

QuiC SLED™

Current-Regulated Pulse Generator

Overview

The RPD01 is a current-regulated pulse generator for our QuiC SLED™ product line of mid-infrared light emitting diodes. The pulse generator operates in two distinct timing modes for short bursts of high current (burst mode) or long pulses of lower current (quasi-CW). Burst mode is ideal for use with time-gated or peak-detection applications that require maximum LED brightness. This allows the LED to be driven at a full 2.0 A of current, thereby passing the 2.0 mW barrier in output power. Quasi-continuous wave, or qCW, is ideal for application times involving long integration times or lock-in amplification techniques.

The RPD01 is powered by a single 9.0 V supply and features a secondary output of 5.0 V TTL pulses for timing synchronization with the primary drive current. Cycling between drive states is accomplished with a simple toggle switch. Output current is specifically regulated to 2.0 A for burst mode and 300 mA for qCW mode operation. This maintains a constant drive current that is independent of specific LED impedance variations due to temperature drift or process uncertainties.

Applications

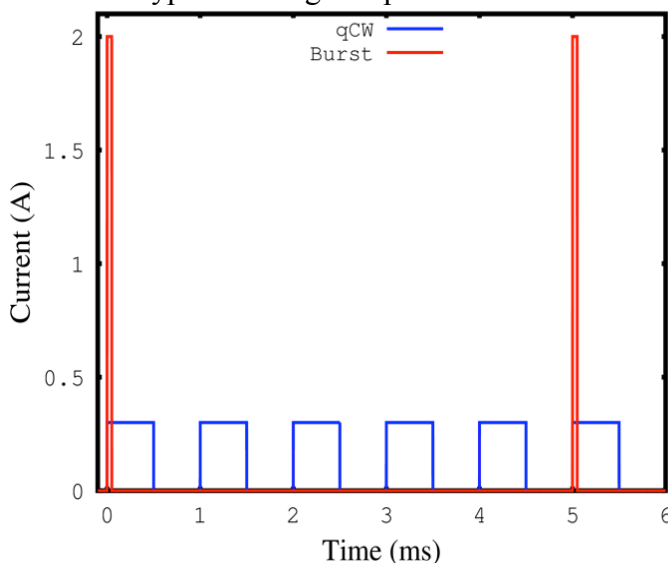
- Time gating
- Lock-in amplification
- Peak detection
- Infrared imaging/illumination
- Gas sensing



Quasi-Continuous Wave

Parameters	Symbol	Value	Units
Pulse Width	t_{ON}	500	μs
Duty Cycle	DC	50	%
Period	T	1.0	ms
Rise Time	τ	< 2	μs
Peak Current	I_{pk}	0.3	A
Quiescent Current	I_0	0.36	A

Typical timing comparison



Pulsed Mode

Parameters	Symbol	Value	Units
Pulse Width	t_{ON}	54	μs
Duty Cycle	DC	1.1	%
Period	T	4.9	ms
Rise Time	τ	< 2	μs
Peak Current	I_{pk}	2.0	A
Quiescent Current	I_0	0.14	A