

High-Side Sensing Constant Current Buck Controller for High Switching Frequency LED Driver

FL7760

The FL7760 is a constant current step-down CCM controller for wide output power LED lighting applications. The FL7760 adapts hysteretic reference architecture that accurately regulates LED current by sensing voltage across an external high side sense resistor. This control scheme can stabilize LED current against input voltage and output load transient condition and implement optimal PWM and analog dimming control. Time delay control method widens analog dimming range down to less than 5%.

FL7760 has low 200 mV reference voltage to maximize system efficiency and high frequency driving capability so that system profile can be minimized in wide scale power ranges.

The FL7760 implements PWM and analog dimming together through a DIM pin and provides thermal shutdown (TSD), and under-voltage lockout (UVLO) protections.

Features

- Wide Input Range (8 VDC~70 VDC)
- Continuous Conduction Mode Operation
- Hysteretic LED Current Control
- Wide analog dimming range down to 5%
- Wide PWM dimming duty range to 0.2% at 2 kHz PWM freq.
- High switching frequency up to 1 MHz
- High source / sink current of 1.5 A / 2.5 A
- Cycle-by-Cycle Peak Current Limit
- Low Operating Current (300 uA)
- Low Stand-by Current (240 uA)

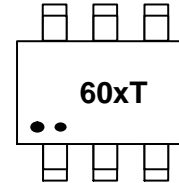
Typical Applications

- LED Lighting System



SOT23-6LD
 CASE 527AJ

MARKING DIAGRAM



VCC (Top) FT(TT95 2.26(T)75(T)958 I0 9.466.60 c39.376Q42772T

60 : Production Identifier
 x : Version (A or B)
 T : Wafer Lot Code
 ■■■■ Week Code
 ■■■■■ Year Code

ORDERING INFORMATION

See detailed ordering and shipping information on page 4 of this data sheet.

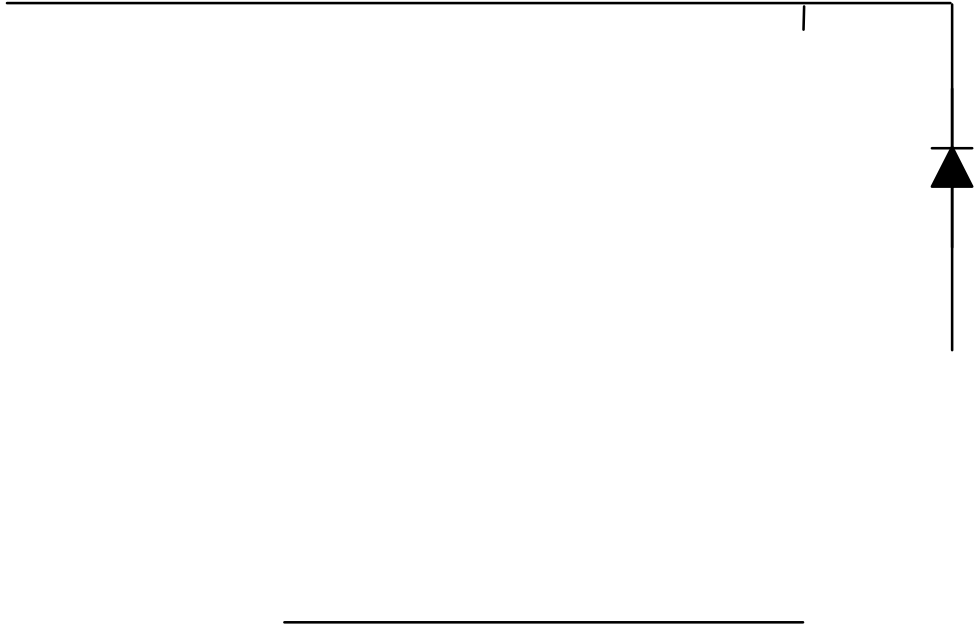
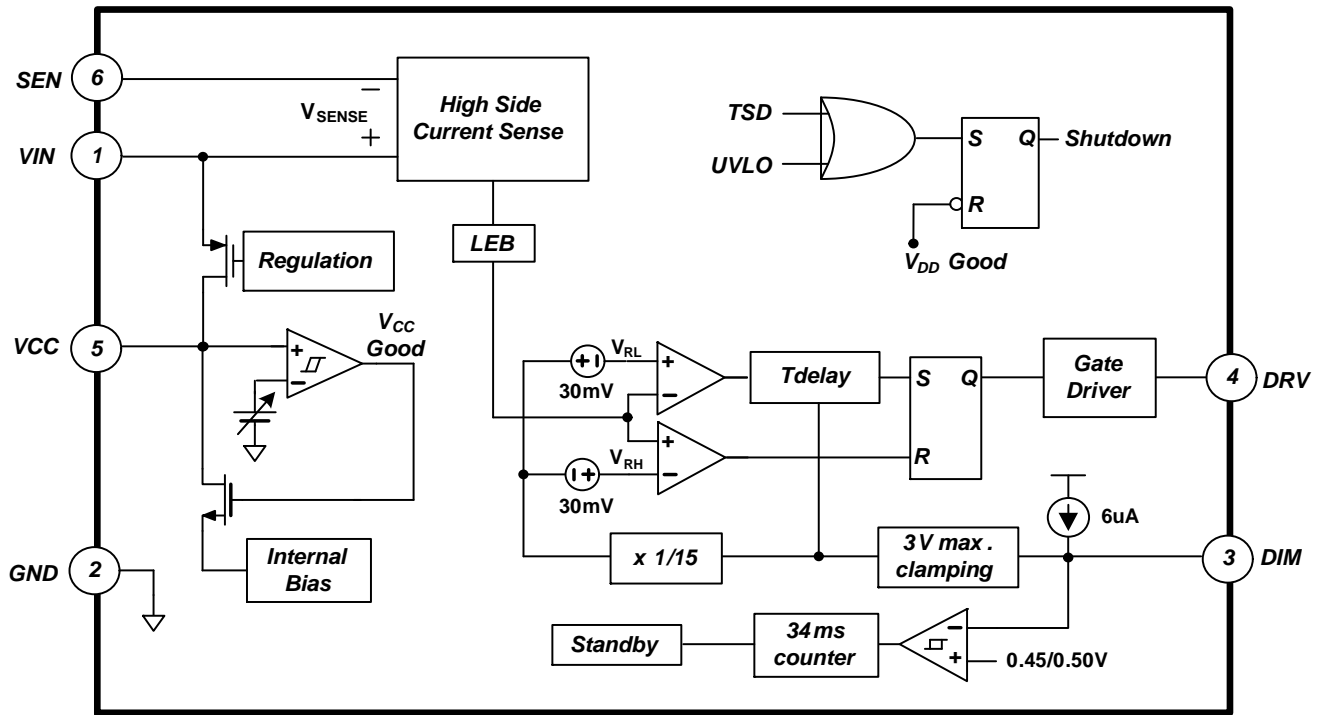
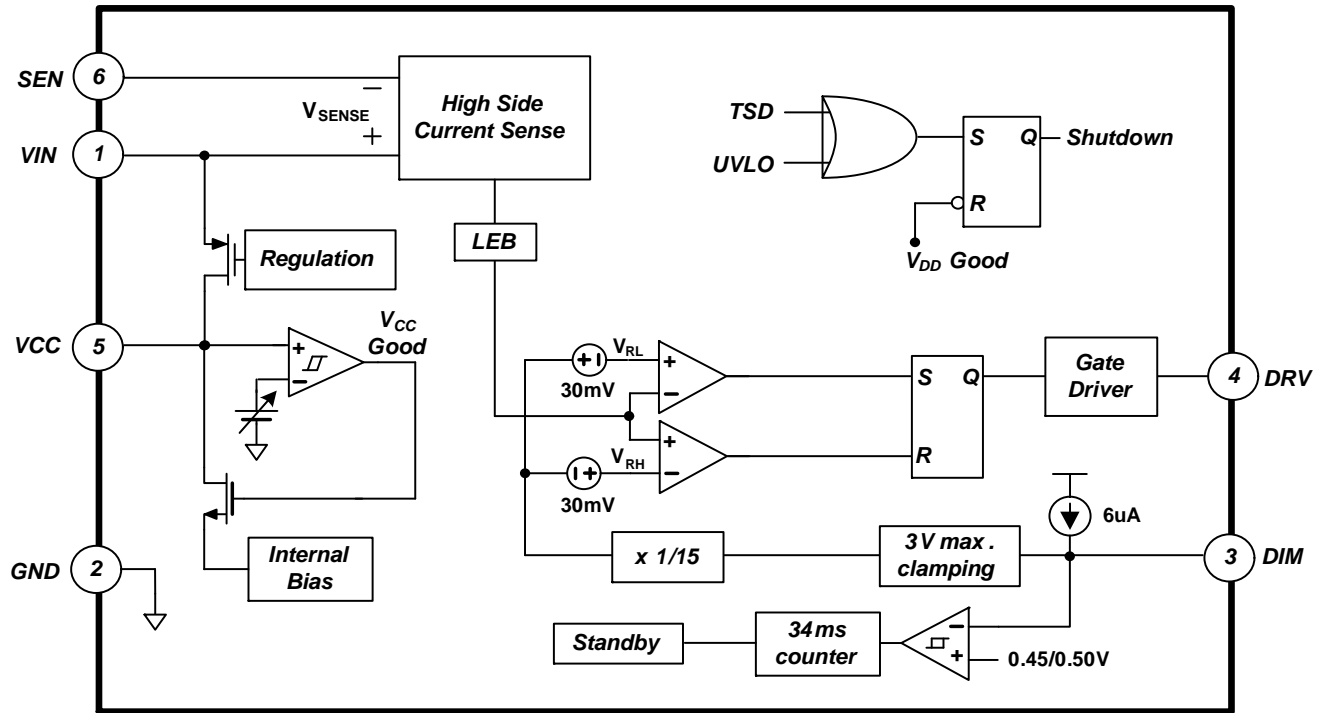


Figure 1. Application Schematic for Analog or PWM Dimming

FL7760



a) A Version (with Time Delay Control)



b) B Version (without Time Delay Control)

Figure 2. Block Diagram

FL7760

Table 2. MAXIMUM RATINGS

Symbol	Rating	Value	Unit
VIN(MAX)	Maximum VIN Pin Voltage Range	-0.3 to 70	V
SEN(MAX)	Maximum SEN Pin Voltage Range	-0.3 to 70	V
VCC(MAX)	VCC Pin Voltage Range	-0.3 to 5.5	V
VDIM(MAX)	DIM Pin Voltage Range	-0.3 to 5.5	V
VDRV(MAX)	DRV Pin Voltage Range	-0.3 to 5.5	V
VCC(PULSE)	Maximum VCC Pin Pulse Voltage at $t_{PULSE} < 20$ ns	8	V
VDRV(PULSE)	Maximum DRV Pin Pulse Voltage at $t_{PULSE} < 20$ ns	8	V
TJ(MAX)	Maximum Junction Temperature	150	°C
TSTG	Storage Temperature Range	-65 to 150	°C
RθJA	Junction-to-Ambient Thermal Impedance	263	°C/W
PD	Power Dissipation	247	mW
ESDHBM	ESD Capability, Human Body Model (Note 2)		

TYPICAL CHARACTERISTICS

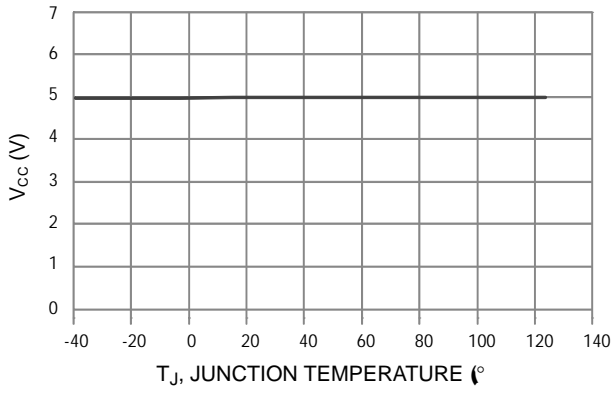


Figure 3. V_{CC} vs. Temperature

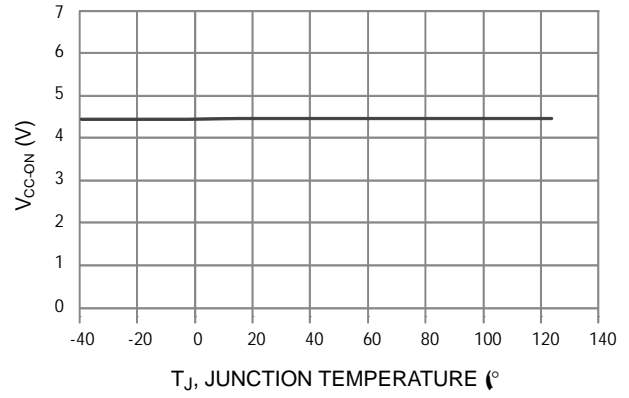


Figure 4. V_{CC-ON} vs. Temperature

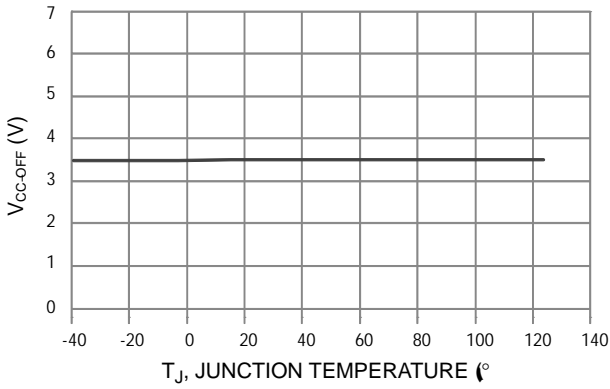


Figure 5. V_{CC-OFF} vs. Temperature

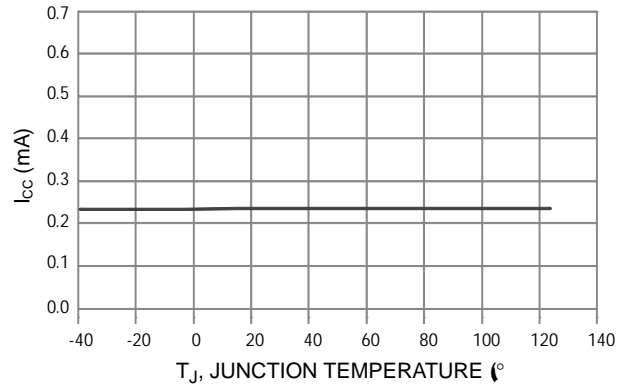


Figure 6. I_{CC} vs. Temperature

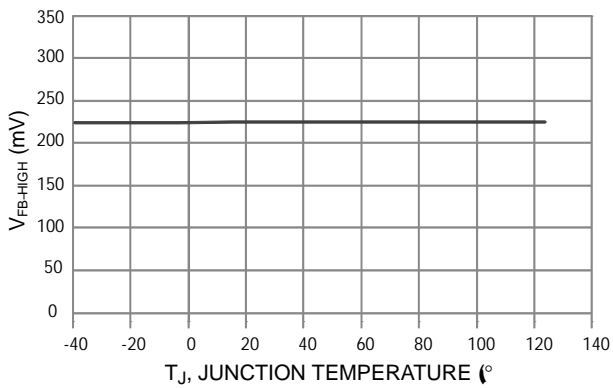


Figure 7. V_{FB-HIGH} vs. Temperature

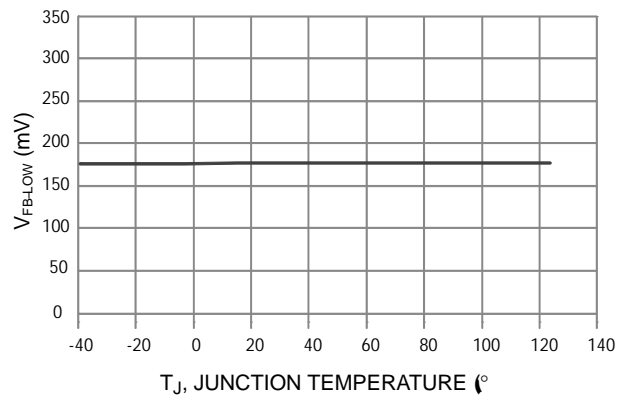


Figure 8. V_{FB-LOW} vs. Temperature

APPLICATION INFORMATION

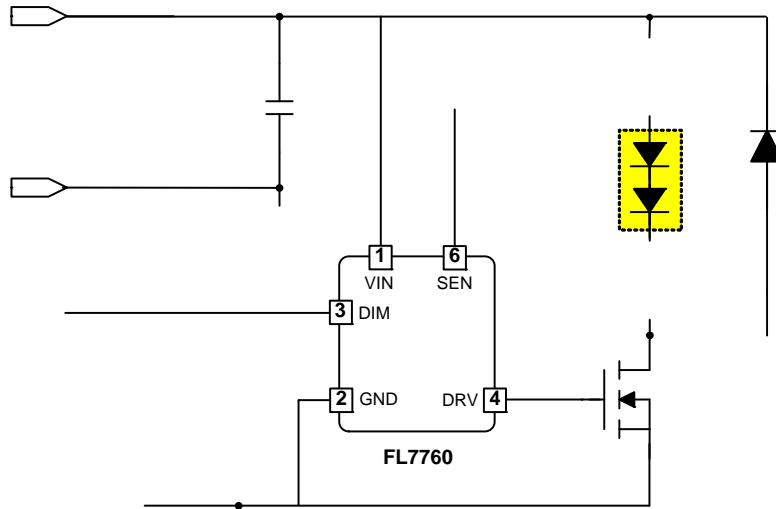
General

FL7760



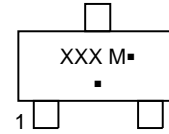
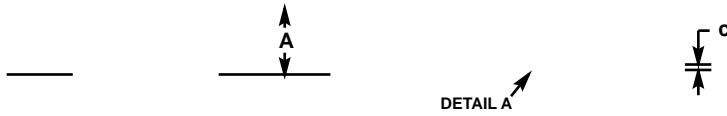
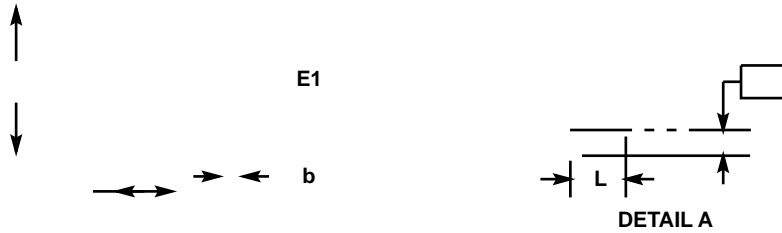
FL7760

Single layer PCB layout guidance



SOT-23, 6 Lead
CASE 527AJ

SCALE 2:1



- XXX = Specific Device Code
- M = Date Code
- = Pb-Free Package

*This information is generic. Please refer to device data sheet for actual part marking. Pb-Free indicator, "G" or microdot "

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