

Surface Mount LEDs
A clinic by Frank Schneider
me@frankalan.com
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LED is a light emitting diode, so electricity only goes through one way. This is important when wiring. If you wire the + and - backwards it will not light.

SMD LEDs available from Mouser

<http://www.mouser.com/>

(800) 346-6873

For surface mount LEDs search **standard led – smd**

For resistors search **surface mount resistors** – Thick film 1206 package

For wire search **magnet wire** – you want 36 gauge Belden Single Beldsol solderable magnet wire (belden part # 8058) OR just google solderable magnet wire – cheaper options out there

Surface mount LEDs

Standard sizes – 0603, 0805, 1206, 1210 – now also 0402 – really small!

The size is also the LED in 100ths of an inch (approx)

0603 - .063" x .031" #50 drill bit

0805 - .08" x .05" #41 drill bit

1210 - .126" x .1" #20 or 11/64 drill bit

Ohm's Law

Subtract required voltage from supplied voltage, divide that by the amps required.

That is the resistance in Ohms you need. Expressed as an equation –

$$\frac{(+V - V_{led})}{\text{current in amps}} = R$$

For example, a 3 volt LED that requires 20mA powered by 12v track power would be –

$$\frac{(12 - 3)}{.02} = 450 \text{ Ohm resistor}$$

Power (wattage) = Dissipated voltage x amps needed = 9v x .02A = .18Watts

1/4w resistor would be fine