aimtec
Your Power Partner

FEATURES:

- Switching Regulator
- Low Noise
- Wide Input
- Non-Isolated
- Adjustable Output Voltage
- Thermal Shutdown
- SMD Package
- Efficiency Up To 96%
- Remote On/Off
- Short Circuit Protection
- High MTBF
- RoHS Compliant

Models
Single output

Model	Input Voltage (V)	Output Voltage (V)	Output Current max (mA)	Efficiency Vin Max (%)	Efficiency Vin Min (%)
AMSRL-783.3-NZ	4.5-28	3.3	500	75	90
AMSRL-7805-NZ	6-28	5	500	81	94
AMSRL-7812-NZ	14-28	12	500	90	95
AMSRL-7815-NZ	17-28	15	500	92	96

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	Nominal	Typical	Maximum	Units
Voltage range	See Models table above			
Start up time		2		ms
On/Off Control	ON –open or 1.5V < Vc < 6V ; OFF –GND or 0V < VC < 1V , 2uA			
Quiescent Current	Vin = min to max at 0% load	10		mA

Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Voltage accuracy	At 100% load	±3		%
Short Circuit protection	Continuous, hiccup mode			
Short circuit restart	Auto-Recovery			
Thermal shutdown	Internal IC Junction	160		°C
Dynamic load stability	10-100% load	±75		mV
Line voltage regulation	Vin=(LL-HL) at full load	±0.5		%
Load voltage regulation	10-100% load	±1		%
Temperature coefficient	-40°C to +85°C ambient	0.02		%/°C
Ripple & Noise	20MHz Bandwidth	25		mV p-p
Voltage adjustment range (V adj)	3.3	1.8-5.5		VDC
	5	2.5-8.0		
	12	4.5-13.5		
	15	4.5-15.5		
Maximum Capacitive Load			1000	uF

General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	1.4		MHz
Operating temperature	With derating above 71 ºC	-40 to +85		°C
Storage temperature	-55 to +125			°C
Maximum case temperature			100	°C
Cooling	Free Air Convection			
Humidity			95	% RH
Case material	Plastic (UL94-V0)			
Weight		2.3		g

General Specifications (continued)

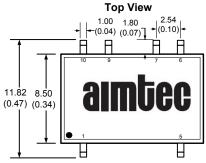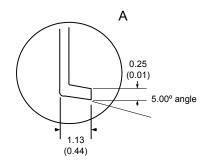| Parameters	Conditions	Typical	Maximum	Units
Dimensions (L x W x H)	0.60 x 0.47 x 0.29 Inches	15.24 x 11.82 x 7.25 mm		
MTBF	> 2 000 000 hrs (MIL-HDBK-217F, Ground Benign, t=+25 $_o$C)			
Maximum Soldering Temperature	1.5mm from case for 10 sec		300	^{o}C
Turn on Transient process time	50			us
Off idle current	30			uA

Pin Out Specifications

Pin	Single
1	+V input
5	+V output
6	V adj
7	Ground
9	Ground
10	ON/OFF

Dimensions

Side View
15.24 (0.60)
7.25 (0.29) 7.00 (0.28)
2.54 (0.10)

Front View
7.25 (0.29)
A
0.25 (0.01)

Top View
1.00 (0.04) 1.80 (0.07) 2.54 (0.10)
10 9 7 6
11.82 (0.47) 8.50 (0.34)
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1 5

A
0.25 (0.01)
5.00º angle
1.13 (0.44)

Derating

Free Air Convection

71°C

Output Power (%)

Safe Operating Area

100 80 60 40 20 0

- 40 - 20 0 20 40 60 80 85 100

Ambient Temperature º C

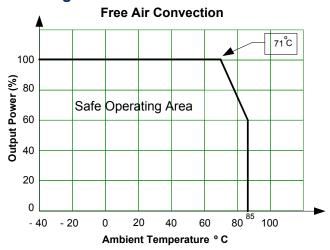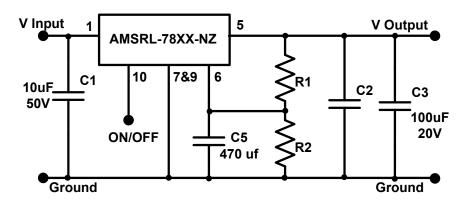## Application Circuit

Model Number	C2 (uF)
AMSRL-783.3-NZ	22
AMSRL-7805-NZ	22
AMSRL-7812-NZ	10
AMSRL-7815-NZ	10

It is recommended that ceramic capacitors are used for C2 & C3.
It is recommended to install C3 to improve performance.
C1 & C2 are required and should be installed as close to the converter as possible

Model Number	Nominal Output (V)	Vout Adjusted Up R2 (KΩ)	Vout Adjusted Down R1 (KΩ)
AMSRL-783.3-NZ	3.3	$= \dfrac{75.1 - (10 \times Vout)}{Vout - 3.3}$	$= \dfrac{(61 \times Vout) - 75.1}{3.3 - Vout}$
AMSRL-7805-NZ	5	$= \dfrac{90.72 - (10 \times Vout)}{Vout - 5}$	$= \dfrac{(61 \times Vout) - 90.72}{5 - Vout}$
AMSRL-7812-NZ	12	$= \dfrac{280.81 - (20 \times Vout)}{Vout - 12}$	$= \dfrac{(71 \times Vout) - 280.81}{12 - Vout}$
AMSRL-7815-NZ	15	$= \dfrac{269.37 - (15 \times Vout)}{Vout - 15}$	$= \dfrac{(66 \times Vout) - 269.37}{15 - Vout}$

If it is needed to adjust the output voltage higher or lower than the converter's nominal value use the equations in the table above to calculate appropriate resistor values, insuring that the voltage is within the adjustment range for the converter used. If no voltage adjustment is needed connect a 470uF ceramic capacitor from pin 6 to 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 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. **5.** 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.

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