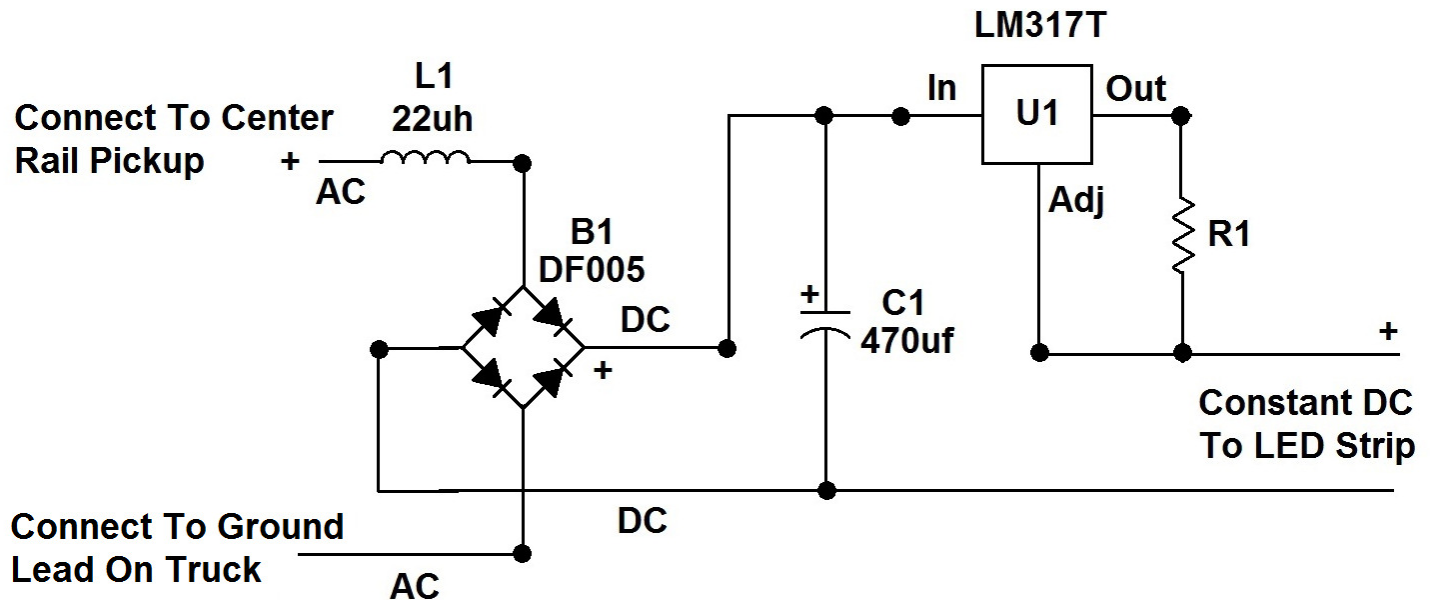


Passenger Car & Caboose LED Lighting

By Gunner John, 1/2015



Constant Current Passenger & Caboose LED Lighting

Input 12Vac to 19Vac from track.

L1 is a 22uh Inductive Coil which functions as a choke to prevent DCS signal interference.

B1 is a DF005 Bridge Rectifier which converts Vac from the track to Vdc for the regulator and LEDs.

C1 is a 470uF, 50V Capacitor to control flicker of the LEDs.

U1 is a LM317T Regulator connected for a constant current output. See the hookup diagram below. The LM317T has a capacity of 1.5a, and it will handle 20ma without a heat sink.

R1 limits the output current from the regulator and determines the brightness of the LEDs. Typically 20ma provides adequate brightness for a strip of 12 3mm LEDs. Vary the value of R1 to achieve the desired LED brightness. To determine R1, use the formula:

$$I_{out} = 1.25 / R_1$$

$$20\text{ma} = 1.25 \text{ Vdc} / R_1$$

$$R1 = 1.25 / 0.020 = 62.5 \text{ ohms}$$

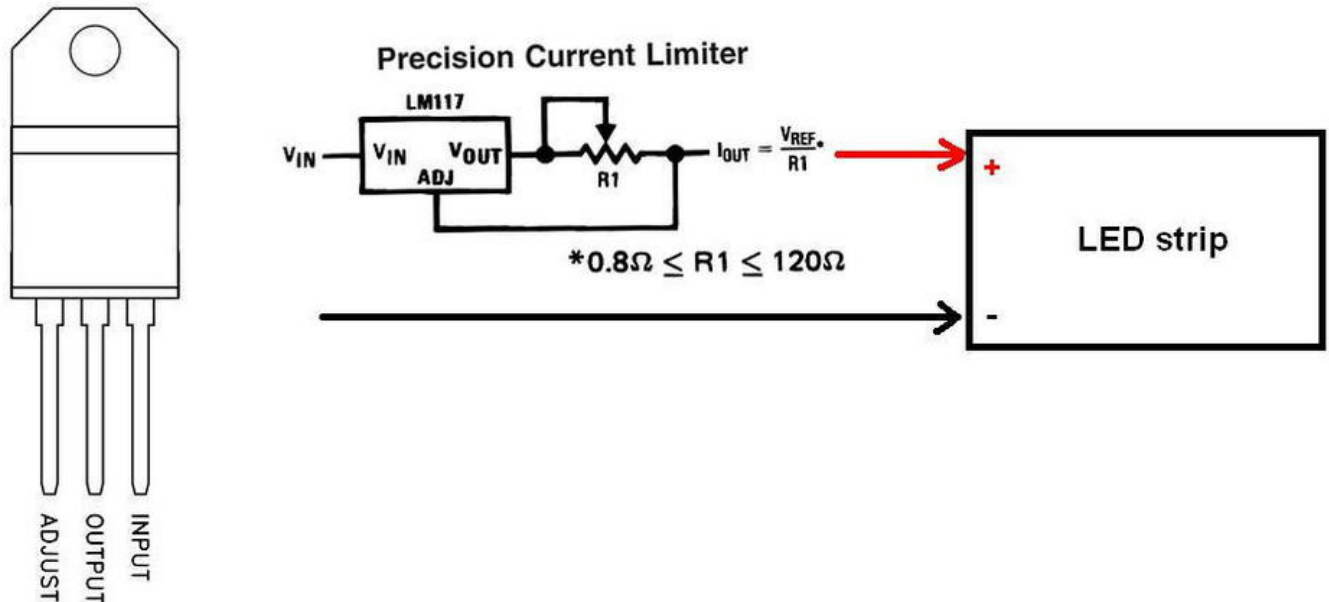
Constant DC Out connects to a strip of 12 3mm LEDs cutoff from a reel of LEDs.

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The LM317T can be setup for a constant voltage output, but the propensity / sensitivity for input voltage to vary makes voltage regulation difficult.

Pin connections (top view)



LM317T Regulator Hookup