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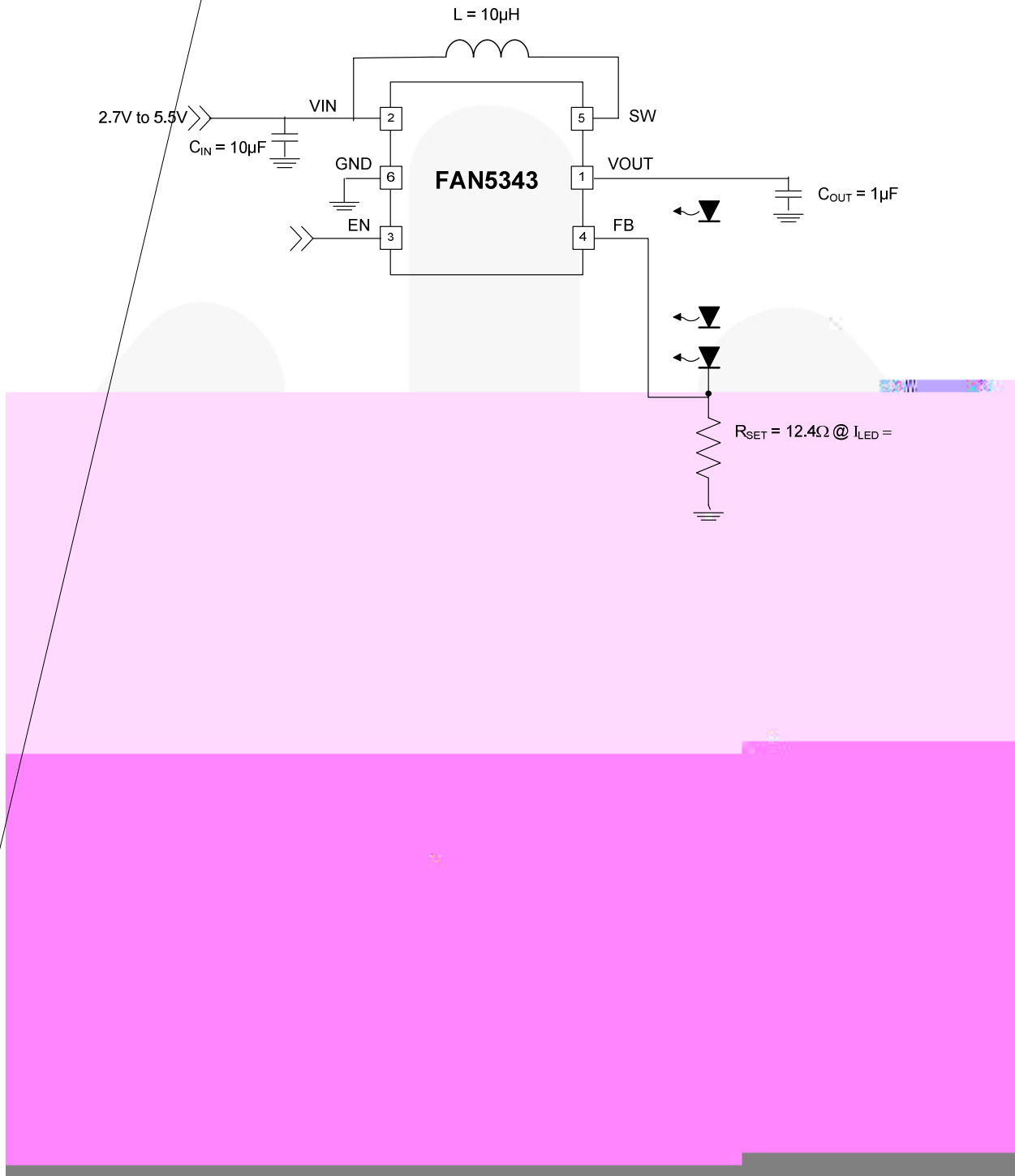
FAN5343

6-LED Series Boost LED Driver with Integrated Schottky

FAN5343 — 6-LED Series Boost LED Driver with Integrated Schottky Diode and Single-Wire Digital Interface



Figure 9 Application Diagram



Pin Configuration

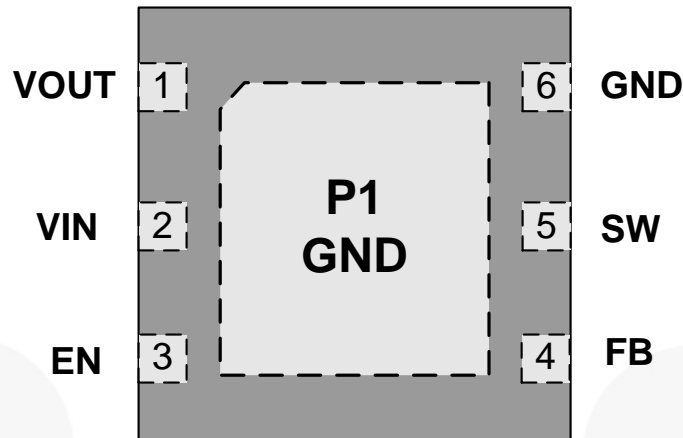
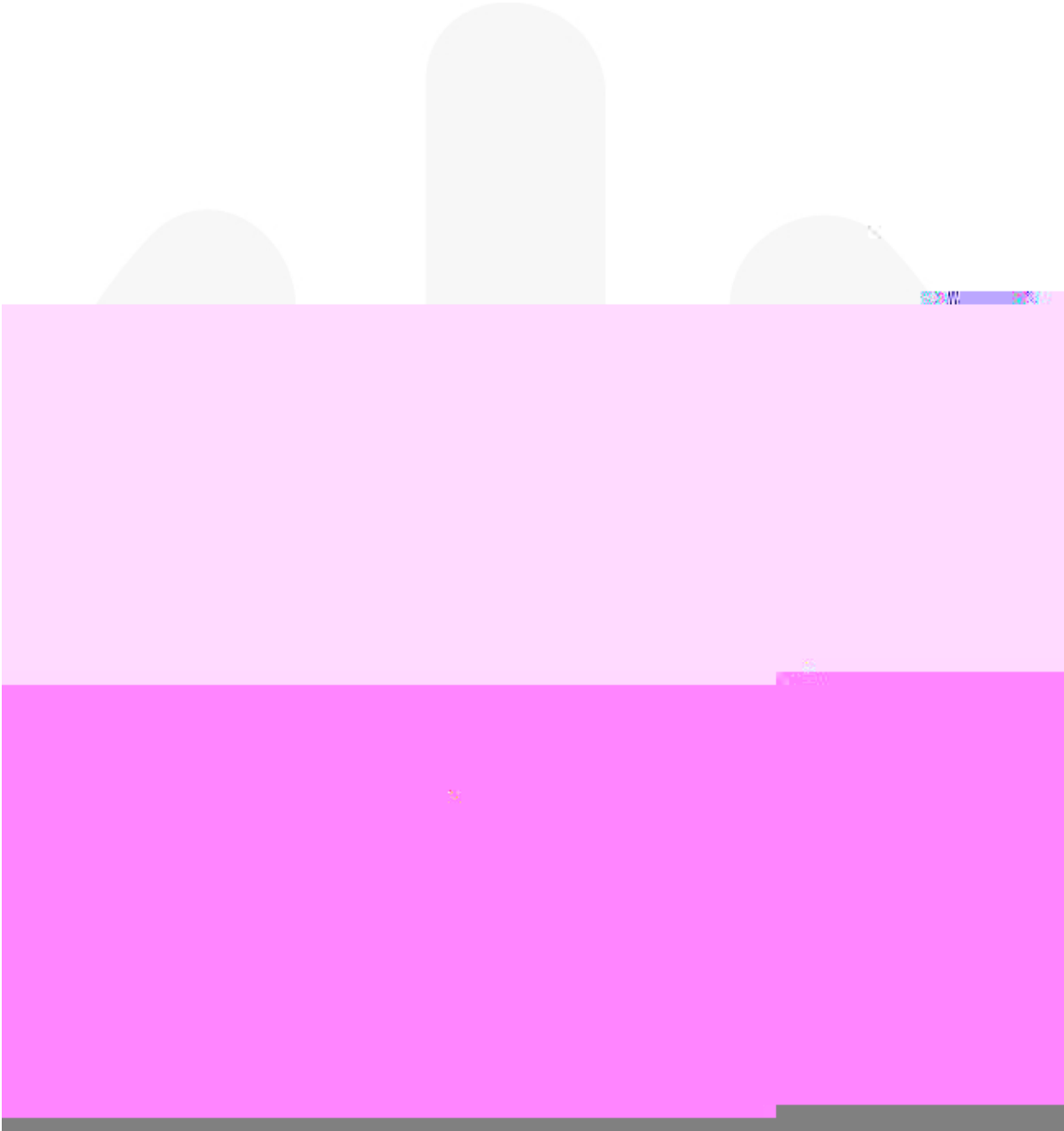


Figure 3. UMLP6 Package (Top View)

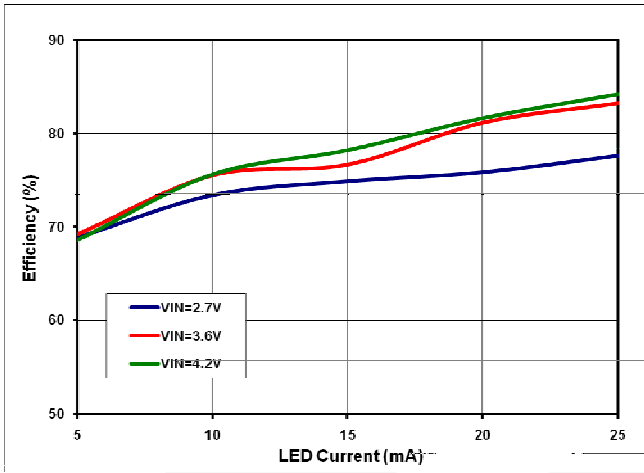
Pin Definitions

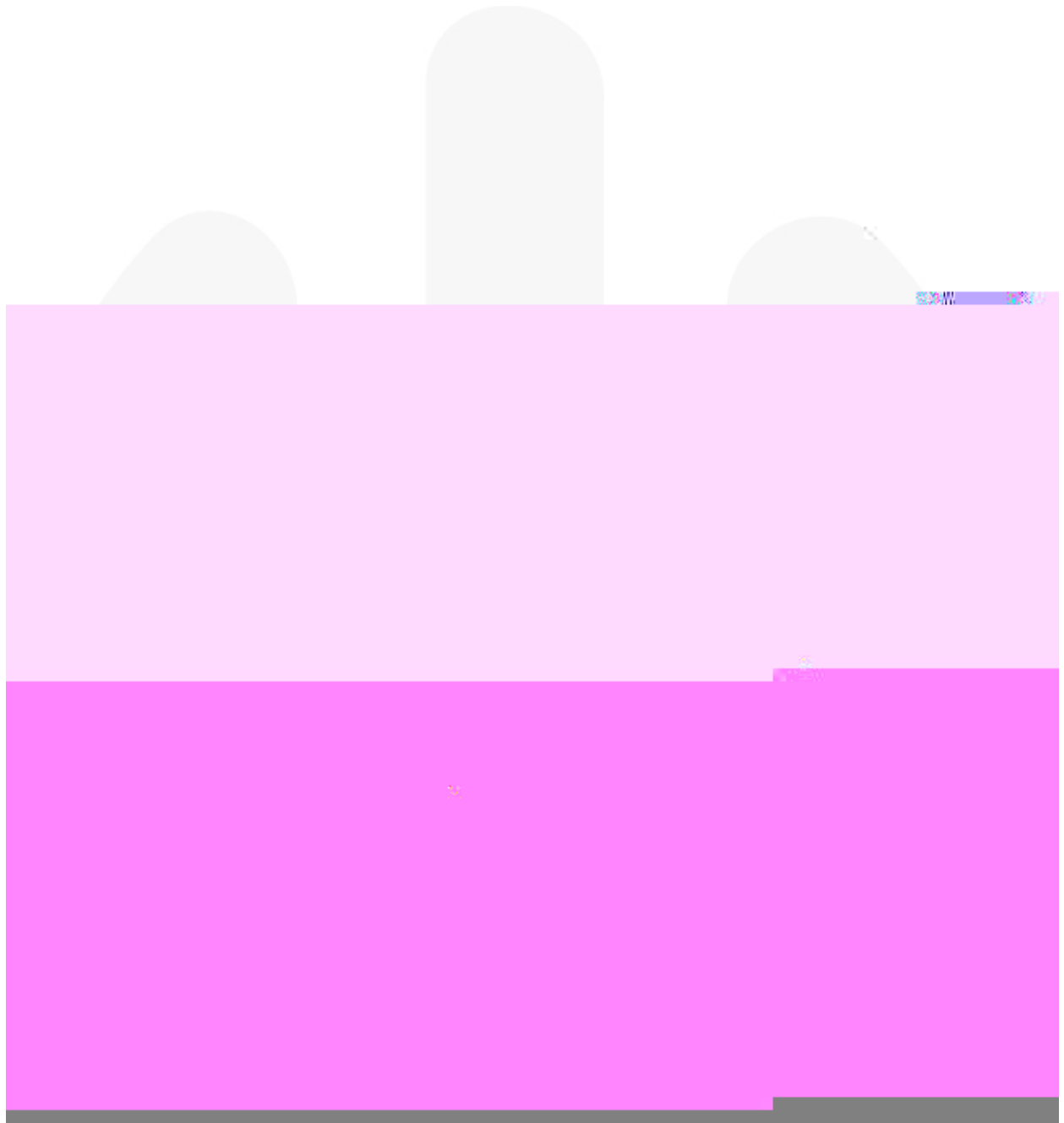
Pin #	Name	Description
1	VOUT	Boost Output Voltage. Output of the boost regulator. Connect the LEDs to this pin. Connect C_{OUT} to GND.
2	VIN	Input Voltage. Connect to power source and decouple with C_{IN} to GND.
3	EN	Enable Brightness Control. Program dimming levels by driving this pin with digital pulses.
4	FB	Voltage Feedback. The boost regulator regulates this pin to 0.25V to control the LED string current. Tie this pin to a current setting resistor (R_{SET}) between GND and the cathode of the LED string.
5	SW	Switching Node. Tie inductor L1 from the VIN to SW pin.
6	GND	Ground. Tie directly to a GND plane.



Typical Characteristics

$V_{IN} = 3.6V$, $T_A = 25^\circ C$, $I_{LED} = 25mA$, $L = 10\mu H$, $C_{OUT} = 1.0\mu F$





Functional Description

Overview

The FAN5343 is an inductive current-mode boost serial LED driver that achieves LED current regulation by maintaining 0.25V across the R_{SET} resistor. The current through the LED string (I_{LED}) is therefore given by:

$$I_{LED} = \frac{0.25}{R_{SET}} \quad (1)$$

The voltage V_{OUT} is determined by the the sum of the forward voltages across each LED, plus the voltage across R_{SET} , which is always 250mV.

UVLO and Soft-Start

If EN has been LOW for more than 1ms, the IC may initiate a “cold start” soft-start cycle when EN rises, provided V_{IN} is above the UVLO threshold.

Digital Interface

The FAN5343 implements a single-wire digital interface to program the LED brightness to one of thirty two (32) levels spaced in linear steps. With this single-wire solution, the FAN5343 does not require the system processor to constantly supply a signal to drive the LEDs.

Digital Dimming Control

The FAN5343 starts driving the LEDs at the maximum brightness level. After startup, the control logic is ready to accept programming pulses to decrease the brightness level by the positive edges applied to the EN pin. Figure 14 illustrates the digital pulse dimming control for the FAN5343.

Over-Current and Short-Circuit Detection

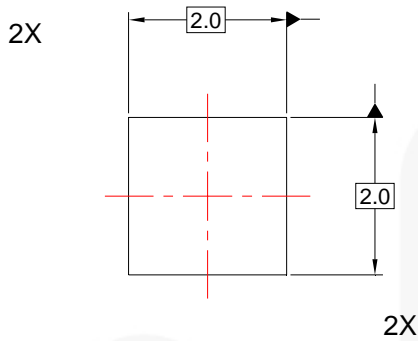
Application Information

Inductor and Output Capacitor Selection

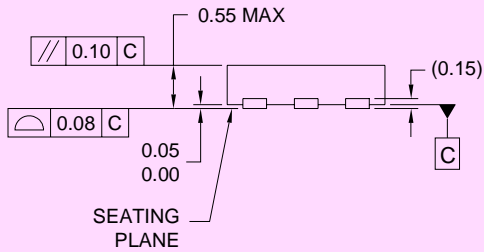
Table 1. Recommended External Components

# of LEDs	L	Part Number	Manufacturer	Min. C _{OUT}	Part Number	Manufacturer
		LQH43MN100K03	Murata			
5, 6	10.0μH	NLCV32T-100K-PFR	TDK	1.00μF	UMK212BJ105KG	Taiyo Yuden

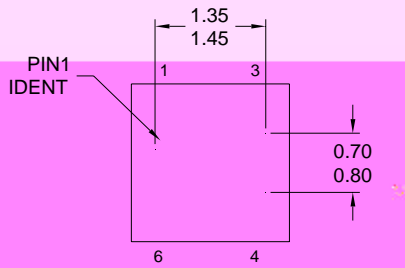
Physical Dimensions



TOP VIEW



SIDE VIEW



BOTTOM VIEW

RECOMMENDED LAND PATTERN

NOTES:

- A. PACKAGE CONFORMS TO JEDEC MO-229 EXCEPT WHERE NOTED.
- B. DIMENSIONS ARE IN MILLIMETERS.
- C. DIMENSIONS AND TOLERANCES PER ASME Y14.5M, 1994.
- D. LANDPATTERN RECOMMENDATION IS BASED ON FSC DESIGN ONLY.
- E. DRAWING FILENAME: MKT-UMLP06Erev2.



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