

## Series AMSRB-78-Z

### Up to 7.5Watt | DC-DC Converter



#### FEATURES:

- No heatsink required
- 3 Pin SIP package
- Non-isolated
- Low ripple and noise
- Extra low no load current
- RoHS compliant
- Operating temperature -40°C to +85°C
- Very high efficiency up to 94%
- Pin compatible to multiple manufacturers
- Highly Regulated Outputs
- Very high switching frequency



#### Models

##### Single output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Efficiency Vin Max (%)	Efficiency Vin Min (%)	Max Capacitive Load
AMSRB-783.3Z	4.5 ~ 28	3.3	500	75	89	100μF
AMSRB-7805Z	7 ~ 28	5	500	80	92	100μF
AMSRB-7812Z	14 ~ 28	12	500	90	94	100μF
AMSRB-7815Z	17 ~ 28	15	500	92	94	47μF

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.

#### Input Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage range	See the table above			
Filter	Capacitor			
Input Current (No Load)	Maximum		(3.3V) 1.0 (5V) 1.0 (12V) 1.5 (15V) 2.0	mA
Input Current	Vin 4.5 / 28 Vdc Full Load Vin 7 / 28 Vdc Full Load Vin 14 / 28 Vdc Full Load Vin 17 / 28 Vdc Full Load	411 / 78 388 / 111 455 / 238 469 / 291		mA
Startup Time		10		mS
Input Reflected Current *		35		mA pk-pk
Absolute Max Stress Rating	For 100ms		0-30	Vdc

\* The input reflected ripple current should be measured with a 12μH inductor and a 47μF capacitor.

#### Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	100% load	±3		%
Short circuit protection	Continuous			
Short circuit restart	Auto recovery			
Output current limit			500	mA
Minimum load current			5	mA
Transient Response Deviation		250		μs
Line voltage regulation		±0.5		%
Load voltage regulation	10-100% load	±0.8		%
Temperature coefficient	-40°C to +85°C ambient	±0.02		%/°C
Ripple & Noise	20MHz Bandwidth, 10-100% load	60		mV p-p

#### General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	570		KHz
Operating temperature	See derating graph	-40 to +85		°C
Storage temperature		-55 to +125		°C
Maximum case temperature			100	°C
Cooling	Free air convection			

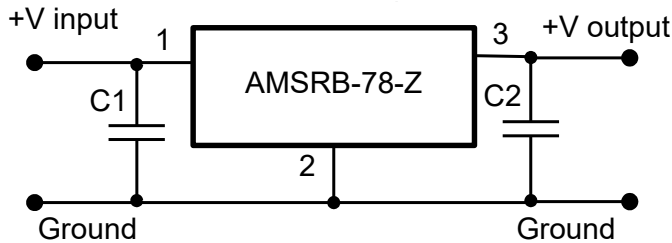
## General Specifications (continued)

Parameters	Conditions	Typical	Maximum	Units
Humidity			95	%
Case material	Non-conductive black plastic (UL94V-0 rated)			
Weight		2		g
Dimensions (L x W x H)	0.46 x 0.29 x 0.40 inches 11.68 x 7.50 x 10.15 mm			
MTBF	> 4 000 000 hrs (MIL-HDBK-217F, Ground Benign, t=+25 °C)			
Soldering temperature	1.5 mm from case for 10 sec		260	°C

## Safety Specifications

Parameters	
Agency approvals	CE
Standards	EN 55032, class B with the recommended circuit
	Electrostatic Discharge Immunity IEC 61000-4-2, Criteria A with the recommended circuit
	RF, Electromagnetic Field Immunity IEC 61000-4-3, Criteria A with the recommended circuit
	Electrical Fast Transient/Burst Immunity IEC 61000-4-4, Criteria A with the recommended circuit
	Surge Immunity IEC 61000-4-5, Criteria A with the recommended circuit
	RF, Conducted Disturbance Immunity IEC 61000-4-6, Criteria A with the recommended circuit
	Power frequency Magnetic Field Immunity IEC 61000-4-8, Criteria A with the recommended circuit

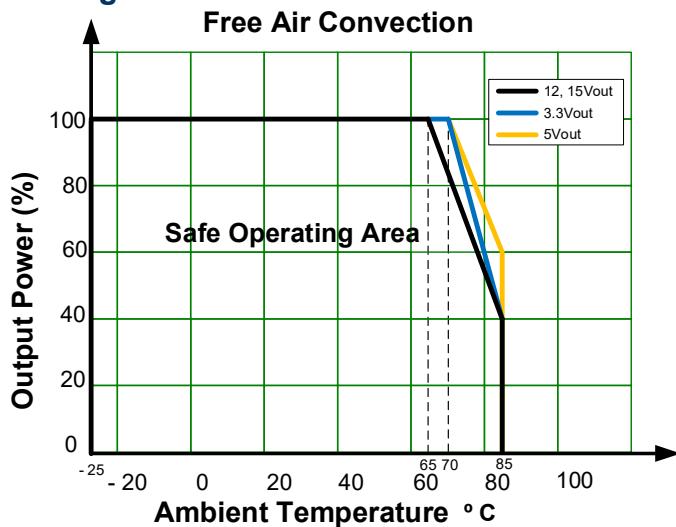
## Standard Application Circuit



## External Capacitor values

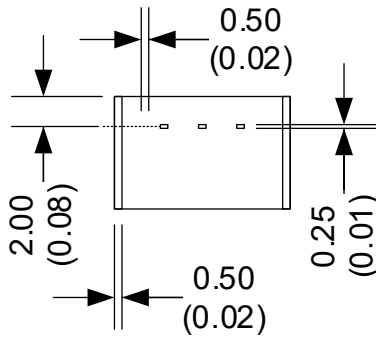
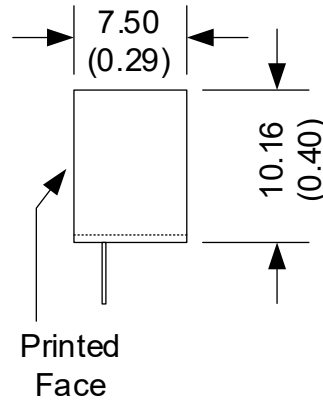
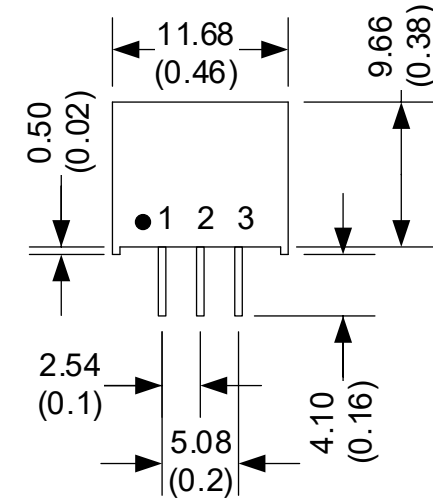
Model Number	C1 (ceramic capacitor)	C2 (ceramic capacitor)
AMSRB-7805Z	22uF/50V	47uF/16V

## Derating



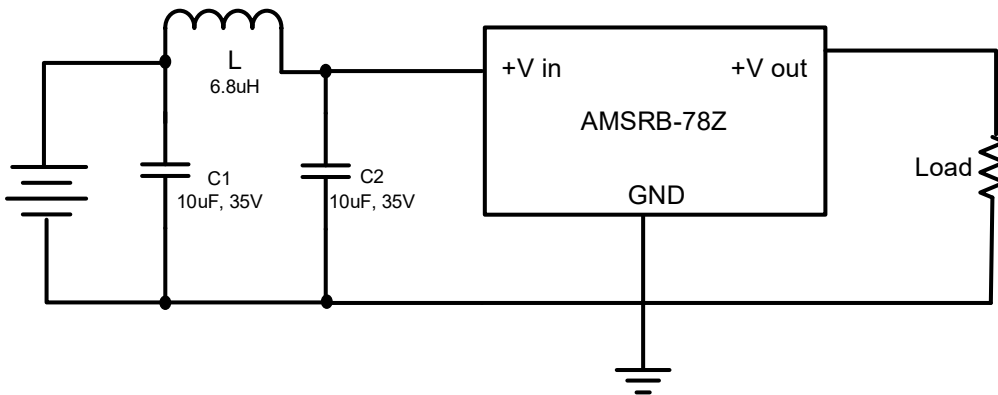
**Pin Out Specifications    Dimensions**

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



Unit: mm(inch)  
Case tolerance:  $\pm 0.5(0.02)$   
Pin tolerance:  $\pm 0.05(0.002)$   
Pin pitch and length tolerance:  $\pm 0.35(0.014)$   
Pin to case tolerance:  $\pm 0.5(0.02)$

**EMI & EMS Class B Solution Circuit**



**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).