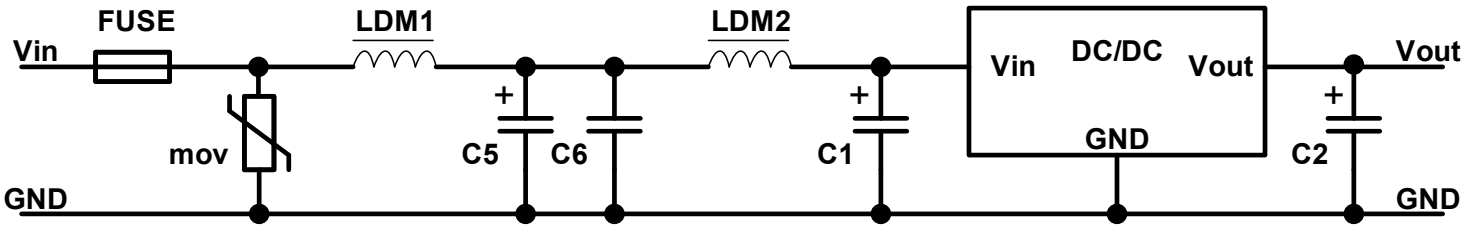
Typical Application Circuit



Vout	C1, C3	C2, C4
3.3, 5V, 6.5	10uF, 50V	22uF, 16V
9, 12,15V	10uF, 50V	22uF, 25V

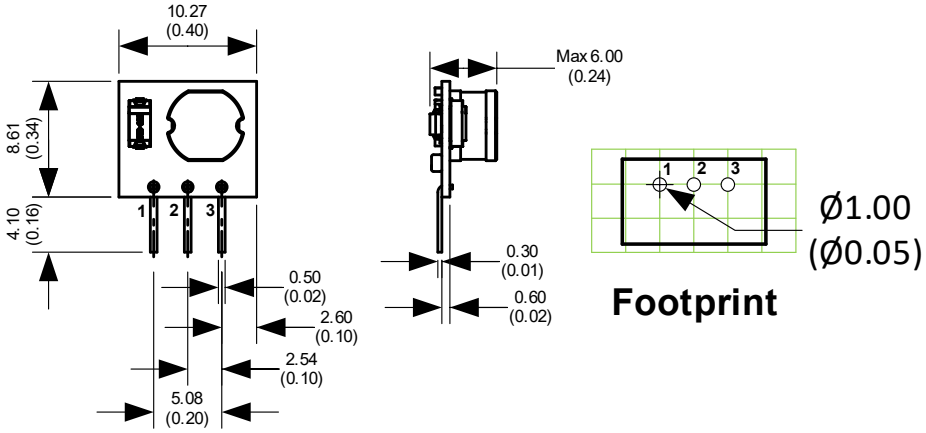
1. C1, C2, C3, C4 are ceramic capacitors, and mandatory for operating of the converters. They can also be tantalum or low ESR electrolytic capacitors. Recommended specs listed in the table above can be changed according to the needs in the circuits. Recommended **LDM is 10uH**.
2. The converter can be used both for positive and negative output using the circuit connection shown above.
3. These converters are not allowed to use in parallel or hot plug without support from properly designed external circuits.

Recommended EMC Circuit



Component	MOV	LDM1	LDM2	C5	C6
SPEC	20D470K	82uH	22uH	680uF, 50V	4.7uF, 50V
*Fuse selection should be based on application needs. *C1 and C2 refer to Typical Application Circuit					

Dimensions



Pin Definition		
Pin	Positive Out	Negative Out
1	+V Input	+V Input
2	GND	-V Output
3	+V Output	GND

Unit: mm (inch)
General tolerance: ±0.50 (±0.02)
Pin thickness tolerance: ±0.20 (±0.008)
Footprint grid 2.54 x 2.54 mm