Series AMSRL-78-NZ

Up to 7.5 Watt | DC-DC Converter

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

RoHS

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		ºC
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

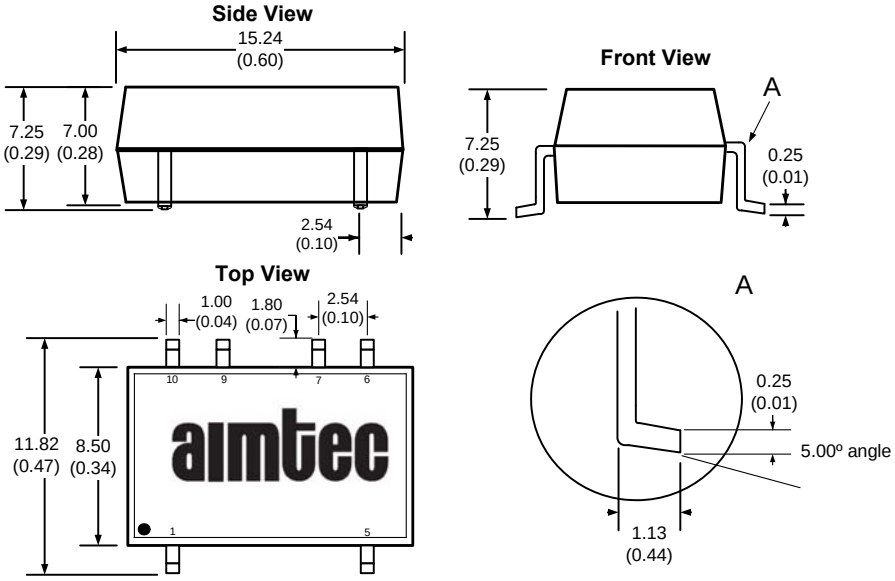
General Specifications (continued)

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 oC)			
Maximum Soldering Temperature	1.5mm from case for 10 sec		300	°C
Turn on Transient process time	50			us
Off idle current	30			uA

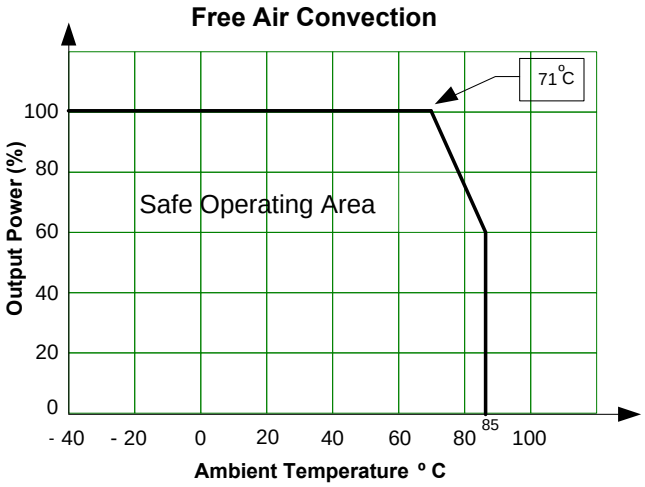
Pin Out Specifications

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

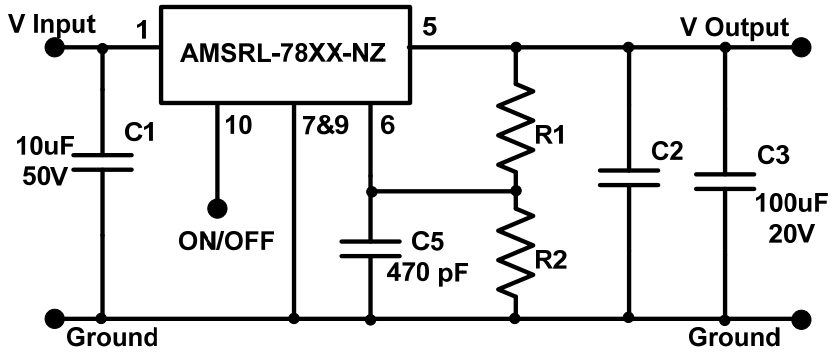
Dimensions



Derating



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	$\frac{= 75.1 - (10 \times Vout)}{Vout - 3.3}$	$\frac{= (61 \times Vout) - 75.1}{3.3 - Vout}$
AMSRL-7805-NZ	5	$\frac{= 90.72 - (10 \times Vout)}{Vout - 5}$	$\frac{= (61 \times Vout) - 90.72}{5 - Vout}$
AMSRL-7812-NZ	12	$\frac{= 280.81 - (20 \times Vout)}{Vout - 12}$	$\frac{= (71 \times Vout) - 280.81}{12 - Vout}$
AMSRL-7815-NZ	15	$\frac{= 269.37 - (15 \times Vout)}{Vout - 15}$	$\frac{= (66 \times Vout) - 269.37}{15 - Vout}$

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 470pF ceramic capacitor from pin 6 to ground.