



Long-term Support
World Class Quality

2017

FxLED, Audio, and HBLEDD

Consumer & Industrial Product Selector Guide

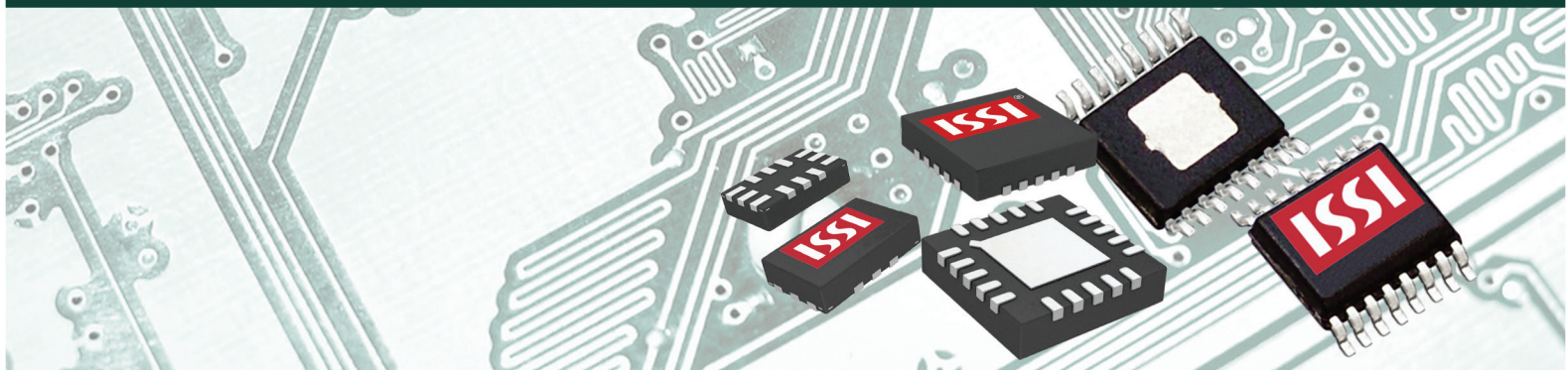


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Features

- Supply Voltage 2.7 to 5.5V
- 400KHz I2C interface
 - Automatic address increment function
- Single resistor sets max current
- Each channel independently controlled
 - Individually addressable LED registers
 - Independently controlled outputs of up to 256 PWM steps
 - Independently controlled automatic and semiautomatic breathing
 - System-free pre-established patterns
- RGB groups, up to 16 million colors
- Operating temperature $T_A = -40^{\circ}\text{C} \sim +85^{\circ}$

Note: Reference device datasheet for specific features

Description

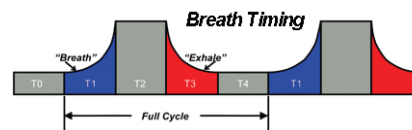
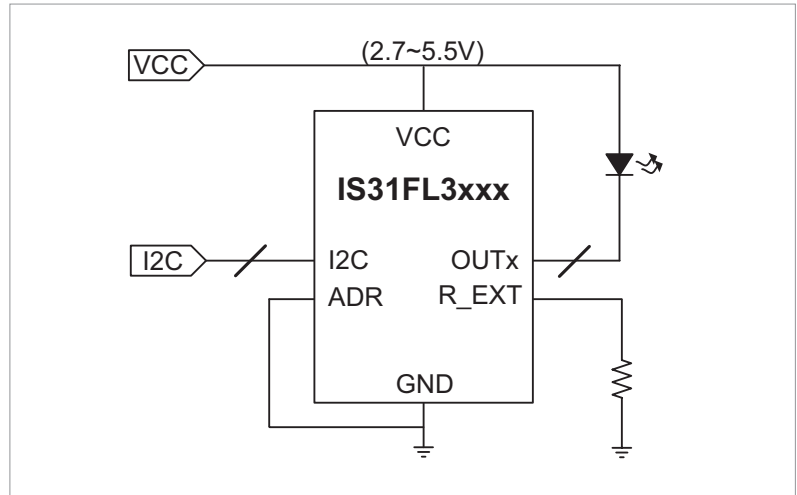
The IS31FL3xxx FxLED devices are linear constant current sink drivers with a simplified I²C control interface. The fast 400KHz I2C bus speed provides quick access to the individual full feature LED registers. The advanced control features in the LED registers enable a true “set it and forget it” architecture requiring minimal microcontroller overhead so the micro can perform other functions.

The FxLED drivers are available from 1-to-36 channels providing the designer with a wide selection to choose from. The commonality in registers and functionality means the designer can port existing firmware across the family.

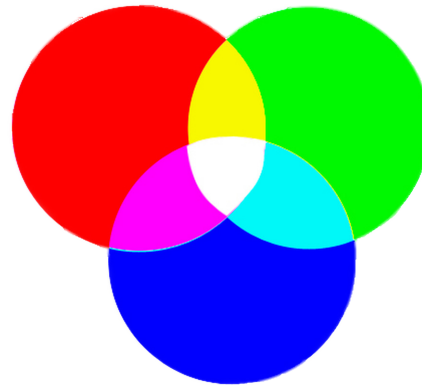
A low external parts count consisting of a few power supply capacitors and set resistors combined with small package sizes results in small PCB area. In addition, the low power consumption of these devices makes them ideally suited for small battery-powered portable applications.

Applications

Appliance interface, hand held display, visual status feedback, portable battery operated devices

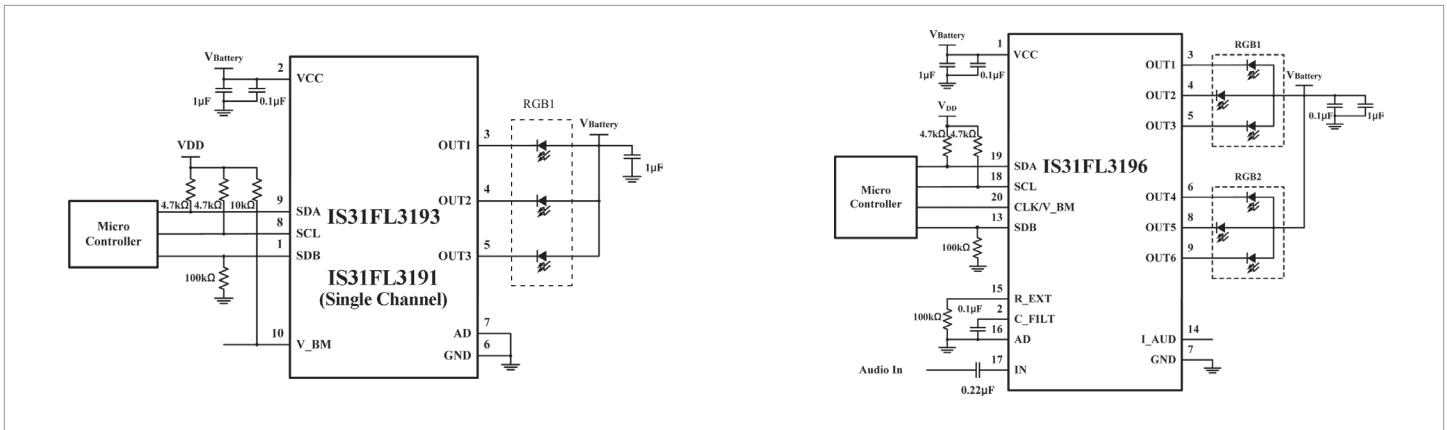


Example of “Breath Timing”
Period = T1 : T4



RGB Color Mixing

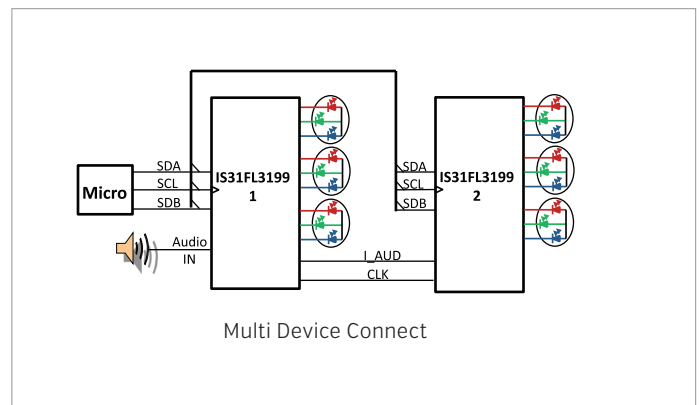
Part No.	No Channels	No. RGB Group	Current Levels	Pkg/Pin
IS31FL3190	1	-	5	UTQFN-9{1.5x1.5}
IS31FL3191	1	-	5	UTQFN-9{1.5x1.5}
IS31FL3193	3	1	5	DFN-10{3x3}
IS31FL3193D	3	1	5	WLCSP-8{1x1.5}
IS31FL3196	6	2	8	QFN-20{3x3}
IS31FL3199	9	3	8	QFN-20{3x3}
IS31FL3216	16	5	8	QFN-28{4x4}
IS31FL3218	18	6	1	QFN-24{4x4},SOP-24
IS31FL3235	28	6	4	QFN-36{4x4}
IS31FL3236	36	6	4	QFN-44{5x5},TQFP-48
IS31FL3236A	36	6	4	QFN-44{5x5}



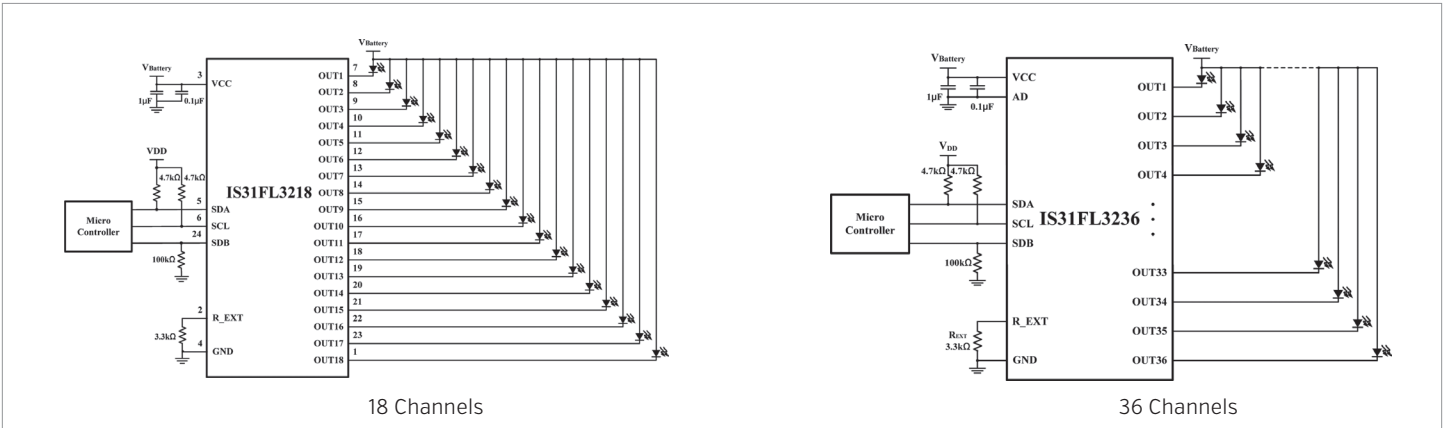
IS31FL3193, IS31FL3196, IS31FL3199

Applications

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



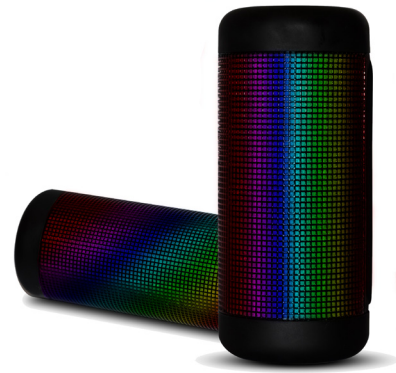
Part No.	No. RGB Group	LED Current Levels	Cascade	Audio Input	Package
IS31FL3191	0	5	No	No	UTQFN-9
IS31FL3193	1	5	No	No	DFN-10
IS31FL3193D	1	5	No	No	WLCSP-8
IS31FL3196	2	8	Yes	Yes	QFN-20
IS31FL3199	3	8	Yes	Yes	QFN-20



IS31FL3218, IS31FL3235, IS31FL3236, IS31FL3236A

Applications

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



Bluetooth Speakers



Appliance Control Panels

Part No.	No. of Channels	Current Scaling	Package
IS31FL3218	18	No	QFN-24, SOP-24
IS31FL3235	28	Yes	QFN-36
IS31FL3236	36	Yes	QFN-44, TQFP-48
IS31FL3236A	36	Yes	QFN-44

Features

- Supply Voltage 2.7 to 5.5V
- 400KHz and 1MHz I2C interface
 - Configurable voltage level
 - Interrupt output
- Configurable matrix size
- Individual LED control
 - Blink and ON/OFF
 - 256 PWM steps
 - Auto breath modes
 - Open/Short detect
- RGB grouping or single color LED
- Global LED current control
- LED de-ghosting function
- 8 Memory frames available for animation
- Cascade and synchronization capability

Note: Reference device datasheet for specific features

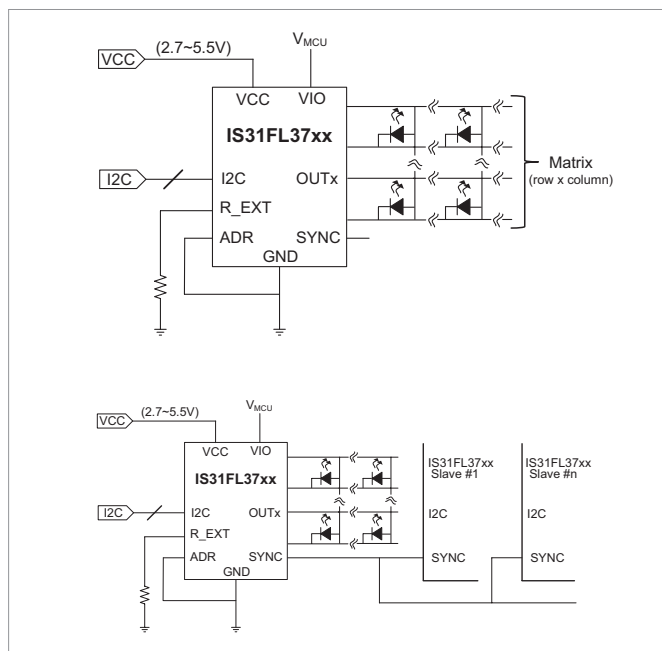
Description

The IS31FL37xx devices are a family of dot matrix LED display drivers with pre-programmed animation and color-effect functions accessed via an I2C interface. These pre-programmed functions free-up the microcontroller to do other system functions resulting in increased system performance.

The IS31FL37xx family supports a flexible matrix array architecture (Charlieplexing or traditional row/column) which is size adjustable to suit the number of LEDs and specific hardware arrangement. A matrix architecture simplifies applications requiring a large number of LEDs since one device can control 64 to 192 LEDs. The devices also have a wide range of selectable I2C addresses simplifying the cascading and synchronization of many devices sharing the same I2C bus interface.

Applications

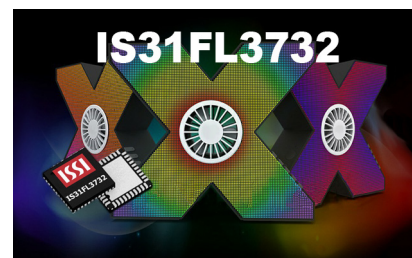
RGB Keyboard, appliance interface, hand held display, visual status feedback, portable battery operated devices



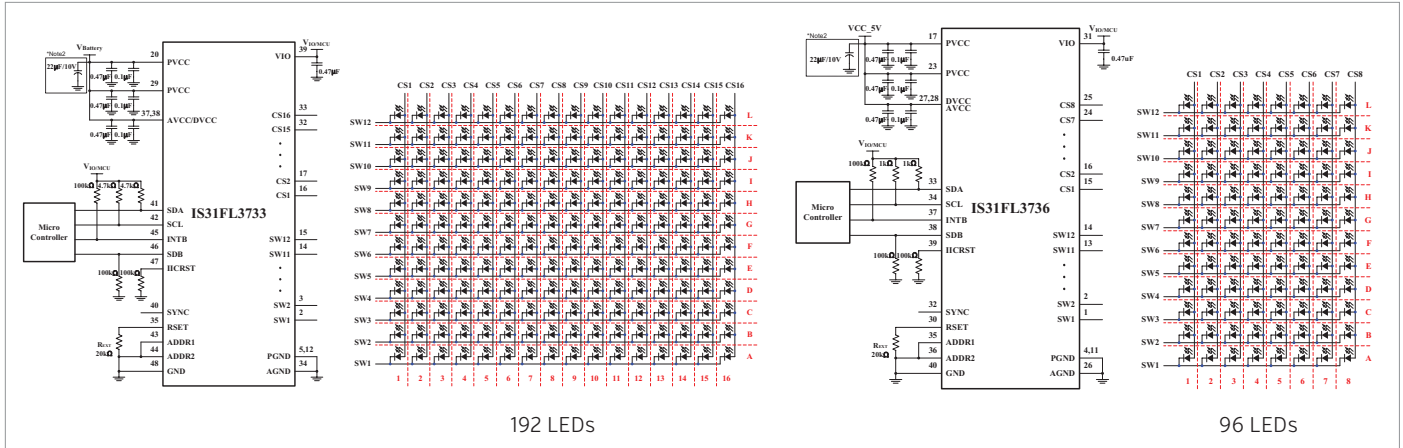
Cascadable and Synchronize Application



RGB Keyboards



Part No.	Matrix Size	No. RGB Group	I2C Bus Speed	Pkg/Pin
IS31FL3728	64	-	400KHz	QFN-24[4x4]
IS31FL3730	128	-	400KHz	QFN-24[4x4]
IS31FL3731	144	32	400KHz	QFN-28[4x4], SSOP-28
IS31FL3731C	144	32	400KHz	SSOP-28
IS31FL3732	144	32	1MHz	QFN-40 [5x5]
IS31FL3733	192	64	1MHz	QFN-48 [6x6]
IS31FL3736	96	32	1MHz	QFN-40 [5x5]
IS31FL3737	144	48	1MHz	QFN-40 [5x5]



192 LEDs

96 LEDs

IS31FL3733, IS31FL3736, IS31FL3737

Features

- Supply Voltage 2.7 to 5.5VDC
- 16 row current source outputs and 12 scan switch current inputs for up to 192, 96, 144 LEDs
- Individual open / short LED detect reporting
- Individual dot programmable matrix with de-ghost function
 - Individual on/off control
 - Individual 256 PWM control steps
 - Individual Auto Breath Mode select
- 256 steps Global Current Setting
- Selectable 3 Auto Breath Modes for each dot
 - Auto Breath Loop Features interrupt pin inform MCU Auto Breath Loop completed
 - Auto Breath offers 128 steps gamma current, interrupt and state look up registers
- 1MHz I2C-compatible interface
- Cascade for synchronization of chips
- QFN-48 [6mm×6mm] and eTQFP-48 packages

Note: Reference device datasheet for specific features

Applications

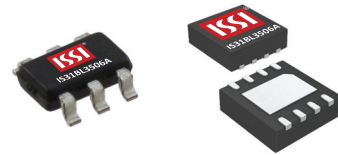
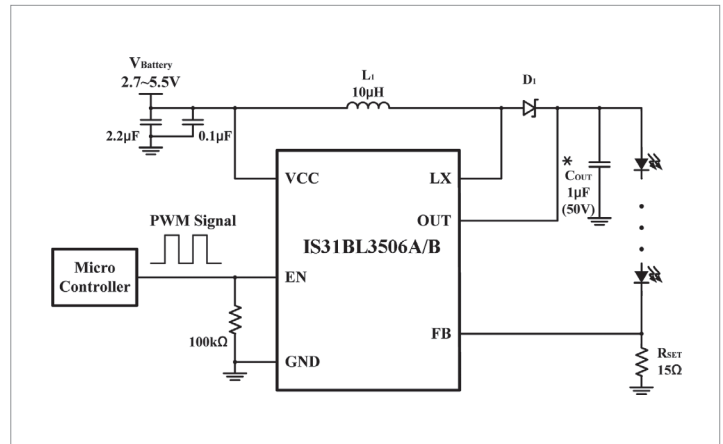
PC gaming peripherals, consumer and white goods appliances

Features	Part Numbers		
	IS31FL3733	IS31FL3737	IS31FL3736
Maximum LED Dot	192[16x12]	144[12x12]	96[8x12]
RGB LED	64	48	32
Scan Technology	Single scan	Single scan	Single scan
I2C speed	1MHz	1MHz	1MHz
I2C Address Programmable	16	16	16
Sync in Multi chip application	Yes	Yes	Yes
Integrated RAM Loop	No	No	No
Audio Modulated	No	No	No
Auto Breath Control	3 Pattern group	3 Pattern group	3 Pattern group
Register Lock	Yes	Yes	Yes
D-Ghost function	Yes	Yes	Yes
Open/Short detect	Yes	Yes	Yes
Each Dot PWM control	256 steps	256 steps	256 steps
Global PWM control	256	256	256
Separate Analog/Digital Vcc	Yes	Yes	Yes
Package	QFN48[6x6], LQFP48	QFN40[5x5]	QFN40[5x5]

IS31BL3506A/B - 1.0MHz Boost Converter IS31BL3508A/B - 1.0MHz Boost Converter

Features

- 35V Internal MOSFET Switch (IS31BL3506A/B)
- 38V Internal MOSFET Switch (IS31BL3508A/B)
- 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, IS31BL3508A)
 - 200mV (IS31BL3506B, IS31BL3508B)
- Over voltage protection
 - 40°C ~ +85°C working temperature range



Package: TSOT-23-6 and DFN-8 (2mm×2mm)

Description

IS31BL3506/ IS31BL3508 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 IS31BL3506/08 operates at a constant switching frequency of 1.0MHz to allow for small component size. IS31BL3506/08 features an over voltage shutdown pin which prevents the output voltage from exceeding 35V [typ.] in the case of an open circuit condition.

Applications

- Small LCD Backlights
- Notebook PC
- GPS



Part No.	LEDs	VFB	Package
IS31BL3506A	8	300mV	TSOT23-6
	9		DFN-8
IS31BL3506B	8	200mV	TSOT23-6 SOT23-6
IS31BL3508A	10	300mV	TSOT23-6, SOT23-6
IS31BL3508B	10	200mV	TSOT23-6 SOT23-6

Features

- Supply Voltage 2.7 to 5.5VDC
- 400kHz I2C compatible interface
 - Interrupt driven
- Integrated signal processing
- Extremely low power consumption
 - 1 μ A shutdown current
- 0.6mA low supply current
- Detection range can be adjusted
- Capacitive touch input with LED indication
 - Support 8 or 4 capacitive electrodes
- InfraRed sensor for touchless applications
 - Motion or proximity sensing

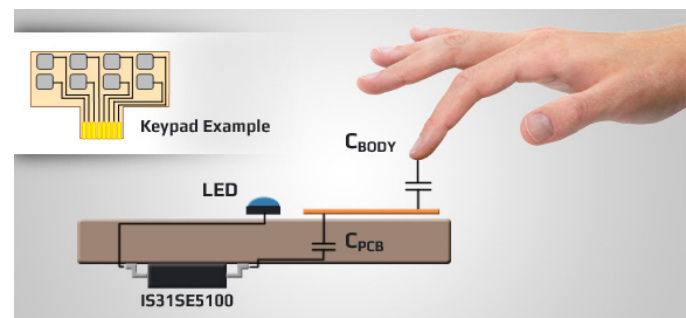
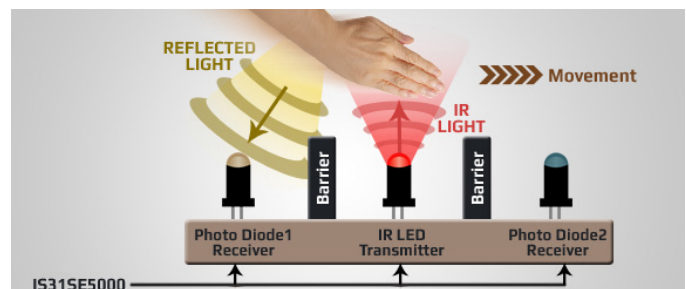
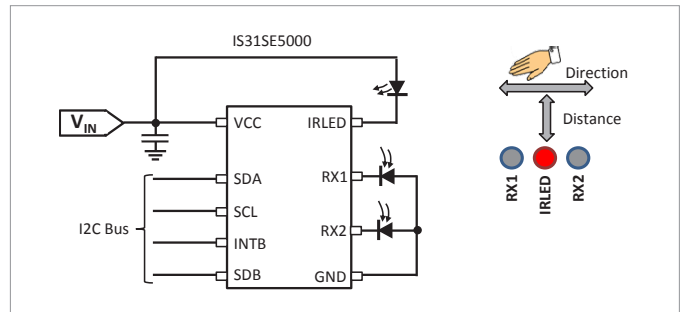
Note: Reference device datasheet for specific features

Description

Ultra-low power fully integrated capacitive or InfraRed (IR) sensors designed for portable applications. On-chip signal processing simplifies design application since the system only needs to read device status registers when an object is detected and interrupt is generated.

Applications

Lighting/switch controller for white good appliances



Part Number	Sensor Type	V _{in} [V]	No. Channels	Pkg-Pin[mm]
IS31SE5000	Gesture Sensor	2.7-5.5	1 Trans 2 Recv	UTQFN-12 [2x2]
IS31SE5001	Proximity Sensor	2.7-5.5	1 Trans 1 Recv [Integrated]	QFN-8 [2x2]
IS31SE5100	Capacitive Touch	2.7-5.5	8 Cap Touch Input 8 LED Drive Output	QFN-24, SSOP-24
IS31SE5104	Capacitive Touch	2.7-5.5	4 Cap Touch Input 4 LED Drive Output	QFN-16, SSOP-16

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
IS31FL3190	1	-	Built-in	I ² 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
IS31FL3191	1	-	Built-in	I ² 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 ² 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
IS31FL3193D	3	1	Built-in	I ² C	No	Yes	2.7-5.5	WLCSP-8 [1x1.5]	16Million color RGB auto and semi-auto breathing with pre-set pattern	Prod
IS31FL3196	6	2	Built-in	I ² C	Yes	Yes	2.7-5.5	QFN-20 [3.0x3.0]	16Million color RGB auto and semi-auto breathing with pre-set pattern and audio sync mode	Prod
IS31FL3199	9	3	Built-in	I ² 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 ² 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	6	External	I ² 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	9	External	I ² C	No	No	2.7-5.5	QFN-36 [4.0x4.0]	Modulate 28 Independent LED channels with 256 steps PWM	Prod
IS31FL3236	36	12	External	I ² C	No	No	2.7-5.5	QFN-44 [5.0x5.0] TQFP-48	Modulate 36 Independent LED channels with 256 steps PWM	Prod
IS31FL3236A	36	12	External	I ² C	No	Selectable	2.7-5.5	QFN-44 [5.0x5.0]	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 ² 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 ² C	Yes	No	2.7-5.5	QFN-24 [4.0x4.0]	16-row/column outputs, Audio Modulated. 8x8,7x9,6x10,5x11 dual matrix arrays.	Prod
IS31FL3731	18 Matrix 144	32	External	I ² 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	32	External	I ² 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, Within robust I2C for white goods application	Prod
IS31FL3732	18 Matrix 144	32	External	I ² C	Yes	Yes	2.7-5.5	QFN-40	Robust version of IS31FL3731, separate power rails, synchronize 8 devices, address 16, global current	Prod

FxLED Driver Contd.

Part No.	No. of Channel	No. RGB Group	Gamma Correction	Control Interface	Audio Sync.	Auto Dimming	VDD [V]	Package [Size mm]	Key Feature	Status
IS31FL3733*	Matrix 192	64	Built-in	I ² C	No	Yes	2.7-5.5	QFN-48 [6.0x6.0], eTQFP-48	12 switch sinks/16 current source outputs. 12*16 array. 3 selectable Auto Breathing Modes. 256 steps Global Current Setting. Open/short detect for each dots. De-ghost function	Prod
IS31FL3736*	Matrix 96	32	Built-in	I ² C	No	Yes	2.7-5.5	QFN-40 [5.0x5.0]	12 switch sinks/8 current source outputs. 12*8 array. 3 selectable Auto Breathing Modes. 256 steps Global Current Setting. Open/short detect for each dots. De-ghost function	Prod
IS31FL3737*	Matrix 144	48	Built-in	I ² C	No	Yes	2.7-5.5	QFN-40 [5.0x5.0]	12 switch sinks/12 current source outputs. 12*12 array. 3 selectable Auto Breathing Modes. 256 steps Global Current Setting. Open/short detect for each dots. De-ghost function	Prod

*-40C to +125C: Extended temperature range option available

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	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 [2.0x2.0]	4/6 channel with 14 programmable current levels, built-in charge pump for high efficiency mode	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 32 programmable current levels, 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	Flash/Torch	1.5A	2.7 - 5.5	1.0	Enable Pin	DFN-14 [3.0x2.0]	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	10	Boost	20	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
IS31BL3508B	10	Boost	20	2.7 - 5.5	2.0	PWM or DC Level	SOT23-6 [3.0x3.0]	1.0MHz Boost Converter with 38V internal switch; VFB = 200mV	Prod

Sensor

Device	Sensor Type	VIN [V]	No. Channels	Package	Key Feature	Status
IS31SE5000	Gesture Sensor	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
IS31FL3199-QFLS2	IS31FL3199-QFLS2-EB	9-Channel
IS31FL3216-QFLS2	IS31FL3216-QFLS2-EB	16-Channel
IS31FL3218-GRLS2	IS31FL3218-GRLS2-EB	18-Channel
IS31FL3236-QFLS2	IS31FL3236-QFLS2-EB	36-Channel
IS31FL3726-QFLS2	IS31FL3726-QFLS2-EB	16-Bit Serial w/PWM Control
IS31FL3728-QFLS2	IS31FL3728-QFLS2-EB	64-Matrix Audio Modulated
IS31FL3730-QFLS2	IS31FL3730-QFLS2-EB	128-Matrix Audio Modulated
IS31FL3731-QFLS2	IS31FL3731-QFLS2-EB	144-Matrix Audio Modulated
IS31FL3732-QFLS2	IS31FL3732-QFLS2-EB	144-Matrix Audio Modulated

Backlight*

Device	Evaluation Board	Description
IS31BL3212-STLS2-TR	IS31BL3212-STLS2-EB	4 Channel, 23mA
IS31BL3228B-UTLS2-TR	IS31BL3228B-UTLS2-EB	6 Channel, 20mA
IS31BL3230-QFLS2-TR	IS31BL3230-QFLS2-EB	8 Channel, 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

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

* Note : Visit www.issi.com for a complete list of Evaluation Boards.

Features

- Industry standard Class A/B, D, G architecture
 - Mono or stereo inputs
- Ultra-low power consumption, low standby current
- High efficiency >89%
- No “Click-and-Pop” during device power On
- Designed for portable applications
 - Low power (1~3W) battery operated 2.7~5.5V
 - Med power (20W) voltage supply 8~26V
- Treble/Bass control with 3D enhancement
- Available in small package sizes

Note: Reference device datasheet for specific features

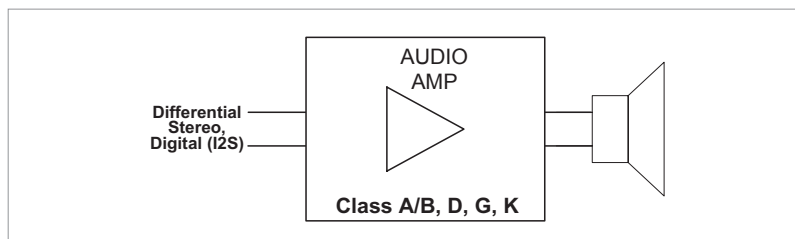
Description

A broad line of high performance audio operational amplifiers (op amps) to address a wide range of portable applications, from a few milliwatts up to 20 watts.

Class AB type are linear design and generate no switching noise but are less efficient than Class D. Class D type are higher efficiency but can generate some switching noise due to their switching design architecture.

Applications

Portable audio players, personal navigation, USB speakers, medical equipment, white goods appliances



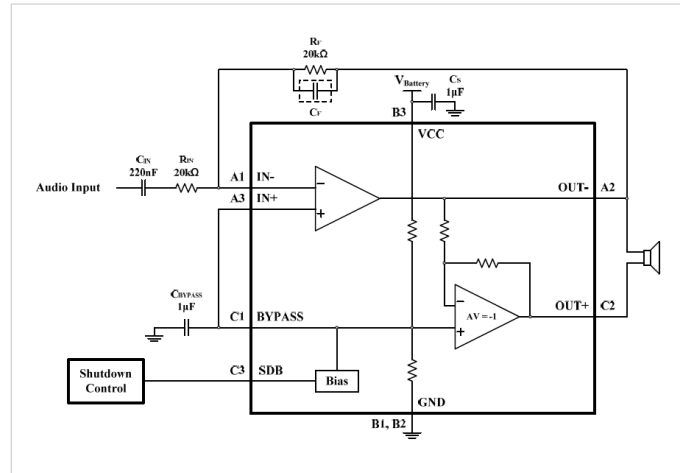
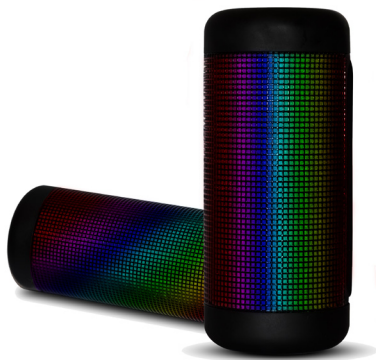
Part Number	Channels	Power[W]	Vdd[V]	Pkg-Pin[mm]
Class-AB				
IS31AP4066D	2	1.3	2.7-5.5	QFN-16[3x3]
IS31AP4088A	2,2HP	2.8	2.7-5.5	QFN-16[4x4]
IS31AP4088D	2	2.6	2.7-5.5	QFN-16[4x4]
IS31AP4833	2+,2HP	2.8	3.0-5.5	QFN-36[4x4], TQFP-48[9x9]
IS31AP4990D	1	1.2	2.7-5.5	UTQFN-9L[1.5x1.5]
IS31AP4991	1	1.2	2.7-5.5	MSOP-8,SOP-8
IS31AP4991A	1	1.1	2.7-5.5	MSOP-8,SOP-8
IS31AP4996	1	1.1	2.7-5.5	MSOP-8,SOP-8
Class-D				
IS31AP2005	1	2.7	2.5-5.5	DFN-8[3x3], MSOP-8
IS31AP2006	1	3	2.7-5.5	DFN-8[3x3]
IS31AP2010B	1	3	2.7-5.5	UTQFN-9[1.5x1.5]
IS31AP2110	2	20 BTL, 40 PBTL	8.0-26	eTSSOP-28 [9.8x6.5]
IS31AP2145A	1	2.9	2.7-5.5	UTQFN-9[1.5x1.5]
IS31AP2145E	1	2.7	2.7-5.5	UTQFN-9[1.5x1.5]
Class-G				
IS31AP2031	1	2	2.7-4.5	QFN-20/28 [3x3,4x4]
IS31AP4915A	1	20VP-P	2.5-5.5	QFN-16[4x4]
Class-K				
IS31AP2036	1	2	3.0-5.0	FCQFN-16
IS31AP2036A	1	2	3.0-5.0	FCQFN-16
Headphone Driver				
IS31AP4912	2	30mW	2.7-5.5	UTQFN-12[2x2]
IS31AP4913	2	30mW	2.7-5.5	QFN-20[3x3]
Digital (I2S)				
IS31AP2111	2	20x2	7-26	eTSSOP-24
IS31AP2121	2, 2.1	20x2, 10x2+20	7-26	eLQFP-48

IS31AP4990D

1.2W Audio Amplifier

Features

- Operating from $V_{CC} = 2.7V \sim 5.5V$
- 1.2W output power @ $V_{CC} = 5V$, THD+N= 1%, $f = 1kHz$, with 8 Ω load
- Ultra-low consumption in shutdown mode (1 μA)
- Near-zero pop & click
- Ultra-low distortion
- Unity gain stable
- UTQFN-9L (1.5mm \times 1.5mm) package



Typical Application Circuit (Single-ended input)

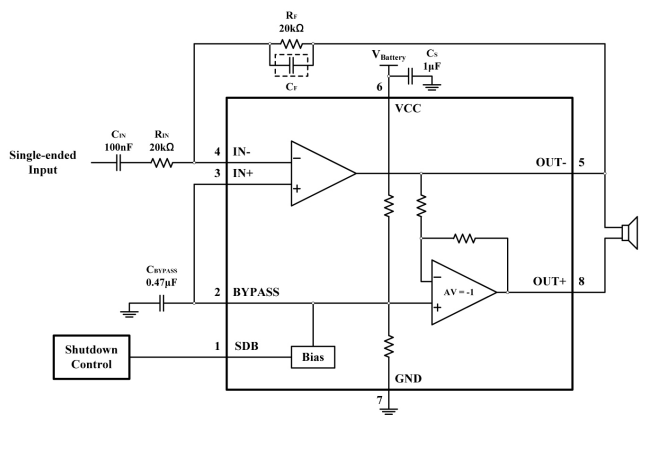


IS31AP4991A/AP4996

1.1W Audio Amplifier

Features

- Operating from $V_{CC} = 2.7V \sim 5.5V$
- 1.1W output power @ $V_{CC} = 5V$, THD+N= 1%, $f = 1kHz$, with 8 Ω load
- Ultra-low consumption in standby mode (much less than 1 μA for IS31AP4991A)
- Ultra-low consumption in standby mode (much less than 2 μA for IS31AP4996)
- 56dB PSRR @217Hz in grounded mode
- Near-zero click-and-pop
- Ultra-low distortion [0.074% @0.5W, 1kHz]
- SOP-8 and MSOP-8 package



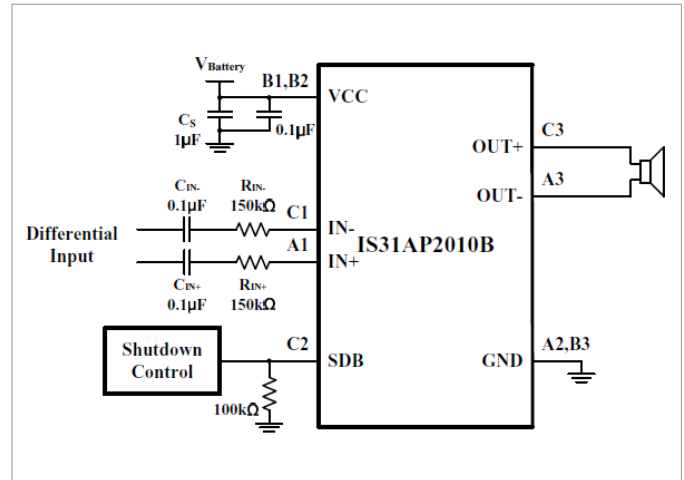
Typical Application Circuit (Single-ended input)

IS31AP2010B

3W Mono Filter-less Audio Amplifier

Features

- 5.0V supply at THD+N = 10%
 - 3W into 4Ω [Typ.]
 - 1.68W into 8Ω [Typ.]
- Efficiency at 5.0V
 - 85% at 400mW with a 4Ω speaker
 - 88% at 400mW with an 8Ω speaker
- Less than 1μA shutdown current
- Optimized PWM output stage eliminates LC output filter
- Fully differential design reduces RF rectification and eliminates bypass capacitor
- Improved CMRR eliminates two input coupling capacitors
- Integrated click-and-pop suppression circuitry
- UTQFN-9 package
- RoHS compliant and 100% lead(Pb)-free



Typical Application Circuit (Differential input)



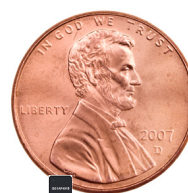
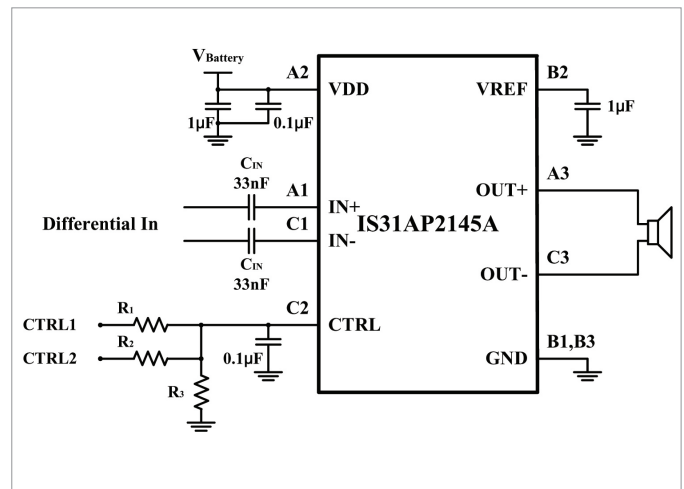
Video door bell

IS31AP2145A

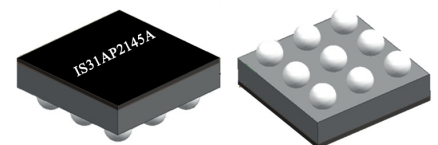
2.9W Mono Clip-less & Filter-less Audio Amplifier with Built-in AGC

Features

- Filter-less Class-D architecture
- AGC enable/disable function
- Selectable attack and release times
- Improved RF-rectification immunity
- High efficiency: 90%
- Click-and-pop suppression
- Low shutdown current: 0.1μA



Scale to size



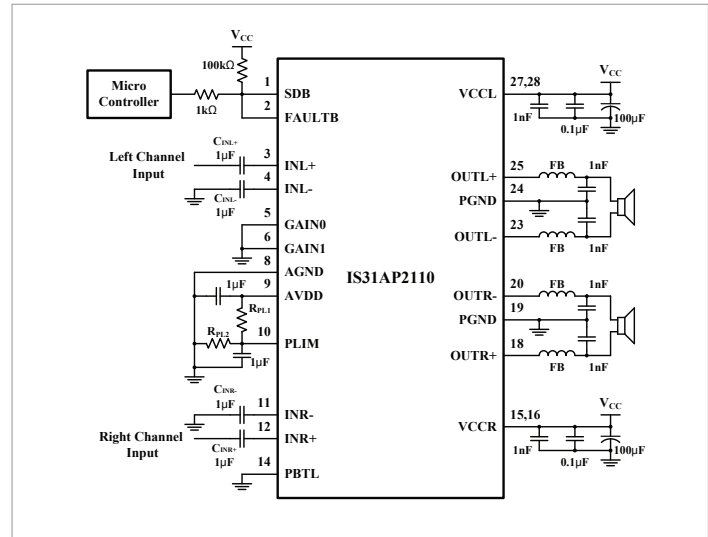
Tiny UTQFN-9 Package 1.5x1.5 mm

IS31AP2110

20W Stereo Class-D Audio Amplifier with Power Limit and Dynamic Temperature Control

Features

- Single supply voltage
 - 8V ~ 26V for loudspeaker driver
 - Built-in LDO output 3.3V for others
- Loudspeaker power from 24V supply
 - BTL Mode: 20W/CH into 8Ω @0.2% THD+N
 - PBTL Mode: 40W/CH into 4Ω @0.11% THD+N
- Loudspeaker power from 13V supply
 - BTL Mode: 10W/CH into 8Ω @10% THD+N
- 87% efficient Class-D operation eliminates need for heat sink
- Four selectable, fixed gain settings
- Short-Circuit protection with auto recovery option
- Over-voltage protection
- Pop noise and click noise reduction
- Adjustable power limit function for speaker protection
- Output DC detection for speaker protection



Typical Application Circuit (for BTL Stereo, Single-ended Input)

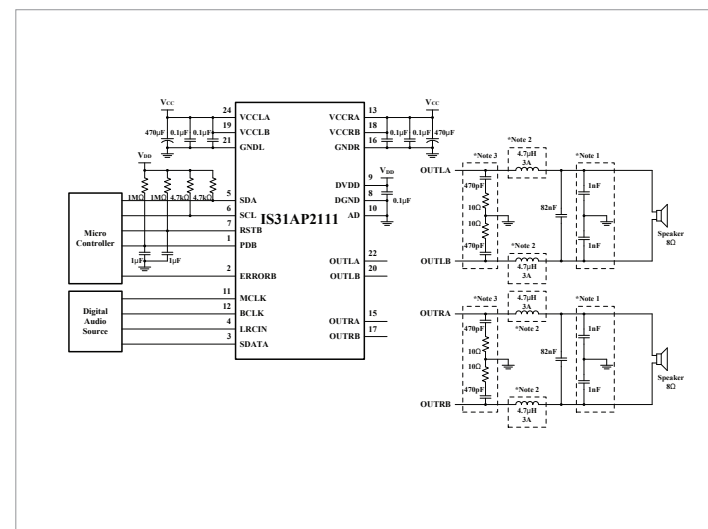
- Filter-Free operation
- Over temperature protection with auto recovery
- Dynamic temperature control prevents chip from over heating

IS31AP2111

2x20W Stereo Digital (I2S) Audio Amplifier with 20 Bands EQ Functions

Features

- 16/18/20/24-bits input with I2S, Left-alignment and Right-alignment data format
- Supply voltage
 - 3.3V for digital circuit
 - 7-26V for speaker driver
- Speaker output power at 24V
 - 10W × 2CH into 8Ω @0.24% THD+N for stereo
 - 20W × 2CH into 8Ω @0.38% THD+N for stereo
- Sound processing including:
 - 20 bands parametric speaker EQ
 - Volume control [+24dB ~ -103dB, 0.125dB/step]
 - Dual band dynamic range control
 - 3D surround sound
 - Channel mixing
 - Bass/Treble tone control



Typical Application Circuit for BTL Stereo

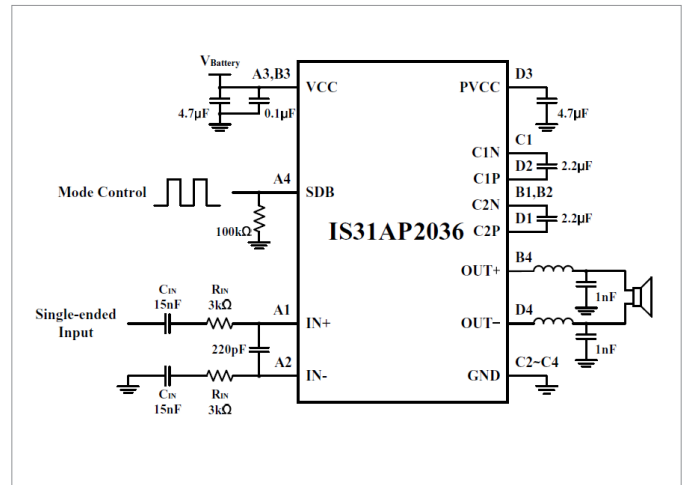
- Short circuit and over-temperature protection
- I2C control interface with selectable device address

IS31AP2036

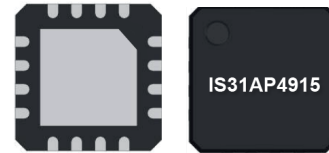
High Efficiency, Class-K Audio Power Amplifier with Integrated Charge Pump Converter

Features

- Operates from 3.0V to 5.0V
- Advanced K-charge pump technology, efficiency up to 92%
- Low EMI
- -65dB [217Hz] high PSRR
- 0.2% low THD+N
- AGC function
- Pulse Count Control serial interface
- Output power in 0.8W, 1W and 1.2W levels
- Thermal and short-circuit protection
- Integrated Click-and-Pop suppression circuitry
- Available in FCQFN-16 [2mm × 2mm] package



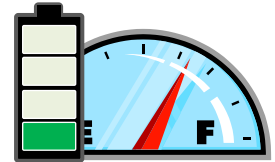
Typical Application Circuit [Single-ended input]



16 Pin QFN Package 4x4 mm

Extended Battery Life!

High Efficiency operation even when in low battery condition.

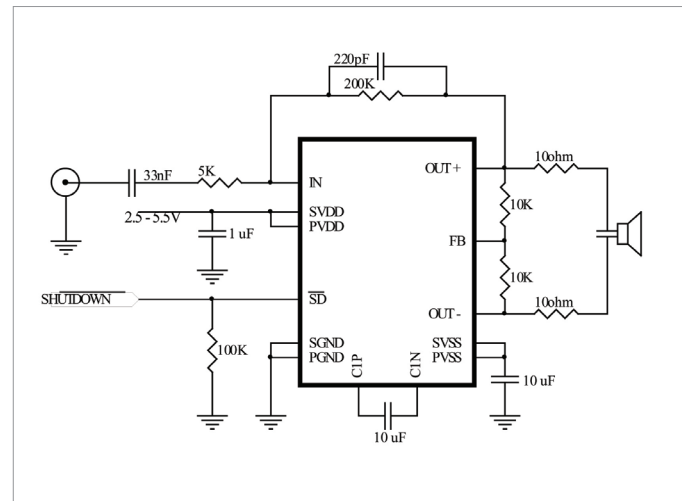


IS31AP4915A

20V P-P Charge Pump Ceramic Speaker Driver

Features

- Integrated charge-pump power supply
- Ultra-Fast Start up of 450 us [typ]
- Drive high-capacitance ceramic loudspeaker
- 20VP-P voltage swing
- Maximize battery life
- Extended temperature range



Piezo Speaker Driver

Class-AB Audio Power Amplifier with or without Headphone Driver

Part No.	No. of Channel	Power [W]	THD+N [kHs]	PSRR [dB]	VDD [V]	IDD [mA]	Package [Size in mm]	Key Feature	Status
IS31AP4066D	2	1.3	0.10%	60	2.7 - 5.5	3.9	QFN-16 [3.0x3.0]	Dual 1.3W Stereo Audio Power Amplifier	Prod
IS31AP4088A	2+2 HP	2.84	0.06%	80	2.7 - 5.5	5.7	QFN-16 [4.0x4.0]	Dual 2.84W Stereo Audio Power Amplifier with Headphone Driver	Prod
IS31AP4088D	2	2.6	0.10%	60	2.7 - 5.5	4.5	QFN-16 [4.0x4.0]	Dual 2.6W Stereo Audio Power Amplifier	Prod
IS31AP4833	2+2HP	2.8	0.022%	67	3.0 - 5.5	6	QFN-36[4x4] TQFP48[9x9]	Stereo audio PA with headphone driver, with Multi input & I2C control for 3D, Tone, Volume	Prod
IS31AP4990D	1	1.2	0.23%	61	2.7 - 5.5	3.8	UTQFN-9L [1.5x1.5]	1.2W Mono Audio Power Amplifier in UTQFN Package	Prod
IS31AP4991A	1	1.1	0.03%	68	2.7 - 5.5	3.0	MSOP-8 [3.0x5.0] SOP-8 [5.0x6.0]	1.1W Mono Audio Power Amplifier	Prod
IS31AP4996	1	1.1	0.074%	68	2.7 - 5.5	3	MSOP-8 SOP-8	Ultra-low power, low distortion Amplifier with BTL output	Prod

Class-D Audio Power Amplifier

Part No.	No. of Channel	Power [W]	THD+N [kHs]	PSRR [dB]	VDD [V]	IDD [mA]	Package [Size in mm]	Key Feature	Status
IS31AP2005	1	2.95	0.20%	65	2.5 - 5.5	2.6	DFN-8[3x3] MSOP-8	2.95W Mono Filter-less Class-D Audio Power Amplifier	Prod
IS31AP2006	1	3	0.28%	55	2.7 - 5.5	2.6	DFN-8[3x3]	3W Mono Filter-less Class-D Audio Power Amplifier	Prod
IS31AP2010B	1	3	0.22%	75	2.7 - 5.5	2.6	UTQFN-9 [1.5x1.5]	3W Mono Filter-less Class-D Audio Power Amplifier	Prod
IS31AP2145A	1	2.9	0.2%	72	2.7 - 5.5	2.0	UTQFN-9 [1.5x1.5]	2.9W Mono Clip-less & Filter-less Audio Amplifier with Built-in AGC	Prod
IS31AP2145E	1	2.7	0.20%	67	2.7 - 5.5	2.0	UTQFN-9 [1.5x1.5]	2.7W Mono Clip-less & Filter-less Audio Amplifier with Built in AGC	Prod
IS31AP2110	2	Mono 40 /Dual 20	0.20%	62	8~26	20	eTSSOP-28	Differential input, power limit, dynamic temperature control, four selectable gain settings	Prod
IS31AP2111	2	Mono 40 /Dual 20	0.26%	68	7~26	-	eTSSOP-24	Digital I2S input, multiple sample frequencies, fast system clock, 20 bands EQ functions, I2C control	Prod
IS31AP2121	2	Mono 50 / Dual 25	0.2%	76	10~26	-	eLQFP-48	Digital I2S input, multiple sample frequencies, fast system clock, 20 bands EQ functions, I2C control	Prod
IS31AP2036A	1	2	0.05%	66	3-5	12	FCQFN-16	High efficiency, Class-K audio power amplifier with integrated charge pump converter	Prod

Headphone Driver

Part No.	No. of Channel	Power [mW]	THD+N [kHs]	PSRR [dB]	VDD [V]	IDD [mA]	Package [Size in mm]	Key Feature	Status
IS31AP4912	2	30	0.024%	95	2.7 - 5.5	5.0	UTQFN-12 [2.0x2.0]	High Quality Stereo Headphone Driver with High SNR and 7uV Ultra-Low O/P Noise	Prod
IS31AP4913	2	30	0.05%	92	2.7 - 5.5	5.0	QFN-20 [3.0x3.0]	3D Surround & Bass Enhanced High Quality Stereo Headphone Driver	Prod

Class-G Speaker Amplifier

Part No.	No. of Channel	Power [W]	THD+N [kHs]	SNR [dB]	VDD [V]	IDD [mA]	Package [Size in mm]	Key Feature	Status
IS31AP2031	1	2W [8Ω Spkr]	0.33%	-	2.7 - 4.5	5	QFN-20 [3.0x3.0]	High Power, Ultra-Low EMI Class-G Amplifier with AGC	Prod
IS31AP4915A	1	20VP-P	0.01%	100	2.5 - 5.5	6	QFN-16 [4.0x4.0]	20VP-P Charge Pump Ceramic Speaker Driver	Prod

Class-K Speaker Amplifier

Part No.	No. of Channel	Power [W]	THD+N [kHs]	SNR [dB]	VDD [V]	IDD [mA]	Package [Size in mm]	Key Feature	Status
IS31AP2036	1	2W [8Ω Spkr]	0.05%	-72dB	3.0-5.0	10	FCQFN-16	Advanced K-charge pump to boost supply voltage with a 92% efficiency and increased amplifier efficiency of 75%	Prod
IS31AP2036A	1	2W [8Ω Spkr]	0.05%	-64dB	3.0-5.0	10	FCQFN-16	Advanced K-charge pump to boost supply voltage with a 92% efficiency and increased amplifier efficiency of 75%	Prod

Audio Amplifiers Evaluation Boards*

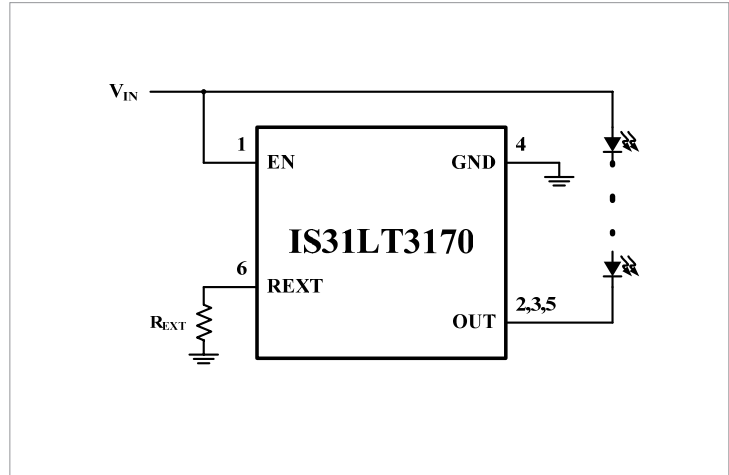
Device	Evaluation Board	Description
IS31AP2005-DLS2-TR	IS31AP2005-DLS2-EB	2.7W Mono Filter-less Class-D Amp
IS31AP2010B-UTLS2-TR	IS31AP2010B-UTLS2-EB	3.0W Mono Filter-less Class-D Amp
IS31AP2145A-UTLS2-TR	IS31AP2145A-UTLS2-EB	2.9W Mono Clip-less & Filter-less Amp with Built-in AGC
IS31AP4088A-QFLS2-TR	IS31AP4088A-QFLS2-EB	Dual 2.84W Stereo Audio Amplifier Plus Headphone Driver
IS31AP4833-TQLS2	IS31AP4833-TQLS2-EB	Stereo audio PA with headphone driver, multi-input & I2C control for 3D, Tone, Volume
IS31AP4990D-UTLS2-TR	IS31AP4990D-UTLS2-EB	1.2W Audio Power Amplifier with Active-low Shutdown Mode
IS31AP4991A-SLS2-TR	IS31AP4991A-SLS2-EB	1.1W Audio Power Amplifier with Active-low Shutdown Mode
IS31AP4915A-QFLS2-TR	IS31AP4915A-QFLS2-TR	20Vp-p Charge Pump Ceramic Speaker Driver
IS31AP4913-QFLS2-TR	IS31AP4913-QFLS2-EB	3D Surround & Bass Enhanced High Quality Stereo Headphone Driver

* Note : Visit www.issi.com for a complete list of Evaluation Boards.

Features

- Wide input voltage range from
 - 6V to 53VDC input voltage range
- Adjustable set with external resistor
 - Up to 350mA per channel
 - $\pm 3\%$ output current matching
 - Low dropout voltage [1V typ]
- PWM dimming and shutdown control input
 - Up to 10kHz PWM input
- Over temperature protection
 - Thermal current regulation above 130°C
 - 0.26%/K negative temperature coefficient
- Up to 1.8W power dissipation in a small SOP-8-EP package
- Very few external components required

Note: Reference device datasheet for specific features



Description

Adjustable linear current regulators with excellent temperature stability. A single resistor is all that is required to set the operating current. The devices operate from a wide input voltage and require a minimal voltage headroom of 1V [typical]. With a low headroom voltage; the devices can drive LED strings close to the supply voltage.

They provide a stable current without the additional requirement of input or output capacitors, inductors, FETs or diodes. The complete constant current driver requires only a current set resistor and a small PCB area making designs both efficient and cost effective. They can be pulse width modulated to achieve excellent dimming range. As a current sink it is ideal for LED lighting applications or current limiter for power supplies.



Applications

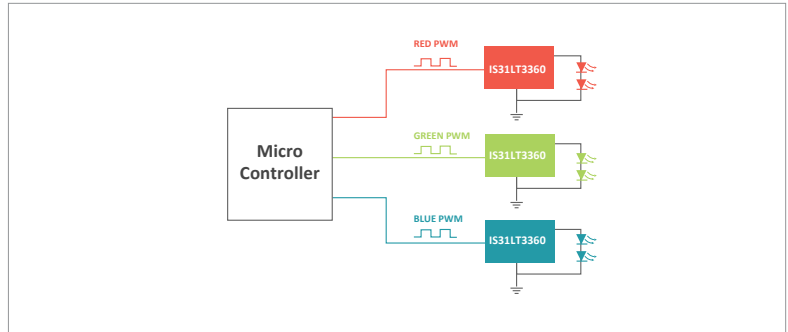
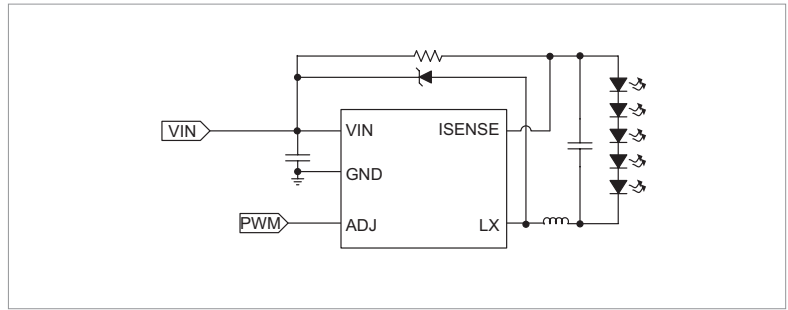
LED strip lighting, automotive aftermarket, Architectural LED lighting, Channel letters for advertising, Retail lighting in fridge, freezer case and vending machines, Emergency lighting (e.g. steps lighting, exit way sign etc.)

Device	Vsupply	IOUT (max)	# Channels	Pkg-Pin
IS31LT3117	6-53V	350mA	4	eTSSOP-16
IS31LT3170	5.0-42V	150mA	1	SOT23-6
IS31LT3171	2.5-42V	150mA	1	SOT23-6
IS31LT3172	5.0-42V	200mA	1	eSOP-8
IS31LT3173	2.5-42V	200mA	1	eSOP-8
IS31LT3135	2.7-5.5	500mA	2	SOP-8

Features

- Wide input voltage range from 6V ~ 40VDC
 - Internal 40V power switch
- Up to 1.2A output current
 - Typical 3% output current accuracy
- High efficiency [up to 98%]
- Single pin on/off and brightness control using DC voltage or PWM
 - Up to 1MHz switching frequency
 - Up to 1200: 1 dimming ratio
- Inherent LED open-circuit/short-circuit protection
- Thermal shutdown protection circuitry
- Simple low parts count

Note: Reference device datasheet for specific features



Description

High brightness LED driver ICs available in various topologies such as boost, buck or buck-boost. They offer the highest efficiency, lowest noise, and the smallest footprints for driving a single LED or multiple series connected LEDs.

The buck controllers are meant for applications where voltage source is higher than the LED voltage. Boost controllers step up the input voltage to meet higher LED voltage requirements. The buck boost controllers provide a constant LED current independent of the supply voltage.

An integrated high-side current sensing circuit requires a single external resistor to set the nominal average output current. Output current can be adjusted linearly by applying an external control signal to the ADJ pin or digitally with a PWM waveform. Applying a voltage less than 0.2V to the ADJ pin turns the output off and switches the chip into a low current standby state.



Applications

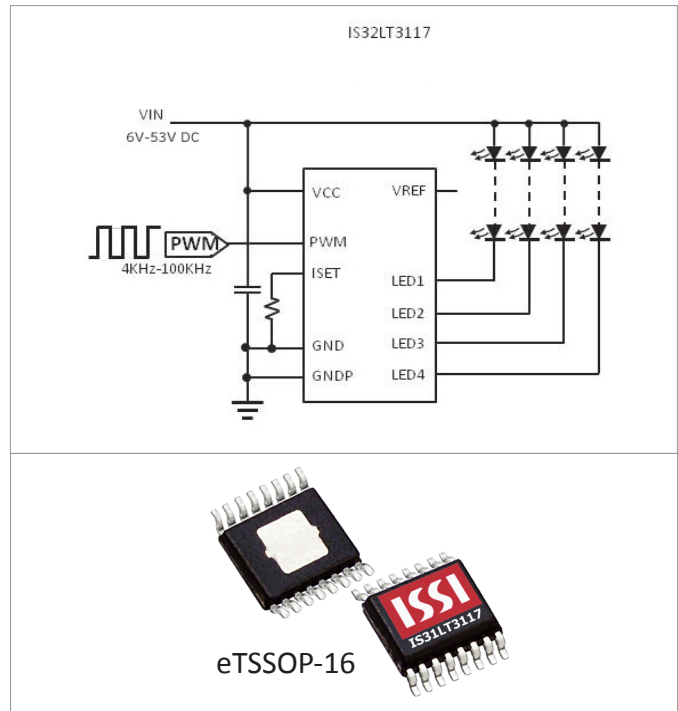
Industrial lighting, exterior building lighting, automotive aftermarket

Device	Driver Type	Vsupply	IOUT	Pkg-Pin
IS31LT3350	DC/DC, Step-down	6~40	750mA±5%	SOT89-5, SOT23-5
IS31LT3352	DC/DC, Step-down	6~40	750mA±5%	SOP-8
IS31LT3353	DC/DC, Step-down	6~40	1A±3%	SOT23-5
IS31LT3354	DC/DC, Step-down	6~40	±3%	SOT23-5
IS31LT3360	DC/DC, Step-down	6~40	1.2A±3%	SOP89-5
IS31LT3380	DC/DC, Step-down	8.5-40	1.2A±5%	SOP-8
IS31LT3505	Boost Step-up	6~30	24W±5%	MSOP-10
IS31LT3515	Buck, Boost or Buck-Boost	5.5-35V	±3%	QFN-16
IS31LT3938	DC/DC, AC/DC	10-450DC, 85-265AC	±3%	SOP-8
IS31LT3948	Boost Step-up	5-100	±5%	SOP-8

IS31LT3117 - 4-Channel CCR

Features

- Four 350mA channels, 1.4A total output
- Current matching 3% between channels
- Thermal current regulation above 130°C
- PWM dimming and Shutdown control input
- VREF 2.5V output to drive external standoff BJTs for high voltage/current operation
- Low IC quiescent current less than 100uA
- PWM frequency up to 100KHz



IS31LT3170 - 10-to-150mA CCR

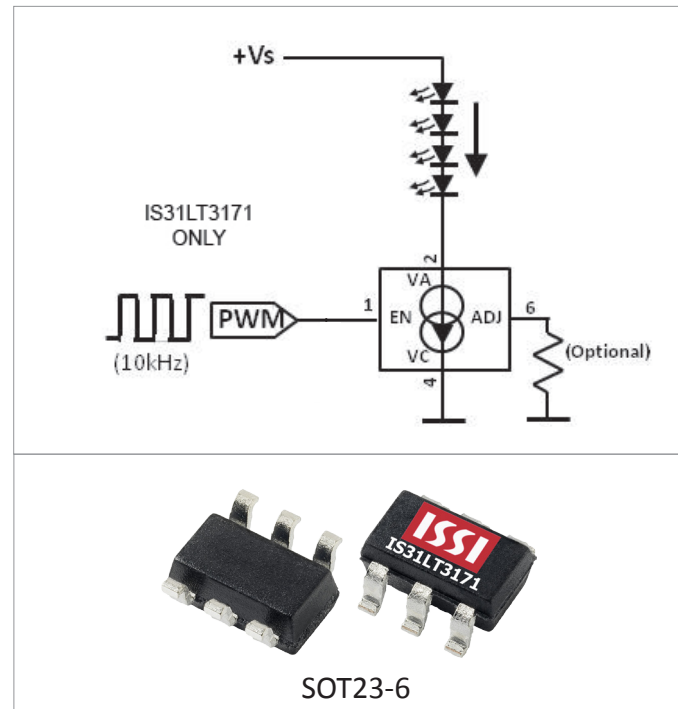
IS31LT3171 - 10-to-150mA CCR with PWM

IS31LT3172 - 10-to-200mA CCR

IS31LT3173 - 10-to-200mA CCR with PWM

Features

- Adjustable continuous output current up to 150 mA with an external resistor on ADJ pin
- LED drive current preset to 10 mA
- Supply voltage up to 42V
- Low or high side current control
- Negative thermal coefficient of -0.2 %/K reduces output current at higher temperatures
- SOT23-6 package



Part Number	Current range [mA]	PWM Input	Package
IS31LT3170	10-150	High Side	SOT-23
IS31LT3171	10-150	Low Side	SOT-23
IS31LT3172	10-200	High Side	eSOP-8
IS31LT3173	10-200	Low Side	eSOP-8

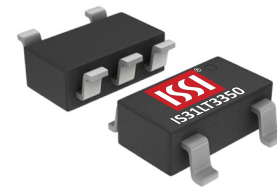
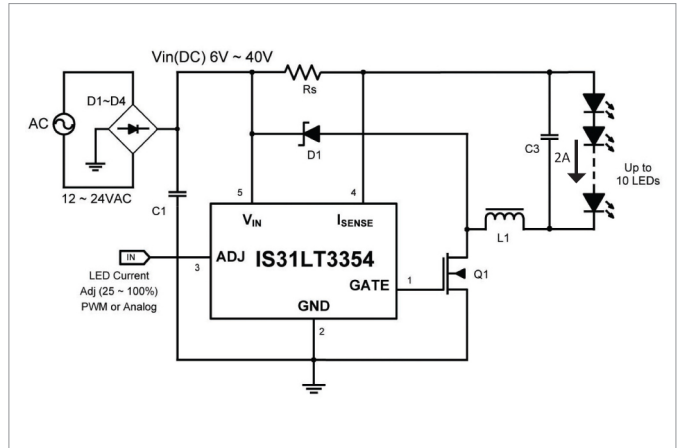
IS31LT3354 - Buck w/ External Switch

Features

- Up to 2A output current only limited by external component selection
- 1MHz switching frequency with 98% efficiency
- Up to 1200 : 1 dimming ratio
- Open and short LED, thermal shutdown protection
- Single pin ON/OFF and brightness control using DC voltage or PWM

Applications

- MR16 LED Spot Lighting
- LED Street Lamp
- Decorative Lighting



SOT23-5

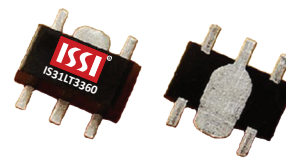
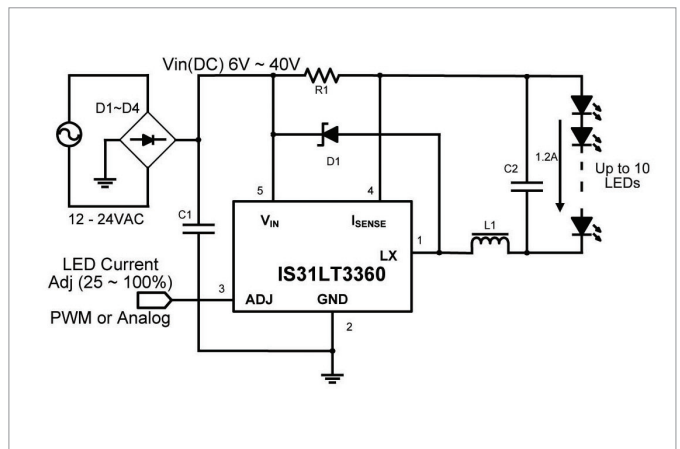
IS31LT3360 - Buck w/ Integrated Switch

Features

- Up to 1.2A output current with 3% accuracy
- 1MHz switching frequency with 98% efficiency
- Integrated 40V power MOS switch
- Single pin ON/OFF and brightness control using Linear or PWM
- Up to 1200 : 1 dimming ratio
- Open and short LED, thermal shutdown protection
- Temperature Ranges:
S3: -40°C to +105°C, S4: -40°C to +125°C

Applications

- MR16 LED spotlight
- LED Streetlamp, wall-washer, decorative lighting
- Automobile LED decorative lights



SOT89-5

HBLEDD Driver Switching (AC/DC & DC/DC)

Part No.	Driver	VIN (V)	IOUT Accuracy	Effcy [%]	Power Transistor	Typical Applications	Package	Key Feature	Status
IS31LT3350	DC/DC Buck	6-40	750mA ±5%	95	Built-in	Low voltage LED lighting, MR16 replacement	SOT23-5, SOT89-5	Single pin ON/OFF or brightness control with DC/PWM, thermal shutdown	Prod
IS31LT3353	DC/DC Buck	6-40	1A ±3%	97	Built-in	Low voltage LED lighting, Industrial lighting	SOT23-5, SOT89-5	High efficiency, 1MHz switching 1A driver	Prod
IS31LT3360*	DC/DC Buck	6-40	1.2A ±3%	98	Built-in	MR16, MR11 spot light, PAR light	SOT89-5	High efficiency with buck converter, with analog or PWM dimming	Prod
IS31LT3380	DC/DC Buck	8.5-40	1.2A ±5%	98	Built-in	MR16, MR11 spot light, PAR light	SOP-8	3-level switch dimming control, open/short and thermal shutdown protection	Prod
IS31LT3505	DC/DC Boost	6-30	24W ±5%	90	Built-in	Battery powered LED, solar light	MSOP-10	1MHz Boost Converter with 30V Internal NMOS	Prod
IS31LT3938	DC/DC, AC/DC	10-450 DC 85-265 AC	- ±3%	95	External	LED Lighting; Signal & decorative lighting	SOP-8	High voltage LED driver with Switch Dimming, Single External FET	Prod
IS31LT3948*	DC/DC Boost	5-100		90	External	Street lamp, LED lighting, Gen. illum.	SOP-8	Wide input voltage range, Boost, over-voltage/temperature protection	Prod

*-40C to +125C: Extended temperature range option available

Linear

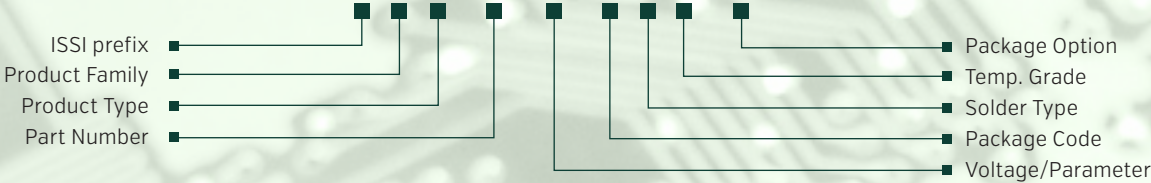
Part No.	Driver	VIN (V)	IOUT Accuracy	Power Transistor	Typical Applications	Package	Key Feature	Status
IS31LT3117	Linear	6 - 53V	350mA ±5.0%	Integrated	Low-side CCR	eTSSOP-16	Four 350 mA channel current sinks. Support for external ballast transistor	Prod
IS31LT3135	Constant Current	2.7-5.5V	500mA ±5%	Built-in	Miner lamp, Torch, Battery powered LED lighting	SOP-8	Main/sub dual-channel driver with short circuit and over temp. protection	Prod
IS31LT3170	Constant Current	5 - 42V	150mA	Built-in	Architectural, appliance, emergency lighting	SOT23-6	Adjustable CCR 10 to 150mA, negative thermal coeff., low/high side, power supply dimming	Prod
IS31LT3171	Constant Current	2.5 - 42V	150mA	Built-in	Architectural, appliance, emergency lighting	SOT23-6	Adjustable CCR 10 to 150mA, negative thermal coeff., low/high side, Logic PWM dimming	Prod
IS31LT3172	Constant Current	5-42V	200mA	Built-in	Architectural, appliance, emergency lighting	SOP-8-EP	Adjustable CCR 10 to 200mA, negative thermal coeff., low/high side, power supply dimming	Prod
IS31LT3173	Constant Current	2.5-42V	200mA	Built-in	Architectural, appliance, emergency lighting	SOP-8-EP	Adjustable CCR 10 to 200mA, negative thermal coeff., low/high side, Logic PWM dimming	Prod

Evaluation Boards

Device	Evaluation Board	Description
IS31LT3117-ZLS4-TR	IS31LT3117-ZLS4-EBBJT	4-Channel CCR, 350mA per channel
IS31LT3170-STLS4-TR	IS31LT3170-STLS4-EB	10-TO-150mA CCR, Power supply dimming
IS31LT3171-STLS4-TR	IS31LT3171-STLS4-TR-EB	10-TO-150mA CCR, Logic level dimming
IS31LT3350-V1SDLS2-TR	IS31LT3350-V1SDLS2-EB3CH	750mA, 40V Buck LED driver with integrated switch
IS31LT3352-V1GRLS2-TR	IS31LT3352-V1GRLS2-EBMR16	IS31LT3350 with temperature compensation
IS31LT3354-STLS2-TR	IS31LT3354-STLS2-EBDCDC	40V Buck LED driver with external switch
IS31LT3360-SDLS3-TR	IS31LT3360-SDLS3-EBSG	1.2A, 40V Buck LED driver with integrated switch
IS31LT3380-GRLS3-TR	IS31LT3380-GRLS3-EBSG	IS31LT3360 with switch dimming
IS31LT3505-SLS2-TR	IS31LT3505-SLS2-EBDC	30V Boost LED driver with integrated switch
IS31LT3948-GRLS2-TR	IS31LT3948-GRLS4-EB	100V Boost LED driver with external switch

Analog Part Decoder

IS 31 LT 3135 V1 - GR L S2 - TR



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

Package Option

- Blank = Tray or Tube
- TR = Tape & Reel



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