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AMSR-78LPZ



The AMSR-78LPZ series are SIP3 DC/DC high efficiency switching regulators and ideal substitutes for LM78xx series three-terminal linear regulators. The switching regulators feature high efficiency, low loss, short circuit protection, and there is no need for a heat sink.

It also features excellent reliability and performance while offering a wide input voltage range of 4.75-36VDC as well as an output voltage of -15~15V. This compact SIP3 design will surely benefit your new system design.

This new series offers great operating temperatures, from -40 to 85°C with full power up to 71°C. Additionally, 2,000,000 hours MTBF comes standard.

The AMSR-78LPZ is suitable for instrumentation, industrial control and electric power.

Features

- Pin-out compatible with LM78XX Linear
- Non isolated, heatsinks not required
- Efficiency up to 95%
- Operating Temp: -40 °C to +85 °C
- Short circuit protection: Continuous, Auto recovery
- No-load input current as low as 0.2mA
- Regulated output



Summary



Training



Product Training Video
(click to open)



Application Notes

Applications



Models & Specifications

Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max (mA)	Maximum capacitive Load (μF)	Efficiency Vin Min (%)	Efficiency Vin Max (%)
AMSR-783.3LPZ	4.75-36	3.3	500	680	86	80
AMSR-7805LPZ	6.5-36	5	500	680	90	84
	7-31	-5	-300	330	80	80
AMSR-7809LPZ	12-36	9	500	680	93	90
AMSR-7812LPZ	15-36	12	500	680	94	91
	8-24	-12	-150	330	85	84
AMSR-7815LPZ	19-36	15	500	680	95	93
	8-21	-15	-150	330	87	85

Input Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage range	See models table			VDC
No load input current		0.2	1.5	mA
Filter	Capacitor			
Reverse polarity Input	Avoid / Not protected			

Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	100% load, 3.3Vout model	±2	±4	%
	100% load, Others	±2	±3	%
Line regulation	100% load	±0.2	±0.4	%
Load regulation	10-100% load, 3.3/5Vout models	±0.6		%
	10-100% load, Others	±0.3		%
Ripple & Noise*		20	75	mV pk-pk
Transient response time	25% load step change	200	1000	μS
Dynamic load stability	25% load step change	50	250	mV

* Ripple and Noise are measured at 20MHz bandwidth. Please refer to the application note for specific detail.

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	Full load, nominal input	>550	850	KHz
Short circuit protection	Continuous, auto recovery			
Operating temperature	With derating at 71°C	-40 to +85		°C
Storage temperature		-55 to +125		°C
Pin soldering temperature	Soldering spot is 1.5mm away from case, 10 sec max		260	°C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Case material	black plastic (UL94V-0 rated)			
Weight		1.8		g
Dimensions (L x W x H)		0.46 x 0.30 x 0.40 inches (11.60 x 7.55 x 10.16 mm)		
MTBF	2 000 000 hrs (MIL-HDBK -217F, t=+25°C) / Full Load			

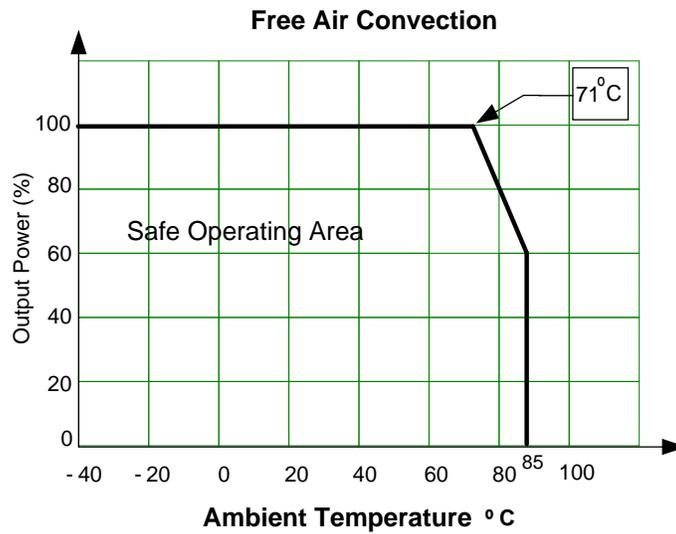
NOTE: All specifications in this datasheet are measured at an ambient temperature of 25°C, humidity<75%, nominal input voltage and at rated output load unless otherwise specified.

Safety Specifications

Parameters

Standards	Designed to meet UL/EN/IEC 62368-1	
	EMC - Conducted and radiated emission	CISPR32 / EN55032, class B with the recommended EMI circuit
	Electrostatic Discharge Immunity	IEC/EN 61000-4-2 Contact $\pm 4\text{KV}$, 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 $\pm 1\text{KV}$, Criteria B
	RF, Conducted Disturbance Immunity	IEC/EN 61000-4-6 3Vr.m.s, Criteria A

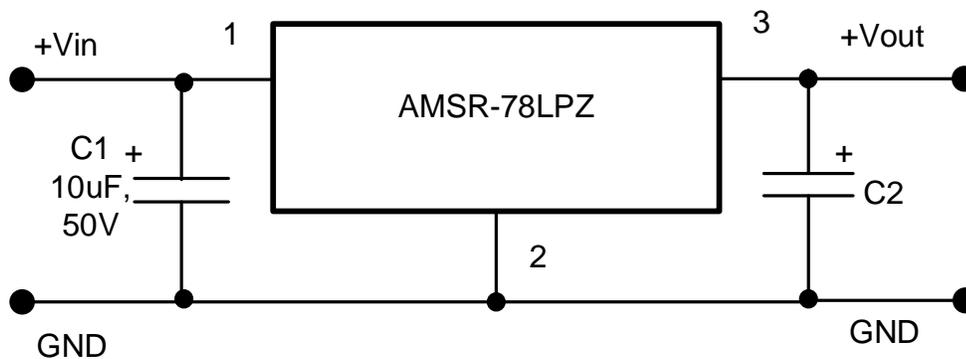
Derating



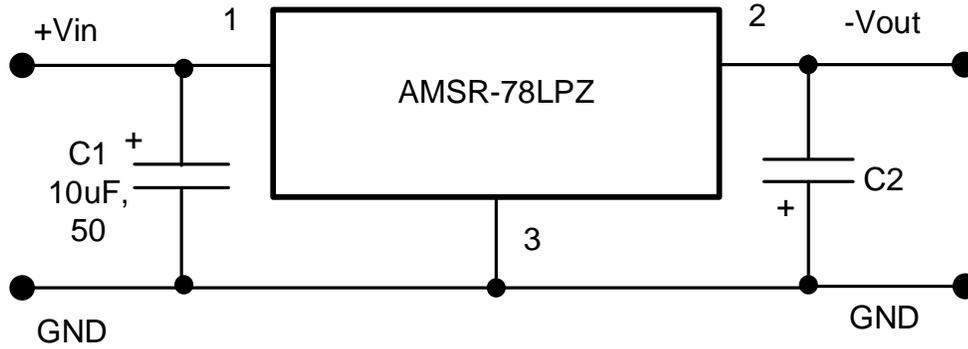
Typical application circuit



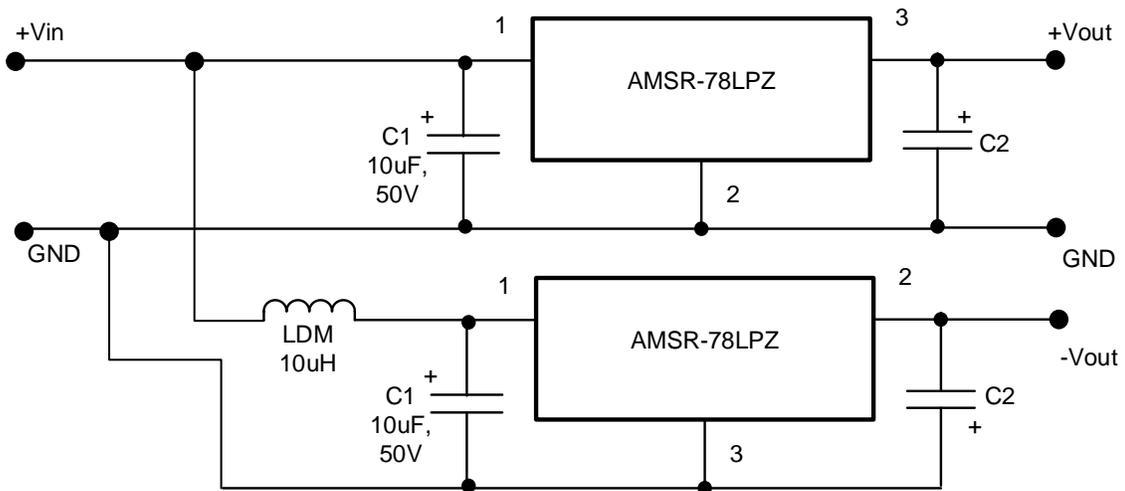
Standard Application circuit – positive output



Standard Application circuit – negative output



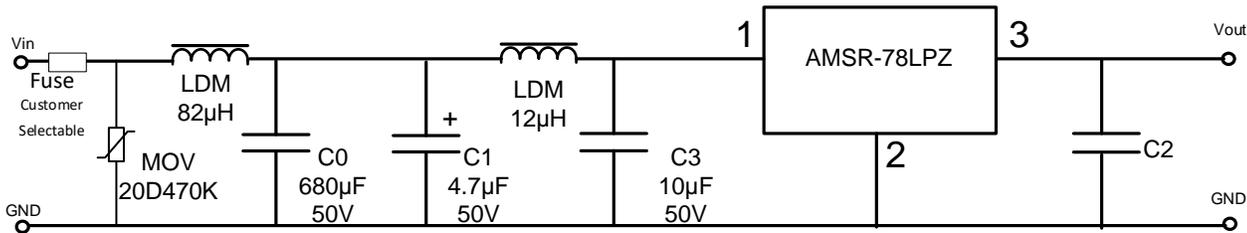
Standard Application circuit – dual output



Vout	C2
3.3V	22μF/10V
5V	22μF/10V
9V	22μF/16V
12V	22μF/25V
15V	22μF/25V

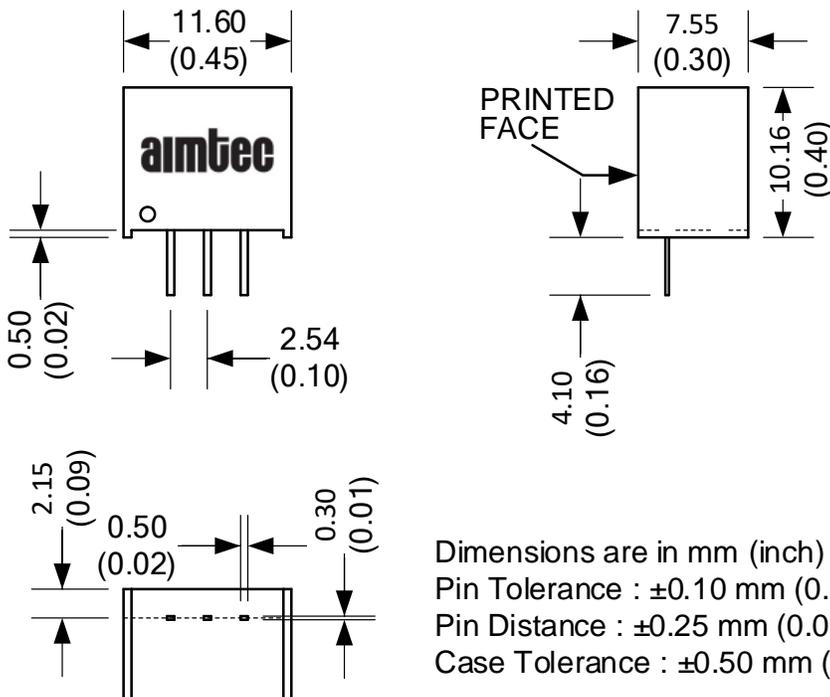
NOTE: This part is not designed for parallel operation, only input parallel supply to achieve positive and negative output

EMI Recommended circuit



NOTE: Refer to above table for C2 values

Dimensions



Pin Out Specifications

Pin	Positive	Negative
1	+V Input	+V Input
2	Ground	-V Output
3	+V Output	Ground

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 label shown, including safety agency certifications on label, 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 chemical 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.