MT7282

Boost/Buck-Boost/Buck White LED Driver IC with High Frequency PWM Dimming

DESCRIPTION

MT7282 is a constant current white LED driver IC designed for wide input voltage range from 2.5V to 40V system rail. The chip can be configured as Buck, Boost and Buck-Boost topology. The chip can drive up to 10W with AC12V/DC12V input voltage. Current mode and fixed frequency operation provides fast transient response and eases loop stabilization. With a current sense amplifier threshold of 200mV, the LED current is programmable with one external current sense resistor and the power loss is minimized. The 415kHz operating frequency minimizes external inductor, input and output capacitor.

MT7282 supports both PWM and analog dimming by a single control pin. The chip is integrated with fault condition protection includes over-voltage protection (OVP), cycle-by-cycle peak current limiting and thermal shutdown.

MT7282 is available in ESOP8 package.

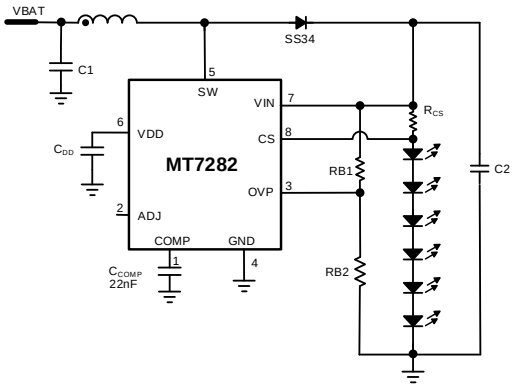
FEATURES

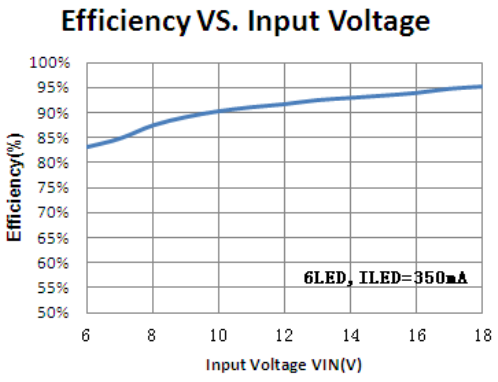
- Input/output voltage range: 2.5V to 40V input/output voltage range
- High efficiency up to 95%
- Cycle-by-cycle over current protection
- Internal 0.2Ω power MOS
- Supports Boost, Buck-Boost, Buck topology
- LED temperature protection
- Stable with Low ESR Ceramic Capacitor
- OTP and OVP protection
- External setting over-voltage protection
- Fixed switching frequency: 415kHz
- Frequency jittering for reduced EMI
- Low feedback voltage: 200mV
- Adjustable soft-start
- Support one pin analog dimming and up to 10kHz PWM dimming
- Available in ESOP8 package

APPLICATION

- Automotive and Marine Lighting
- High Power LED Driver
- Torch Driver
- Low voltage LED Lighting (Landscape, Desk, Room, MR16 lighting)
- LED backlighting

TYPICAL APPLICATION (STEP-UP/BOOST APPLICATION)





time. Connect a 22nF capacitor from the COMP pin to GND.

Inductor Selection

Inductor value ranges from 10μH to 47μH. A 22μH inductor optimizes the efficiency for most applications. To prevent core saturation, ensure that the inductor-saturation current rating exceeds about 30% to 40% of the peak inductor current for the application.

Schottky Diode Selection

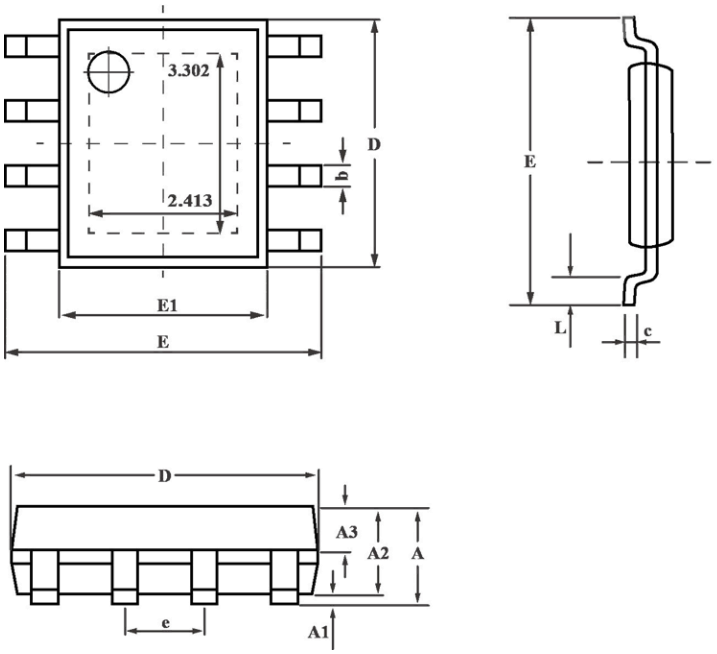
In MT7282, high switching frequency demands a high-speed rectification diode for optimum efficiency. A Schottky diode is recommended due to its fast recovery time and low forward-voltage drop. Ensure that the diode's average and peak current rating exceed the average output current and peak inductor current. In addition, the diode's reverse breakdown voltage must exceed the maximum output voltage.

PC Board Layout

1. Due to fast switching waveform and high-current paths (VIN, SW), PC board layout should be done carefully. An evaluation kit is available to speed design.
2. During layout of board, minimize trace lengths between the chip and R_{CS}, the inductor, the diode, the input capacitor, and the output capacitor.
3. Keep traces short, direct, and wide. Keep noisy traces, such as the SW node trace, away from R_{CS}.
4. The ground connections of input capacitor C1 and output capacitor C2 should be as close as possible.

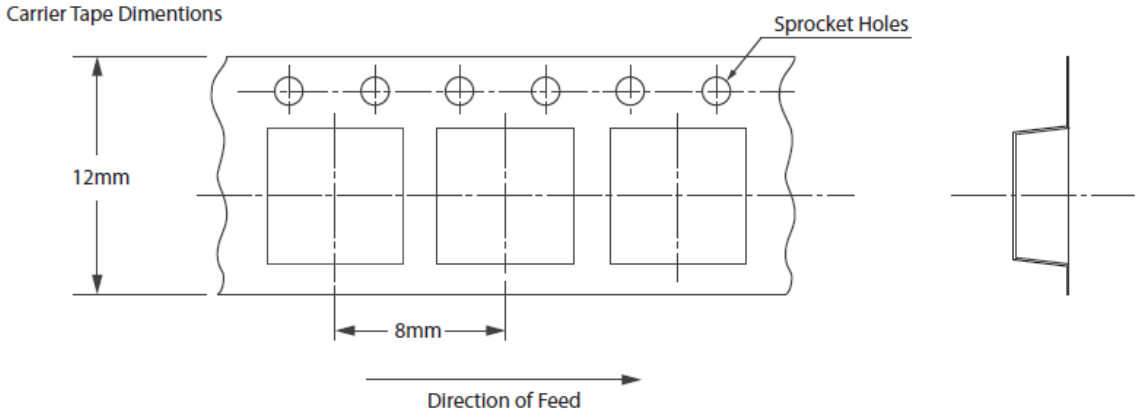
PACKAGE INFORMATION

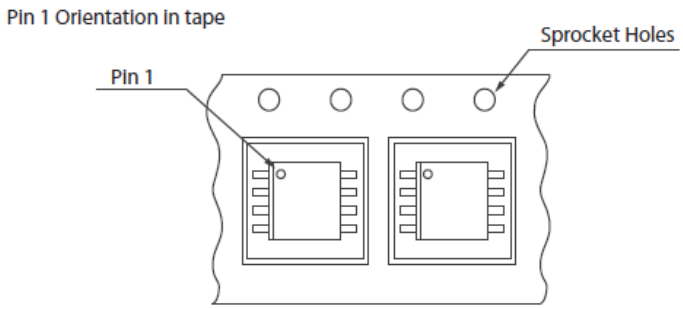
ESOP8 PACKAGE OUTLINE AND DIMENSIONS



SYMBOL	MILIMETER		
	MIN	NOM	MAX
A	1.35	-	1.75
A1	0.10	-	0.25
A2	1.30	1.40	1.50
A3	0.55	0.65	0.70
b	0.33	-	0.51
c	0.17	-	0.25
D	4.70	4.90	5.10
E	5.80	6.00	6.20
E1	3.80	3.90	4.00
e	1.27BSC		
L	0.40	0.60	0.80

TAPE INFORMATION





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