

AMSRO-78LPZ

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SIP3

The AMSRO-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 AMSRO-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.

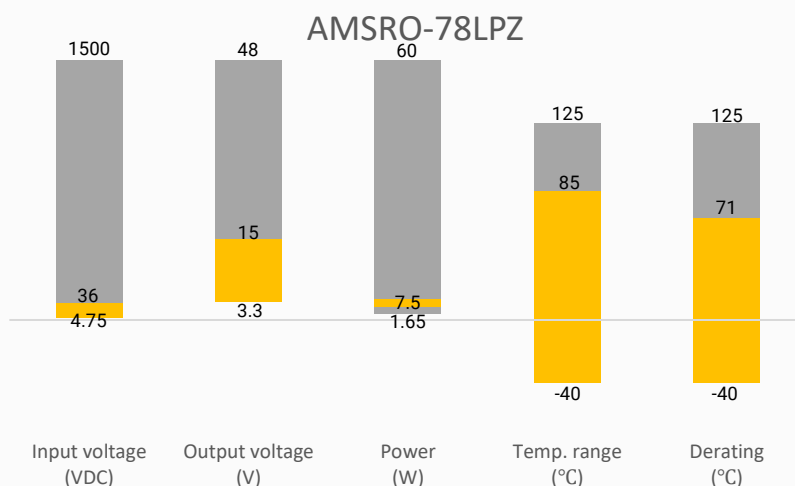
The series also features an ultra-low no-load input current of only 0.2 mA, making it particularly well suited for battery-powered and energy-sensitive applications. With their high efficiency, compact footprint, and robust performance, AMSRO-78LPZ regulators are ideal for portable devices and other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



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
AMSRO-783.3LPZ	24 (4.75~36)	3.3	500	680	86	80
AMSRO-7805LPZ	24 (6.5~36)	5	500	680	90	84
	12 (7~31)	-5	-300	330	80	81
AMSRO-7812LPZ	24 (15~36)	12	500	680	94	91
	12 (8~24)	-12	-150	330	84	85
AMSRO-7815LPZ	24 (19~36)	15	500	680	95	92
	12 (8~21)	-15	-150	330	85	87

Input Specification				
Parameters	Conditions	Typical	Maximum	Units
No load input current	Vin = Min. to Max.	0.2	1.5	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	± 0.4	%
Load regulation	10~100% load, 3.3/ 5Vout model	± 0.6		%
	10~100% load, others	± 0.3		%
Transient Recovery Time	25% load step	0.2	1	mS
Transient Response Deviation	25% load step	± 50	± 200	mV
Temperature coefficient	-40~85°C		0.03	%/°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.

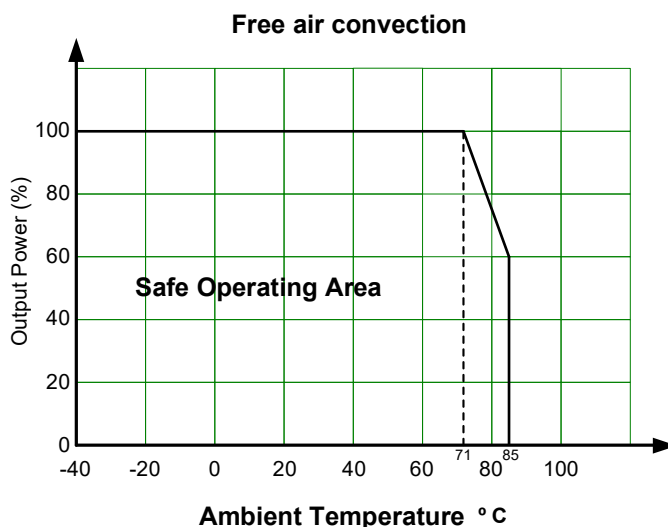
General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	500		KHz
Operating temperature	See derating graph	-40 to +85		°C
Storage temperature		-55 to +125		°C
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		1		g
Dimensions (L x W x H)		0.39 x 0.28 x 0.43 inches (10.00 x 7.20 x 11 mm)		
MTBF	>2 000 000 hrs (MIL-HDBK -217F, t=+25°C) / 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.				

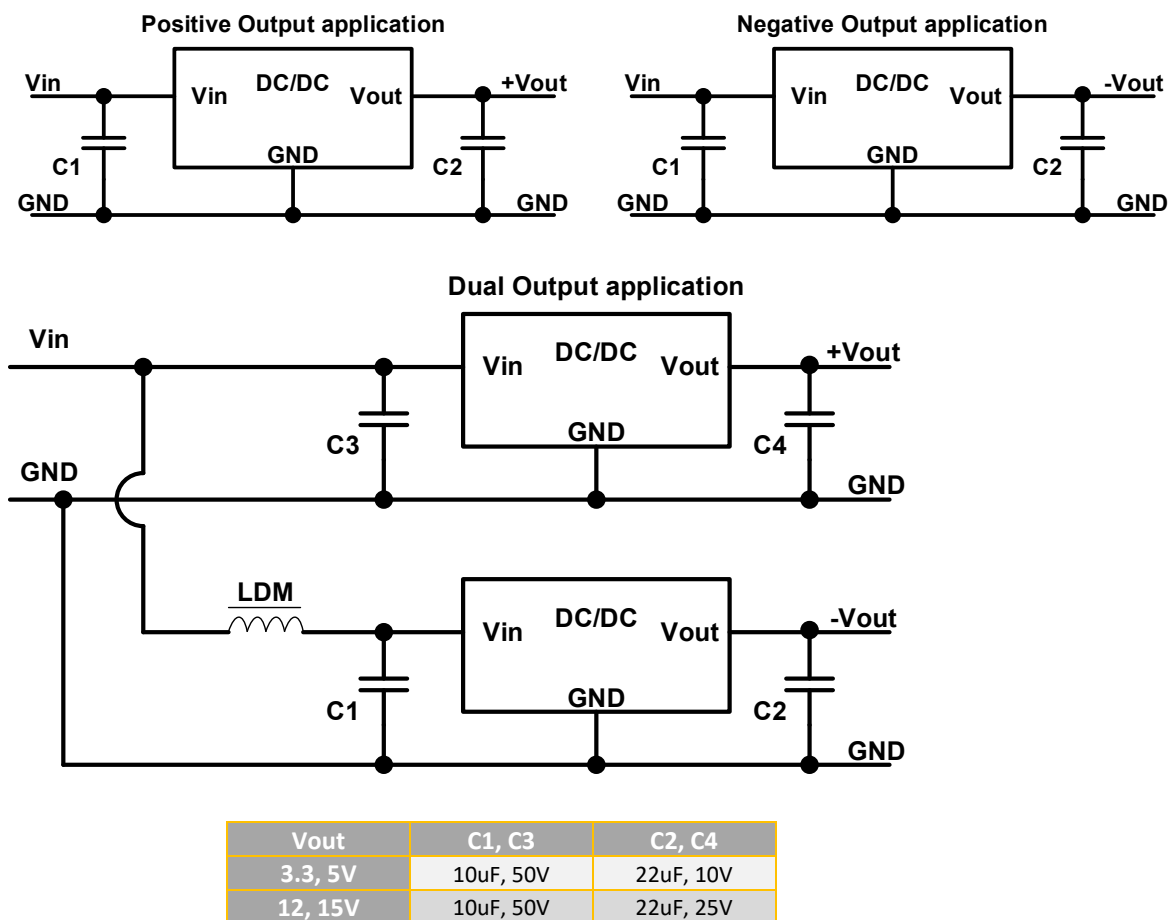
Safety Specifications

Parameters		
Standards	Designed to meet UL/EN/IEC 62368-1	
	EMC - Conducted and radiated emission	CISPR32/EN55032, CLASS B with recommended EMC circuit
	Electrostatic Discharge Immunity	IEC/EN 61000-4-2 Contact ± 4 KV, 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 ± 1 KV, Criteria B with recommended EMC circuit
	RF, Conducted Disturbance Immunity	IEC/EN 61000-4-6 3Vr.m.s, Criteria A

Derating



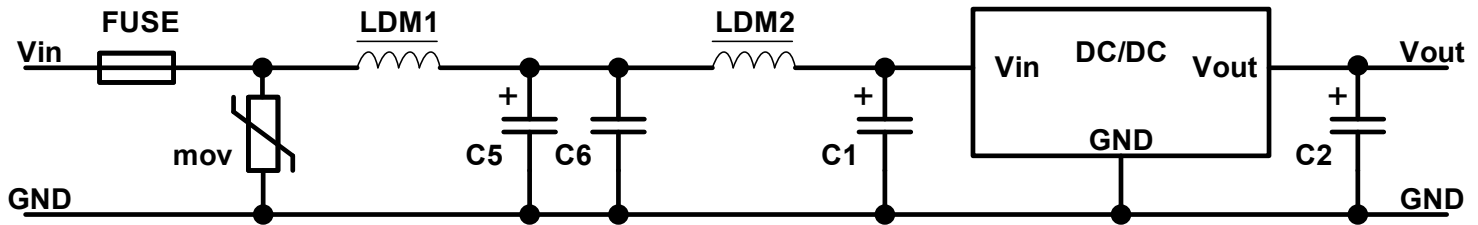
Typical Application Circuit



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**.

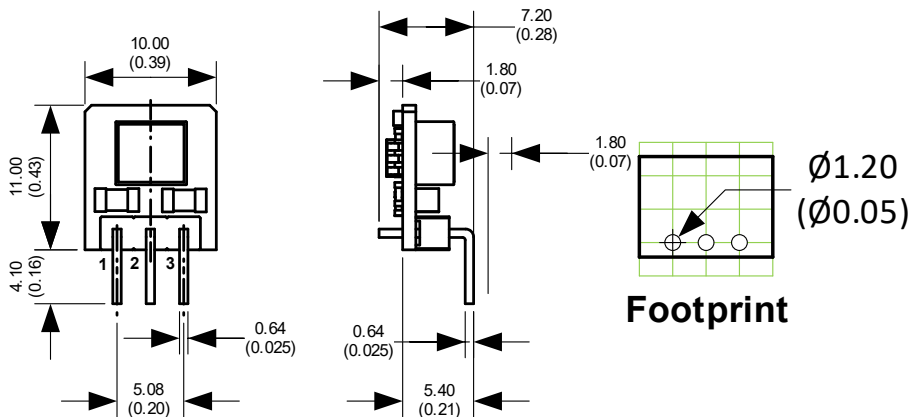
2. These converters are not allowed to use in parallel or hot plug without support from properly designed external circuits.

Recommended EMC Circuit



Component	MOV	LDM1	LDM2	C5	C6
SPEC	20D470K	82uH	12uH	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: ± 0.10 (± 0.004)
Footprint grid 2.54 x 2.54 mm

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 than the ones listed in this datasheet. 7. Warranty is in accordance with Aimtec's standard Terms of Sale available at www.aimtec.com.