LED FLASHER/OSCILLATOR

3909
276-1705

GENERAL DESCRIPTION

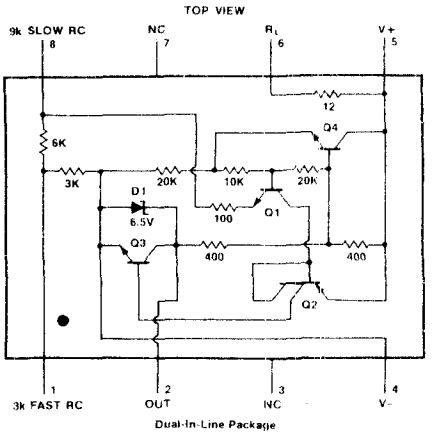
The 3909 is a monolithic oscillator specifically designed to flash Light Emitting Diodes. By using the timing capacitor for voltage boost, it delivers pulses of 2 or more volts to the LED while operating on a supply of 1.5V or less. The circuit is inherently self-starting, and requires addition of only a battery and capacitor to function as a LED flasher.

It has been optimized for low power drain and operation from weak batteries so that continuous operation life exceeds that expected from battery rating.

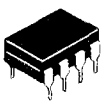
Application is made simple by inclusion of internal timing resistors and an internal LED current limit resistor.

Timing capacitors will generally be of the electrolytic type, and a small 3V rated part will be suitable for any LED flasher using a supply up to 6V. However, when picking flash rates, it should be remembered that some electrolytics have very broad capacitance tolerances, for example -20% to +100%.

PIN CONNECTION



Dual-In-Line Package



FEATURES

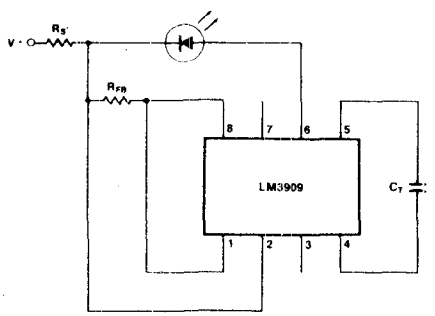
- Operation over one year from one C size flashlight cell
- Bright, high current LED pulse
- Minimum external parts
- Low voltage operation, from just over 1V to 5V
- Low current drain, averages under 0.5 mA during battery life
- Powerful; as an oscillator directly drives an 8Ω speaker

ABSOLUTE MAXIMUM RATINGS

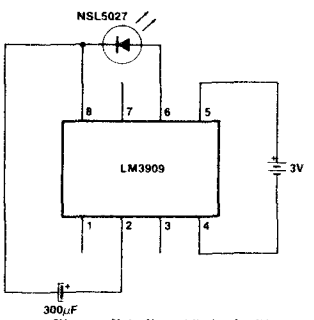
Power Dissipation	500 mW
V^+ Voltage	6.4V
Operating Temperature Range	-25°C to +70°C
Pulse Width	6 ms
Peak LED Current	45 mA
Operating Current	75 mA
Flash Frequency	1.3 Hz
High Flash Frequency	1.1 kHz

TYPICAL APPLICATIONS

Warning Flasher High Voltage Powered

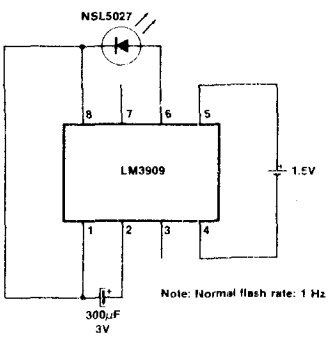


3V Flasher

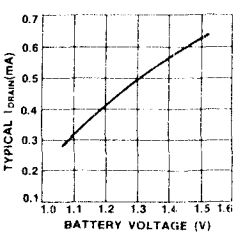


Note: Normal flash rate: 1Hz.
Average I_{DRAIN} = 0.77mA

1.5V Flasher



Note: Normal flash rate: 1 Hz.



TYPICAL OPERATING CONDITIONS

V+	NORMAL FLASH Hz	C_T	R_S 1W	R_{FB}	$V+_{RANGE}$
6V	2	400µF	1K	1.5K	5-25V
15V	2	180µF	3.9K	1K	13-50V
100V	1.7	180µF	43K	1K	85-200V

ESTIMATED BATTERY LIFE
(CONTINUOUS 1.5V FLASHER OPERATION)

SIZE CELL	TYPE	
	STANDARD	ALKALINE
AA	3 MONTHS	6 MONTHS
C	7 MONTHS	15 MONTHS
D	1.3 YEARS	2.6 YEARS

Note: Estimates are made from our tests and manufacturers data. Conditions are fresh batteries and room temperature. Clad or "leak-proof" batteries are recommended for any application of five months or more. Nickel Cadmium cells are not recommended.