

## Four Channel High Efficiency White LED Driver

### Features

- Dynamic 1x/2x Charge Pump Switching
- Up to 80mA (20mA/LED) Drive Capability
- 90% Average Efficiency
- 0.5% (TYP) LED Current Matching
- Wide Current Range per LED [0.1mA ~ 20mA]
- Single Wire EN/Brightness Control
- 2.7V to 5.5V Supply Voltage Range
- < 1μA Shutdown Current
- Output Over-voltage Protection
- Open/Short LED Protection
- Thermal Shutdown Protection
- TDFN2.5X2.5-10 and TQFN3X3-16 Package

### Applications

- Mobile Phones
- White LED Backlighting
- Camera Flash LED Lighting

### General Description

The G5904 charge pump drives up to four white LEDs with regulated constant current for uniform intensity. By utilizing dynamic 1x/2x charge-pump modes and ultra-low-dropout current regulators, it achieves high efficiency over the 1-cell lithium battery input voltage range. The 250kHz fixed frequency switching allows for tiny external components, and the regulation scheme is optimized to ensure low EMI and low input ripple.

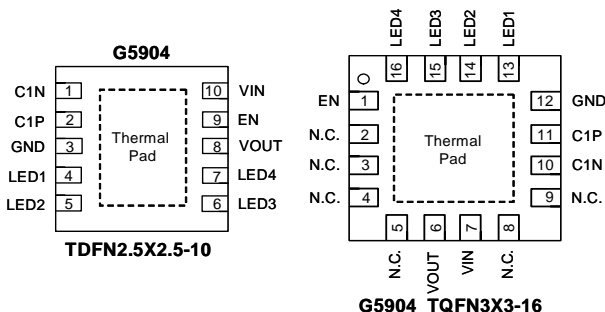
The G5904 uses a single wire EN/Brightness control to enable, disable, and set the LED current with 16-linear steps down to 100μA. Once the desired LED brightness is set, the G5904 maintains constant LED current as long as EN pin is kept high. If EN pin kept low for 90μs, the G5904 enters shutdown. The short-circuit, over-voltage, and thermal protection are also included. The soft start is enabled to reduce the inrush current during power on and pump mode transformed.

### Ordering Information

ORDER NUMBER	MARKING	TEMP. RANGE	PACKAGE (Green)
G5904RM1U	5904	-40°C~ +85°C	TDFN2.5X2.5-10
G5904R41U	5904	-40°C~ +85°C	TQFN3X3-16

Note: RM: TDFN2.5X2.5-10      R4: TQFN3X3-16  
 1: Bonding Code  
 U: Tape & Reel

### Pin Configuration



### Typical Application Circuit

