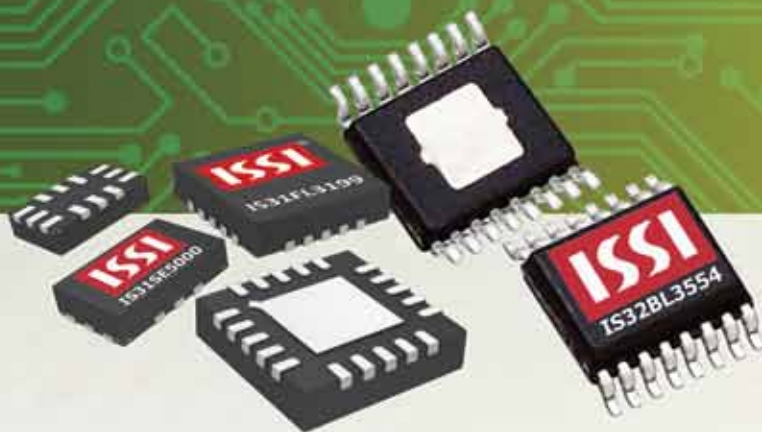




# ANALOG

## FxLED, BACKLIGHT, SENSOR SELECTOR GUIDE 2015



FxLED | BACKLIGHT | SENSOR

### FxLED Selector

- Audio Modulate
- Shift Register
- Gamma Correction
- Auto Breath
- Charge Pump
- Eval Board

FxLED Driver

<p><b>IS31FL3199</b> 9 Outputs 3 - RGB, 16M color QFN-20</p> <p><b>IS31FL3196</b> 6 Outputs 2 - RGB, 16M color QFN-20</p> <p><b>IS31FL3193/3193C</b> 3 Outputs 1-RGB DFN-10(FL3193) WCSP-8(FL3193C)</p> <p><b>IS31FL3191</b> 1 Output Single LED UTQFN-9</p>	<p><b>IS31FL3726</b> 16-Channel LED, 60mA QFN-24, TSSOP-24</p> <p><b>IS31FL3236</b> 36-Channel LED QFN-44, TQFP-48</p> <p><b>IS31FL3235</b> 28-Channel LED QFN-36</p> <p><b>IS31FL3218</b> 18-Channel LED QFN-24, SOP-24</p> <p><b>IS31FL3216</b> 16-Channel LED QFN-28</p>	<p><b>IS31FL3732</b> 144 LED Driver Cascade for synchronization QFN-40</p> <p><b>IS31FL3731/3731C</b> 144 LED Driver QFN-28, SSOP-28</p> <p><b>IS31FL3730</b> 128 LED Driver QFN-24</p> <p><b>IS31FL3728</b> 64 LED Driver (8x8) Audio Freq Equalizer QFN-24</p>
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RGB

Multi-Channel

Matrix

### Backlight Selector

- Boost Converter
- Charge Pump
- DC Level Dim
- Eval Board
- Linear
- Pulse Count Dim
- PWM Dim

Backlight LED Driver

<p><b>IS31BL3233A (boost)</b> 750mAx2 Flash Time out function DFN-14</p> <p><b>IS31BL3231/3232</b> 750mA/1.2A Flash Time out function (BL3232) DFN-10</p>	<p><b>IS31BL3212</b> 23 mA Output DFN-8</p> <p><b>IS31BL3228A/B</b> 20 mA Output UTQFN-12</p>	<p><b>IS31BL3230</b> 40 mA or 320mA ParallelQFN-16</p> <p><b>IS31BL3229</b> 20 mA Output QFN-20</p>	<p><b>IS31BL3508A/B</b> 1.5 Amp Integrated FET 10 LEDs TSOT-23-6, SOT23-6</p> <p><b>IS31BL3506A</b> 2.2 Amp Integrated FET 9 or 8 LEDs DFN-8, TSOT-23-6</p>	<p><b>IS32BL3552</b> 2 channel @ 360mA 1.5% accuracy</p> <p><b>IS32BL3554</b> 4 channel @ 180mA 1.5% accuracy</p> <p><b>IS32BL3556</b> 4 channel @ 100mA Integrated Power MOS</p>
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1~2

4

8

10

Automotive

Number of LEDs

### Sensor Selector

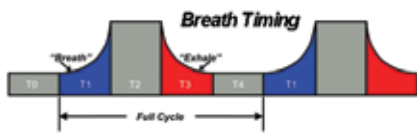
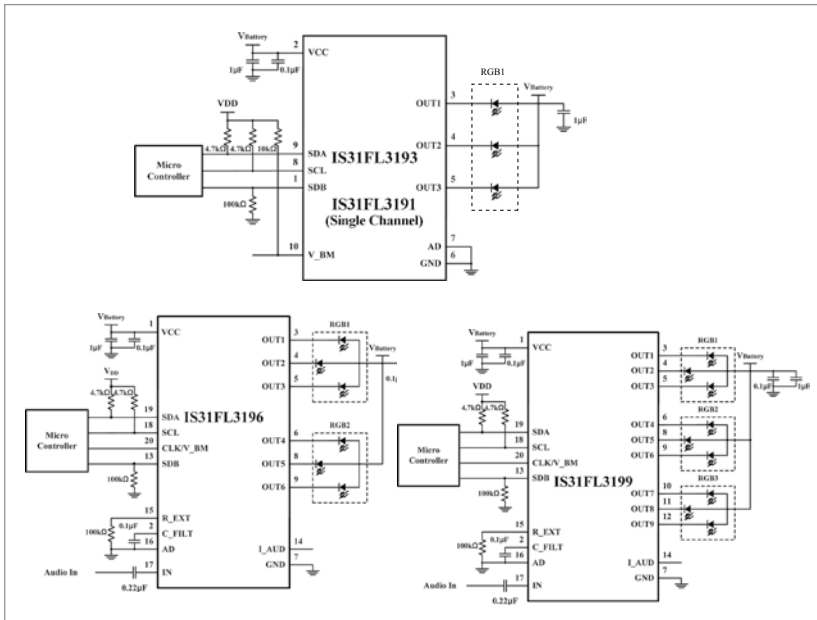
- Eval Board

Sensor

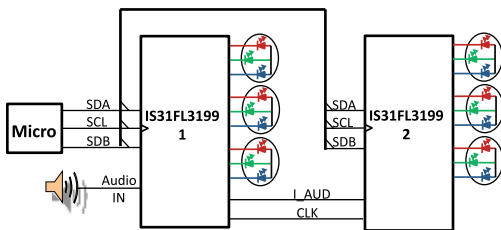
<p><b>IS31SE5000</b> Gesture Sensor/Proximity 2 receiver, 1 transmit UTQFN-12</p> <p><b>IS31SE5001</b> Proximity Sensor 1 receiver, 1 transmit QFN-8</p>	<p><b>IS31SE5100</b> 8 Touch input/LED output QFN-24, SSOP-24</p> <p><b>IS31SE5104</b> 4 Touch input/LED output SOP-16, QFN-16</p>
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IR

Capacitance



Example of "Breath Timing"  
Period = T1 : T4



Multi Device Connect

Part No.	No. RGB Group	LED Current Levels	Cascade	Audio Input	Package	Package Outline
IS31FL3191	0	5	No	No	UTQFN-9	
IS31FL3193	1	5	No	No	DFN-10	
IS31FL3193C	1	5	No	No	WLCSP-8	
IS31FL3196	2	8	Yes	Yes	QFN-20	
IS31FL3199	3	8	Yes	Yes	QFN-20	

**IS31FL3193, IS31FL3196, IS31FL3199**

- 1, 2 and 3 RGB Support

Features

- Supply voltage 2.7V to 5.5V
- Audio modulation with AGC
- I2C interface, automatic address increment function
- RGB groups, up to 16 million color LED breathing system-free pre-established pattern
- Independently controlled automatic and semiautomatic breathing system-free pre-established pattern
- Independently controlled outputs of 256 PWM steps
- Programmable output current levels
- Cascade for the synchronization of chips
- Over-temperature protection
- 31FL3193C - In a WLCSP-8 [1.5x1.0] package

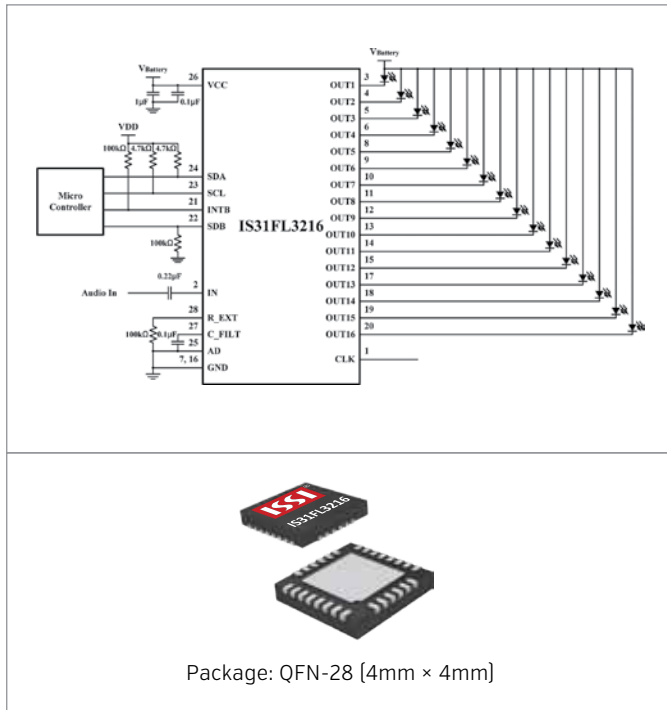
Applications

- Mobile phones and other hand-held devices for LED display
- LED in White Good Appliances

Description

Multi-channel light effect LED drivers with two-dimensional auto breathing mode and an audio modulated display mode. They have a One Shot Programming mode and PWM Control mode for RGB lighting effects. The maximum output current can be adjusted in set levels [5mA~40mA].

The devices include an audio modulated display mode, wherein the brightness of LED can be modulated by an audio analog signal. There is a cascade pin for the synchronization of two chips.



**IS31FL3216 - 16 Channel**

Features

- 2.7V to 5.5V supply
- I2C interface, automatic address increment function
- Individually modulate each LED brightness with 256 steps PWM
- Audio Frame Mode with 8 frames of memory for animations
- 8 of 16 outputs not used as LED drivers can be used as GPIO ports
- Over-temperature protection



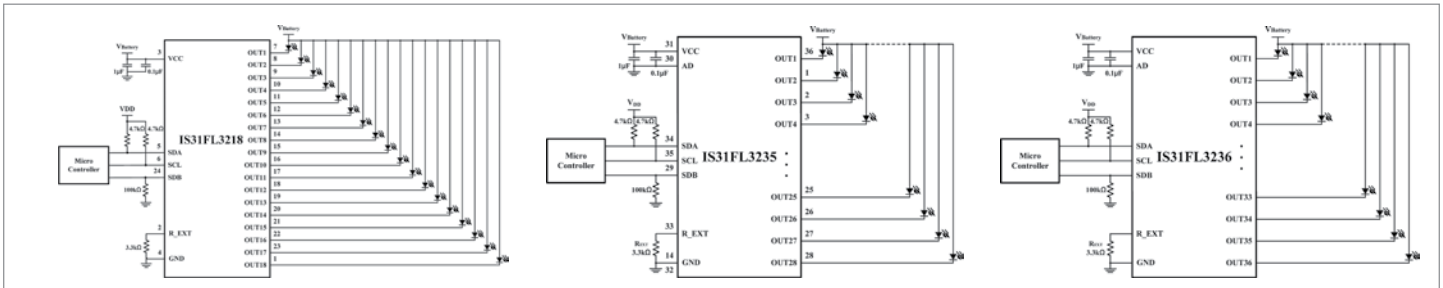
Applications

- Mobile phones and other hand-held devices for LED display
- LED in White Good Appliances

Description

The IS31FL3216 is a fun light LED controller with an audio modulation mode. It can store data of 8 frames with internal RAM to play small animations automatically. It can sample an input analog signal to modulate the intensity of LEDs, or control 8 frames playing by internal ADC block. The LED current of each channel can be set in 256 steps by adjusting the PWM duty cycle through an I2C interface. 8 channels can be used as GPIO ports.





**IS31FL3218, IS31FL3235, IS31FL3236**  
-18, 28 and 36 LED channel

Features

- 2.7V to 5.5V supply
- I2C interface, automatic address increment function
- Internal reset register
- Modulate LED brightness with 256 steps PWM
- Each channel can be controlled independently
- Each channel can be scaled independently by 1, 1/2, 1/3 and 1/4

Applications

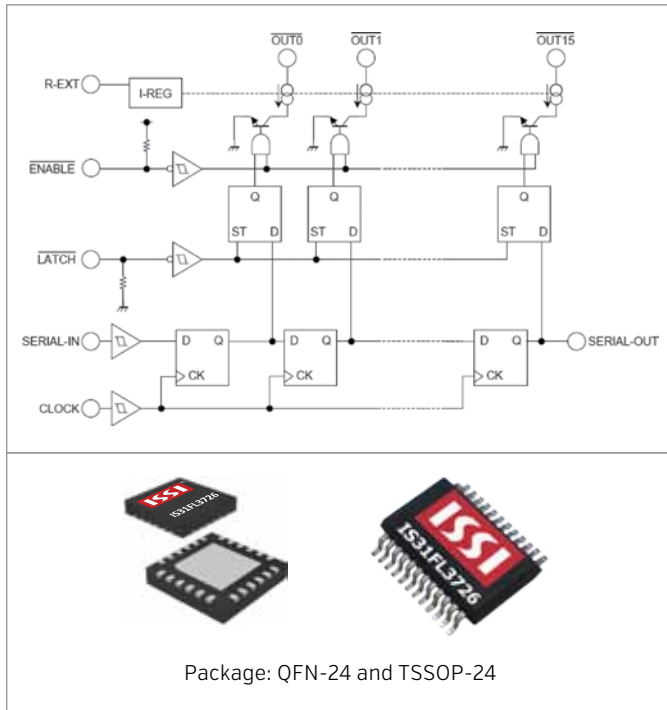
- Mobile phones and other hand-held devices for LED display
- LED in White Good Appliances

Description

IS31FL3218, IS31FL3235, IS31FL3236 are constant current multi-channel LED controllers with independent PWM control. The output current of each channel can be set at up to 38mA [Max.] by an external resistor and independently scaled by a factor of 1, 1/2, 1/3 and 1/4. The average LED current of each channel can be changed in 256 steps by changing the PWM duty cycle through an I2C interface.

They can be turned off by pulling the SDB pin low or by using the software shutdown feature to reduce power consumption.

Part No.	No. of Channels	Current Scaling	Package	Package Outline
IS31FL3218	18	No	QFN-24 SOP-24	
IS31FL3235	28	Yes	QFN-36	
IS31FL3236	36	Yes	QFN-44 TQFP-48	



**IS31FL3726** - 16-Bit Serial Shift LED Driver w/ PWM control

Features

- Output current capability and number of outputs: 60mA × 16 outputs
- Constant current range: 5mA to 60mA
- Application output voltage: ≥0.4V
- For anode-common LEDs
- Power supply voltage range,  $V_{DD} = 3.3V$  to 5.5V
- Serial and parallel data transfer rate: 20MHz (Max. cascade connection)

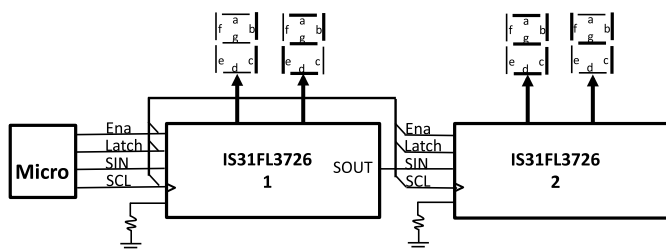
Applications

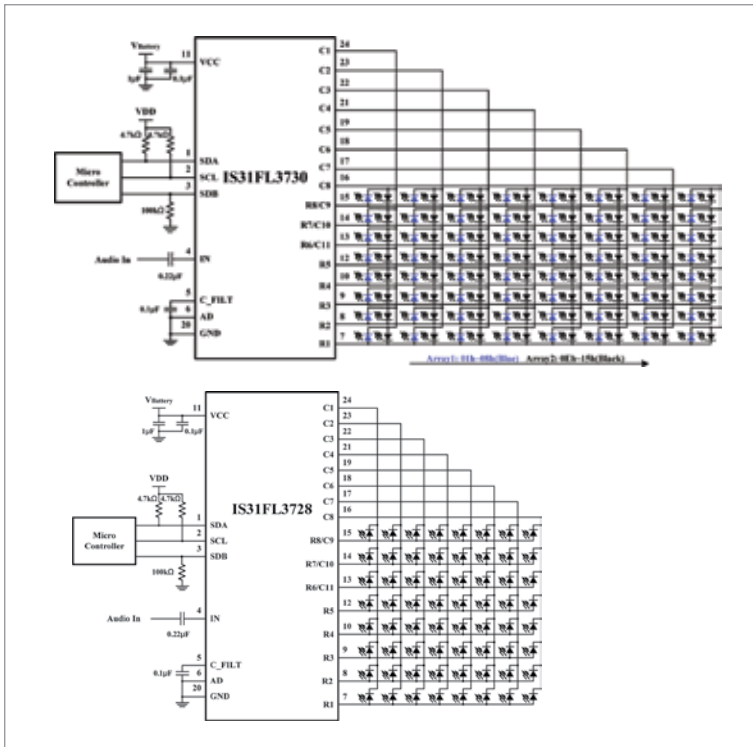
- Cellular phones
- MP3/MP4/CD/mini disk players
- Toys

Description

The IS31FL3726 is comprised of constant current drivers designed for color LEDs. The output current value can be adjusted from 5mA to 60mA through the external resistor. As a result, all outputs will have virtually the same current levels.

This driver incorporates 16-bit constant current outputs, a 16-bit shift register, a 16-bit latch and a 16-bit AND-gate circuit.





**IS31FL3730, IS31FL3728 -**  
Audio Modulated Matrix LED Drivers

Features

- Supply voltage range: 2.7V to 5.5V
- 400kHz I2C-compatible interface
- One address pin with 4 logic levels to allow four I2C slave addresses
- Individual blink control
- Auto intensity breathing during the switching of different frames
- Audio modulated LED display frame intensity
- 8 frames memory for animations
- Picture mode and animation mode





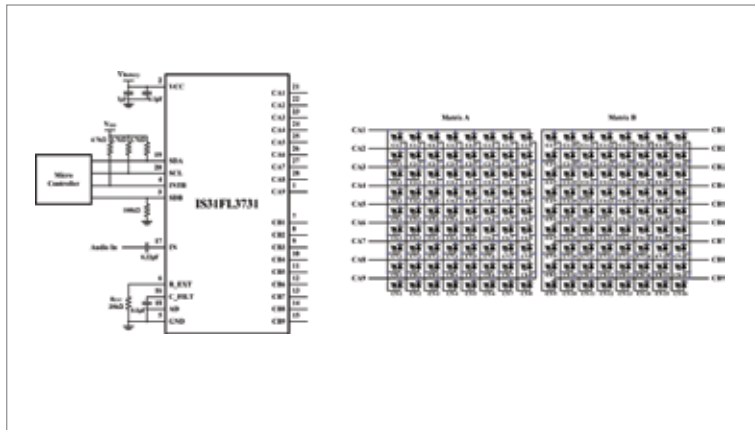
Applications

- Mobile phones and other hand-held devices for LED display
- LED in White Good Appliances
- Audio frequency equalizer display

Description

The devices are compact LED driver for addressing multiple LEDs in a matrix arrangement which are programmable via an I2C interface. Additionally each of the LEDs can be dimmed individually with 8-bit allowing 256 steps of linear dimming. The intensity of any matrix picture can be modulated by an audio signal. Additional features help minimize MCU/DSP software overhead.

Part No.	Matrix Size	Current Scaling	Package	Package Outline
IS31FL3728	64 1 Block [64]	No	QFN-24	
IS31FL3730	128 2 Blocks [64]	Yes	QFN-24	



**IS31FL3731/C - Support 144 LEDs**

**Features**

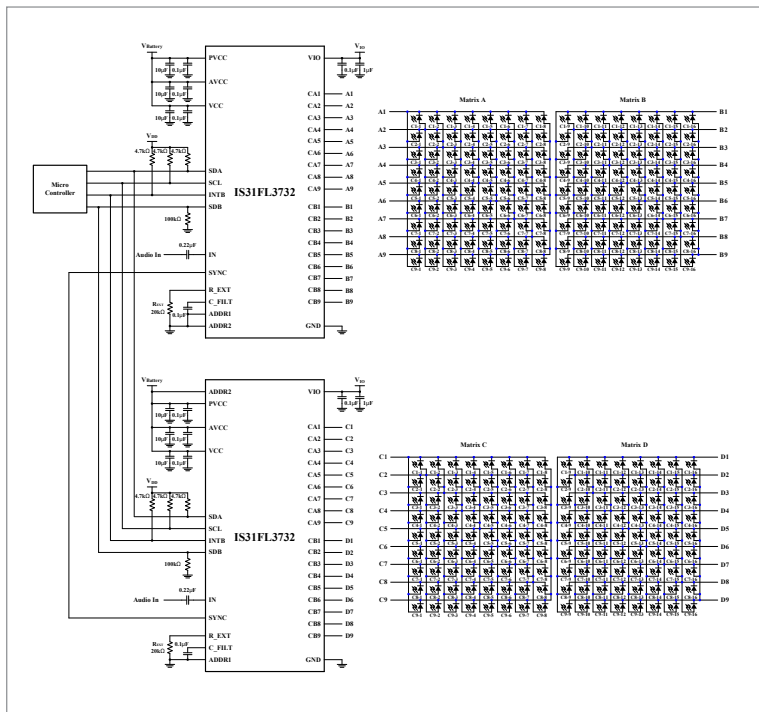
- Supply voltage range: 2.7V to 5.5V
- 400kHz I2C-compatible interface
- Robust I2C bus signal levels (IS31LT3731C)
- 144 LEDs in dot matrix
- Individual blink control
- Individual PWM control 256 steps
- Individual on/off control
- Global current control 256 steps
- Cascade for synchronization of chips
- 8 frames memory for animations
- Picture mode and animation mode
- Auto intensity breathing during the switching of different frames
- LED frames displayed can be modulated with audio signal intensity
- LED light intensity can be modulated with audio signal intensity
- QFN-40 [5mm×5mm] package

**Applications**

- Mobile phones and other hand-held devices for LED display
- LED in home appliances
- Keyboard
- Bluetooth speaker system
- LED display

Part No.	Matrix Size	Current Scaling	Package	Package Outline
IS31FL3731/C	144 2 Blocks [72]	Yes	QFN-28 SSOP-28	






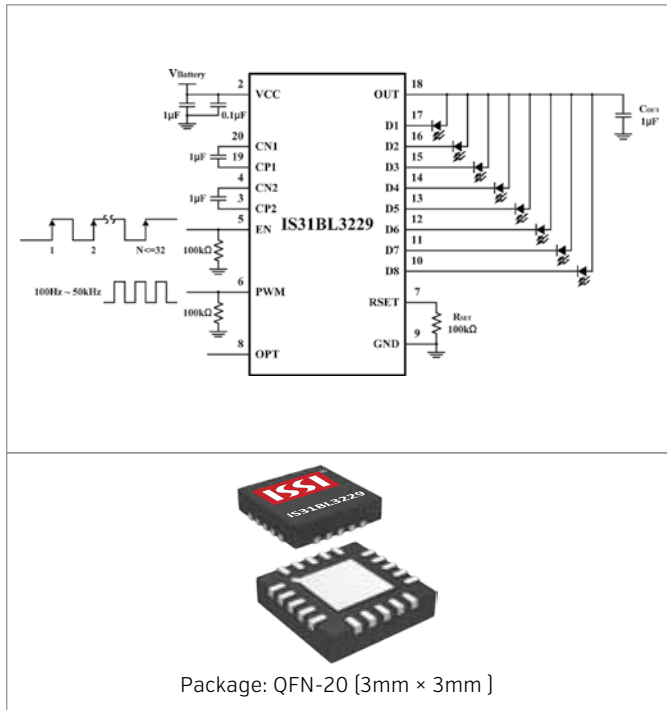
**IS31FL3732 - 1MHz I2C Bus, Cascadable Features**

- Supply voltage range: 2.7V to 5.5V
- 1MHz I2C-compatible interface
- Cascade for Synchronization
- 144 LEDs in dot matrix
- Individual blink control
- Individual PWM control 256 steps
- Individual on/off control
- Global current control 256 steps
- Cascade for synchronization of chips
- 8 frames memory for animations
- Picture mode and animation mode
- Auto intensity breathing during the switching of different frames
- LED frames displayed can be modulated with audio signal intensity
- LED light intensity can be modulated with audio signal intensity
- QFN-40 [5mm×5mm] package

**Applications**

- LED in home appliances
- Keyboard
- Bluetooth speaker system
- LED display

Part No.	Matrix Size	Current Scaling	Package	Package Outline
IS31FL3732	144 2 Blocks [72]	Yes	QFN-40	



### IS31BL3229 - 8 - LED Backlight Driver

#### Features

- Supply voltage: 2.7V ~ 5.5V
- 1X, 1.5X operating mode
- Fade in and fade out mode
- Output current can be 25mA
- 32 current level and PWM intensity control
- Low input current ripple, low EMI
- 90% high efficiency
- No inductors, low noise operation
- Over voltage protection on output
- Built-in thermal protection
- Automatic soft start
- Built-in thermal protection

#### Applications

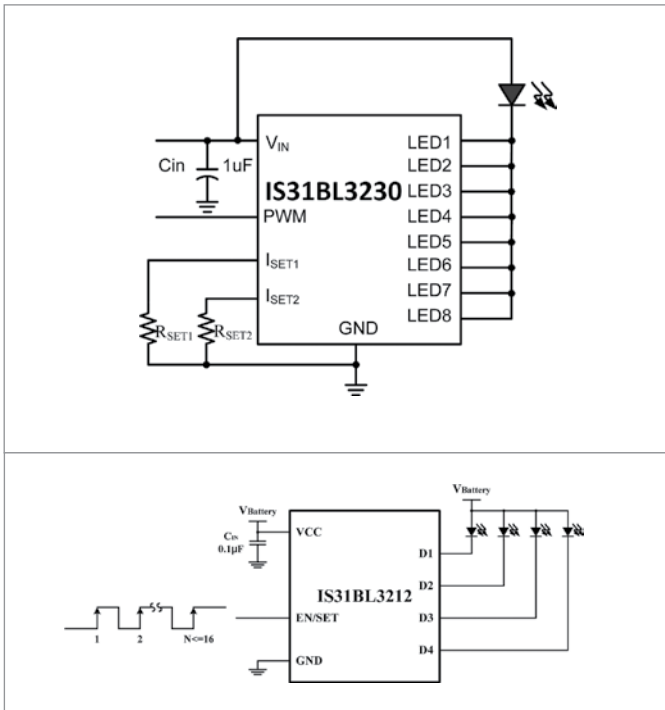
- Cell phone, smart phone, PDA
- Mp3, Mp4, Personal Navigation Devices
- White LED backlighting

#### Description

The IS31BL3229 with a smart charge-pump circuit is a parallel white-LED driver with eight matched 20mA current outputs. It can supply a total output current of 160mA over an input voltage range of 2.7V to 5.5V.

The IS31BL3229 typically draws less than 1mA when placed in shutdown, and 0.7mA when operating in the no-load and 1X mode condition. If any of the outputs are not used, leave the pin(s) unconnected. Brightness can be controlled by simple-series-control techniques and external PWM signal.





## IS31BL3230, IS31BL3212 - Multichannel Linear Current Sink

### Features

- Ultra low headroom voltage
- Cost effective LED driver
- Current adjustable via external resistors
- Best Noise and Efficiency Performance
- Highly integrated design, minimal component
- 1.0mA (typ.) Shutdown current (BL3212)



### Applications

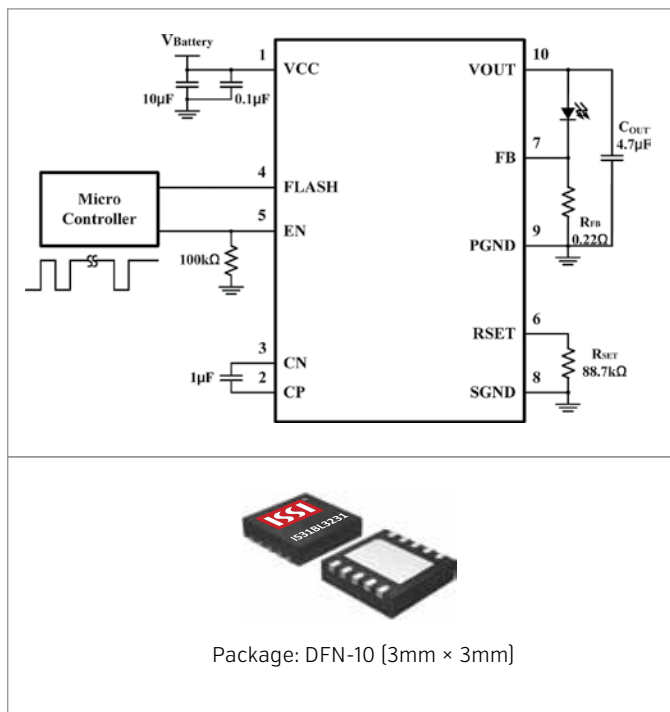
- Flash LED driver
- White LED display and keypad backlight
- Cell Li-ion battery-operated equipment including PDAs, hand-held PCs, cellular phone



### Description

The IS31BL3230 provides eight regulated current sources of up to 40mA of load current each, while the IS31BL3212 provides four regulated current sources of up to 23mA of load current each. All the outputs can be connected in parallel to combine the currents for up to 320mA [BL3230] or 92mA [BL3212] flowing through one LED. They require no charge pump, have no EMI noise and have significantly improved efficiency.

Part No.	Channels	Current Source (mA)	Package	Package Outline
IS31BL3230	8	40	QFN-16	
IS31BL3212	4	23	DFN-8	
	3	23	SOT23-6	



## IS31BL3231 & IS31BL3232

- Flash LED Driver

### Features

- Operates from 2.7V to 5.5V
- Up to 90% efficiency in Torch Mode
- Output current: IS31BL3231 - up to 750mA, IS31BL3232 - up to 1.2A
- 1 sec flash time out to protect LED [IS31BL3232]
- Adjustable output current in Flash Mode
- Minimum external components, no external inductor required
- Automatic boost mode
- Less than 1mA shutdown current
- Low ripple and EMI
- Over voltage protection on output
- Short and over temperature protections

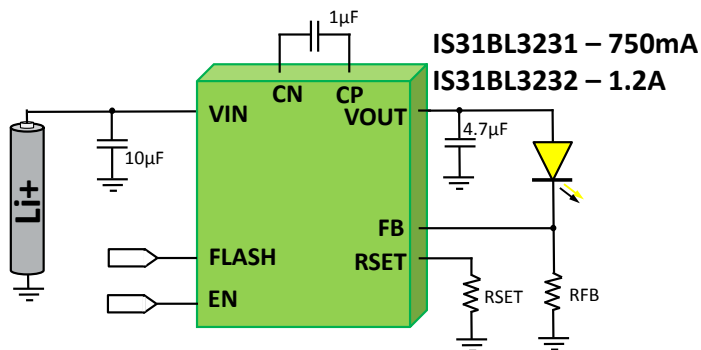
### Applications

- White LED backlighting
- Cellular phones
- Generic lighting/flash/strobe applications

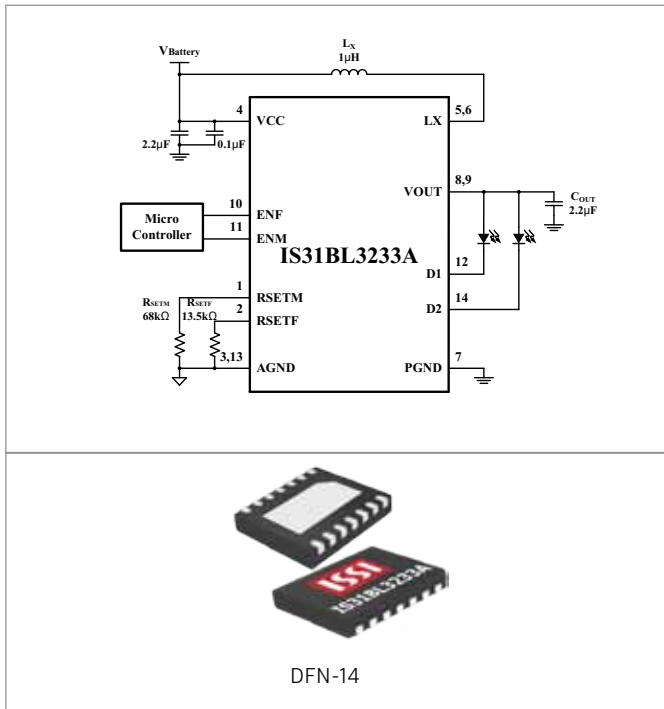
### Description

These devices are integral current-regulated charge pump and ideal for powering high brightness LEDs for camera flash and torch applications. The charge pump can be set to regulate two current levels for FLASH and TORCH modes. They automatically switch between linear and boost modes ensuring that LED current does not depend on the LED forward voltage.

They provide a low cost, space saving solution for driving LED. It also integrates thermal and short circuit protection function.



Part No.	Flash mode (mA)	Package
IS31BL3231	750	DFN-10
IS31BL3232	1,200	DFN-10



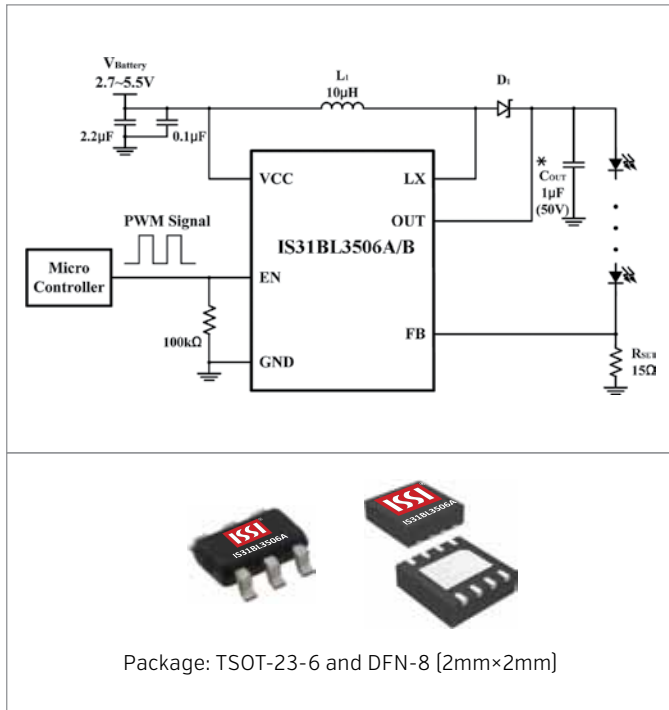
### IS31BL3233A - 1.5A Dual Channel

#### Features

- Input voltage range: 2.7V~5.5V
- Dual flash LED outputs
- Drive up to total 1.5A or 0.75A per channel
- 1s time out in Flash Mode to protect LED
- High efficiency LED driver (up to 93%)
- 2MHz step-up converter
- Very small inductor: 1.0mH
- Movie/torch-mode dimming via PWM control
- Integrated thermal regulation control
- LED open/short protection
- Over-voltage protection
- Cycle-by-cycle inductor current limit
- 0.1mA shutdown current
- Pb-free package: DFN-14 (2mm×3mm)
- -40C° ~ +85C° temperature range

#### Applications

- Mobile phones
- Smart phones and PDAs
- Digital still cameras



## IS31BL3506A/B - 1.0MHz Boost Converter

### Features

- 35V Internal MOSFET Switch
- Supply voltage: 2.7V~5.5V
- Built-in soft start
- Drive series strings of
  - 9 LEDs in series (DFN-8)
  - 8 LEDs in series (TSOT-23-6)
- PWM or DC voltage dimming
- Frequency of PWM is 500Hz ~ 500kHz
- 1.0MHz high speed switching frequency
- Feedback voltage:
  - 300mV (IS31BL3506A)
  - 200mV (IS31BL3506B)
- Over voltage protection
  - 40°C ~ +85°C working temperature range

### Applications

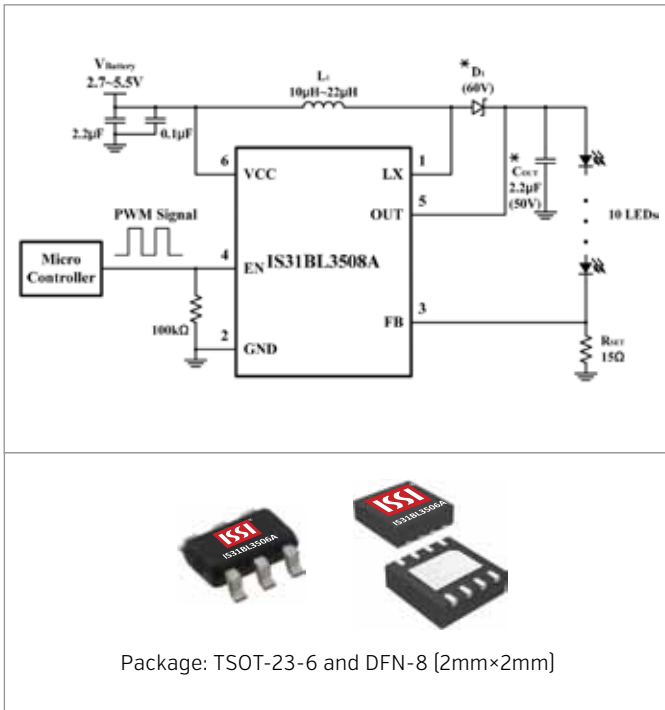
- Small LCD Backlights
- Notebook PC
- GPS

### Description

IS31BL3506 is a boost converter featuring an integrated MOSFET switch designed for driving series strings of LEDs. The input operating voltage range is 2.7V~5.5V. The regulated LED load current is set using an external, low value sensing resistor. The device adjusts the PWM duty cycle of the switch to maintain the voltage at the FB pin. The IS31BL3506 operates at a constant switching frequency of 1.0MHz to allow for small component size. IS31BL3506 features an over voltage shutdown pin which prevents the output voltage from exceeding 35V [typ.] in the case of an open circuit condition.



Part No.	LEDs	V <sub>FB</sub>	Package
IS31BL3506A	8	300mV	TSOT23-6
	9		DFN-8
IS31BL3506B	8	200mV	TSOT23-6 SOT23-6



## IS31BL3508A/B - 1.0MHz Boost Converter

### Features

- 38V Internal MOSFET Switch
- Supply voltage: 2.7V~5.5V
- Built-in soft start
- Drive series strings of 10 LEDs or 3x8 LEDs
- PWM or DC voltage dimming
- Frequency of PWM is 500Hz ~ 500kHz
- 1.0MHz high speed switching frequency
- Feedback voltage:  
300mV [IS31BL3508A]  
200mV [IS31BL3508B]
- Over voltage protection
- -40°C ~ +85°C working temperature range



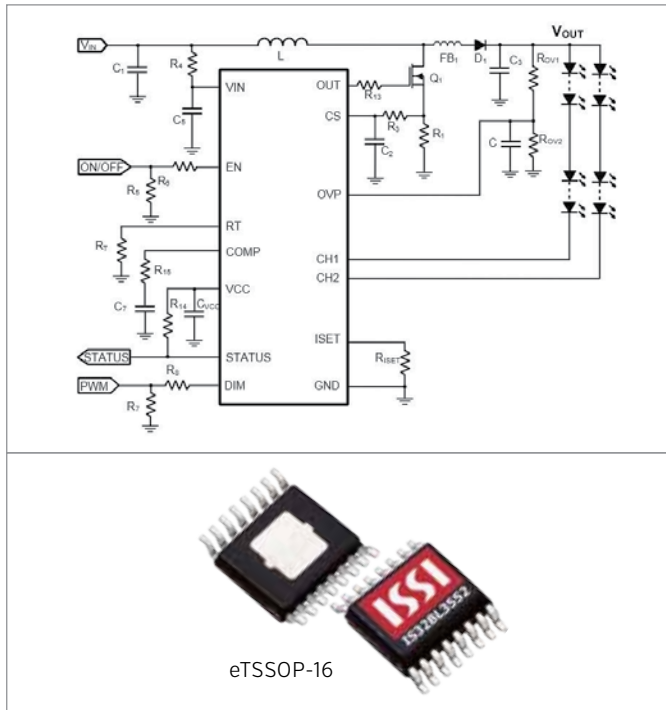
### Applications

- Small LCD Backlights
- Notebook PC
- GPS

### Description

IS31BL3508A is a 1.0MHz boost converter featuring an integrated MOSFET for driving series strings of upto 10 LEDs. With an operating voltage range of 2.7V~5.5V, an external sense resistor is all that is necessary to regulate the LED load current. The device adjusts the switch PWM duty cycle to maintain the FB pin voltage. It features an over voltage shutdown pin which prevents the output voltage from exceeding 38V [typ.] in case of an open circuit condition.

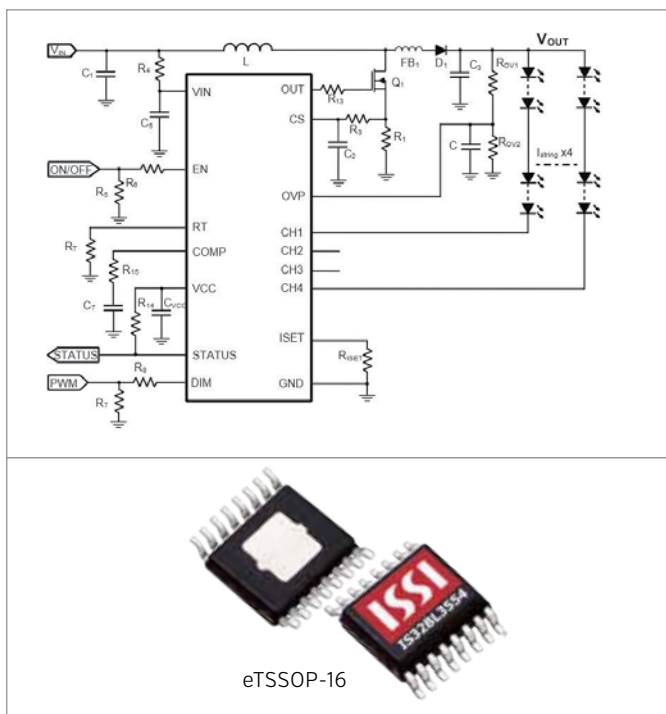
Part No.	LEDs	VFB	Package
IS31BL3508A	10	300mV	TSOT23-6, SOT23-6
IS31BL3508B	10	200mV	TSOT23-6 SOT23-6



### IS32BL3552 - Two Channel Boost

#### Features

- 2 current sinks adjustable 40 to 360mA
  - String-to-string current matching of 1.5%
  - High contrast ratio
  - External PWM dimming
- Input voltage range: 4.5V to 33V
- Operating frequency: 100kHz to 1MHz
- Protections for: OCP, OTP, UVLO, LED open/short, programmable OVP
- Automotive AEC-Q100 Qualified

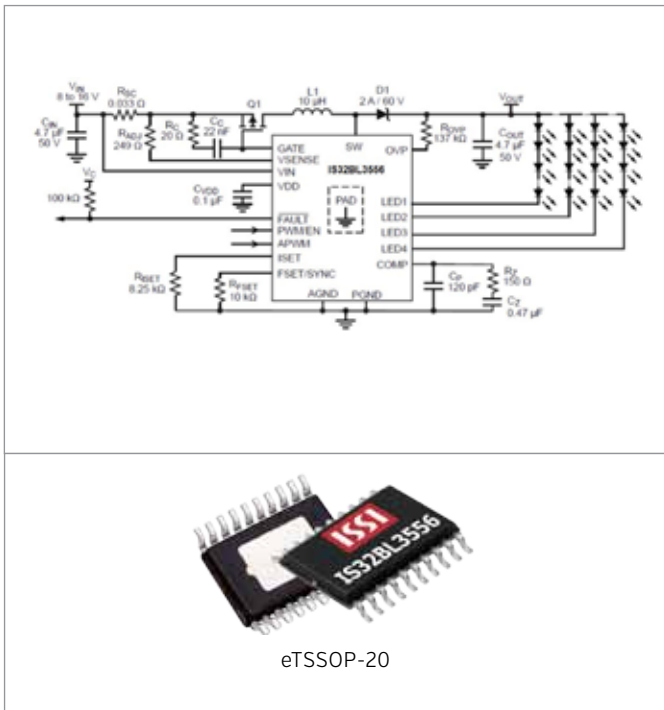


### IS32BL3554 - Four Channel Boost

#### Features

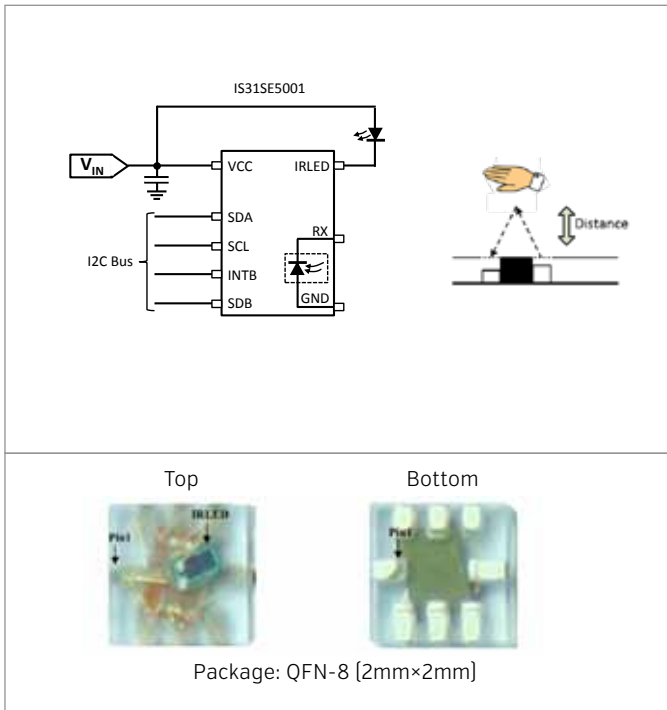
- 4 current sinks adjustable 20 to 180mA
  - String-to-string current matching of 1.5%
  - High contrast ratio
  - External PWM dimming
- Input voltage range: 4.5V to 33V
- Operating frequency: 100kHz to 1MHz
- Protections for: OCP, OTP, UVLO, LED open/short, programmable OVP
- Automotive AEC-Q100 Qualified



**IS32BL3556** - Four Channel Boost

## Features

- 4 current sinks adjustable up to 100mA
  - String-to-string current matching of 0.8%
  - High contrast ratio
  - External PWM dimming
- Input voltage range: 4.75V to 40V
- Integrated Power MOSFET
- Operating frequency upto 2.3MHz
  - Synchronize capable
- Protections for: OCP, OTP, UVLO, LED open/short, programmable OVP
- Provide driver for external PMOS input disconnect switch
- Automotive AEC-Q100 Qualified [Pending]



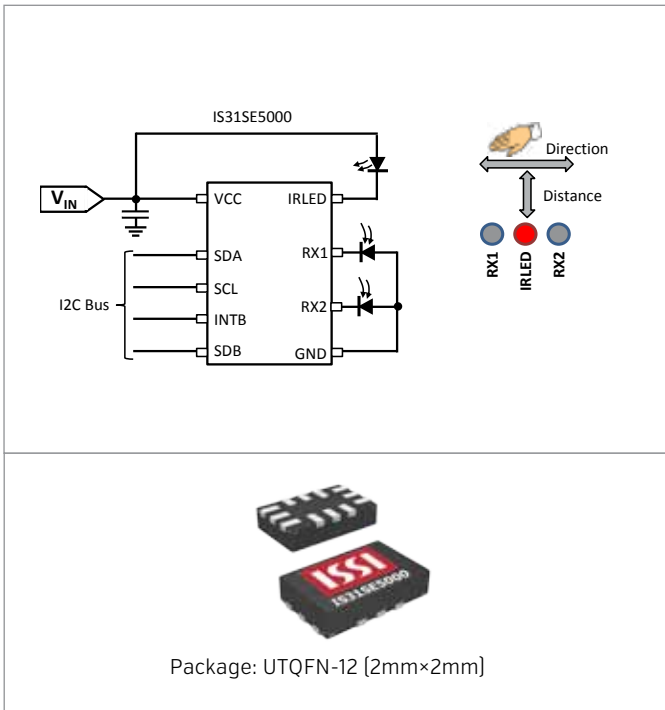
### IS31SE5001 - Infrared Proximity Detection

#### Features

- Supply voltage from 2.7V~5.5V @ 0.6mA and 1mA shutdown current
- Integrated signal processing and digital output
- Detection range can be adjusted thru software
- 400kHz I2C compatible interface
- Interrupt signal is automatically cleared

#### Description

The IS31SE5001 is a low-power, reflectance-based infrared light sensor with advanced signal processing and an I2C interface. It uses one infrared LED transmitter and an integrated receiver to pick up the reflectance signal for touchless proximity detection. When a proximity motion is detected, the IS31SE5001 sets a flag bit in the status register and then generates an interrupt signal to inform the master to read the flag bit through the I2C interface.



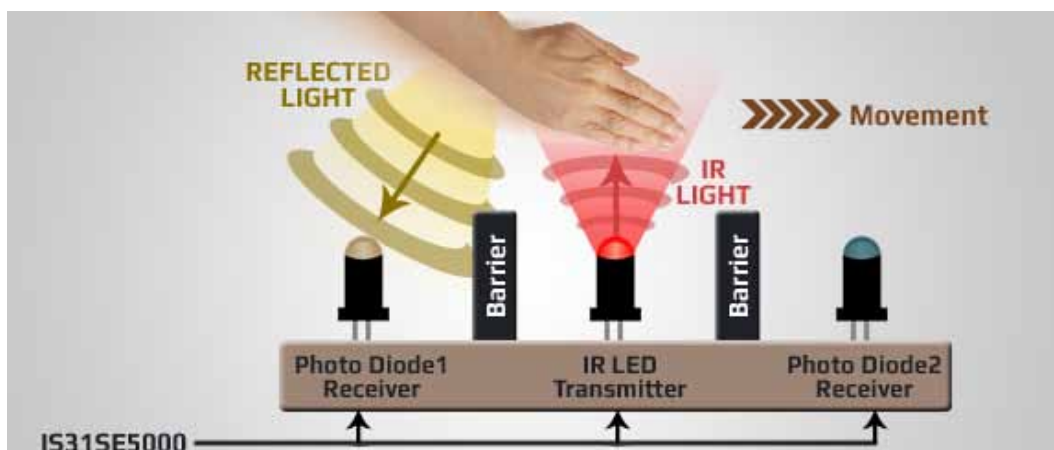
### IS31SE5000 - Infrared Gesture Detection

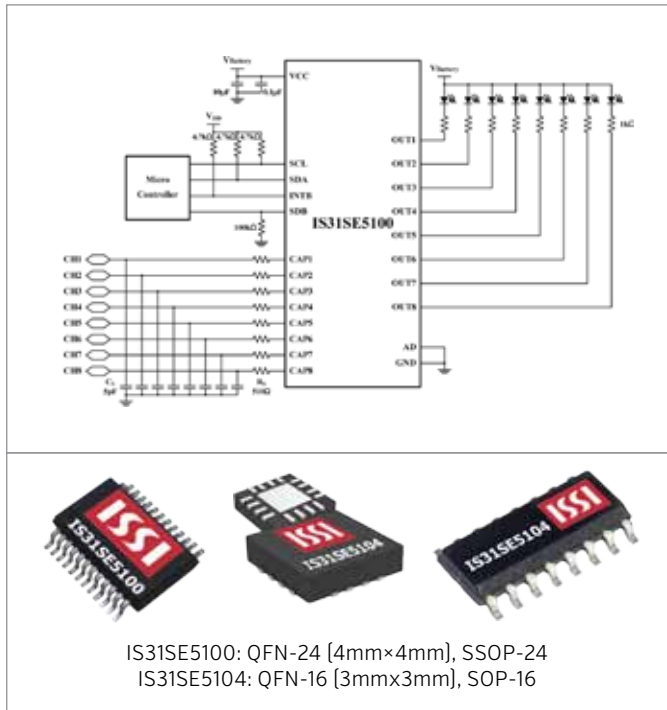
#### Features

- Supply voltage from 2.7V~5.5V @ 0.6mA and 1mA shutdown current
- Dual receiver input and one transmitter
- Integrated signal processing and digital output
- Detection range can be adjusted thru software
- 400kHz I2C compatible interface
- Interrupt signal is automatically cleared

#### Description

The IS31SE5000 is a low-power, reflectance-based infrared light sensor with advanced signal processing and an I2C interface. The IS31SE5000 uses one infrared LED and 2-channel receivers which pick up the reflectance signal from the photodiodes. When horizontal motion or proximity motion is detected, the flag bits in the status register will be triggered and an interrupt signal is generated to inform the master to read the flag bit through I2C interface.

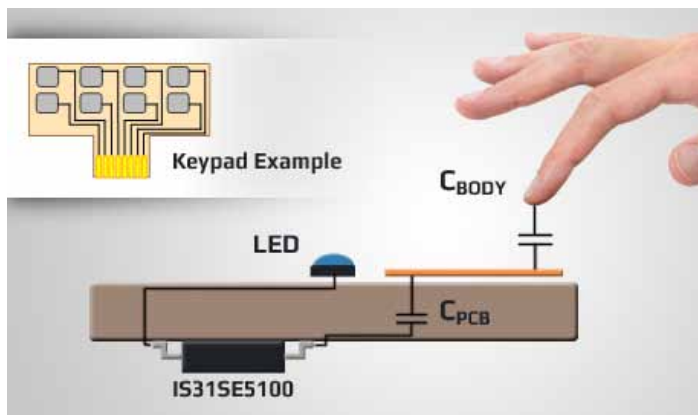




## IS31SE5100 and IS31SE5104 - Capacitive Touch Sensor

### Features

- Supply voltage from 2.7V~5.5V @ 0.4mA and 2mA shutdown current
- Extremely low power optimized for portable applications
- Complete capacitive touch sensor controller with auto offset compensation
- Integrated signal processing and digital output
- Sensitivity adjustable by external capacitor or internal register
- Interrupt driven fast-mode I<sup>2</sup>C interface [400KHz]
- IS31SE5100 - 8 cap sensors with 8 LED outputs
- IS31SE5104 - 4 cap sensors with 4 LED outputs



### Description

The IS31SE5100 and IS31SE5104 are ultra-low power, fully integrated 8 and 4-channel capacitive touch controllers. They project sense fields through any dielectric such as glass or plastic. On-chip calibration logic continuously monitors the environment and automatically adjusts on-and-off threshold levels to prevent false sensor activation.

They support a fast 400kHz I<sup>2</sup>C serial bus data transfer with a programmable slave address. An interrupt is generated every time a sense electrode is touched or released

## Product Selector Guide

### FxLED Driver

Part No.	No. of Channel	No. RGB Group	Gamma Correction	Control Interface	Audio Sync.	Auto Dimming	VDD [V]	Package [Size mm]	Key Feature	Status
IS31FL3191	1	-	Built-in	I <sup>2</sup> C	No	Yes	2.7-5.5	UTQFN-9 [1.5x1.5]	Single LED driver with auto breath mode and 5 levels programmable current	Prod
IS31FL3193	3	1	Built-in	I <sup>2</sup> C	No	Yes	2.7-5.5	DFN-10 [3.0x3.0]	16Million color RGB auto and semi-auto breathing with pre-set pattern	Prod
IS31FL3193C	3	1	Built-in	I <sup>2</sup> C	No	Yes	2.7-5.5	WLCSP-8 [1.5x1.0]	16Million color RGB auto and semi-auto breathing with pre-set pattern	S=Q1/15
IS31FL3196	6	2	Built-in	I <sup>2</sup> C	Yes	Yes	2.7-5.5	QFN-20 [3.0x3.0]	16Million color RGB auto and semi-auto breathing with pre-set pattern	Prod
IS31FL3199	9	3	Built-in	I <sup>2</sup> C	Yes	Yes	2.7-5.5	QFN-20 [3.0x3.0]	16Million color RGB auto and semi-auto breathing with AGC Audio Sync mode	Prod
IS31FL3216	16	-	External	I <sup>2</sup> C	Yes	No	2.7-5.5	QFN-28 [4.0x4.0]	Audio modulated, Internal SRAM supports animation frames, 16 independent channels	Prod
IS31FL3218	18	-	External	I <sup>2</sup> C	No	No	2.7-5.5	QFN-24 [4.0x4.0] SOP-24 [10x15]	Modulate 18 Independent LED channels with 256 steps PWM	Prod
IS31FL3235	28	-	External	I <sup>2</sup> C	No	No	2.7-5.5	QFN-36 [4.0x4.0]	Modulate 28 Independent LED channels with 256 steps PWM	Prod
IS31FL3236	36	-	External	I <sup>2</sup> C	No	No	2.7-5.5	QFN-44 [5.0x5.0] TQFP-48	Modulate 36 Independent LED channels with 256 steps PWM	Prod
IS31FL3726	16	-	-	Serial	No	No	3.3-5.5	QFN-24 [4.0x4.0] TSSOP-24	16-channels On/Off LED driver with serial-in and serial-out for cascade application	Prod
IS31FL3728	16 Matrix 64	-	External	I <sup>2</sup> C	Yes	No	2.7-5.5	QFN-24 [4.0x4.0]	16-row/column outputs, Audio Modulated. 8x8,7x9,6x10,5x11 matrix arrays.	Prod
IS31FL3730	16 Matrix 128	-	External	I <sup>2</sup> C	Yes	No	2.7-5.5	QFN-24 [4.0x4.0]	16-row/column outputs, Audio Modulated. 8x8,7x9,6x10,5x11 bi-color matrix arrays.	Prod
IS31FL3731	18 Matrix 144	-	External	I <sup>2</sup> C	Yes	Yes	2.7-5.5	QFN-28 [4.0x4.0] SSOP-28	18 row/column outputs. Audio Modulated, Two 8x9 arrays with SRAM. 8-image swapping 8x9x2 [144 dot] LED array display	Prod
IS31FL3731C	18 Matrix 144	-	External	I <sup>2</sup> C	Yes	Yes	2.7-5.5	QFN-28 SSOP-28	18 row/column outputs. Audio Modulated, Two 8x9 arrays with SRAM. 8-image swapping 8x9x2 [144 dot] LED array display, Within robust I2C for white goods application	Prod
IS31FL3732	18 Matrix 144	-	External	I <sup>2</sup> C	Yes	Yes	2.7-5.5	QFN-40	18 row/column outputs. Audio Modulated, Two 8x9 arrays with SRAM. 8-image swapping 8x9x2 [144 dot] LED array display. With 1MHz I2C, Cascade for Synchronization	S=Q1/15

## Product Selector Guide cont'd

### White LED Driver for LCD Backlight & Flash

Part No.	No. of LED	Type of Driver	IOUT [mA]	VDD [V]	ISD [uA]	Intensity Control	Package [Size in mm]	Key Feature	Status
IS31BL3212	3/4	Constant Current	23	2.7 - 5.5	1.0	Pulse Count	SOT23-6 [3.0x3.0], DFN-8 [2.0x2.0]	Ultra low headroom voltage, highly integrated design with minimal component	Prod
IS31BL3228A/B	4/6	Constant Current	20	2.8 - 5.5	0.5	Pulse Count	UTQFN-12	4 channel with 14 programmable current levels	Prod
IS31BL3229	8	Constant Current w/charge pump	25	2.7 - 5.5	1.0	PWM	QFN-20 [3.0x3.0]	8 channel output with built-in charge pump for high efficiency mode [1x/1.5x]	Prod
IS31BL3230	8	Constant Current	40mA or 320mA in parallel	2.7 - 5.5	1.6	PWM	QFN-16 [3.0x3.0]	Ultra low headroom voltage. All outputs may be connected in parallel	Prod
IS31BL3231	1	Charge Pump	750	2.7 - 5.5	1.0	Pulse Count	DFN-10 [3.0x3.0]	Camera Flash LED Driver	Prod
IS31BL3232	1	Charge Pump	1200	2.5 - 5.5	1.0	Pulse Count	DFN-10 [3.0x3.0]	Camera Flash LED Driver with time out protection	Prod
IS31BL3233A	2	Boost	750	2.7-5.5	1.0	PWM	DFN-14[2.0x3.0]	2x750mA Boost Camera Flash LED Driver with time out protection	Prod
IS31BL3506A	9	Boost	20	2.7 - 5.5	1.5	PWM or DC Level	TSOT23-6 [3.0x3.0] DFN-8 [2.0x2.0]	35V Internal MOSFET 1MHz Step-up Converter; VFB = 300mV	Prod
IS31BL3506B	8	Boost	20	2.7 - 5.5	1.5	PWM or DC Level	TSOT23-6 [3.0x3.0]	35V Internal MOSFET 1MHz Step-up Converter; VFB = 200mV	Prod
IS31BL3508A/B	10	Boost	20-160	2.7 - 5.5	2.0	PWM or DC Level	TSOT23-6 [3.0x3.0] SOT23-6 [3.0x3.0]	1.0MHz Boost Converter with 38V internal switch; VFB = 300mV	Prod

### Automotive Backlight LED Drivers

Part No.	Driver	VIN [V]	IOUT Accuracy	Power Transistor	Typical Applications	Package	Key Feature	Status
IS32BL3552	DC/DC Boost	4.5 - 33V	±1.5%	External	Automotive lighting, LCD display backlight	eTSSOP-16	Two channel LED current sinks, 40 to 360mA per string. String-to-string accuracy 1.5%	Sample
IS32BL3554	DC/DC Boost	4.5 - 33V	±1.5%	External	Automotive lighting, LCD display backlight	eTSSOP-16	Four 20 to 180mA channel current sinks. String-to-string accuracy 1.5%	Sample
IS32BL3556	DC/DC Boost	4.75-40V	±0.8%	External	Automotive lighting, LCD display backlight	eTSSOP-20	Four 100mA channel current sinks, Integrated Power MOS, String-String accuracy 0.8%	S=Q2/15

### Sensor

Device	Sensor Type	VIN [V]	No. Channels	Package	Key Feature	Status
IS31SE5000	Gesture Sensor/ Proximity	2.7-5.5	1 Trans, 2 Recv	UTQFN-12 [2x2]	IR Light Sensor for gesture or movement detection	Prod
IS31SE5001	Proximity Sensor	2.7-5.5	1 Trans, 1 Recv [Integrated]	QFN-8 [2x2]	IR Light Sensor for proximity detection	Prod
IS31SE5100	Capacitive Touch	2.7-5.5	8 Cap Touch Input, 8 LED Drive Output	QFN-24, SSOP-24	Capacitance sensor, 8 sense plate input with 8 LED outputs	Prod
IS31SE5104	Capacitive Touch	2.7-5.5	4 Cap Touch Input, 4 LED Drive Output	SOP-16, QFN-16	Capacitance sensor, 4 sense plate input with 8 LED outputs	Prod

## FxLED\*

Device	Evaluation Board	Description
IS31FL3193-DLS2	IS31FL3193-DLS2-EB	3-Channel LED Driver
IS31FL3199-QFLS2	IS31FL3199-QFLS2-EB	9-Channel LED Driver
IS31FL3216-QFLS2	IS31FL3216-QFLS2-EB	16-Channel LED Driver
IS31FL3218-GRLS2	IS31FL3218-GRLS2-EB	18-Channel LED Driver
IS31FL3236-QFLS2	IS31FL3236-QFLS2-EB	36-Channel LED Driver
IS31FL3726-QFLS2	IS31FL3726-QFLS2-EB	16-Bit Serial w/PWM Control LED Driver
IS31FL3728-QFLS2	IS31FL3728-QFLS2-EB	64-Matrix Audio Modulated LED Driver
IS31FL3730-QFLS2	IS31FL3730-QFLS2-EB	128-Matrix Audio Modulated LED Driver
IS31FL3731-QFLS2	IS31FL3731-QFLS2-EB	144-Matrix Audio Modulated LED Driver

## Sensor\*

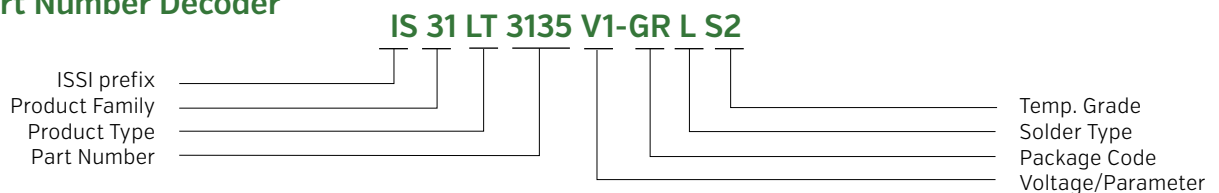
Device	Evaluation Board	Description
IS31SE5000	IS31SE5000-UTLS2-EB	IR Sensor for Touchless Motion and Proximity
IS31SE5001	IS31SE5001-QFLS2-EB	IR Sensor for Proximity Detection
IS31SE5100	IS31SE5100-QFLS2-EB	8-Channel Capacitive Touch Sensor

## Backlight\*

Device	Evaluation Board	Description
IS31BL3212-STLS2-TR	IS31BL3212-STLS2-EB	4 Channel constant current, 23mA
IS31BL3228B-UTLS2-TR	IS31BL3228B-UTLS2-EB	6 Channel constant current, 20mA
IS31BL3230-QFLS2-TR	IS31BL3230-QFLS2-EB	8 Channel constant current, 40mA
IS31BL3231-DLS2-TR	IS31BL3231-DLS2-EB	Flash (750mA) and Torch
IS31BL3232-DLS2-TR	IS31BL3232-DLS2-EB	Flash (1,200mA) and Torch
IS31BL3506A-DLS2-TR	IS31BL3506A-DLS2-EB	9 LED string @ 20mA
IS31BL3506A-TTLS2-TR	IS31BL3506A-TTLS2-EB	8 LED string @ 20mA
IS31BL3506B-STLS2-TR	IS31BL3506B-STLS2-EB	9 LED string @ 20mA
IS31BL3508A-TTLS2-TR	IS31BL3508A-TTLS2-EB	10 LED string @ 30mA

\* Note : Visit [www.issi.com](http://www.issi.com) for a complete list of Evaluation Boards.

## Analog Part Number Decoder



### • Analog Product Family

- 31 = Commercial/Industrial Analog
- 32 = Automotive Analog and Mixed Signal

### • Product Type

- AP = Audio Power Amplifier
- BL = White LED Driver for LCD Backlight
- FL = FxLED Driver
- LT = Lighting LED Driver
- SE = Sensor

### • Temperature Grade

- S1 = Commercial (0°C to 70°C)
- S2 = Industrial temp. [-40°C to 85°C]
- S3 = Industrial temp. [-40°C to 105°C]
- S4 = Industrial temp. [-40°C to 125°C]
- A1 = Automotive Grade [-40°C to +85°C]
- A2 = Automotive Grade [-40°C to +105°C]
- A3 = Automotive temp. [-40 to 125°C]

### • Solder Type

- Blank = Sn/Pb
- L = Lead-free (RoHS Compliant)

### • Package Type

- C = WCSP
- D = DFN
- GR = SOP
- QF = QFN
- S = MSOP
- SD = SOT89
- ST = SOT23
- TT = TSOT23
- UT = UTQFN
- Z = TSSOP

### • Voltage Range / Parameters

- Sense Voltage Range
- V1 = 91mV to 101mV
- V2 = 99mV to 110mV
- Under-Voltage Range
- V1 = 1.13V to 1.21V
- V2 = 1.19V to 1.26V

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- Приемлемые сроки поставки, возможна ускоренная поставка.
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