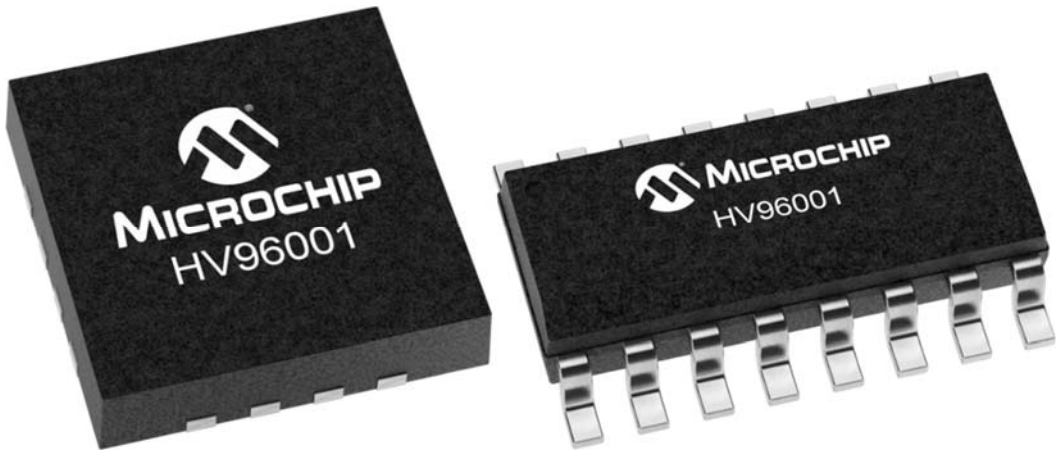

HV96001

Device Overview

Summary

The HV96001 LED driver targets offline lighting applications requiring wide dimming capability. The device is capable of linear dimming and PWM dimming, with the PWM dimming capable of flicker-free dimming down to 0.1% level and lower.

The HV96001 is specifically adapted to LED driver designs that accommodate a wide range of the LED load voltage. The device adjusts the output voltage of the AC to DC conversion stage for maintaining a high conversion efficiency over a wide range of the LED load voltage. It also maintains a precise control over the LED current amplitude, thereby maintaining the consistent color temperature.

The adaptability of the device to wide range PWM dimming allows for a stable control of the LED current waveform for PWM dimming pulse widths down to 250 ns.

The HV96001 driver IC adjusts the flyback converter output voltage such that the boost converter (BC) operates with a small difference between the boost converter input and output voltage, also referred to as the headroom voltage. Operating the boost converter with a small headroom voltage, or, more or less equivalent, operating with a small voltage step-up ratio allows the boost converter to be physically small and operate at a higher efficiency.

The HV96001 includes two feedback regulators, the flyback regulator for control of the flyback output voltage and the boost regulator for control of the LED current amplitude. An optocoupler driver circuit drives the optocoupler, which in turn provides a control signal for driving the control input of the flyback converter.

Additional Features

- Wide Input Voltage Range: 8V to 60V
- Linear (Analog) Dimming:with Wide Range of Amplitude Control of the LED Current
- Pulse Width Modulation (PWM) (Digital) Dimming; Capable of Dimming to Lower than 0.1% with PWM Pulse Width < 250ns
- Flyback Converter:with Automatic Output Voltage Adjustment for Maintaining High System Efficiency
- Boost Converter (Sepic Topology) with Near Zero Voltage Ripple for Ripple Free LED Current (100Hz/120Hz Ripple Rejection,) 200kHz Fixed Switching Frequency
- Vdd Regulator with 5V Output, 10mA Load Current Capability
- Fault Recovery with Auto-retry Delay Set Using Timing Capacitor
- UVP for Vdd and Flyback Vout
- OVP for LED Load Voltage (Flyback Vout)
- OCD for Load Switch Current
- Stuck-at-Zero Dection of Dimming (DIM) SIgnal
- OCP of Output Current with Auto Retry Delay
- Mixed Dimming Capability Enables Implementation with Wide Range of Dimming Protocols

Parametrics

Name	Value
Topology	Current Mode Boost
+Vin min (V)	8
+Vin max (V)	60
Output Current	External FET
Dimming	Extra Wide Range PWM and Analog
Package	16/SOIC, 16/QFN
Product Type	Secondary Controller
Type	Secondary Controller
# of White LEDs	18
Operating Iq (µA)	3.4
Vfb (V)	0.4
Switching Frequency	200kHz
Switching MOSFET	External
Θja (C/W)	60, 46
Extra LDOs	1

RoHS Information

Part Number	Device Weight (g)	Shipping Weight (grams)	Lead Count	Package Type	Package Width	Solder Composition	JEDEC Indicator	RoHS	China EFUP
HV96001-E/NFA	0.021400	0.516430	16	VQFN	3x3x0.9mm	NiPdAu	e4	RoHS	
HV96001-E/D7X	0.157400	0.307692	16	SOIC	.150in	Matte Tin	e3	RoHS	

To see a complete listing of RoHS data for this device, please Click here
Shipping Weight = Device Weight + Packing Material weight. Please contact sales office if device weight is not available.