

Basic Operation

The CAT4101 has one highly accurate LED current sink to regulate LED current in a string of LEDs. The LED current is mirrored from the current flowing from the RSET pin. Table 6 lists various RSET resistor values for LED current in 100 mA increments.

The LED channel needs a minimum of 500 mV headroom to sink constant regulated current. If the input supply falls below 2 V, the under-voltage lockout circuit disables the LED channel.

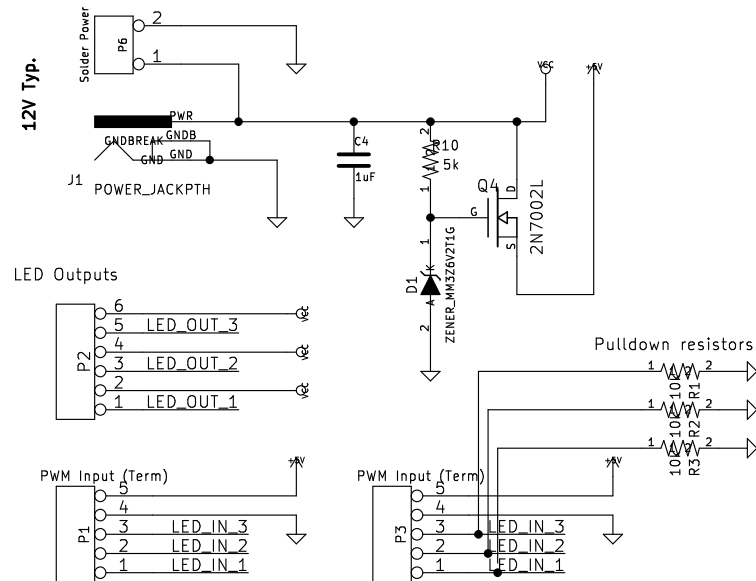
For applications requiring current higher than 1 A, several CAT4101 devices can be connected in parallel.

The LED channel can withstand and operate at voltages up to 25 V. This makes the device ideal for driving long strings of high power LEDs from a high voltage source.

Table 6. RSET RESISTOR SETTINGS

LED Current [mA]	RSET [Ω]
100	4990
200	2490
300	1690
400	1270
500	1050
600	866
700	768
800	680
900	604
1000	549

12V Typ.



To be driven by PWM (Arduino Like) or ON (HIGH 5v) – OFF (LOW 0v)

EN/PWM Operation

The EN/PWM pin has two primary functions. One function enables and disables the device. The other function turns the LED channel on and off for PWM dimming control. The device has a very fast turn-on time (from EN/PWM rising to LED on) and allows “instant on” when dimming LED using a PWM signal.

Accurate linear dimming is compatible with PWM frequencies from 100 Hz to 5 kHz for PWM duty cycle down to 1%. PWM frequencies up to 50 kHz can be supported for duty cycles greater than 10%.

When performing a combination of low frequencies and small duty cycles, the device may enter shutdown mode. This has no effect on the dimming accuracy, because the turn-on time T_{PS} is very short, in the range of 1 μ s.

To ensure that PWM pulses are recognized, pulse width low time T_{LO} should be longer than 1 μ s. The CAT4101 enters a “zero current” shutdown mode after a 5 ms delay (typical) when EN/PWM is held low.

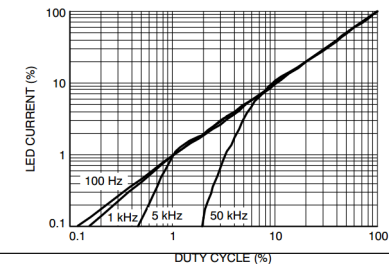


Figure 13. LED Current vs. PWM Duty Cycle

<http://www.drbit.nl>

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