

Compact and Efficient White LED Drivers

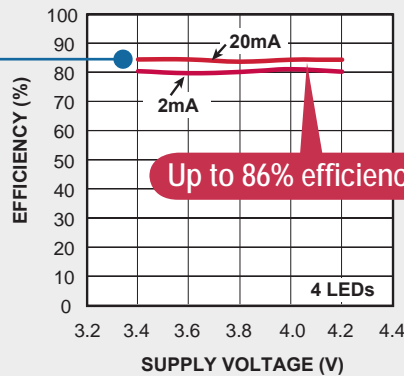
Intersil's ISL97631, ISL97632, ISL97634 are the three most compact fully integrated LED drivers for 1.5"-3.5" TFT LCD backlight applications.

High Efficiency for Longer Battery Life

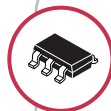
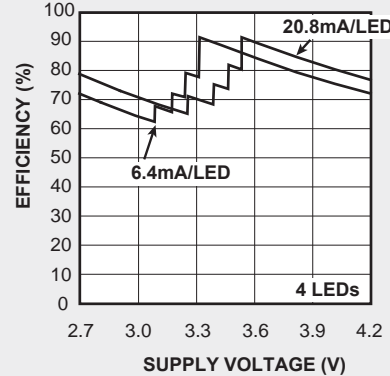
Inductor Boost Type of LED Drivers

Achieve consistent efficiency vs. supply voltage response suitable for critical battery operated applications.

ISL97632/34 Inductor Boost Solution Efficiency



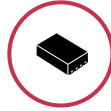
Competing Charge Pump Solution Efficiency



ISL97631

6 Ld TSOT
(2.9mm x 2.8mm)

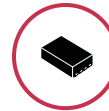
- Integrated Schottky Diode
- Most Compact Package



ISL97632

8 Ld DFN
(3mm x 2mm)

- Integrated Schottky Diode
- Single Wire Digital Dimming in DC Minimizes Noise
- Overvoltage Protection
- Compact Leadless Package



ISL97634

8 Ld DFN
(3mm x 2mm)

- Integrated Schottky Diode
- High Freq PWM Dimming up to 35kHz
- Overvoltage Protection
- Compact Leadless Package

Key Applications

- Smartphone, MP3 players, DSC backlight
- Up to 3.5" Navigation Displays, Handheld Displays



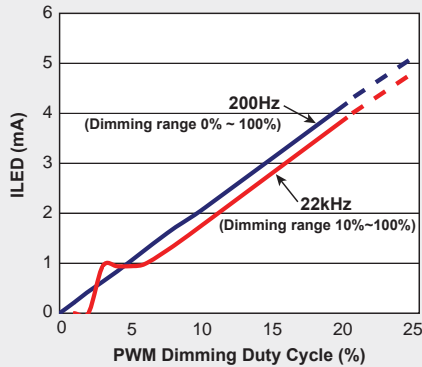
White LED Drivers Compact with Fully Integrated Features



Device	Device Description	Topologies	# of LEDs (max)	Digital Interface	For LCD Size	I _{OUT} (max) (mA)	Peak Efficiency (%)	V _{IN} (V)	V _{OUT} (max) (V)	OVP	Dimming Control	Package
ISL97631	6 LEDs Driver with Integrated Schottky Diode with OVP	Inductor Boost	7	N	1.8" to 3.5" LCD Backlight	30	85	2.7 to 5.5	27	N	PWM	6 Ld TSOT
ISL97632	White LED Driver with Digital Dimming	Inductor Boost	7	Single Wire	1.8" to 3.5" LCD Backlight	40	85	2.7 to 5.5	27	Y	Digital 5-Bit Dimming	8 Ld TDFN
ISL97634	White LED Driver with PWM Dimming	Inductor Boost	7	N	1.8" to 3.5" LCD Backlight	40	85	2.7 to 5.5	27	Y	PWM up to 20kHz	8 Ld TDFN

Wide Dimming Range & High Driving Current Multi-Channel LED Drivers

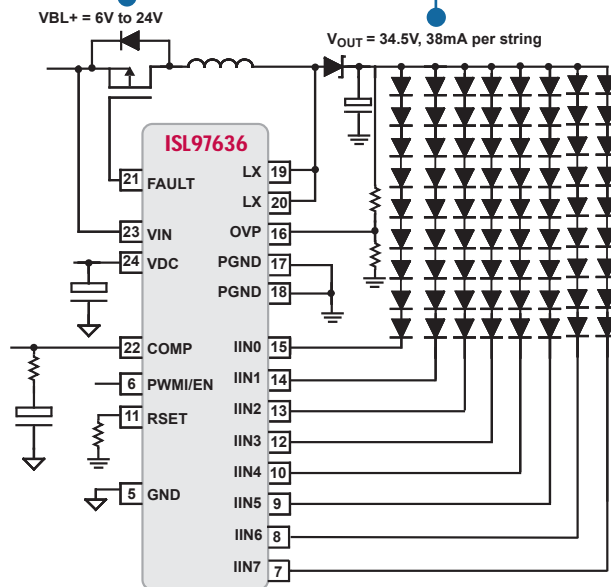
Wide Range of PWM Dimming



- Wide range of PWM dimming allows low duty cycles of operation that extend battery life.
- PWM Dimming up to 22kHz
 - Avoids audible noise sensitive applications.

6V to 24V Input
Support a wide range of battery and AC adaptors.

Max Driving Current 38mA Per Channel
Parallel-able multi-channel for higher current needs.



Key Features

- **Dynamic Headroom Control**
 - Highest VF String Detection
 - Saves Power and Reduces LED stress
- **Full Protection**
 - String Open / Short Circuit Detection
 - OVP & OTP
 - Optional Output Short Circuit Protection

Multi-Channel LED Drivers



Device	Device Description	Topologies	# of LEDs (max)	For LCD Size	I _{OUT} (max) (mA)	Peak Efficiency (%)	V _{IN} (V)	V _{OUT} (max) (V)	Dimming Control	Package
ISL97636	8-Channel LED Driver	Inductor Boost	80	up to 17"	280	91	6 to 24	34.5	PWM	24 Ld 4mmx 4mm QFN
ISL97636A	6-Channel LED Driver	Inductor Boost	60	up to 17"	210	91	6 to 24	34.5	PWM	24 Ld 4mmx 4mm QFN

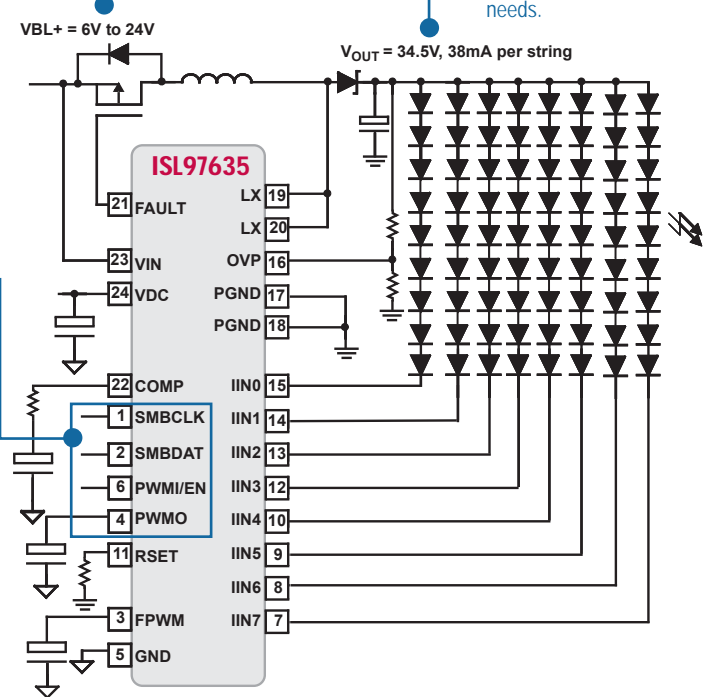
Industry's First SMBus Multi-Channel LED Drivers

6V to 24V Input
Support a wide range of battery and AC adaptors.

Max Driving Current 38mA Per Channel
Parallel-able multi-channel for higher current needs.

4 PWM Dimming Control Methods

1. Internally generated 256 step duty cycle programmed through the SMBus.
2. External signal from PWMI.
3. DPST mode. Internally generated signal with a duty cycle defined by the product of the external PWMI and SMBus programmed PWM at the internal setting frequency.
4. DC-to-PWM control.



ISL97635/35A LED drivers enable small & 1.3mm thin PCB modules fit into slim notebook LCD panel.

SMBus Multi-Channel LED Drivers



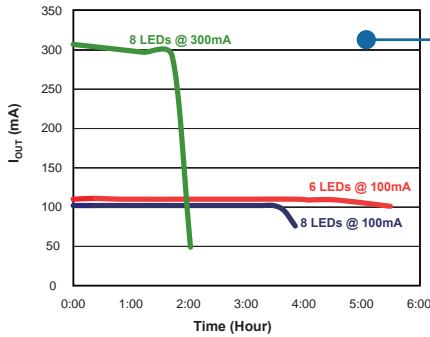
Device	Device Description	Topologies	# of LEDs (max)	Digital Interface	For LCD Size	I _{OUT} (max) (mA)	Peak Efficiency (%)	V _{IN} (V)	V _{OUT} (max) (V)	Dimming Control	Package
ISL97635	SMBus 8-Channel LED Driver	Inductor Boost	80	SMBus/I ² C*	up to 17"	280	91	6 to 24	34.5	SMBus, PWM or DC	24 Ld 4mm x 4mm QFN
ISL97635A	SMBus 6-Channel LED Driver	Inductor Boost	60	SMBus/I ² C*	up to 17"	210	91	6 to 24	34.5	SMBus, PWM or DC	24 Ld 4mm x 4mm QFN

* The driver employs de-featured SMBus design that the Part can be used with most I²C controllers

Best-In-Class Versatile HPLED Driver

ISL97801 is a high power LED driver that can be configured in Boost (More LEDs) and Buck (1 Ultra HPLED), or Buck/Boost (Load-Return-to-Input) for a wide range of applications.

Boost Configuration

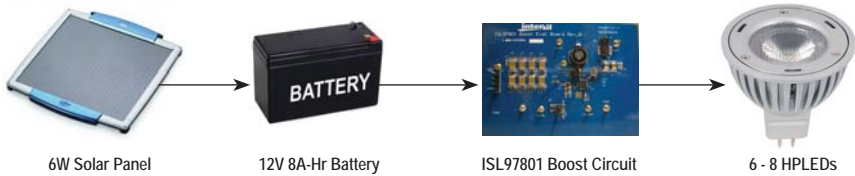


Run Time vs. LED Configuration

Longer Run Time

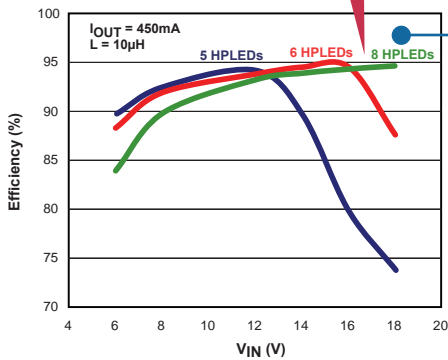
Efficient enough to allow adequate brightness level operation in hours for a small room.

Off-Grid Solar Lighting Solution



Buck/Boost (Load-Return-to-Input) Configuration

Up to 94% efficiency

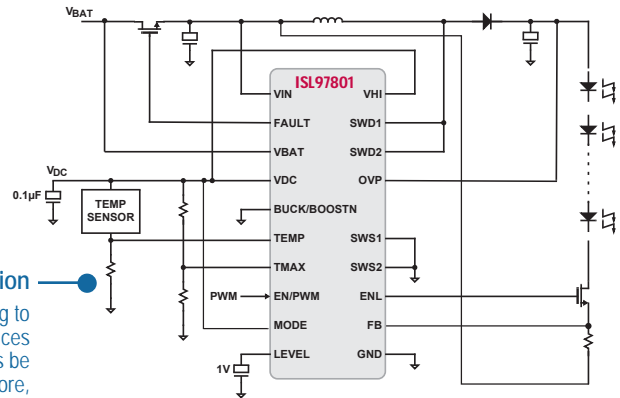


High Efficiency

The circuit operates with LEDs voltage either higher or lower than input voltage without compromising on efficiency.

FB Level Auto-Detection

Determines referencing to ground or input. If references to input, output will always be greater than input. Therefore, effectively allowing load to be higher or lower than the input.



Buck/Boost (Load-Return-to-Input) Application Circuit

High Power LED Drivers

Device	Device Description	Topologies	# of LEDs (max)	Dimming	Protection	Applications	V _{IN} (V)	I _{OUT} (max) (mA)	Peak Efficiency (%)	Package
ISL97801	Versatile HPLED Driver	Boost	9	PWM, DC	OVP, SCP, OTP	Landscape Lighting, Solar Lighting, Portable Lantern, 5"-9" LCD backlight	6 - 18	800	93	20 Ld 4mm x 4mm QFN
		Buck	2			Flashlight, Solar Lantern, Landscape Lighting	5 - 18	1100*	90	
		Load-Return-to-Input (Buck/Boost)	6			Flashlight, Portable Lantern, Pocket Projector	6 - 18	500	94	
ISL78100	AEC-Q100 HPLED Driver for automotive applications	Boost	9	PWM, DC	OVP, SCP, OTP	Automotive Brake Light, Signal Light, Traffic Lighting	6 - 18	800	93	20 Ld 4mm x 4mm QFN
		Buck	2			Automotive Brake Light, Signal Light, Dome Light	5 - 18	1100*	90	
		Load-Return-to-Input (Buck/Boost)	6			Automotive Brake Light, Signal Light, Traffic Lighting	6 - 18	500	94	

* 1HPLED

