

## Product Brief

### Highlights

- Family of products features driving capability of 4 to 8 channels of LED currents from 30 mA to 200 mA per channel and up to 40V to 58V at wide input voltage range and high efficiency.
- Drives multiple channels of LEDs for array or color mixing applications or combines channels for high-power lighting applications.
- Integrates a DC/DC step-up controller or regulator for various power level requirements and high-performance MOSFETs for regulating channel current, which can reduce the number of peripheral components, PCB footprint and total system cost.

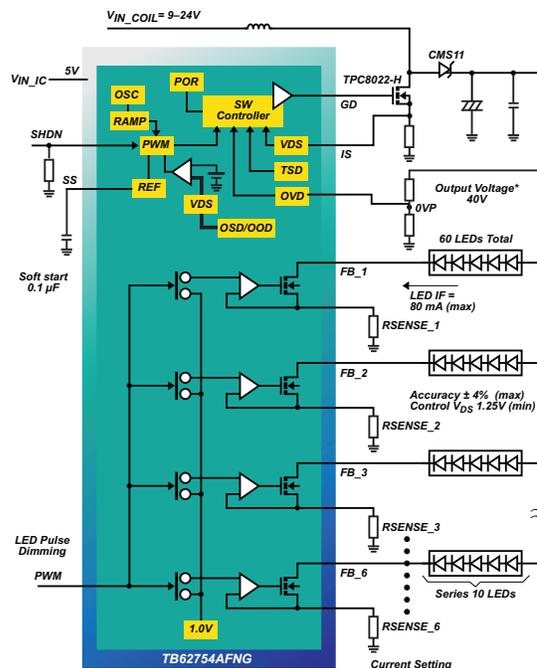
# TB62754AFNG, TB62758FTG, TB62771FTG, TB62D701FTG/FNG, Multi-Channel LED Drivers with DC/DC Step-Up Controller/Regulator

### TB62754AFNG

#### Description

The TB62754AFNG is a high-efficiency, step-up type DC/DC controller especially designed for driving six strings of medium-power LEDs at 80 mA or one string of high-power LEDs at 480 mA of up to 40V at 12V supply. The device provides PWM dimming and the peak current of each channel can be adjusted independently for RGB LEDs, zone lighting or factory calibration applications. The TB62754AFNG drives an external switching power MOSFET that allows high voltage and high current flexibility and it integrates six channels of current regulation MOSFETs that minimize the component count, PCB footprint and system cost. The device has internal compensation that greatly simplifies design complexity. The TB62754AFNG is especially

### TB62754AFNG DC/DC LED Lighting Application Block Diagram



ideal for medium power lighting applications such as indoor plant lighting, traffic lighting and general purpose lighting.

### Features

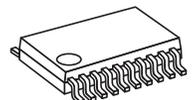
- $V_{IN\_IC}$ : 4.5V – 5.5V
- $V_{IN\_coil}$ : 9V – 24V
- $V_{FB\_max}$ : 40V
- $V_{OUT\_max}$ : Can be higher than  $V_{FB\_max}^*$
- $I_{LED}$ : 6 x 80 mA (max)
- Drive external boot switching MOSFET to allow high voltage application\* with typically 6 x 10 LEDs at 80 mA.
- Channels can be combined to provide higher current
- Internal Compensation simplifies design complexity.
- PWM Dimming: 100 Hz to 10 kHz with duty cycle as short as 10 μsec
- Linear Dimming: Setting LED current of each output by each FB resistor.
- Small Package and Low Loss LED outputs  
Current driver: OUT control voltage=1.25V @ 50 mA  
Small Package: SSOP20  
(6.4 mm x 7.0mm, t=1.6mm, 0.65mm pitch)

### Applications

- Indoor Plant Lighting
- Traffic Lighting
- RGB LEDs
- Aquarium Lighting
- General purpose DC/DC LED Lighting

### Package

- SSOP20-P-225-0.65



\*  $V_{OUT}$  can be higher than  $V_{FB\_max}$  by 2x provided FB pins do not need to sustain to  $V_{OUT}$  shorted and the boost ratio is less than 85%.

# TB62758FTG

## 48V/6x30 mA 6-Channel LED-Driver with DC/DC Step-Up Regulator

### Description

The TB62758FTG is the highest integration medium-power LED driver offered by Toshiba. It integrates a DC/DC Step-Up regulator and 6 channels of current regulators in a compact and thermally enhanced QFN24 4 mm x 4 mm package. The device can drive six strings of 30 mA LEDs or one string of 180 mA LEDs of up to 48V at 12V supply. The device provides a PWM dimming function and the peak current of all the channels can be adjusted by an external resistor. The TB62758FTG is especially ideal for DC/DC medium-power lighting applications such as indoor plant lighting, outdoor flood lighting and general purpose lighting.

### Features

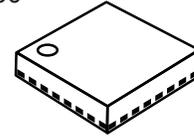
- $V_{IN} = 7\text{--}22\text{V}$
  - $V_{OUT} = 48\text{V (max)}$
  - 12 LEDs/channel (total 72 LEDs) with 6x30 mA (max) @ LED  $V_F=3.6\text{V}$
  - DC/DC regulator and 6-channel LED outputs
  - PWM dimming with minimum pulse width of 10  $\mu\text{sec}$
  - Small Package and Low Loss LED outputs
- Current Driver: OUT control voltage=0.6V@20 mA  
 Small Package: Exposed pad QFN24 (0.5 mm pitch, 3.8 mm x 3.8 mm, t=0.6, 0.5 mm pitch)

### Applications

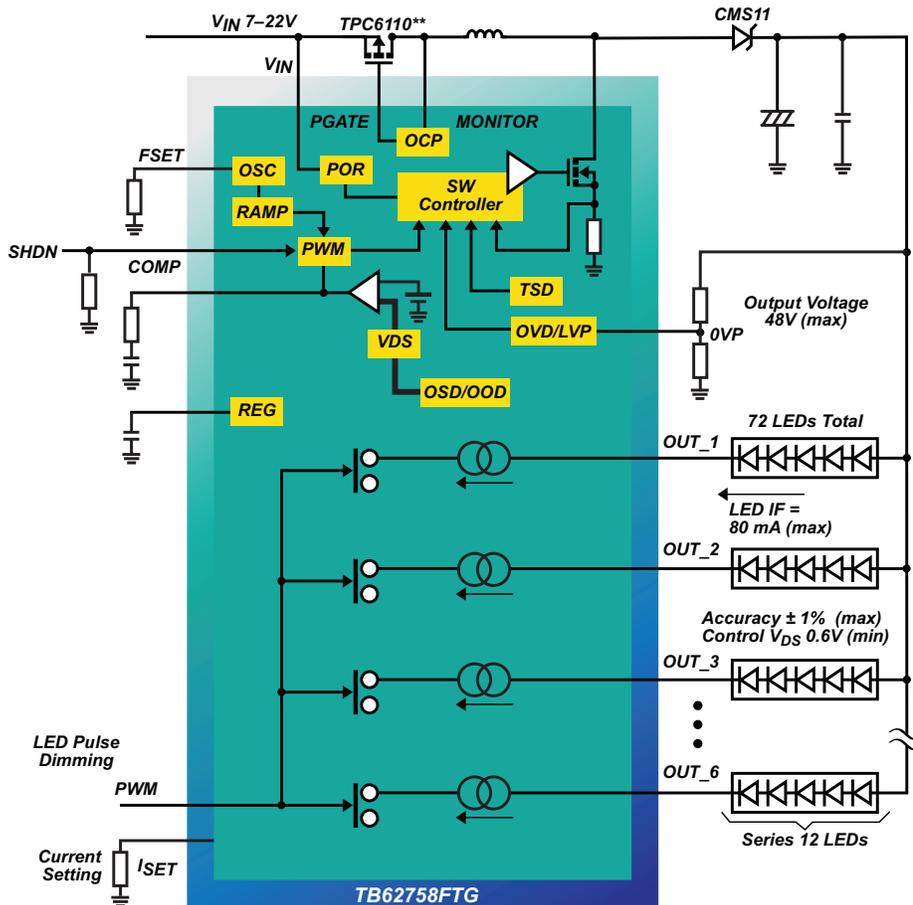
- Portable Lantern and outdoor flood lighting

### Package

QFN24-P-0404-0.50



### TB62758FTG DC/DC LED Lighting Application Block Diagram



\*\* Optional MOSFET as resettable fuse for over current protection.

# TB62771FTG

## 45V/4x200 mA 4-channel LED Driver with DC/DC Step-Up Controller

### Description

The TB62771FTG is a high-integration, high-power LED driver offered by Toshiba. It integrates a DC/DC Step-Up controller with 4 channels of current regulators and is offered in a compact and thermally enhanced QFN20 4 mm x 4 mm package. The device can drive four strings of 200 mA LEDs or one string of 800 mA LEDs of up to 45V at 12V supply. The TB62771FTG provides a PWM dimming function and an adjustable peak current control through an external resistor. The TB62771FTG is especially ideal for DC/DC high-power lighting applications such as street lighting, area lighting, and indoor plant lighting applications.

### Features

- $V_{IN\_}$  = 4.75V – 40V
- $V_{FB\_max}$ : 45V (max)
- $V_{OUT\_max}$ : can be higher than  $V_{FB\_max}$ \*

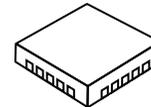
- 12 LEDs/channel (total 48 LEDs) with 4x200 mA (max) @LED VF=3.6V
- DCDC controller and 4-channel LED outputs
- High-Efficiency: Up to 85% peak efficiency under Toshiba evaluation conditions.
- Pulse Dimming: PWM input with minimum pulse width of 0.5  $\mu$ sec
- Adjustable switching frequency from 200 kHz to 2 MHz
- Linear Dimming: Sets all LED current by one resistor
- Low Loss Current Driver: OUT control voltage=0.5V@120 mA
- Error Flag Indication
- Small Package: Exposed pad QFN20 (0.4 mm pitch, (4.0 mm x 4.0 mm, t = 0.8 mm, 0.4 mm pitch)

### Applications

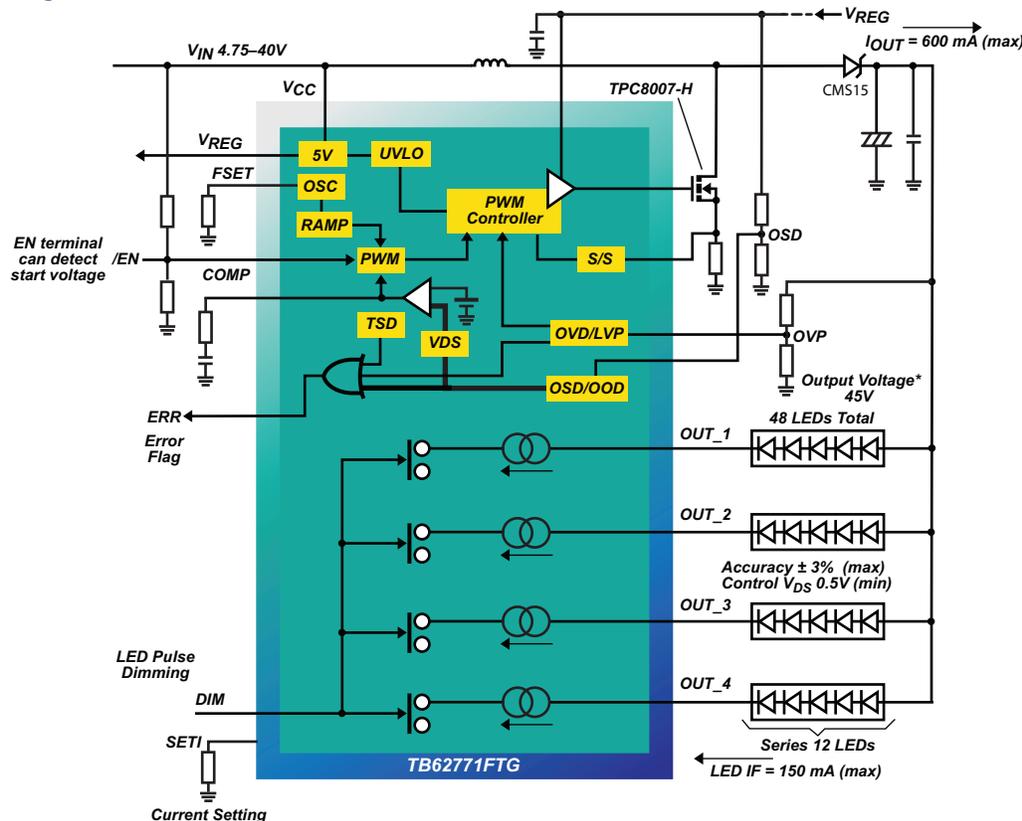
- Street Lighting, Area lighting, Indoor Plant Lighting, LED TV Backlighting
- Visible Light Communication Lighting

### Package

QFN20-P-0404-0.50



### TB62771 DC/DC LED Lighting Application Block Diagram



\*  $V_{OUT}$  can be higher than  $V_{FB\_max}$  by 2x provided that FB pins do not need to sustain to  $V_{out}$  shorted and the boost ratio is less than 85%.

## Regional Sales Offices

### NORTHWEST

San Jose, CA  
TEL: (408) 526-2400  
FAX: (408) 526-2410

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Irvine, CA  
TEL: (949) 623-2900  
FAX: (949) 474-1330  
El Paso, TX  
TEL: 915-771-8156  
FAX: 915-771-8178

### MIDWEST

Wixom, MI  
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FAX: (248) 347-2602  
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TEL: (847) 484-2400  
FAX: (847) 541-7287

### NORTHEAST

Marlboro, MA  
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FAX: (508) 481-8828  
Parsippany, NJ  
TEL: (973) 541-4715  
FAX: (973) 541-4716

### SOUTHEAST

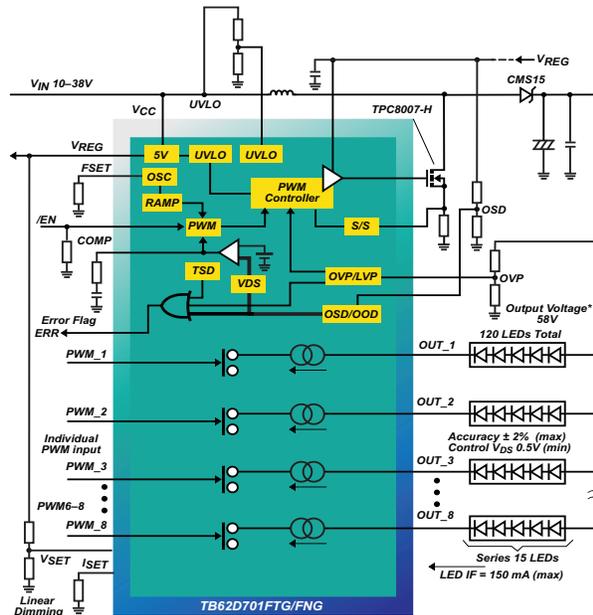
Duluth, GA  
TEL: (770) 931-3363  
FAX: (770) 931-7602

## TB62D701FTG/FNG 58V/8x150 mA 8-channel LED-Driver with DC/DC Step-Up Controller

### Description

The TB62D701FTG/FNG is the highest integration, high-power LED driver offered by Toshiba. It integrates a DC/DC Step-Up controller with 8 channels of current regulators and is offered in thermally enhanced HTSSOP48 and QFN48 7 mm x 7 mm packages. The device can drive 8 strings of 150 mA LEDs or 1 string of 1.2A LEDs of up to 58V at 12V supply. The device provides an independent PWM dimming control for each channel that offers the optimum flexibility for RGB application, factory calibration or special color-mixing needs. The TB62D701FTG/FNG is especially ideal for DC/DC high-power lighting applications such as signage lighting, street lighting, area lighting, mood lighting, RGB lighting and UV-less aquarium lighting applications.

### TB62D701 DC/DC LED Lighting Application Block Diagram



\* $V_{OUT}$  can be higher than  $V_{FB-max}$  by 2x provided that FB pins do not need to sustain to  $V_{out}$  shorted and the boost ratio is less than 85%.

### Features

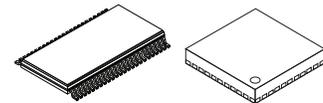
- $V_{IN\_IC}$ : 6V – 36V
- $V_{FB\_max}$ : 58V (max)
- $V_{OUT\_max}$ : can be higher than  $V_{FB\_max}^*$
- 15 LEDs/channel (total 120 LEDs) with 8x150 mA (max) @LED VF=3.6V
- DC DC controller and 8-channel LED outputs
- High-Efficiency: Up to 85% peak efficiency under Toshiba evaluation conditions.
- Individual channel PWM dimming with minimum pulse width of 0.5  $\mu$ sec
- Linear Dimming: LED current setting by  $V_{SET}$  voltage and  $I_{SET}$  resistor
- Adjustable switching frequency 100 kHz to 2 MHz
- Error Flag Indication
- Low Loss Current driver: OUT control voltage=0.5V@100 mA
- High Power Package: Exposed pad TSSOP48 (6.0 mmx12.0 mm, t=0.8 mm, 0.5 mm pitch)
- Small Package: Exposed pad QFN48 (7.0 mmx7.0 mm, t=0.8 mm, 0.5 mm pitch)

### Applications

- Street Lighting
- Area lighting
- Mood Lighting
- Indoor Plant Lighting
- UV-less Aquarium Lighting
- LED Projector
- LED TV Backlighting
- Visible Light Communication Lighting

### Package

HTSSOP48-0612-0.50 QFN48



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