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**AMSR2-78EZ**



The AMSR2-78EZ 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 1.8~15V. This compact SIP3 design will surely benefit your new system design.

This new series offers great operating temperatures, from -40 to 82°C with full power up to 65°C. Additionally, 1,630,000 hours MTBF comes standard.

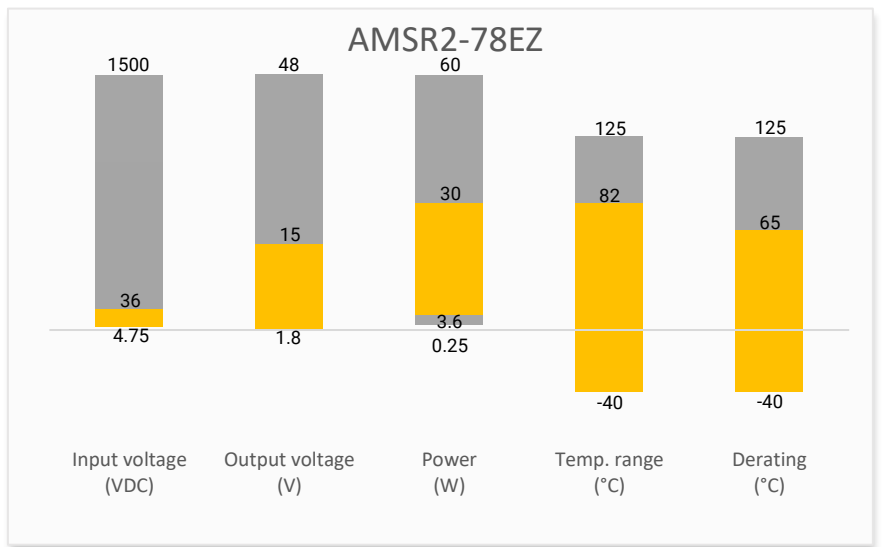
The AMSR2-78EZ is suitable for instrumentation, industrial control and electric power.

**Features**

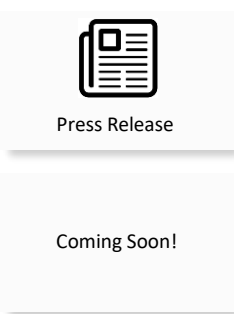
- Pin-out compatible with LM78XX Linear
- Non isolated, heatsinks not required
- Efficiency up to 96%
- Operating Temp: -40 °C to +82 °C
- Short circuit protection: Hiccup, Auto recovery
- No-load input current: 20mA max.
- Regulated output
- Made in Taiwan



**Summary**



**Training**



**Applications**



## Models & Specifications



Model	Input Voltage (VDC)	Output Voltage (VDC)	Output Current max (mA)	Efficiency Vin Min (%)	Efficiency Vin Max (%)
<b>Straight Pins</b>					
AMSR2-781.8EZ	4.75-36	1.8	2000	89	80
AMSR2-782.5EZ	4.75-36	2.5	2000	90	82
AMSR2-783.3EZ	4.75-36	3.3	2000	90	84
AMSR2-7805EZ	6.5-36	5	2000	93	89
AMSR2-786.5EZ	9-36	6.5	2000	93	91
AMSR2-7809EZ	12-36	9	2000	94	90
AMSR2-7812EZ	15-36	12	2000	95	93
AMSR2-7815EZ	18-36	15	2000	96	94
<b>Right Angled Pins</b>					
AMSR2-781.8LEZ	4.75-36	1.8	2000	89	80
AMSR2-782.5LEZ	4.75-36	2.5	2000	90	82
AMSR2-783.3LEZ	4.75-36	3.3	2000	90	84
AMSR2-7805LEZ	6.5-36	5	2000	93	89
AMSR2-786.5LEZ	9-36	6.5	2000	93	91
AMSR2-7809LEZ	12-36	9	2000	94	90
AMSR2-7812LEZ	15-36	12	2000	95	93
AMSR2-7815LEZ	18-36	15	2000	96	94

NOTE: The LEZ suffix indicate right angled pins and the EZ suffix indicates straight pins.

### Input Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage range	See models table	24	36	VDC
No load input current		15	20	mA
Filter	Internal Capacitor 10 $\mu$ F			

### Output Specification

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy			$\pm 3$	%
Line regulation	Vin min-max at full load	$\pm 0.5$		%
Load regulation	10-100% load	$\pm 0.5$		%
Ripple & Noise*	Without output capacitor		100	mV pk-pk
Transient response time	25% load step change	350		$\mu$ S
Current limit	Duty = 40%	325		%
Capacitive load	ESR > 1m $\Omega$		900	$\mu$ F

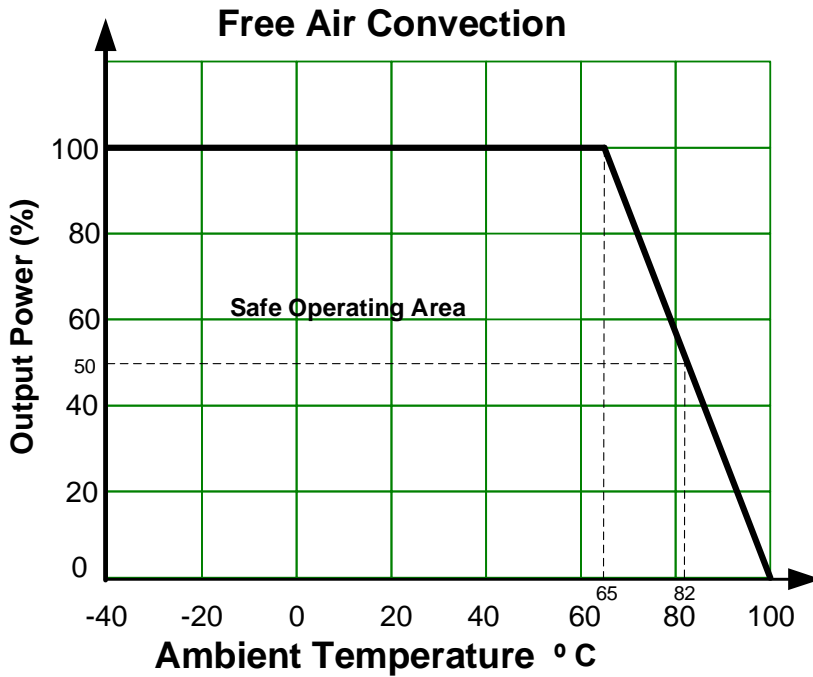
\* Ripple and Noise are measured at 20MHz bandwidth. Please refer to the application note for specific detail.

### General Specifications

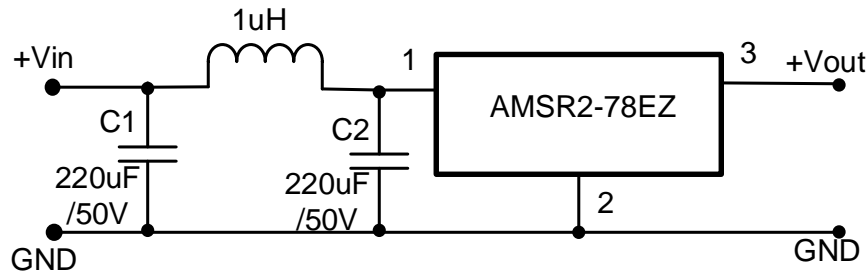
Parameters	Conditions	Typical	Maximum	Units
Switching frequency		500		KHz
Short circuit protection	Hiccup, auto recovery			
Operating temperature	With derating at 65 $^{\circ}$ C	-40 to +82		$^{\circ}$ C
Storage temperature		-55 to +125		$^{\circ}$ C

Temperature coefficient		±0.03		%/°C
Cooling	Free air convection			
Humidity	Non-condensing		95	% RH
Case material	black plastic (UL94V-0 rated)			
Weight		4		g
Dimensions (L x W x H)	0.45 x 0.34 x 0.69 inches (11.50 x 8.50 x 17.50 mm)			
MTBF	1 630 000 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.				

## Derating

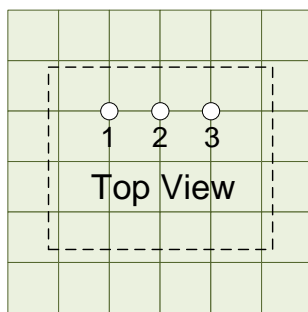
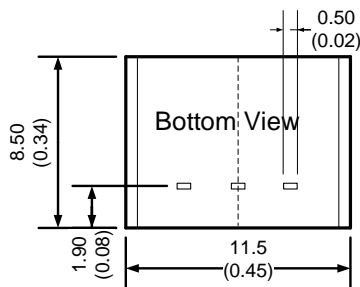
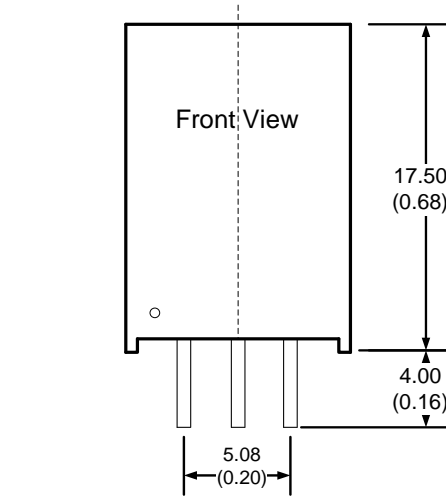


## Typical application circuit



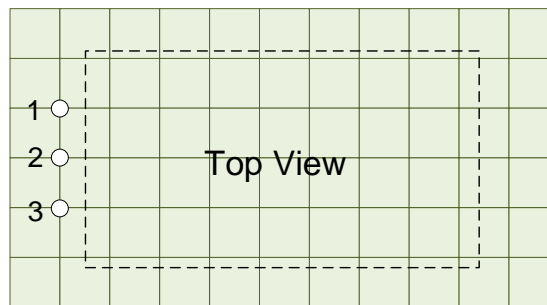
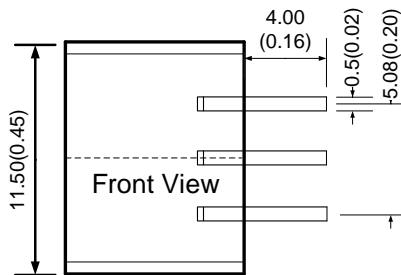
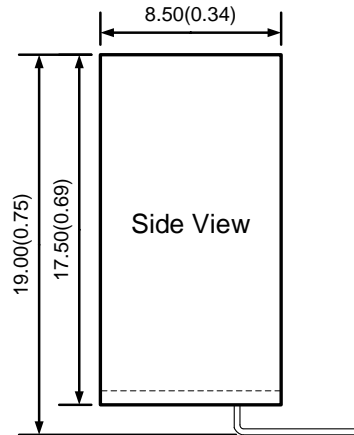
Dimensions

Straight pin models



Grid: 2.54 x 2.54mm  
Unit:mm[inch]  
General tolerances:±0.50mm [± 0.020inch]

Right angled pin models



Grid: 2.54 x 2.54mm  
Unit:mm[inch]  
General tolerances:±0.50mm [± 0.020inch]

Pin Out Specifications

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

**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).