



## FEATURES:

- Step Down DC/DC LED Driver
- Constant Current Output
- Ultra Wide (7:1) Input Range
- High Efficiency Up To 97%
- Operating Temperature Range -40°C to +85°C
- Open And Short LED Protection
- PWM / Digital Voltage / Analogue Dimming
- Output Power Up To 56 Watts



## Models Single output

Model	Input Voltage (V)	Output Voltage (V)	Maximum Rated Current (mA)	Max Capacitive Load (uF)	Efficiency (%)	Ripple & Noise (mV p-p)
AMLD-6030-RZ	9-60	2-56	300	2.2	97	250
AMLD-6035-RZ	9-60	2-56	350	2.2	97	300
AMLD-6050-RZ	9-60	2-56	500	2.2	97	350
AMLD-6060-RZ	9-60	2-56	600	2.2	97	400
AMLD-6070-RZ	9-60	2-56	700	2.2	97	400
AMLD-60100-RZ	9-60	2-56	1000	2.2	97	450

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	48	9-60		VDC
Filter	Capacitor			
Absolute Maximum Rating			65	VDC
Peak Input Voltage time			500	ms
DC/DC ON (Leave open if not used)	ON –Open or 2.5V< Vadj <5V			
DC/DC OFF	OFF(shutdown) – Vadj <0.8 or short pins 2,3,4			
Quiescent Current in Shutdown	Vin = 60V		3	mA
Vadj pin input voltage range	Input voltage range	0-5		VDC
Vadj pin drive current	Vadj = 5V		1	mA
PWM dimming	Max PWM Frequency 1KHz, adjust output current from 1% to 100%			
No load input current			3	mA

## Output Specifications

Parameters	Conditions	Typical	Maximum	Units
Current accuracy	300mA model		±6	%
	Other models		±5	%
Output Voltage range	V input = 60V	2-56		VDC
Output current	Vin – Vout > 4V	See model table above		
Short Circuit protection	Regulated at the rated current for each model			
Temperature coefficient			±0.03	%/°C

## General Specifications

Parameters	Conditions	Typical	Maximum	Units
Switching frequency	100% load	40-1000		KHz
Operating temperature	300, 350mA models	-40 to +85		°C
	Other models	-40 to +71		°C
Storage temperature		-40 to +125		°C
Maximum case temperature			105	°C
Cooling	Free air convection			
Humidity			95	% RH
Case material	Non-Conductive Black Plastic (UL94V-0 rated)			
Weight		17.5		g
Dimensions (L x W x H)	1.25 x 0.80 x 0.49 inches	31.75 x 20.32 x 12.45 mm		
MTBF	> 950 000hrs (MIL-HDBK-217 F at +25 °C)			
Maximum Soldering Temperature	1.5 mm from case for 10sec.		260	°C

**NOTES:**

1. Reversed polarity at the input power will damage the driver. The input ground must not be connected to the negative output.
2. Maximum output open voltage is equal to input voltage.

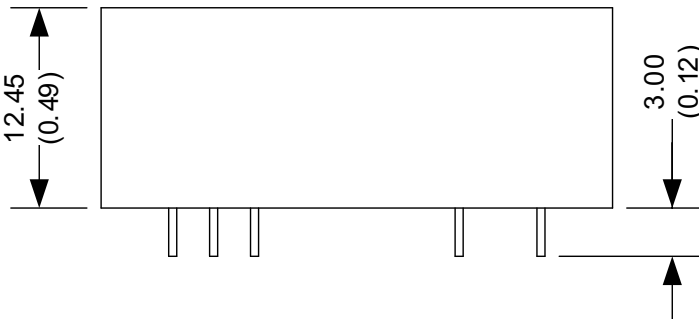
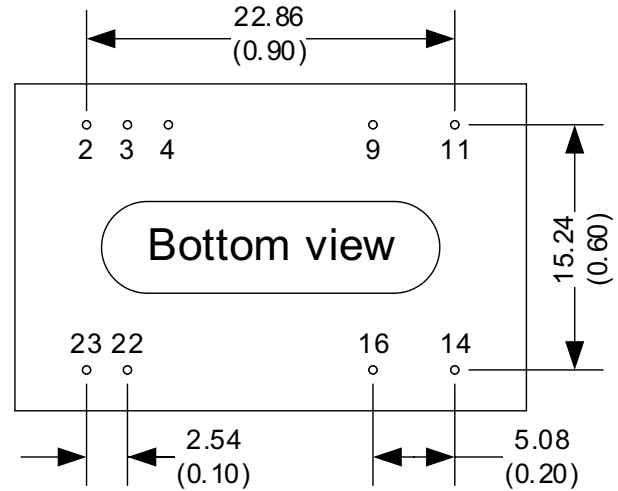
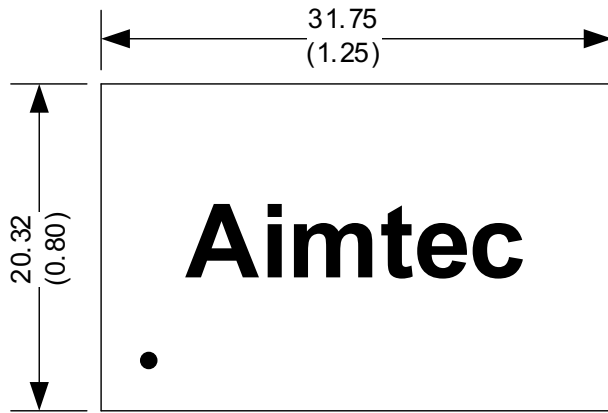
**Safety Specifications**

Parameters	
Agency approval	CE
Standards	Designed to meet IEC/EN 60950-1 EN 55015 (CISPR22) with recommended EMC circuit EN 61547 IEC 61000-4-2 (Perf. Criteria A) IEC 61000-4-3 (Perf. Criteria A) IEC 61000-4-4 (Perf. Criteria A) IEC 61000-4-6 (Perf. Criteria A) IEC 61000-4-8 (Perf. Criteria A)

**Pin Out Specifications**

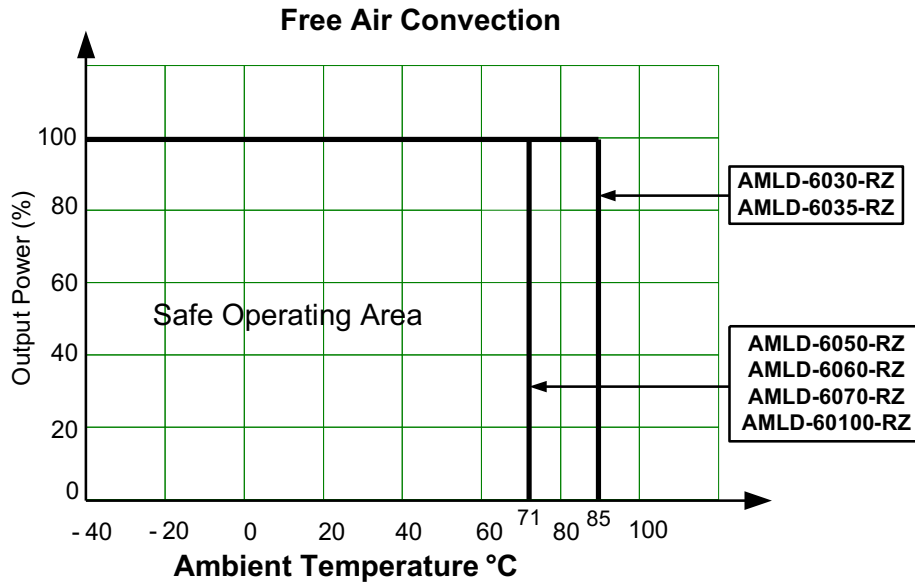
Pin	Single	
2	- V Input	- DC Supply
3	- V Input	- DC Supply
4	Vadj	PWM/ON/OFF or not used
9	- V Output	LED Cathode connection
11	- V Output	LED Cathode connection
14	+ V Output	LED Anode connection
16	+ V Output	LED Anode connection
22	+ V Input	+ DC Supply
23	+ V Input	+ DC Supply

**Dimensions**

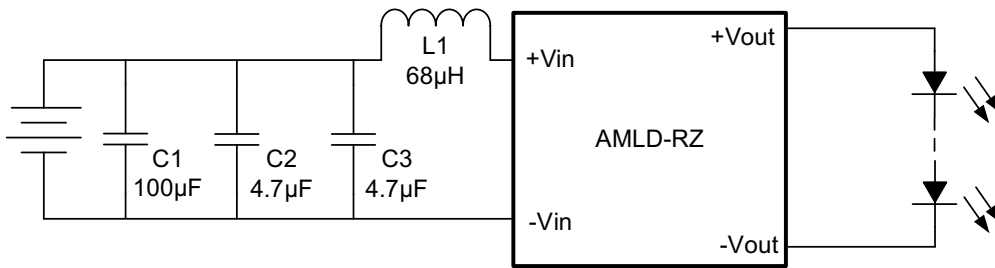


Unit: mm (inch)  
 Case tolerance:  $\pm 0.5 (0.02)$   
 Pin diameter:  $0.5 \pm 0.05 (0.02 \pm 0.002)$   
 Pin pitch and length tolerance:  $\pm 0.35 (0.014)$

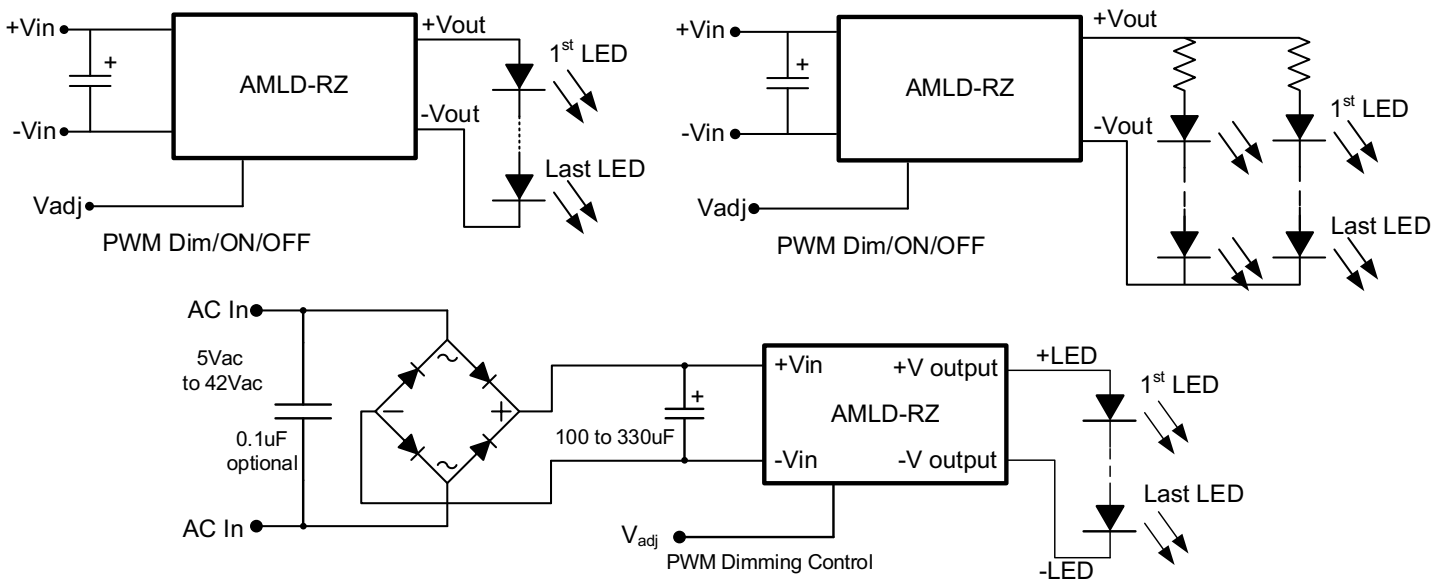
**Derating**



**Recommended EMC Circuit:**



**Application circuit examples:**



### Output Current Adjustment by PWM Control: Driving VADJ Directly

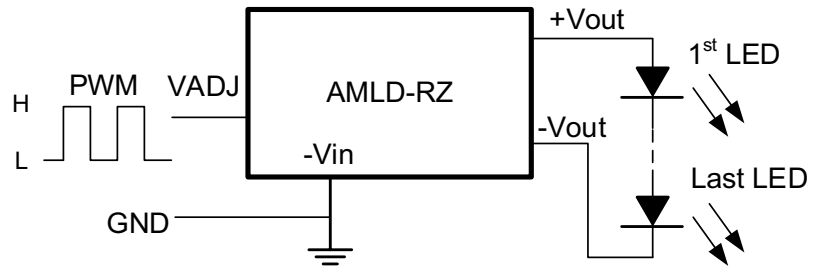
A Pulse Width Modulated (PWM) signal with a duty cycle of DPWM can be applied directly to VADJ pin as shown below.

The output current is given by:

$$I_{outnom} = I_{out} \times DPWM$$

$$H: 2.5V < V_{adj} < 5V$$

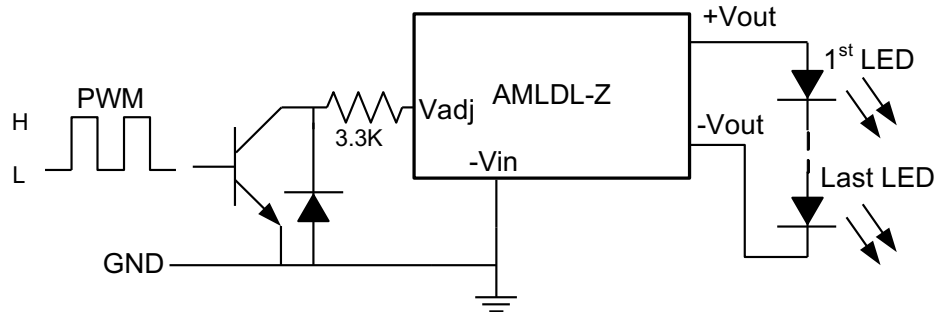
$$L: V_{adj} < 0.8V$$



### Driving VADJ Via Open Collector Transistor

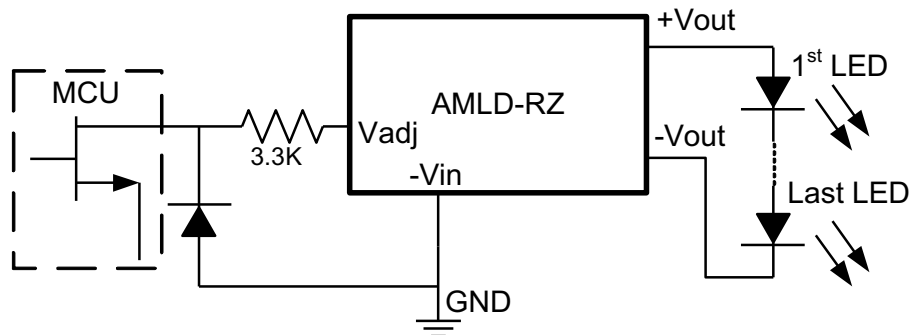
The VADJ can also be driven via an open collector transistor as shown below.

The diode and resistor serve to suppress any possible high amplitude negative voltage spikes to the VADJ input resulting from the collector to emitter capacitance of the transistor. Any negative voltage spikes will cause errors in output current and/or unstable driver operation.



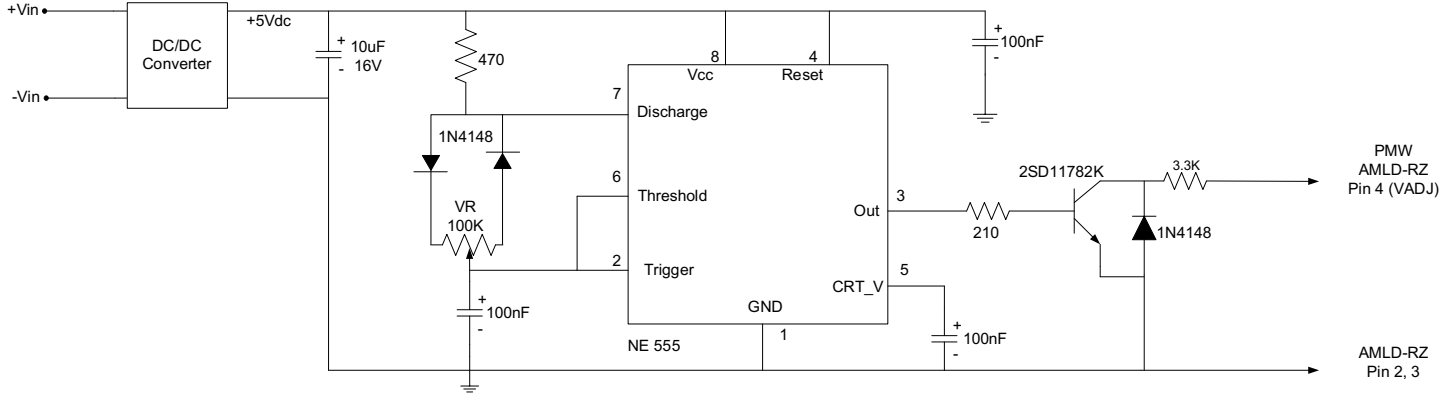
### Driving the VADJ from a Microcontroller

The VADJ can be driven from an open drain output of a microcontroller as shown below. The diode and resistor serve to suppress any possible high amplitude negative voltage spikes to the VADJ input resulting from the drain to source capacitance of the FET. Any negative voltage spikes will cause errors in output current and/or unstable driver operation.

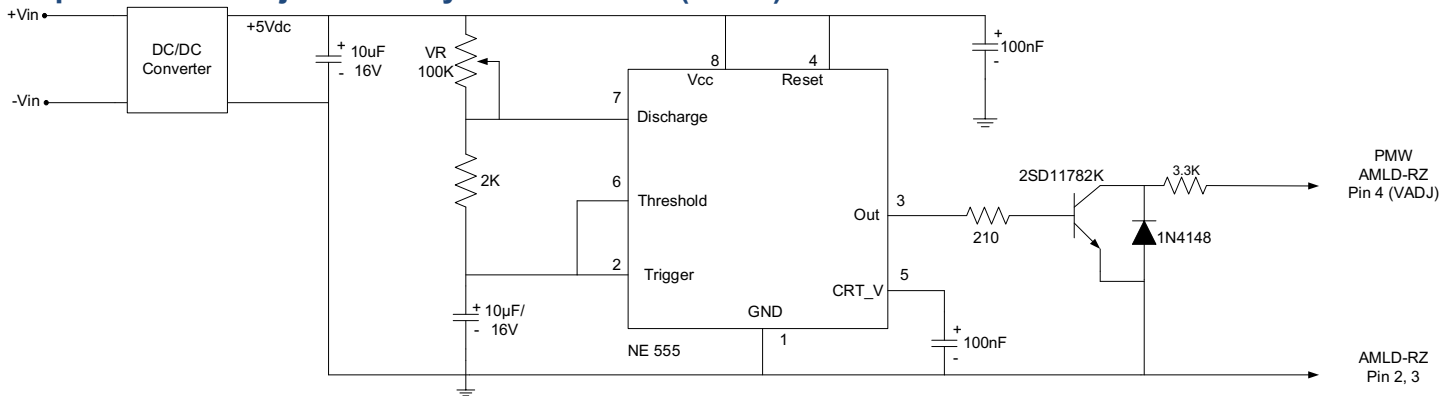


### Output Current Adjustment by PWM Control (Dimming):

A PWM signal must have a frequency of greater than 100Hz to prevent any visible flicker.



### Output Current Adjustment by PWM Control (Flash):



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