



## ABSOLUTE MAXIMUM RATINGS

(Note 1)

|   |                |
|---|----------------|
| $V_{IN}$ .....  | 40V            |
| LED1, LED2, LED3 .....  | 48V            |
| $V_{MAX}$ , SHDN .....  | 48V            |
| $V_{IN} - V_{EE}$ .....                                       | 36V            |
| $V_{EE}$ .....  | 36V            |
| PWM .....   | 15V            |
| OT1, OT2 .....  | 6V             |
| Operating Junction Temperature Range<br>(Notes 2, 3, 4) ..... | -40°C to 125°C |
| Storage Temperature Range .....                               | -65°C to 150°C |
| Lead Temperature (Soldering, 10 sec) .....                    | 300°C          |

## PACKAGE/ORDER INFORMATION

TOP VIEW

MSE PACKAGE  
10-LEAD PLASTIC MSOP  
 $T_{JMAX} = 125^{\circ}\text{C}$ ,  $\theta_{JA} = 35^{\circ}\text{C/W}$   
EXPOSED PAD (PIN 11) IS GND, MUST BE SOLDERED TO PCB

| ORDER PART NUMBER | MSE PART MARKING |
|-------------------|------------------|
| LT3003EMSE        | LTCFF            |

**Order Options** Tape and Reel: Add #TR  
Lead Free: Add #PBF Lead Free Tape and Reel: Add #TRPBF  
Lead Free Part Marking: <http://www.linear.com/leadfree/>

Consult LTC Marketing for parts specified with wider operating temperature ranges.

## ELECTRICAL CHARACTERISTICS

The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at  $T_A = 25^{\circ}\text{C}$ . PWM = 1V,  $V_{MAX} = 4\text{V}$ ,  $V_{IN} = 3\text{V}$ ,  $V_{EE} = 0\text{V}$ ,  $I_{LED2} = 100\text{mA}$ , OT1 = OT2 = Open, SHDN =  $V_{IN}$ .

| PARAMETER  | CONDITIONS   | MIN    | TYP                           | MAX       | UNITS               |
|--|--|--------|-------------------------------|-----------|---------------------|
| $V_{IN}$ Operational Input Voltage   | $V_{EE} = 0\text{V}$ , $I_{LED1,2,3} = 100\text{mA}$<br>$V_{EE} = 4\text{V}$ , $I_{LED1,2,3} = 100\text{mA}$ | ● 3    |                               | 36<br>40  | V<br>V              |
| Minimum ( $V_{IN} - V_{EE}$ )  | $V_{EE} = 0\text{V}$ to 36V  |        | 2.7                           | 3         | V                   |
| $V_{IN}$ Quiescent Current   | PWM = 1V, $I_{LED1,2,3} = 100\text{mA}$<br>PWM = 0V, $V_{LED1} = V_{LED2} = V_{LED3}$                        |        | 10.5<br>470                   | 600       | mA<br>$\mu\text{A}$ |
| $V_{IN}$ Shutdown Current  | SHDN = 0V, $I_{LED1,2,3} = 0\text{mA}$   | 2      | 4                             | 10        | $\mu\text{A}$       |
| $V_{MAX}$ Quiescent Current  | PWM = 1V, $I_{LED2} = 100\text{mA}$<br>PWM = 0V, $V_{LED1} = V_{LED2} = V_{LED3}$                            |        | 55<br>20                      | 90<br>300 | $\mu\text{A}$<br>nA |
| SHDN Pin Threshold   | $I_{LED2} = 100\text{mA}$ , $V_{LED1} = V_{LED2} = V_{LED3}$   | ● 0.25 | 0.7                           | 1         | V                   |
| LED Current Matching   | $I_{LED2} = 350\text{mA}$ , $V_{LED1} = V_{LED2} = V_{LED3}$   | -3     | 0                             | +3        | %                   |
| $ I_{LED2} - I_{LED1} $ , $ I_{LED2} - I_{LED3} $ LED Current Matching with LED Pin Voltage Mismatch | $I_{LED2} = 350\text{mA}$ ,<br>( $ V_{LED2} - V_{LED1}  +  V_{LED2} - V_{LED3} $ ) = 700mV                   | -3.5   | 0.5                           | +3.5      | %                   |
| LED Pin Voltage  | $I_{LED2} = 100\text{mA}$  | 0.7    | 0.8                           | 0.9       | V                   |
| LED1, LED2, LED3 Maximum Current   | $V_{LED1,2,3} < 1.5\text{V}$   | 375    | 500                           | 550       | mA                  |
| LED1, LED2, LED3 Maximum Leakage Current   | PWM = 0V, $V_{LED1,2,3} = 48\text{V}$  |        | 0.1                           | 1         | $\mu\text{A}$       |
| PWM Switching Threshold  | $I_{LED1,2,3} = 100\text{mA}$  | ● 0.3  | 0.5                           | 0.7       | V                   |
| Turn-On Delay (PWM On to $I_{LED}$ On)   | PWM = 0V to 1V, $I_{LED} > 50\text{mA}$  |        | 2                             |           | $\mu\text{s}$       |
| $V_{EE}$ Pin Current in Buck Mode  | PWM = 0V, $V_{MAX} = 40\text{V}$ , $V_{IN} = 39\text{V}$ , $V_{EE} = 36\text{V}$                             |        | 0.1                           | 1         | $\mu\text{A}$       |
| Overtemperature Sense Point (OT1, OT2)   | (Note 4)   |        | 125                           |           | $^{\circ}\text{C}$  |
| Overtemperature Hysteresis Point   | (Note 5)   |        | -6° from Overtemp Sense Point |           | $^{\circ}\text{C}$  |
| OT1 Pull-Down Current  | OT1 = 0.3V (Note 4)  | 100    |                               |           | $\mu\text{A}$       |

**ELECTRICAL CHARACTERISTICS** The ● denotes the specifications which apply over the full operating temperature range, otherwise specifications are at  $T_A = 25^\circ\text{C}$ . PWM = 1V,  $V_{\text{MAX}} = 4\text{V}$ ,  $V_{\text{IN}} = 3\text{V}$ ,  $V_{\text{EE}} = 0\text{V}$ ,  $I_{\text{LED2}} = 100\text{mA}$ ,  $\text{OT1} = \text{OT2} = \text{Open}$ ,  $\text{SHDN} = V_{\text{IN}}$ .

| PARAMETER   | CONDITIONS  | MIN | TYP | MAX | UNITS         |
|---|---|-----|-----|-----|---------------|
| $\overline{\text{OT2}}$ Pull-Down Current                         | $\overline{\text{OT2}} = 0.3\text{V}$ (Note 4)              | 300 |     |     | $\mu\text{A}$ |
| $\overline{\text{OT1}}$ , $\overline{\text{OT2}}$ Leakage Current | $\overline{\text{OT1}} = \overline{\text{OT2}} = 5\text{V}$ |     |     | 1   | $\mu\text{A}$ |

**Note 1:** Stresses beyond those listed under Absolute Maximum Ratings may cause permanent damage to the device. Exposure to any Absolute Maximum Rating condition for extended periods may affect device reliability and lifetime.

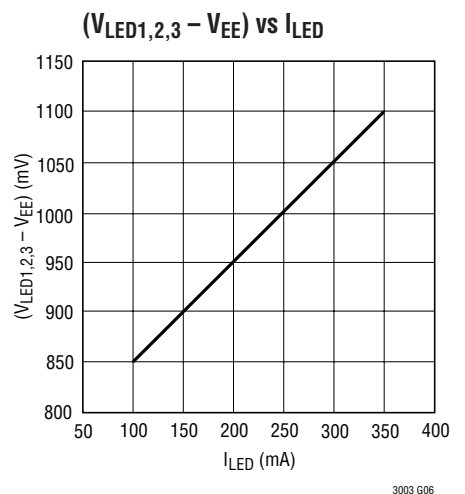
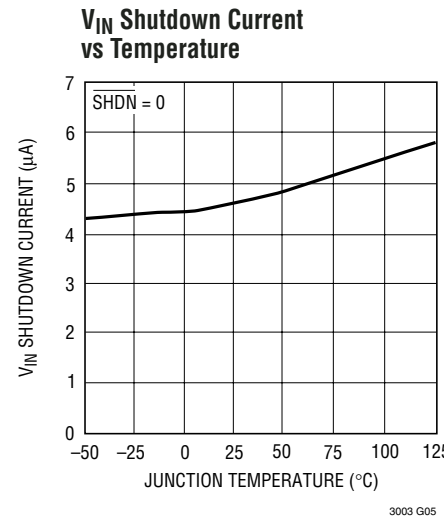
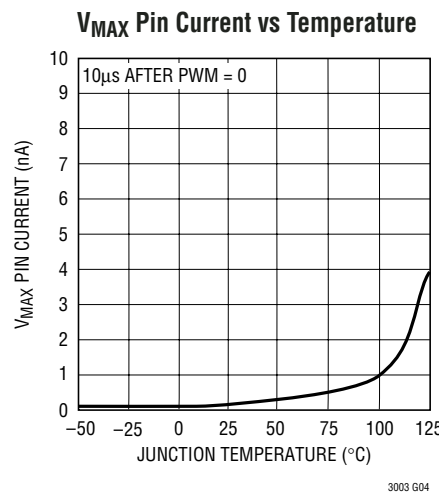
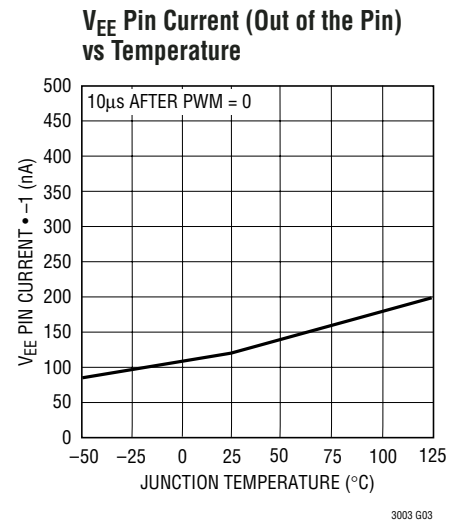
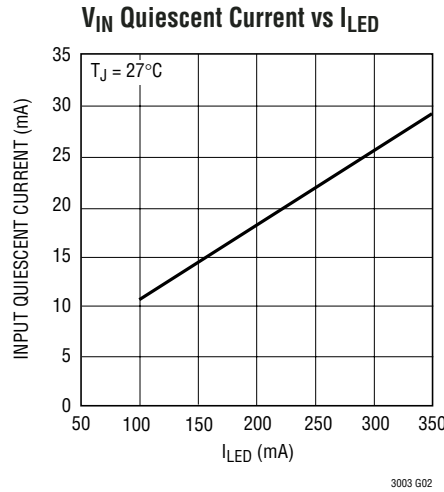
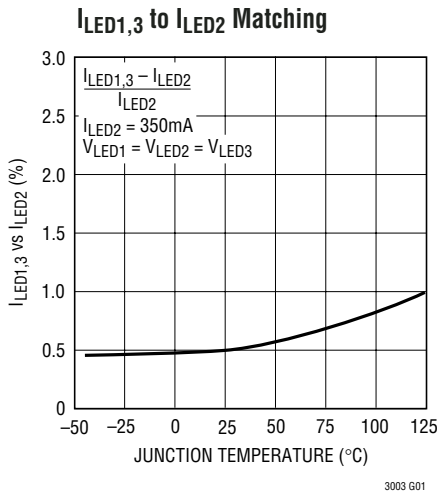
**Note 2:** The LT3003E is guaranteed to meet performance specifications from  $0^\circ\text{C}$  to  $85^\circ\text{C}$  junction temperature. Specifications over the  $-40^\circ\text{C}$  to  $125^\circ\text{C}$  operating junction temperature range are assured by design, characterization and correlation with statistical process controls.

**Note 3:** This IC includes overtemperature protection that is intended to protect the device during momentary overload conditions. Junction temperature will exceed  $125^\circ\text{C}$  when overtemperature protection is active. Continuous operation above the specified maximum operating junction temperature may impair device reliability.

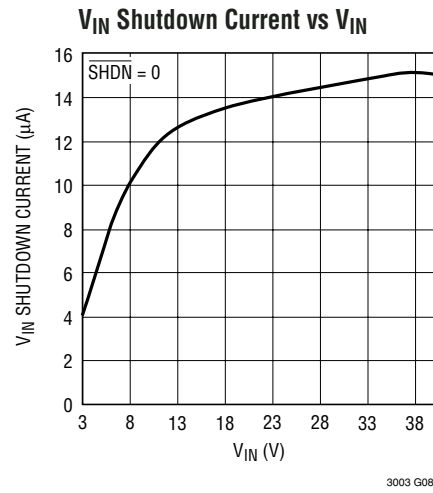
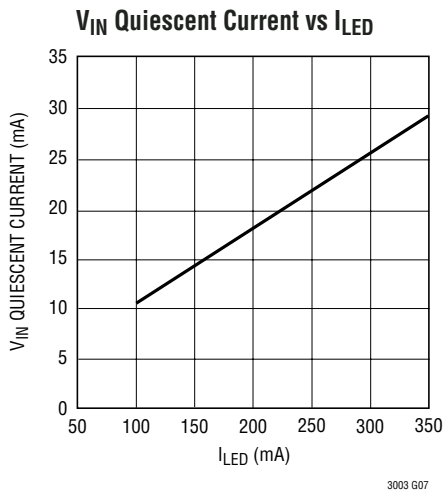
**Note 4:** Correlation to static test at  $T_A = 25^\circ\text{C}$ .

**Note 5:** Guaranteed by design.

**TYPICAL PERFORMANCE CHARACTERISTICS**  $T_A = 25^\circ\text{C}$  unless otherwise noted.



**TYPICAL PERFORMANCE CHARACTERISTICS**  $T_A = 25^\circ\text{C}$  unless otherwise noted.



**PIN FUNCTIONS**

**LED1 (Pin 1):** Controlled current input for a string of LEDs with a cathode lead connected to the pin. Connect the first string of LEDs to this pin.

**LED2 (Pin 2):** Controlled current input for a string of LEDs with a cathode lead connected to the pin. Connect the second string of LEDs to this pin.

**LED3 (Pin 3):** Controlled current input for a string of LEDs with a cathode lead connected to the pin. Connect the third string of LEDs to this pin.

**V<sub>MAX</sub> (Pin 4):**

- Boost: Connect to V<sub>OUT</sub>
- Buck Mode: Connect to Input Supply
- Buck-Boost Mode: Connect to V<sub>OUT</sub>

**V<sub>IN</sub> (Pin 5):** Input Supply, Upper Rail. This pin must be locally bypassed with a capacitor to ground. V<sub>IN</sub> powers the internal control circuitry.

- Boost: Connect to Input Supply
- Buck Mode: Connect to Input Supply
- Buck-Boost Mode: Connect to V<sub>OUT</sub>

**PWM (Pin 6):** Input Pin for PWM Dimming Control. A PWM signal above 0.5V (on threshold) turns the LT3003

channels on. A PWM signal below 0.5V completely disconnects each LED string. If the application does not require PWM dimming, then the PWM pin can be left either open (an internal 10µA source current pulls PWM high) or it can be connected to a supply between 0.5V to 15V.

**OT1 (Pin 7):** Overtemperature Output. OT1 pulls 100µA from the pin when the junction temperature exceeds 125°C. The part has to cool down by 6°C for the flag to reset; ideal for providing an overtemperature flag to the system microprocessor.

**OT2 (Pin 8):** Overtemperature Output. OT2 Pulls 300µA from the pin when the junction temperature exceeds 125°C. The part has to cool down by 6°C for the flag to reset; ideal for connecting to the switching regulator g<sub>m</sub> error amplifier output to defeat switching.

**SHDN (Pin 9):** Micropower Shutdown Pin. Below 0.7V shuts down the IC. Typically I<sub>VIN</sub> = 4µA for SHDN = 0V.

- Boost: Connect to System Shutdown Signal or V<sub>IN</sub>
- Buck Mode: Connect to System Shutdown Signal or V<sub>IN</sub>
- Buck-Boost Mode: If PWM dimming, connect to PWM (Pin 6); if no PWM dimming, connect to system shutdown signal or V<sub>IN</sub>

## PIN FUNCTIONS

**V<sub>EE</sub> (Pin 10):** Lower Rail.

- Boost: Connect to System Ground
- Buck Mode: Connect to Inductor
- Buck-Boost Mode: Connect to Input Supply

**Exposed Pad (Pin 11):** GND. The ground for the IC should be soldered to a continuous copper ground plane under the LT3003 die. Soldering the Exposed Pad to the copper ground plane under the device will reduce thermal resistance and increase the power capability of the LT3003.

## BLOCK DIAGRAM

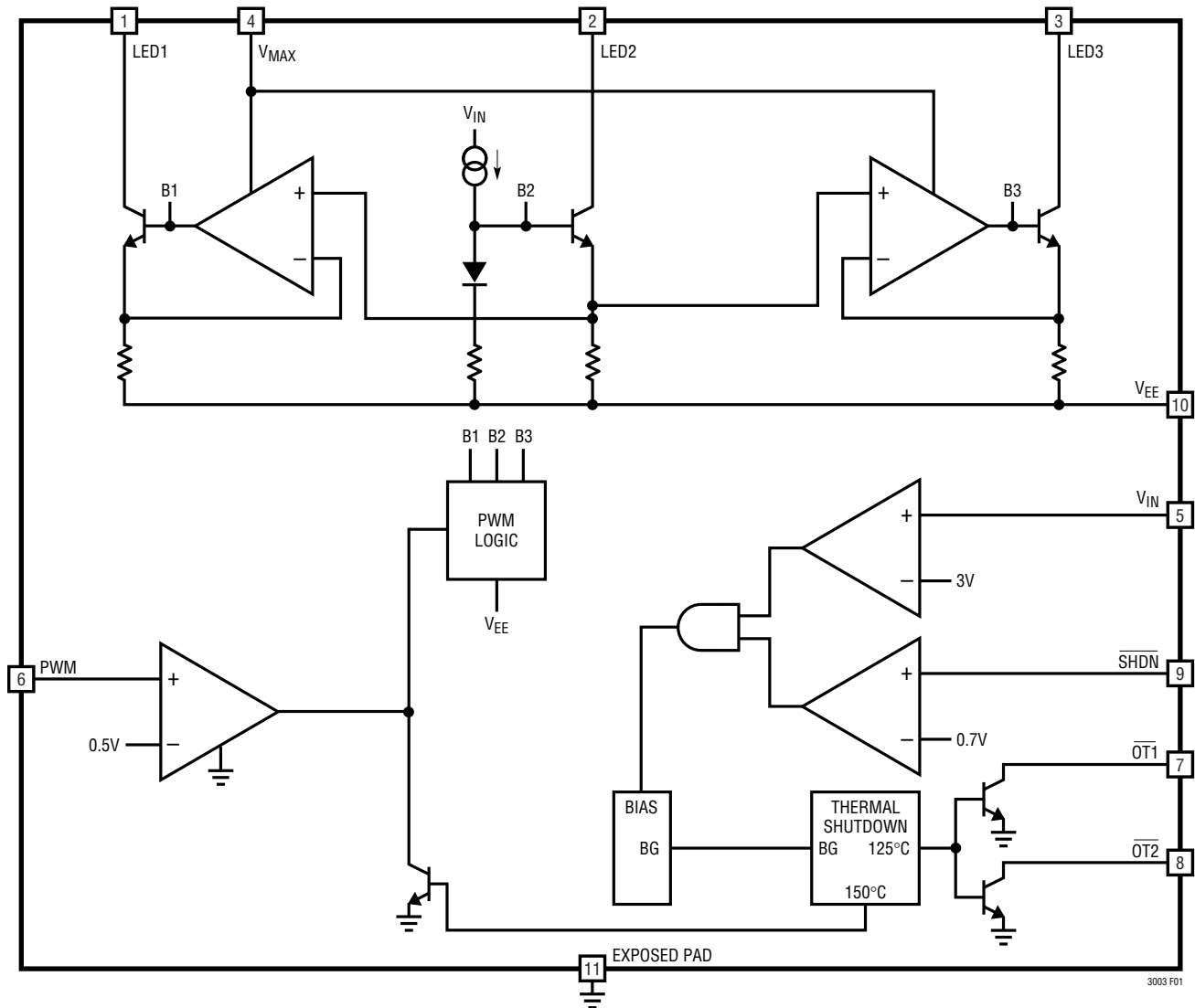


Figure 1. Block Diagram

## OPERATION

The LT3003 is an easy-to-use 3-channel LED ballaster. It allows three strings of LEDs to be driven in parallel with accurate LED current matching. A PWM pin is also provided allowing LED currents to be turned on and off at very low duty cycles for very wide LED dimming ranges. For reliable system thermal management, two output flags,  $\overline{OT1}$  and  $\overline{OT2}$ , are provided to indicate when the junction temperature exceeds 125°C.

The Block Diagram in Figure 1 best illustrates the features of LT3003. The LT3003 internal bias circuitry is turned on when  $V_{IN} > 3V$  and  $\overline{SHDN} > 0.7V$ . For LED current to be active in each channel, the PWM pin must exceed 0.5V.  $V_{MAX}$  should be connected to the highest supply in the application (see various application modes of boost, buck, buck-boost in the Typical Applications section).

The LT3003 ballasting feature is achieved by using the current monitored in the LED2 channel to control the current in channels LED1 and LED3. A servo loop exists for each channel LED1 and LED3 that compares the current in each channel to the LED2 reference channel. The current in LED2 channel is determined by the LED current programmed by the partner LED driver. Details of how LED current can be programmed by the partner IC are covered in the Typical Applications section using various ICs as LED drivers. Maximum fault current in each of the LT3003 LED pins is internally limited to 550mA. If any LED string experiences an open-circuit fault, all LED string currents are turned off.

The LT3003 PWM pin has unique level-shifting circuitry to allow a simple logic-level PWM signal to turn each LED pin current on and off regardless of the  $V_{EE}$  pin voltage. This allows very simple PWM dimming control of LED current without any need for external level-shifting components in buck mode and buck-boost mode applications. Care is taken to ensure low current (nano amps) in the  $V_{EE}$  and  $V_{MAX}$  pins 10 $\mu$ s after PWM low edge. This feature minimizes leakage currents in each application to maximize PWM dimming ratio. Details of PWM dimming and critical parameters are given in the Applications Information section PWM Dimming.

The LT3003 incorporates internal junction temperature sensing and provides two open-collector outputs,  $\overline{OT1}$  and  $\overline{OT2}$ , which become active low when junction temperature exceeds 125°C.  $\overline{OT1}$  is sized to pull 100 $\mu$ A and can be used as an input to the microprocessor for system thermal management.  $\overline{OT2}$  is sized to pull 300 $\mu$ A to defeat switching for most of LTC's LED drivers by pulling down the  $g_m$  error amplifier output. LT3003 is forced to a "zero LED current state" by a special internal protection circuit when junction temperature reaches 150°C.

To calculate the LT3003 junction temperature, see Thermal Calculations in the Applications Information section.

## APPLICATIONS INFORMATION

### Input Capacitor Selection

The LT3003 is typically driven from the same input voltage used for the partner LED driver IC. The LED driver and inductor govern the requirements for the input capacitor of the application. A ceramic input capacitor in the range of 1 $\mu$ F to 10 $\mu$ F works for most applications. In cases where the LT3003 input voltage is derived separately from the LED driver, a 1 $\mu$ F input capacitor works well.

### LED Current Matching

An LED driver programs the LED current and LT3003 actively ballasts three separate strings of LEDs. The currents in all three channels will be matched to better than  $\pm 3\%$ . To achieve best current matching,  $(V_{IN} - V_{EE})$  should be between 3V and 10V. A low  $(V_{IN} - V_{EE})$  also minimizes LT3003 internal power dissipation (see Thermal Calculation section for more information).

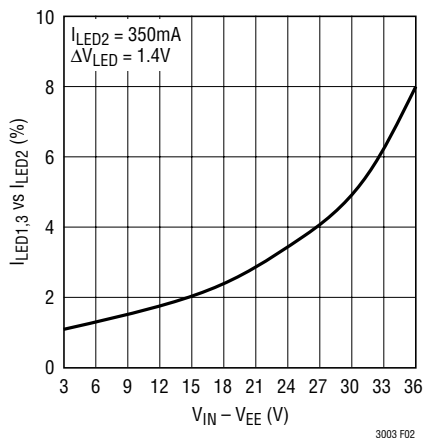


Figure 2.  $I_{LED}$  Matching vs  $(V_{IN} - V_{EE})$

### LED Pin Current Range

The steady-state operational current range for each LED pin is between 100mA and 350mA. Internal protection circuitry limits absolute maximum pin current to 550mA.

### LED Open-Circuit Protection

If any LED string is open, then currents in all three channels reduce to zero. The driver chip, which supplies LED current, should have an overvoltage clamp to protect the LT3003 from high LED pin voltages.

### PWM Dimming

The LT3003 has a wide PWM dimming range for constant color LED dimming. PWM dimming is superior to analog dimming as it preserves true color quality. PWM dimming control with the LT3003 is achieved using a simple ground referenced PWM signal with a 0.5V on/off threshold. The LEDs operate at either programmed or zero current but their brightness changes with the PWM signal duty cycle. When PWM is low, LED strings are completely disconnected. In addition, the LT3003 switches to low power standby mode  $\sim 10\mu$ s after PWM low edge, resulting in higher system power efficiency.

For the widest dimming range, the PWM signal should be 100Hz. The human eye is typically sensitive to flickering below  $\sim 80$ Hz. Operating the PWM higher than 100Hz results in a reduced PWM dimming ratio.

Achieving high PWM dimming ratios require attention to circuit leakages, such as reverse bias leakage currents through the external Schottky. Hence, for high PWM dimming ratios, components should be chosen to minimize leakage currents.

If an application does not require PWM dimming, the PWM pin can be left open (unconnected) and an internal 10 $\mu$ A source current pulls PWM high.

### Boost PWM Dimming

The LT3003 supports up to a 3000:1 PWM dimming ratio with a 100Hz PWM dimming frequency. To achieve such high PWM ratios, leakages of the LED driver and other external components should be minimal.

### Buck Mode: PWM Dimming

The LT3003 supports up to a 3000:1 PWM dimming ratio in buck mode. The PWM dimming in buck mode is achieved by an architecture that allows the LT3003 power ground ( $V_{EE}$ ) to move with output capacitor voltage. PWM dimming control is achieved by a simple ground referenced PWM signal, eliminating the need for any external level-shift component.

High PWM dimming ratios require very low  $V_{EE}$  and  $V_{MAX}$  pin currents during the PWM off state. The LT3003

APPLICATIONS INFORMATION

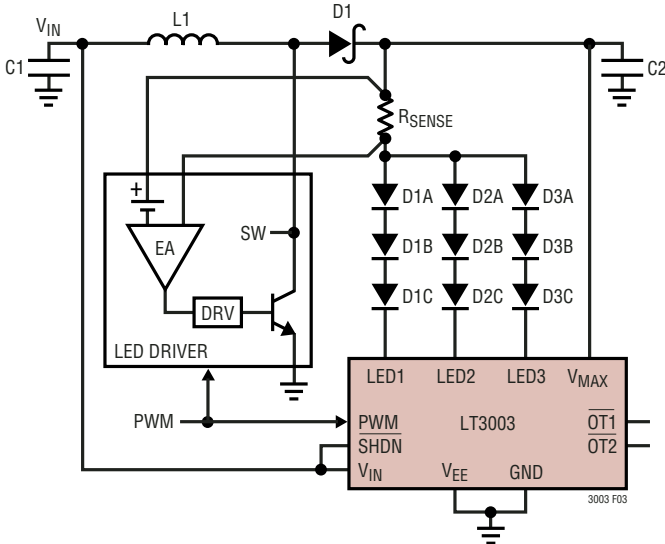


Figure 3. Boost Mode

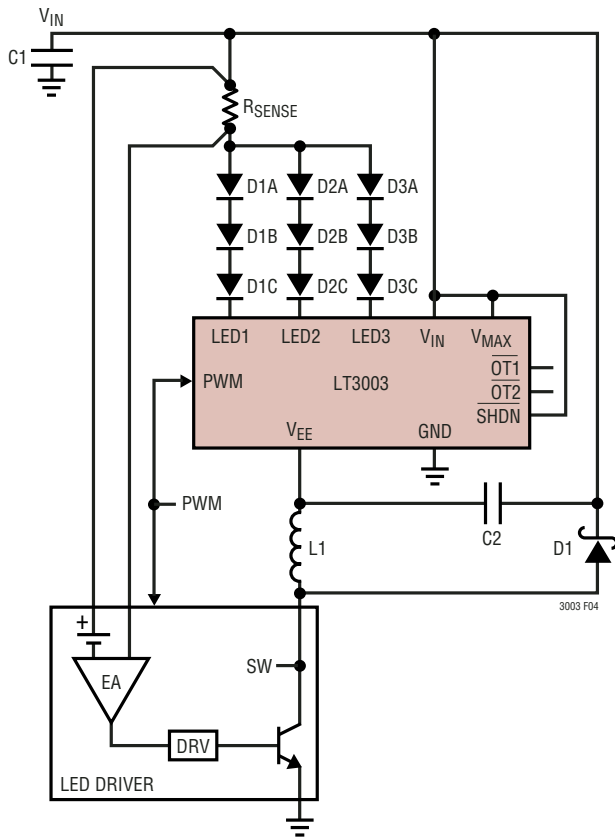


Figure 4. Buck Mode

uses novel circuit techniques to reduce  $V_{EE}$  and  $V_{MAX}$  pin currents to nano amp range  $\sim 10\mu s$  after PWM low edge. This preserves the output capacitor voltage and results in higher PWM dimming ratios.

**Buck-Boost Mode: PWM Dimming**

The LT3003 can also perform PWM dimming in buck-boost mode. The buck-boost configuration requires the PWM and SHDN pins to be tied together. This configuration can support up to a 2000:1 PWM dimming ratio.

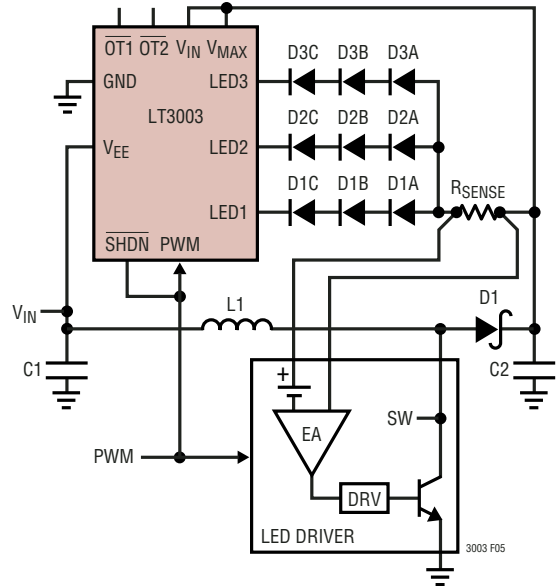


Figure 5. Buck-Boost Mode

**Overtemperature Protection**

The LT3003 incorporates internal junction temperature sensing and provides two open-collector outputs,  $\overline{OT1}$  and  $\overline{OT2}$ , which become active low when junction temperature exceeds  $125^{\circ}C$ . The active  $\overline{OT1}$  output can sink  $100\mu A$  of current and can be connected to system microprocessor. The active low  $\overline{OT2}$  output can sink  $300\mu A$  of current and can be connected to the switching regulator's  $g_m$  error amplifier output to defeat switching. The LT3003 has to cool down by  $6^{\circ}C$  ( $119^{\circ}C$ ) for  $\overline{OT1}$  and  $\overline{OT2}$  outputs to reset (collector outputs high).



## APPLICATIONS INFORMATION

In addition, LT3003 has an internal 150°C overtemperature protection circuitry that resets the chip to zero LED current mode. This prevents the chip from continuous operation at high temperature.

### Thermal Calculations

To maximize output power capability in an application without exceeding the LT3003 125°C maximum operational junction temperature, it is useful to be able to calculate power dissipation within the IC. The power dissipation within the LT3003 comes from four main sources: switch DC loss, switch loss due to LED  $V_{LED}$  mismatch and input quiescent current.

#### 1. Switch DC Loss:

$$P_{SW(DC)} = I_{LED} \cdot V_{LED} \cdot 3$$

(See  $(V_{LED1,2,3} - V_{EE})$  vs  $I_{LED}$  Typical Performance Characteristics graph.)

#### 2. Switch Loss due to $V_{LED}$ Mismatch:

$$P_{SW(\Delta V_{LED})} = \text{Total } V_{LED} \text{ mismatch} \cdot I_{LED}$$

#### 3. Input Quiescent Loss:

$$P_Q = (V_{IN} - V_{EE}) \cdot (I_Q - 1\text{mA}) + 1\text{mA} \cdot V_{IN}$$

$$I_Q = \frac{3 \cdot I_{LED}}{40} + 3\text{mA}$$

#### 4. Total Power Dissipation:

$$P_{TOT} = P_{SW(DC)} + P_{SW(\Delta V_{LED})} + P_Q$$

#### 5. LT3003 Junction Temperature:

$$T_J (\text{LT3003}) = T_A + \theta_{JA}(P_{TOT});$$

$$\theta_{JA}(P_{TOT}) = P_{TOT} \cdot 35^\circ\text{C/W}$$

### Example

$$V_{IN} = 3\text{V}; V_{EE} = 0\text{V}; I_{LED} = 350\text{mA/string};$$

$$\bullet I_Q = \frac{3 \cdot 350\text{mA}}{40} + 3\text{mA} = 29.25\text{mA}$$

Total  $V_{LED}$  mismatch = 1V:

- e.g., LED string 1 voltage drop = 6V;  
LED string 2 voltage drop = 5.7V;  
LED string 3 voltage drop = 5.3V

$$\bullet \text{Total } V_{LED} \text{ mismatch} = (6\text{V} - 5.7\text{V}) + (6\text{V} - 5.3\text{V}) = 1\text{V}$$

$V_{LED} = 1.1\text{V}$  at  $I_{LED} = 350\text{mA}$  (see  $(V_{LED} - V_{EE})$  vs  $I_{LED}$  Typical Performance Characteristics graph).

$$1. P_{SW(DC)} = 3 \cdot 350\text{mA} \cdot (1.1\text{V}) = 1.16\text{W}$$

$$2. P_{SW(LED)} = 1000\text{mV} \cdot 350\text{mA} = 350\text{mW}$$

$$3. P_Q = (3 - 0) \cdot (29.25 - 1)\text{mA} + 3 \cdot 1\text{mA} = 88\text{mW}$$

$$4. P_{TOT} = 1.1\text{W} + 350\text{mW} + 88\text{mW} \approx 1.6\text{W}$$

The LT3003 uses a thermally enhanced 10-lead MSE package. With proper soldering of the Exposed Pad to the underside of the package, combined with a full copper plane underneath the device, the thermal resistance ( $\theta_{JA}$ ) is about 35°C/W. For an ambient temperature of  $T_A = 25^\circ\text{C}$ , the junction temperature of the LT3003, for the example application described above, can be calculated as:

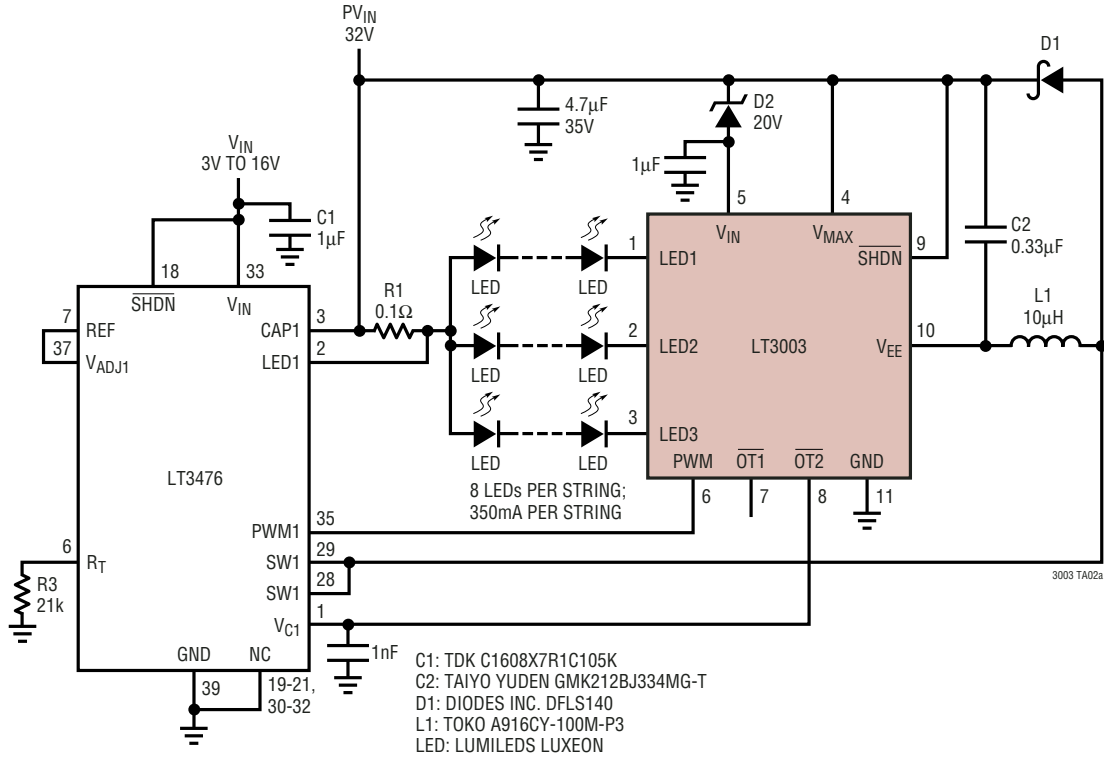
$$5. T_J = T_A + \theta_{JA} \cdot P_{TOT} = 25^\circ\text{C} + 35^\circ\text{C/W} \cdot 1.6\text{W} = 81^\circ\text{C}$$

### Minimizing LT3003 Internal Power Dissipation

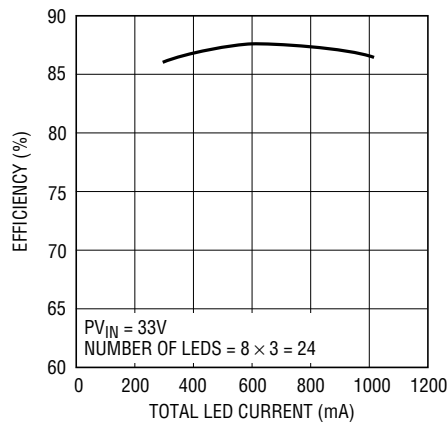
The LT3003 requires at least 3V headroom between  $V_{IN}$  and  $V_{EE}$ . Hence, for systems with high system input voltage and low  $V_{EE}$  (such as running multiple series LEDs in a Buck Mode), it is beneficial to lower the level of  $V_{IN}$  pin voltage (LT3003 upper rail) with an external zener to reduce power dissipation in the chip. Therefore, it is recommended to limit  $(V_{IN} - V_{EE})$  to less than 10V. To achieve best performance,  $(V_{IN} - V_{EE})$  should equal 3V.

TYPICAL APPLICATIONS

1.05A Buck Mode LT3003 with the LT3476



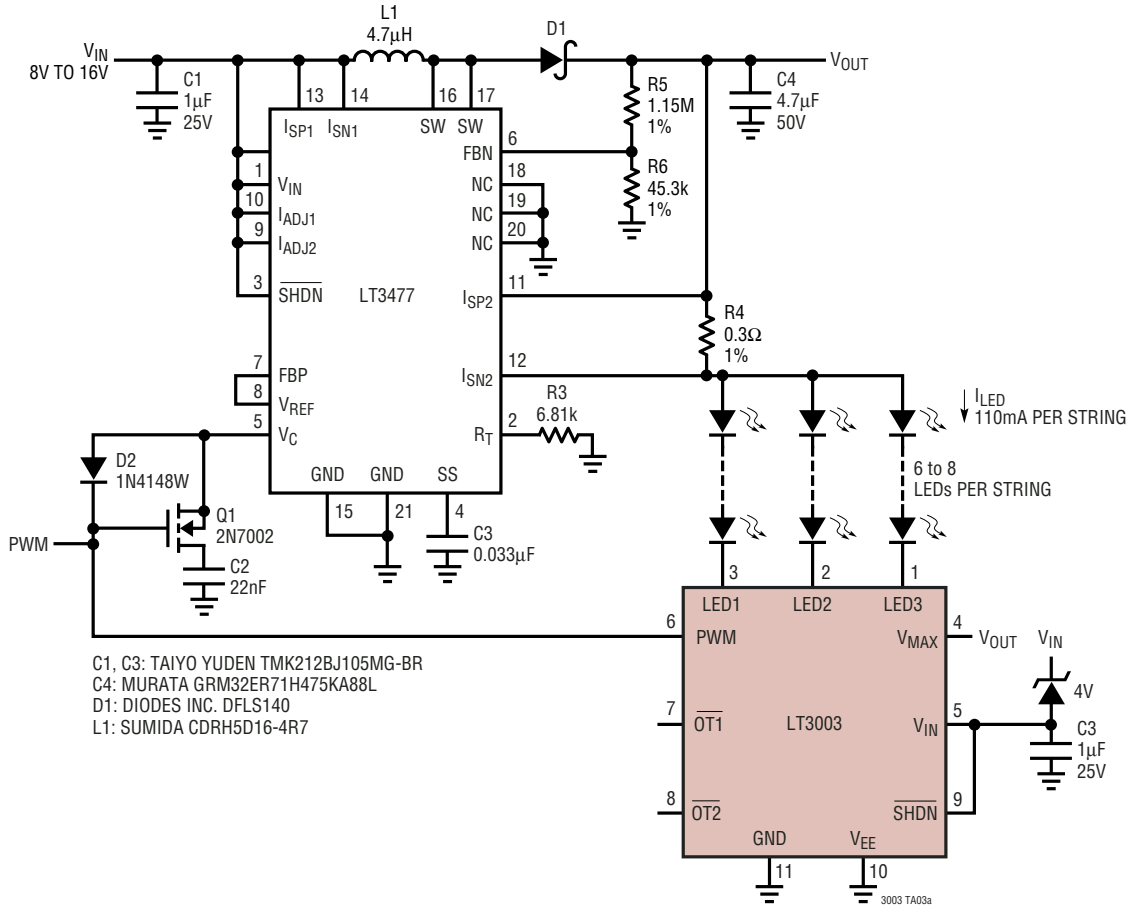
Efficiency



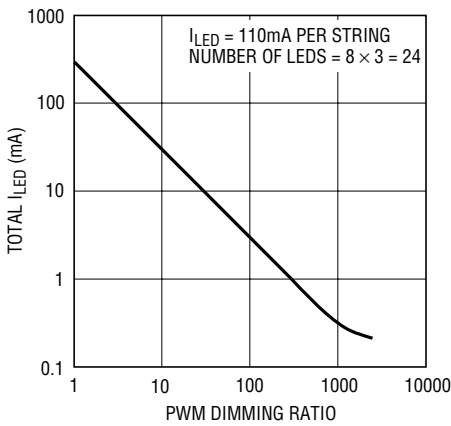
3003 TA02b

# TYPICAL APPLICATIONS

## 330mA Boost LT3003 with the LT3477

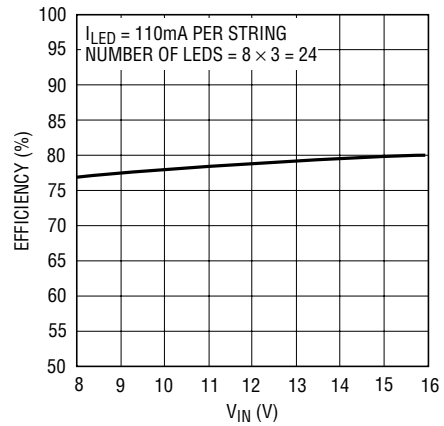


**PWM Dimming**



3003 TA03b

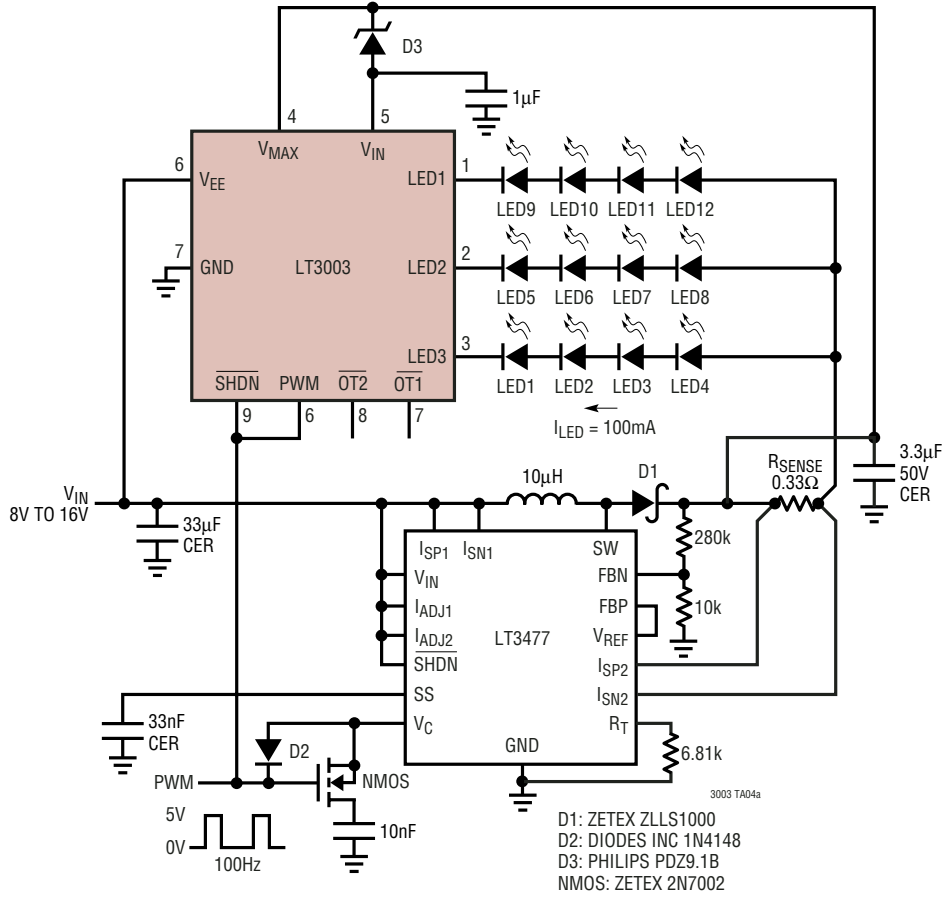
**Efficiency**



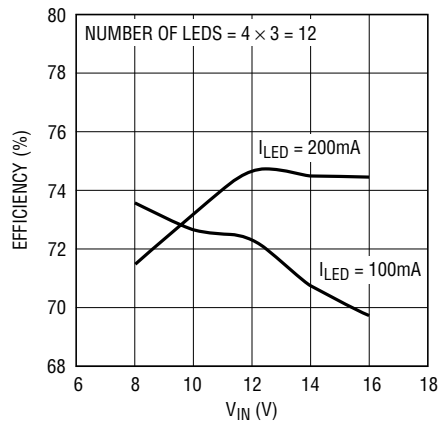
3003 TA03b

TYPICAL APPLICATIONS

300mA Buck-Boost Mode LT3003 with the LT3477

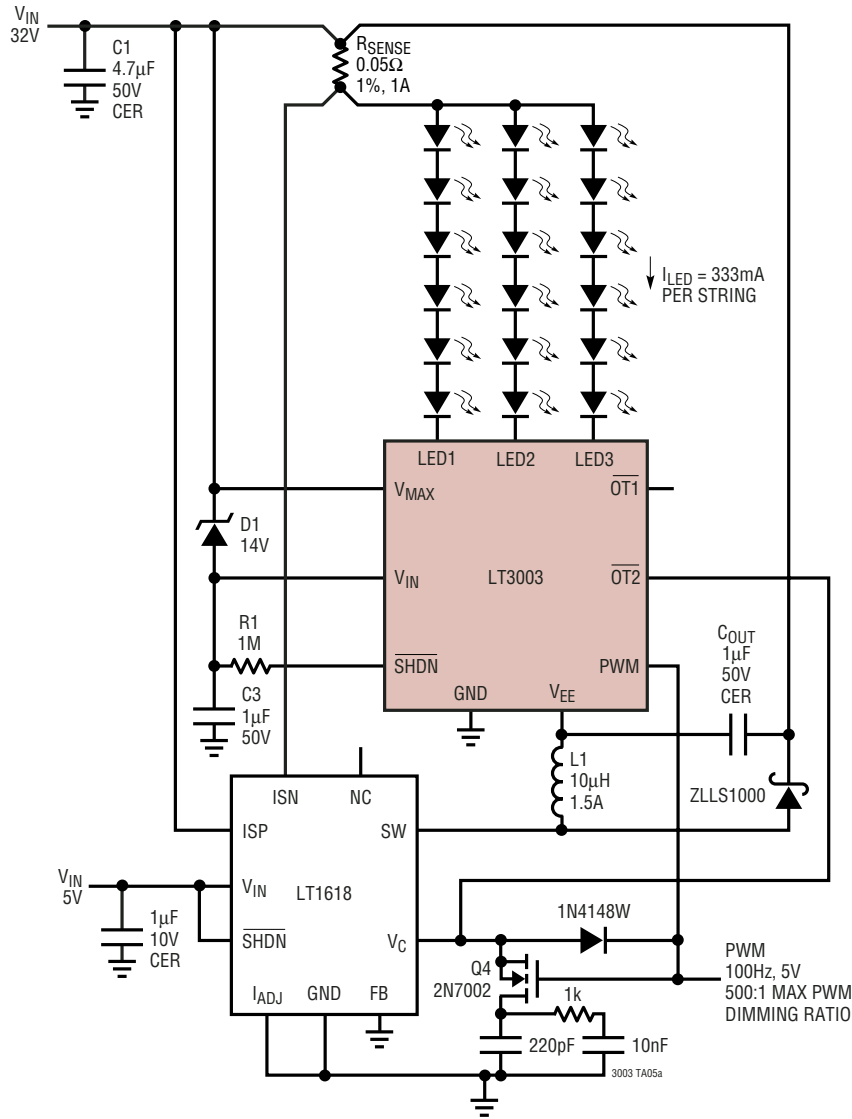


Efficiency

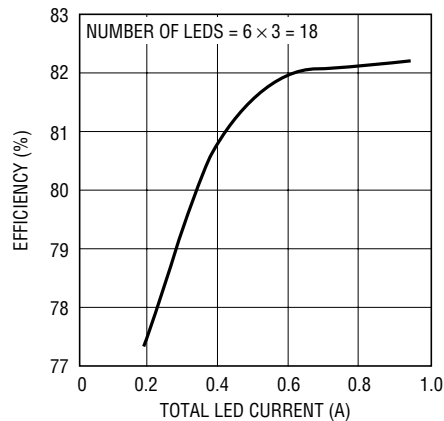


TYPICAL APPLICATIONS

1A Buck Mode LT3003 with the LT1618



Efficiency

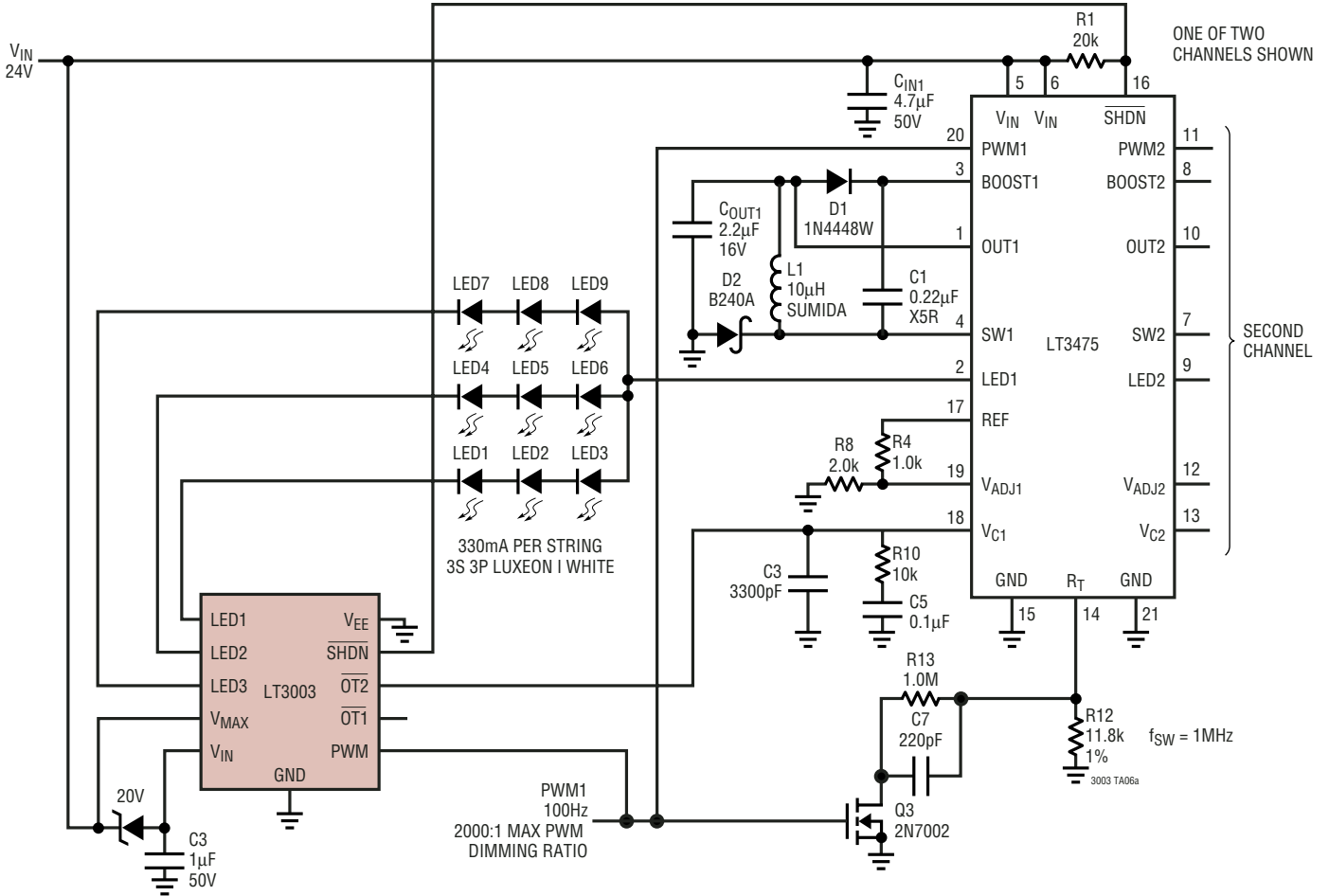


3003 TA05b

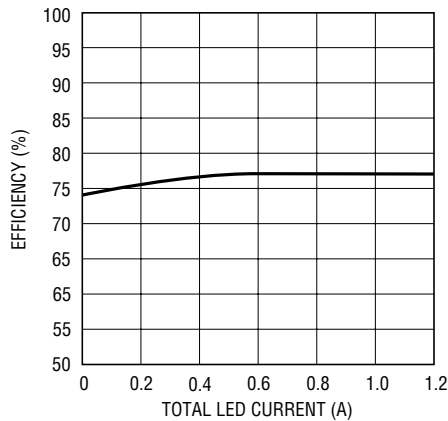
3003fa

## TYPICAL APPLICATIONS

1A Buck LT3003 with the LT3475

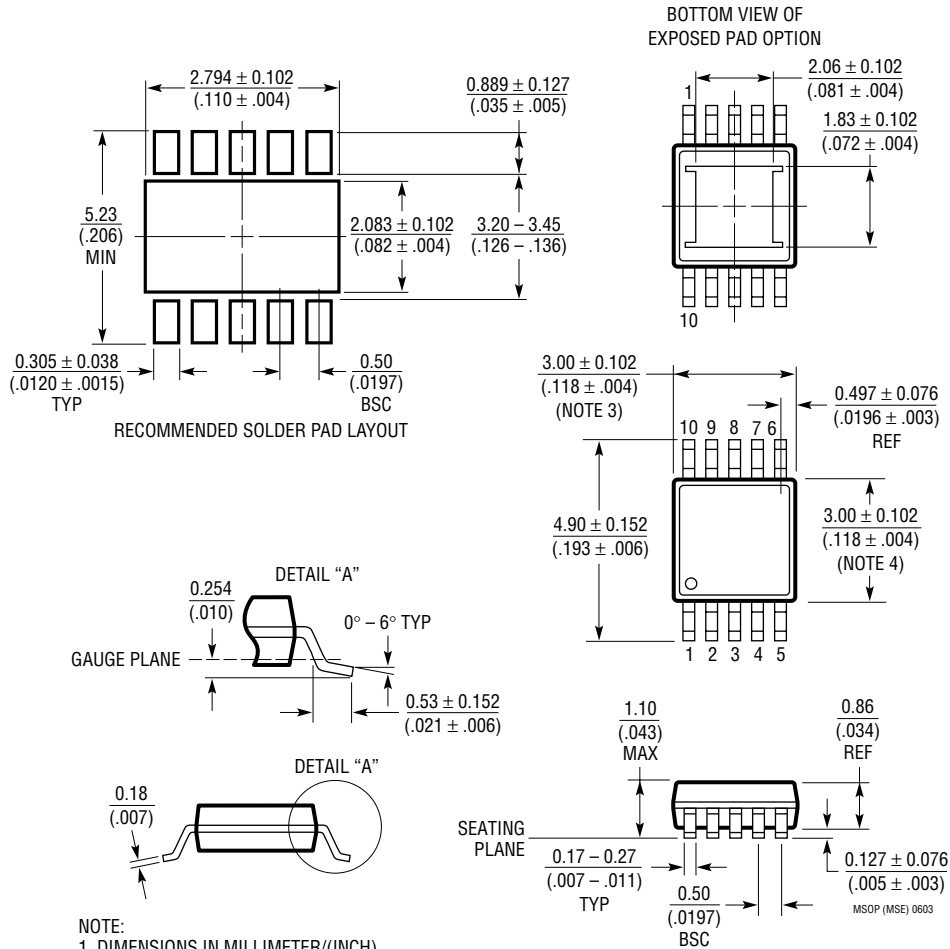


Efficiency



PACKAGE DESCRIPTION

**MSE Package**  
**10-Lead Plastic MSOP**  
 (Reference LTC DWG # 05-08-1664)



- NOTE:
1. DIMENSIONS IN MILLIMETER/(INCH)
  2. DRAWING NOT TO SCALE
  3. DIMENSION DOES NOT INCLUDE MOLD FLASH, PROTRUSIONS OR GATE BURRS.  
MOLD FLASH, PROTRUSIONS OR GATE BURRS SHALL NOT EXCEED 0.152mm (.006") PER SIDE
  4. DIMENSION DOES NOT INCLUDE INTERLEAD FLASH OR PROTRUSIONS.  
INTERLEAD FLASH OR PROTRUSIONS SHALL NOT EXCEED 0.152mm (.006") PER SIDE
  5. LEAD COPLANARITY (BOTTOM OF LEADS AFTER FORMING) SHALL BE 0.102mm (.004") MAX

## RELATED PARTS

| PART NUMBER | DESCRIPTION  | COMMENTS  |
|-------------|--|---|
| LT1618      | Constant-Current/Constant-Voltage DC/DC Converter  | Drives 20 White LEDs from Li-Ion, 10-Lead MS Package  |
| LT1932      | Constant Current, 1.2MHz, High Efficiency White LED Boost Regulator  | $V_{IN}$ : 1V to 10V, $V_{OUT(MAX)}$ = 34V, $I_Q$ = 1.2mA, $I_{SD}$ < 1 $\mu$ A, ThinSOT™ Package   |
| LT1942      | Quad DC/DC Converter for Triple Output TFT Supply Plus Boost LED Driver, with a 2-Channel Ballaster                            | TFT Supply: Three Switching Regulators (Two Boost, One Inverting) LED Supply: Up to Two Strings of 10 LEDs. $V_{IN}$ : 2.6V to 16V, $V_{OUT(MAX)}$ = 45V, $I_Q$ = 7mA, $I_{SD}$ < 1 $\mu$ A, Low Profile QFN package. |
| LT3475      | 36V, 2MHz, Dual 1.5A Step-Down LED Driver  | $V_{IN}$ : 4V to 36V, 200kHz to 2MHz, TSSOP20E Package, 3000:1 Dimming  |
| LT3477      | 3A, 3.5mHz, Constant-Current DC/DC Converter with Dual Rail Sense. Can Drive LEDs in Boost, Buck and Buck-Boost Configurations | $V_{IN}$ : 2.5V to 25V, $V_{OUT(MAX)}$ = 42V, $I_{SD}$ < 1 $\mu$ A, QFN/TSSOP Packages  |
| LT3478      | 4.5A Constant Current BOOST LED Driver with PWM  | $V_{IN}$ : 2.7V to 36V, $V_{OUT(MAX)}$ = 40V, $I_{LED(MAX)}$ = 1.05A, $I_{SD}$ < 5 $\mu$ A, FE16 Package  |
| LT3479      | 3A, 3.5MHz, 42V Full Featured Boost/Inverter Converter with Soft-Start   | $V_{IN}$ : 2.5V to 24V, $V_{OUT(MAX)}$ = 40V, $I_Q$ = 5mA, $I_{SD}$ < 1 $\mu$ A, DFN/TSSOP Packages   |
| LT3474      | 36V, 2MHz, Step-Down 1A LED Driver   | $V_{IN}$ : 4V to 36V, 200kHz to 2MHz, TSSOP16E Package, 400:1 Dimming   |
| LTC3205     | Multi-Display LED Controller, Step-Up/Step-Down Fractional Charge Pump, Independent Current and Dimming Control                | $V_{IN}$ : 2.8V to 4.5V, 800MHz, QFN Package  |
| LTC3783     | PWM LED Power and Boost, Flyback and SEPIC Controller  | $V_{IN}$ : 3.6V to 36V, 300kHz, DFN, TSSOP16E Package, 3000:1 Dimming   |

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Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов;
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001;
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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