PWM Interface Module for Digital Dimming

Description

- A PWM dimmer module between the output of a power converter and light emitting diode (LED) load includes:
  - Circuit (L1) to force a continuous current at the output of power converter
  - Load interface circuit (D1 and C1) which modulates the continuous current
  - PWM switcher circuit (M1) which switches with a user controlled duty cycle to adjust the light output of the LED load

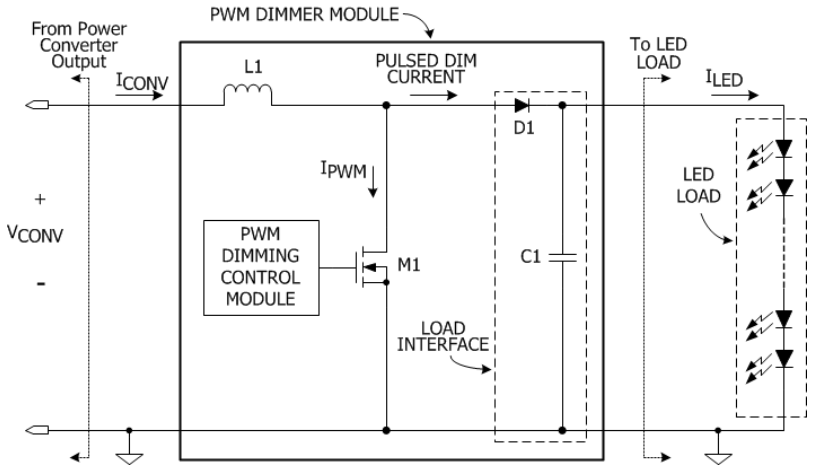

Figure 1. PWM Dimmer Module at the output of the power converter

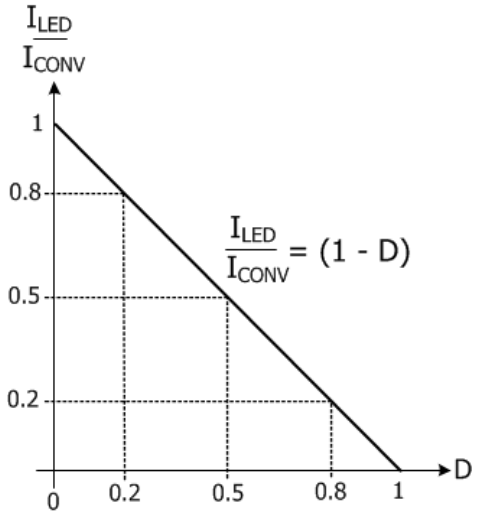

Figure 2. Inverse linear relationship between LED current and PWM duty ratio

World Headquarters 5245 Hellyer Avenue, San Jose, CA 95138, USA, Main: +1-408-414-9200
Customer Service Phone: +1-408-414-9665, Fax: +1-408-414-9765, Email: info@power.com
On the Web www.power.com

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Benefits

- User friendly digital dimming control through a PWM module
- Could be added as a modular package to interface with the output of any topology of power converter
- Tight regulation of the power converter is not required
- PWM pulse current sinking is low loss

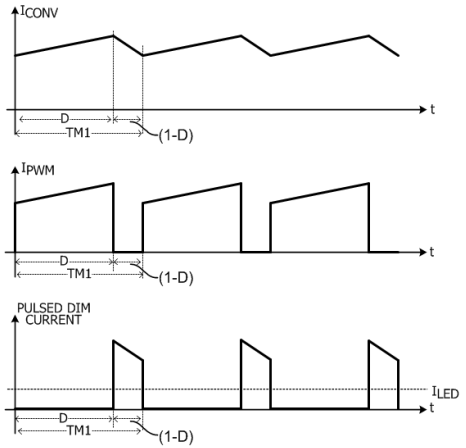

Figure 3. Current waveforms and average output current I_{LED} at 20% (80% PWM).

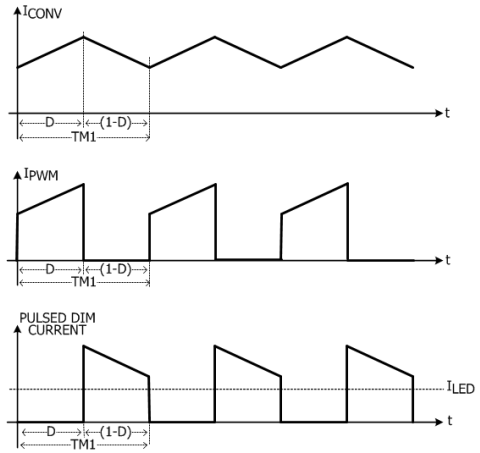

Figure 4. Current waveforms and average output current I_{LED} at 50% (50% PWM)

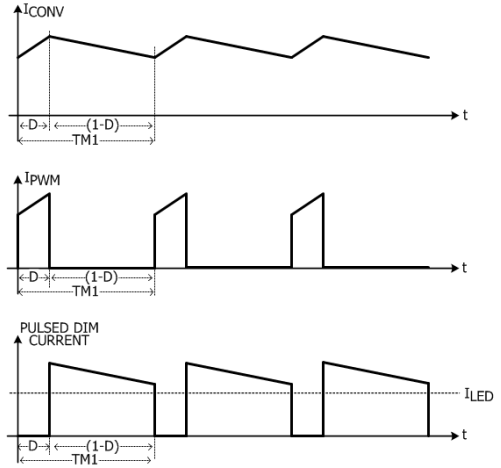

Figure 5. Current waveforms and average output current I_{LED} at 80% (20% PWM)

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