

LED Lighting Product Solutions



Light up your world

Content

Products	Products Name	Page Number
	Touch Dimming Desk Light	3~8
	LED Mixed Colour Light	9~10
	RGB Wireless Dimming Light	11~12
	Touch Remote Mood Lighting	13~14
	Remote Mood Lighting	15~16
	Full-colour Intelligent Ceiling Light	17~18
	Yellow-white Temperature Ceiling Light	19~20
	LED Human Body Sensor Bulb	21~24
	E27 LED Bulb	25~28
	T8 LED Tube	29~34
	LED Outdoor Light	35~36

LED Lighting Product Introduction

With electrical efficiencies many times that of traditional incandescent lamps and fluorescent tubes, LED lighting products are already replacing traditional forms of general indoor and outdoor lighting in many areas. Having the advantages of not only lower power consumption but also longer life, lower maintenance and ability for intelligent control, LED illumination will become the future lighting product of choice in today's ever increasing environmentally conscious world.

In facing this rapidly expanding LED lighting product application area, Holtek's many years of analog and digital IC design experience has enabled it to release a full range of LED lighting driver devices capable of meeting the power IC demands of LED lighting products. Complementing these lighting drivers are also Holtek's other devices such as 8-bit MCUs, analog devices, touch switches, wireless remote devices and interface products all of which combine together to offer LED lighting product designers a total Holtek IC device solution for their LED commercial lamps and other LED lighting systems.

Holtek's range of LED lighting drivers are supplied with a choice of design topologies and include a wide range of functions. Features such as wide input voltage range, overcurrent, overvoltage and short circuit protection, multiple dimming types, PFC correction and integrated power MOS components, ensure a minimum amount of external components are required for LED lighting driver implementation. By combining these lighting driver devices with Holtek's 8-bit microcontrollers and other Holtek peripheral devices, lighting product designers have the ability to construct energy efficient intelligent lighting solutions to meet the demands for today's environmentally friendly lighting applications such as indoor and outdoor area lighting, mood lighting, emergency lighting to name but a few.

More

For more information about Holtek's LED lighting products solutions, visit www.holtek.com/lighting.



Touch Dimming Desk Light

BS83B08A-3

Features

- Touch Key Flash MCU : BS83B08A-3 – 16NSOP package
- Uses PWM output for LED lighting dimming
- 4-level dimming function
- Power-off memory function
- Single 5V USB charge interface

Applications

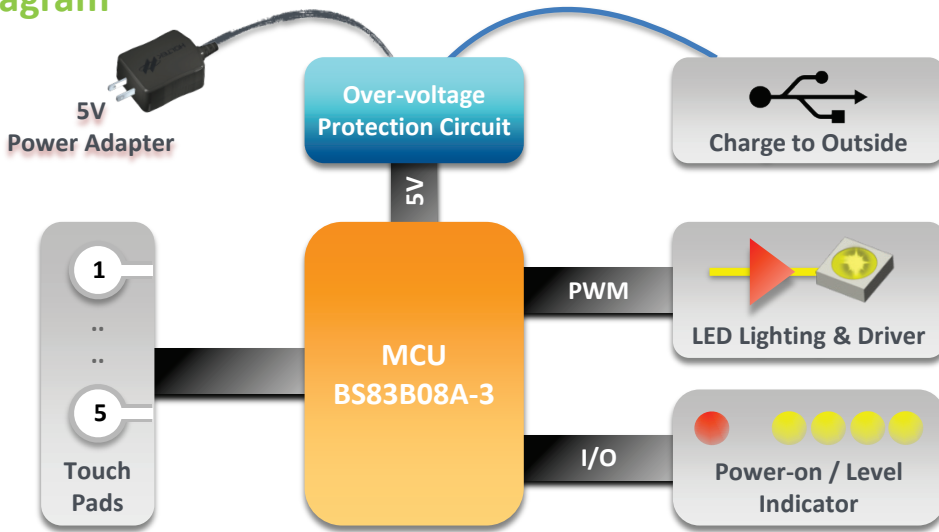
Consumer Products, Home Appliances.



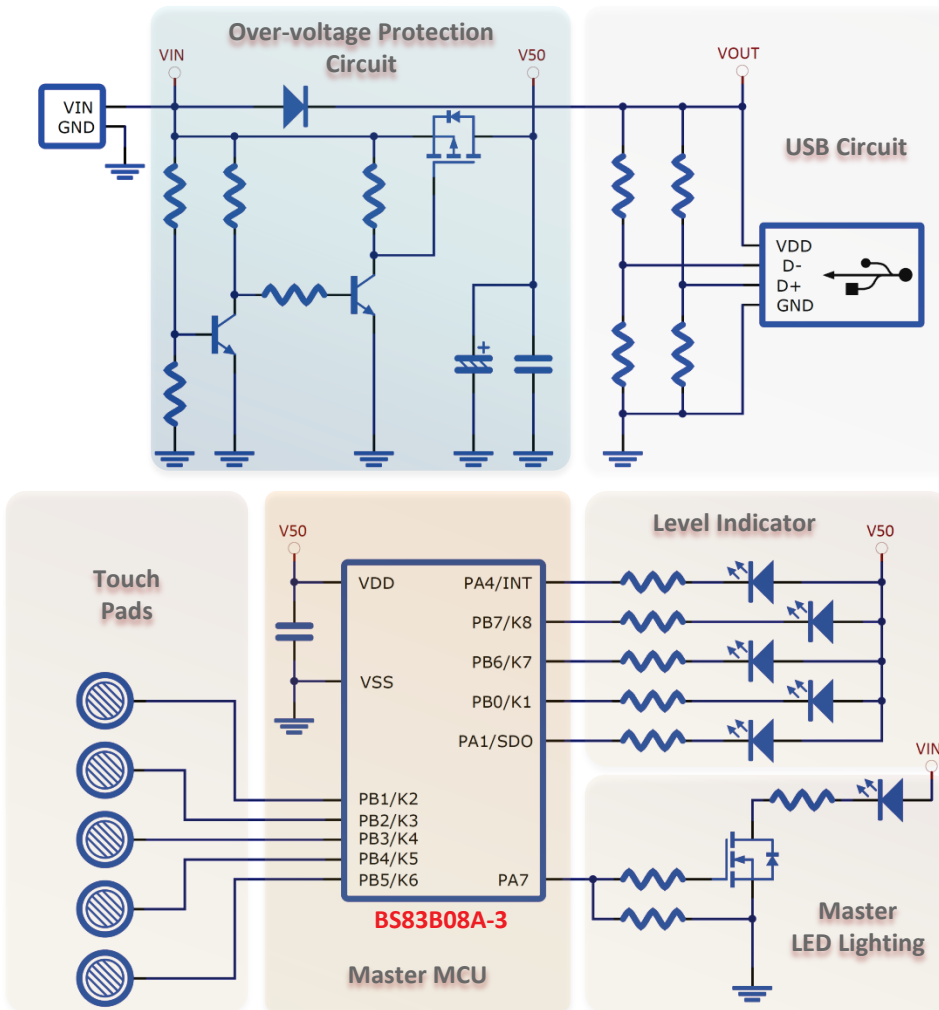
Related Products

Part No.	ROM	RAM	EEPROM	I/O	Timer	Keys	LVR	Package
BS83B08A-3	2K×16	160×8	64×8	14	8-bit×1	8	2.55V	16NSOP 16SSOP

Block Diagram



Application Circuit



Touch Dimming Desk Light

BS83B08A-3 + HT7L4091-1 + HT7465

Features

- Up to 8 touch switches input, internal EEPROM
- Requires few external components and high anti-interference capability
- Roller touch operation with 6-stage brightness adjustment
- DC power output, no flickering
- Low power consumption and high brightness LED lighting
- Column swivels with an angle of 90 degree for flexible adjustment
- Base provides a USB interface as a charging station

Applications

LED Desk Light, Touch Home Appliances, Touch Wall Switch etc.



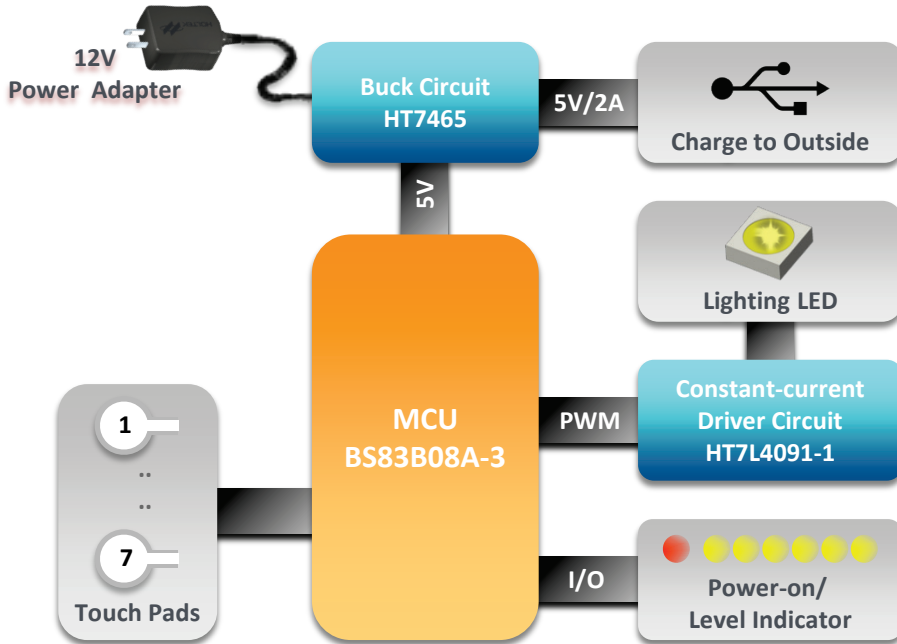
Related Products

Part No.	ROM	RAM	EEPROM	I/O	Timer	Keys	Stack	Package
BS83B08A-3	2Kx16	160x8	64x8	14	8-bitx1	8	4	16NSOP/SSOP

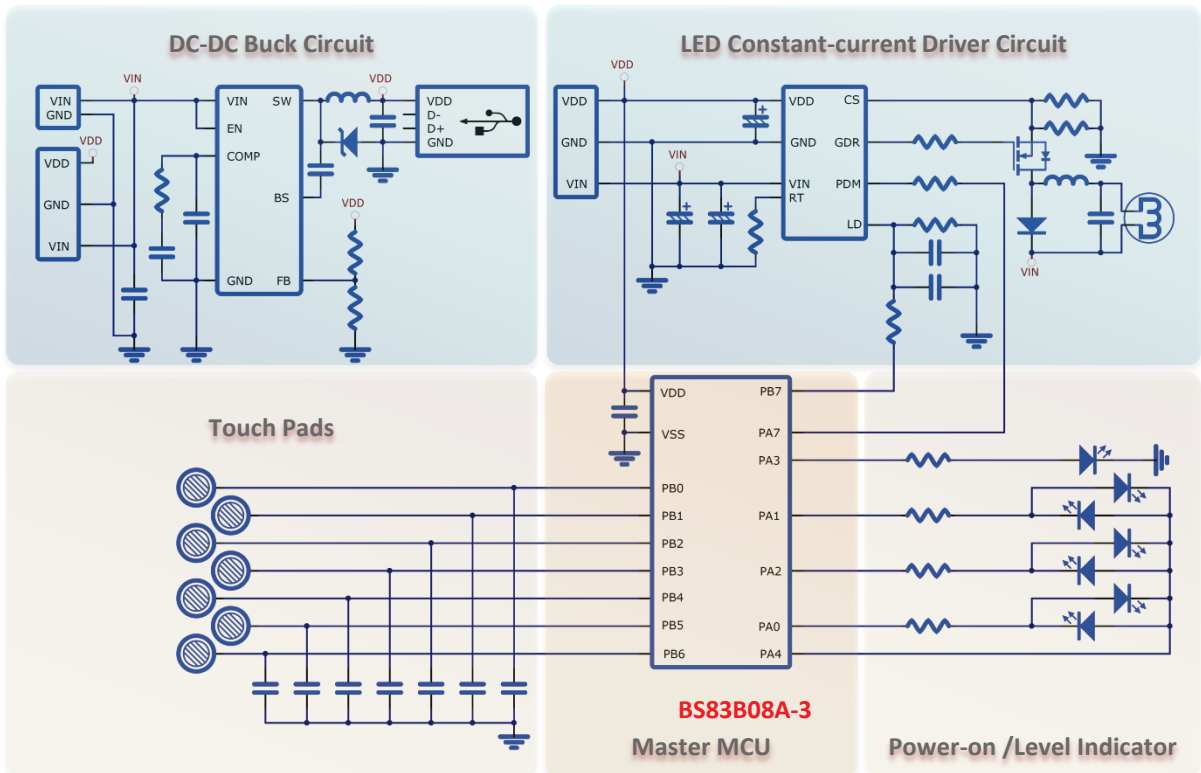
Part No.	Topology	Input Voltage	Dimming	Current Limit	OVP	SCP	OTP	Package
HT7L4091-1	Non-Isolation	9~24V	PWM : 1~99% Linear : 0~250mV	✓	✓	✓	✓	8SOP

Part No.	Input Voltage	Output Current	Frequency	V _{OUT} Min.	V _{OUT} Max.	Current Limit	I _{shutdown}	Package
HT7465	24V	2A	380kHz	0.92V	20V	3.4A	20μA	8SOP

Block Diagram



Application Circuit



Touch Dimming Desk Light

BS84B06A-3 + HT7150-1

Features

- DC 15V/1A input and internal PWM buck driver
- 6-stage LED brightness with maximum output of 4.55W
- Internal touch key and touch slider function
- PWM dimming function and continuous stable brightness output
- LED output constant function
- Over-voltage/Over-current Protection

Applications

LED Desk Light, Touch Home Appliance, Touch Wall Switch etc.

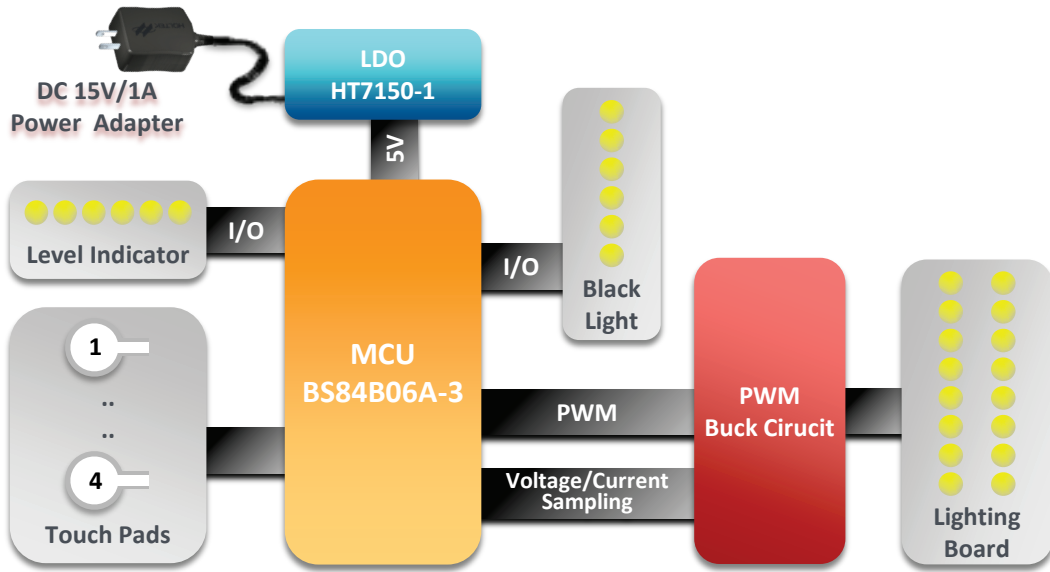


Related Products

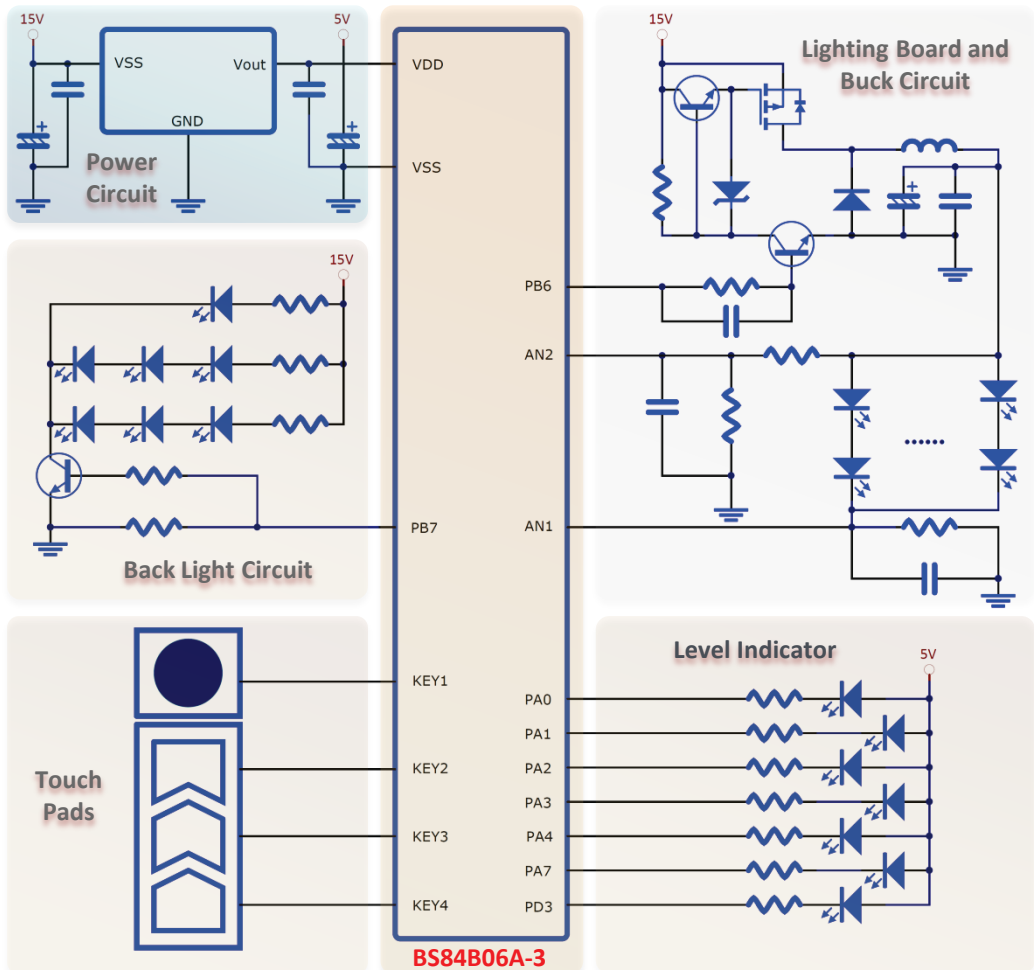
Part No.	ROM	RAM	EEPROM	I/O	Timer	A/D	Keys	SPI/I ² C	Stack	Package
BS84B06A-3	3K×16	288×8	64×8	18	8-bit×1	12-bit×8	6	1	6	16NSOP 20DIP/SOP

Part No.	ROM	RAM	EEPROM	I/O	Timer	A/D	Keys
HT7150-1	30V(Max.)	5.0V	30mA(Max.)	2.5μA(Typ.)	±3%	Soft-Start	SOT23-5 SOT89, TO92

Block Diagram



Application Circuit



LED Mixed Colour Light

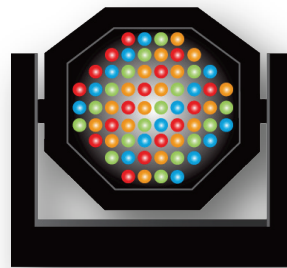
HT66F0042 + HT68FB540 + BS83B08A-3 + HT7750SA

Features

- HT66F0042 3-Colour PWM RGB control function
- Use PC to download data through USB IC HT68FB540 for Colour Demo function
- Use Bluetooth function in tablet PC to implement Colour Demo function
- Use BS83B08A-3 slider key to implement Colour Demo function
- HT66F0042 Auto Colour Demo function
- Enter power down mode automatically after one minute if no operations

Applications

Recreation Facilities, Automobile Industry, Outdoor Decoration, Sign and Indoor Lighting.



Colour Stage Light

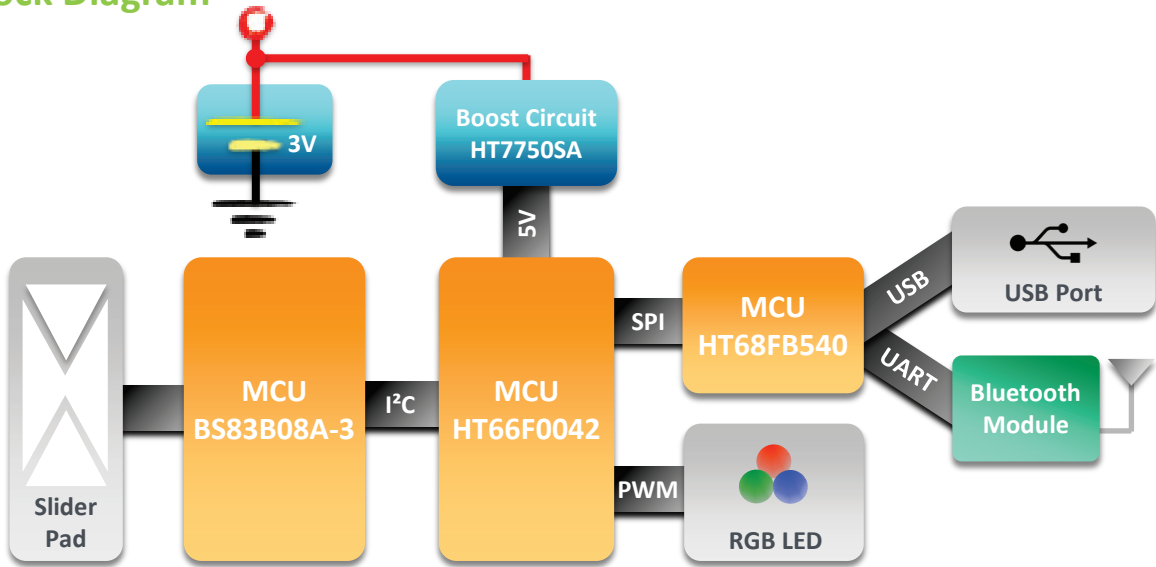


Mixed Colour Light

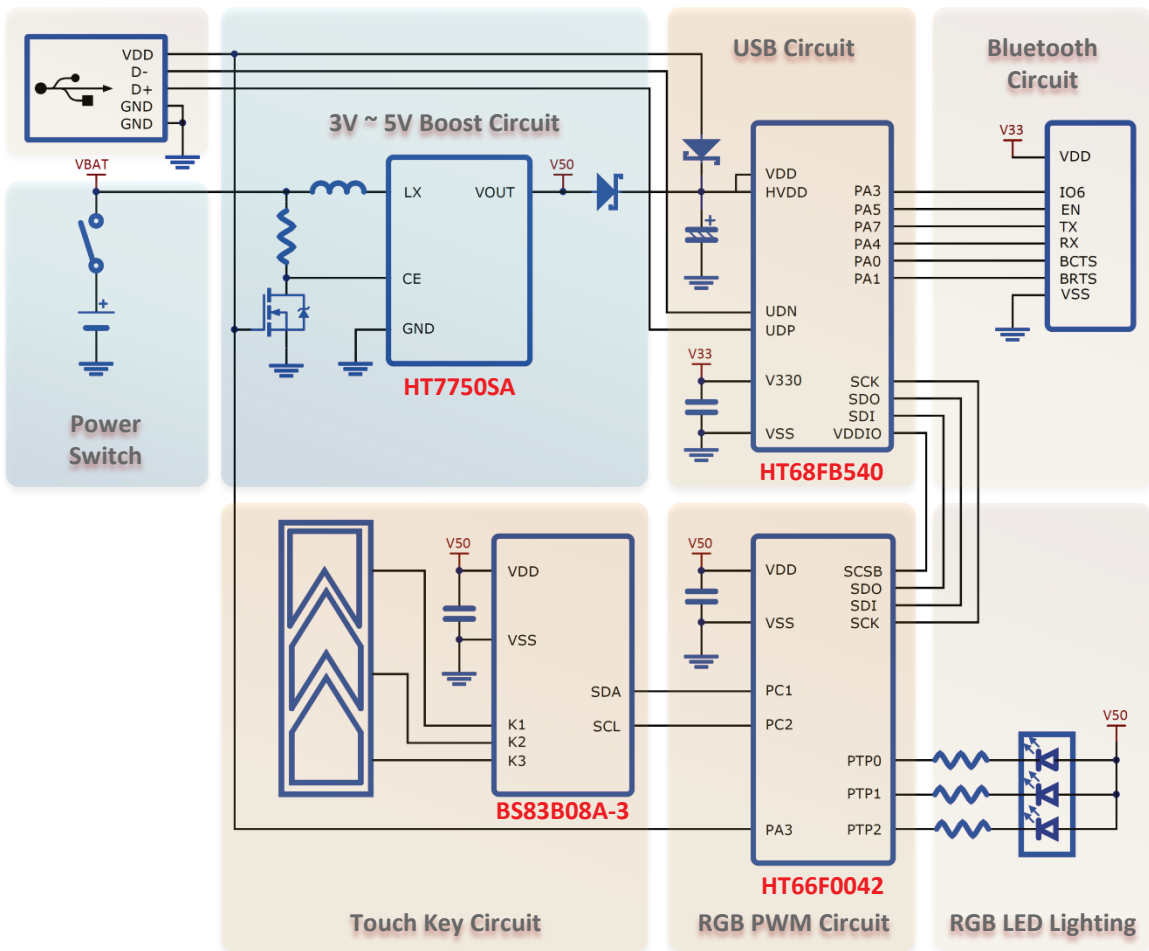
Related Products

Part No.	ROM	RAM	EEPROM	I/O	A/D	Timer	Stack	Package
HT66F0042	2K×15	96×8	32×8	22	12-bit×8	10-bit×6	6	20/24 SOP/SSOP
Part No.	ROM	RAM	Timer	I/O	Internal OSC	70mA LDO	Stack	Package
HT68FB540	4K×16	256×8	10-bit CTM×2 10-bit STM×1 16-bit STM×1	17	√	√	8	20QFN 24SSOP
Part No.	ROM	RAM	EEPROM	I/O	Timer	Keys	LVR	Package
BS83B08A-3	2K×16	160×8	64×8	14	8-bit×1	8	2.55V	16NSOP 16SSOP

Block Diagram



Application Circuit



RGB Wireless Dimming Light

Master : HT66F0082 + BC9824 + HT7550-1 + HT7233

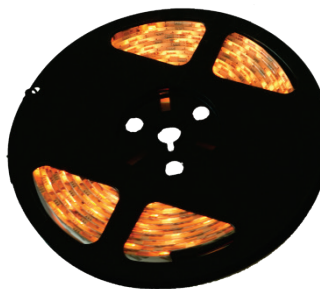
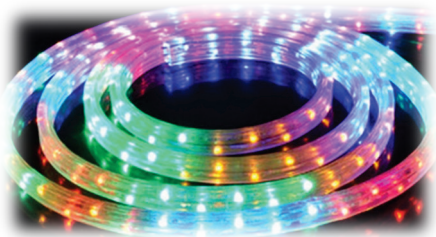
Remote Controller : BS84C12A-3 + BC9824

Features

- Operating Voltage : CNT 3V, Master 12V ~ 24V
- Modulation Type : GFSK
- LED strip has up to 14 operating modes
- Remote controller current consumption : 3mA in operating mode, 15µA in sleep mode
- Remote function : On/Off, Colour Select, Brightness Adjustment, Variable Speed Adjustment

Applications

Recreation, Decorative, Living Room, Study and Bedroom Lighting etc.

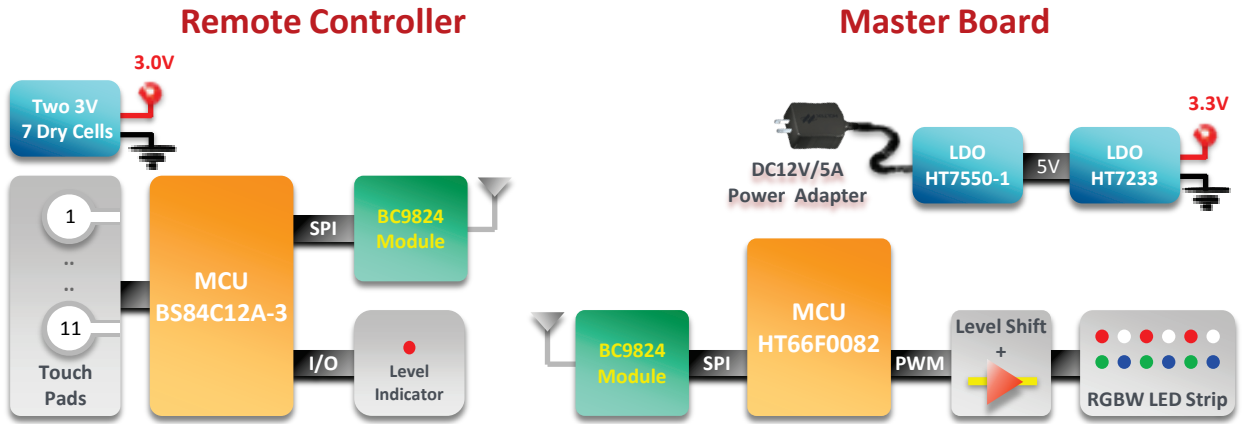


Related Products

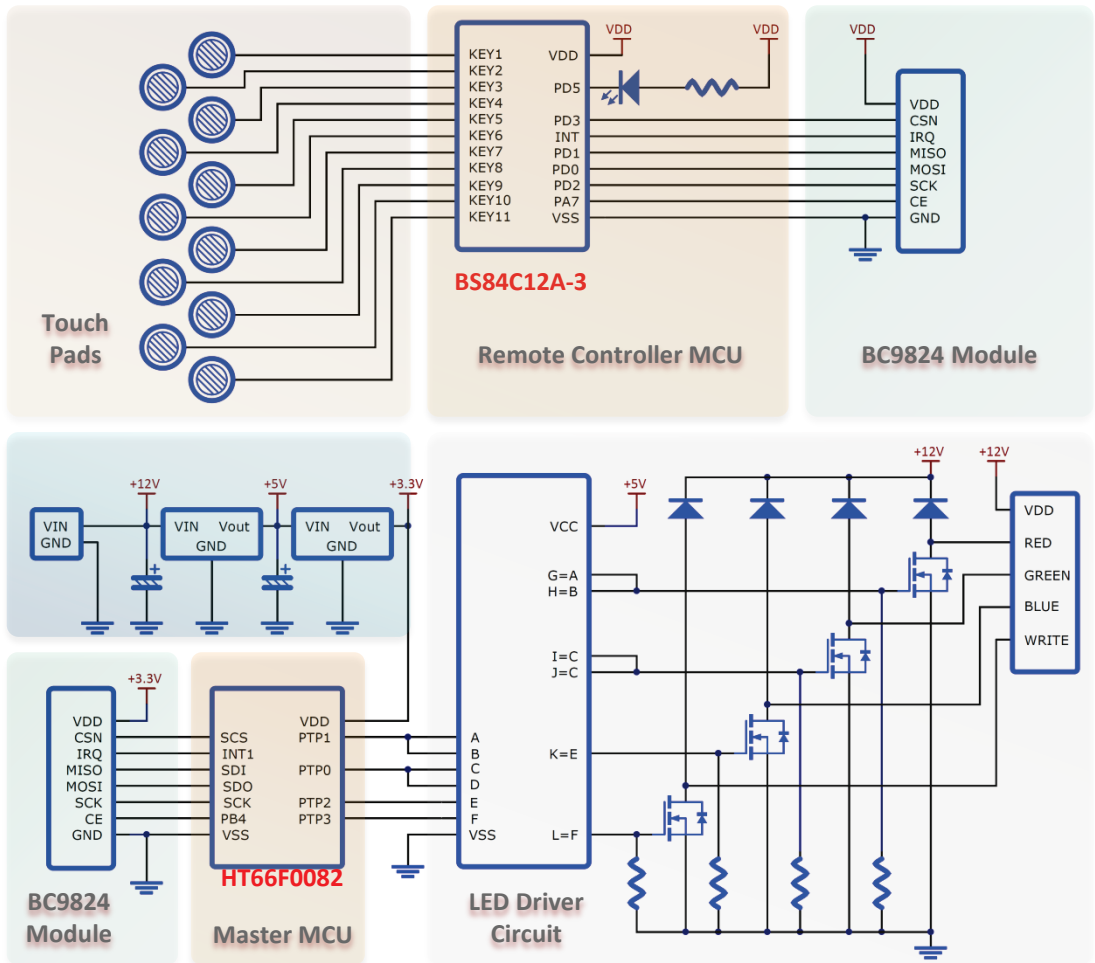
Part No.	ROM	RAM	EEPROM	I/O	A/D	Timer	Stack	Package
HT66F0082	4K×16	128×8	64×8	26	12-bit×8	10-bit PTM×4 10-bit CTM×2	6	24/28 SOP/SSOP
BS84C12A-3	4K×16	384×8	64×8	26	12-bit×8	8-bit Timer×1	6	20/24/28 SOP/SSOP

Part No.	Input Voltage	Operating Frequency	Modulation Type	Mbps	Data Byte	Interface	Package
BC9824	1.9V~ 3.6V	2400MHz~ 2483.5MHz	GFSK	250Kbps/1Mbps/ 2Mbps	1~32 Bytes	SPI	20QFN

Block Diagram



Application Circuit



Touch Remote Mood Lighting

HT66F0042 + BS83B08A-3 + HT7233

Features

- 5V/1A DC Power Adapter Power Supply
- Three modes : Auto changing mode, Mood lighting mode, White light mode
- 256-colour light can freely change using touch operation
- Use an infrared remote controller to control light on/off, light colour, white light brightness etc.

Applications

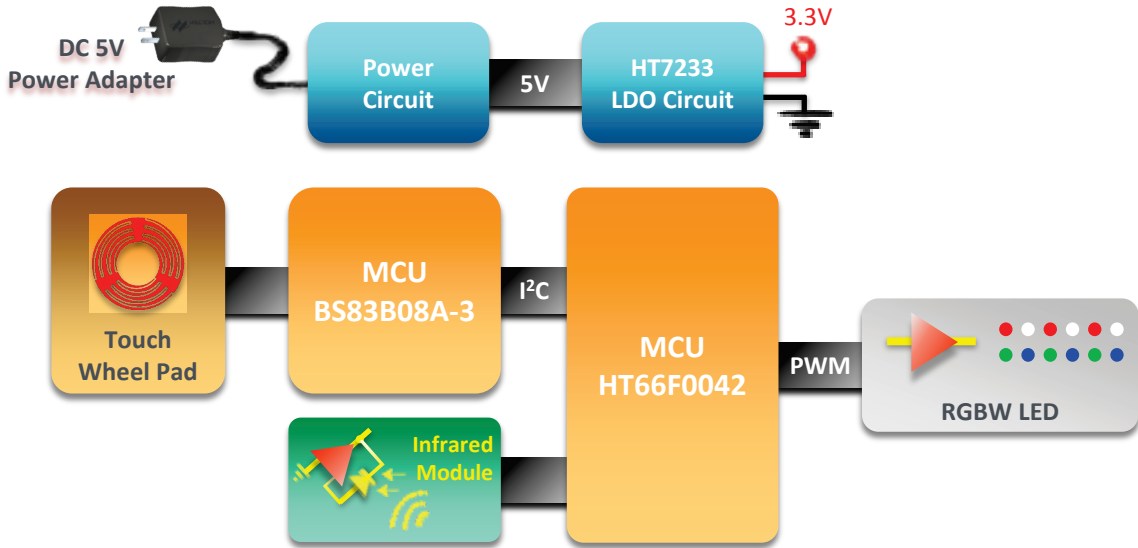
Mood lighting for Living room, study room, Bedroom, etc.



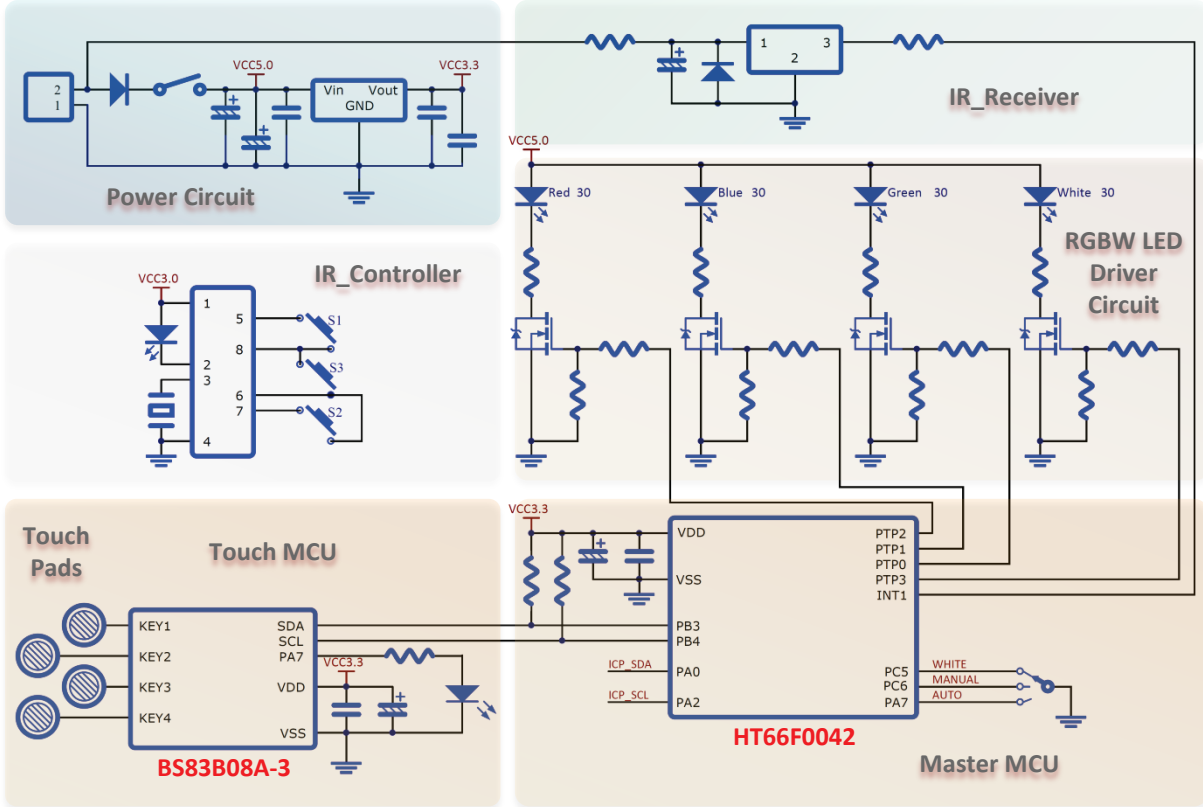
Related Products

Part No.	ROM	RAM	EEPROM	I/O	Timer	SIM	Stack	Package
HT66F0042	2K×15	96×8	32×8	22	10-bit PTM×4 10-bit CTM×2	√	6	20/24 SOP/SSOP
BS83B08A-3	2K×16	160×8	64×8	14	8-bit Timer×1	√	4	16NSOP/SSOP

Block Diagram



Application Circuit



Remote Mood Lighting

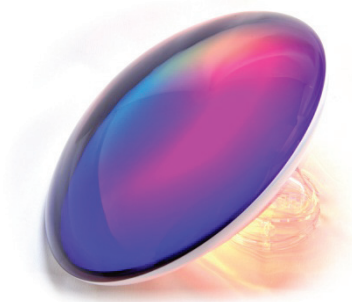
HT66F0082 + HT7465 + HT7233

Features

- Master MCU : HT66F0082 - 24SSOP package, 4K words Flash program memory, 128 Bytes data memory, 64 Bytes EEPROM, 10-bit CTM × 2 and 10-bit PTM × 4 etc.
- Communication method : Infrared
- Functions : monochrome and three circulating colour modes, four switch modes, automatically enter circulating colour mode when powered on.
- Maximum operating current : approx 0.8A at maximum brightness. When the light is on, it is only warm not hot.
- RGB : 8 sets × 2 master boards, 2 sets × 2 back light boards, a total of 20pcs RGB
- 16,000,000 colour changing types, easily used remote controller to control the above display area and colour

Applications

Living room, Bedroom, coffee house, music hall, hotel lightings etc.

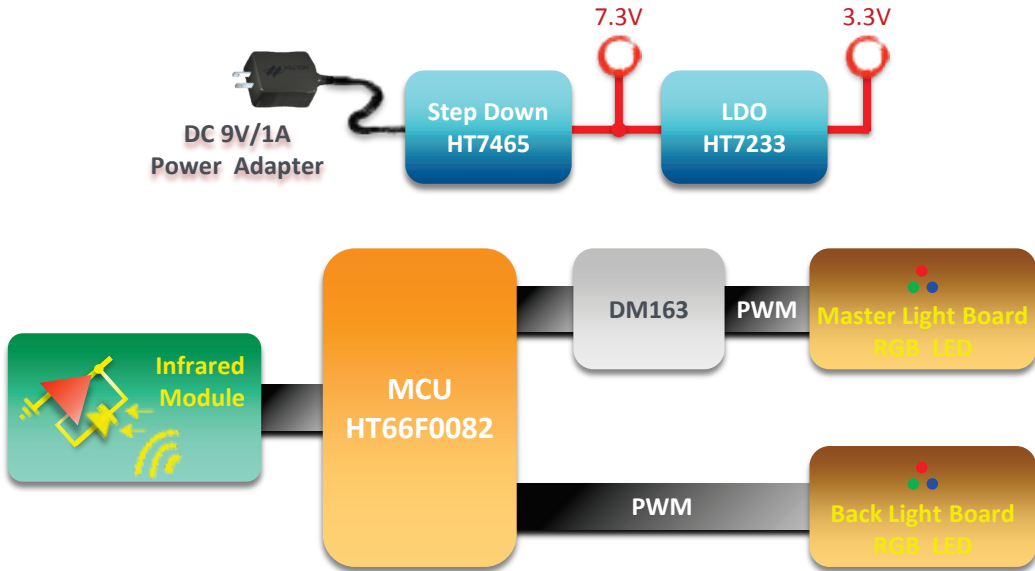


Related Products

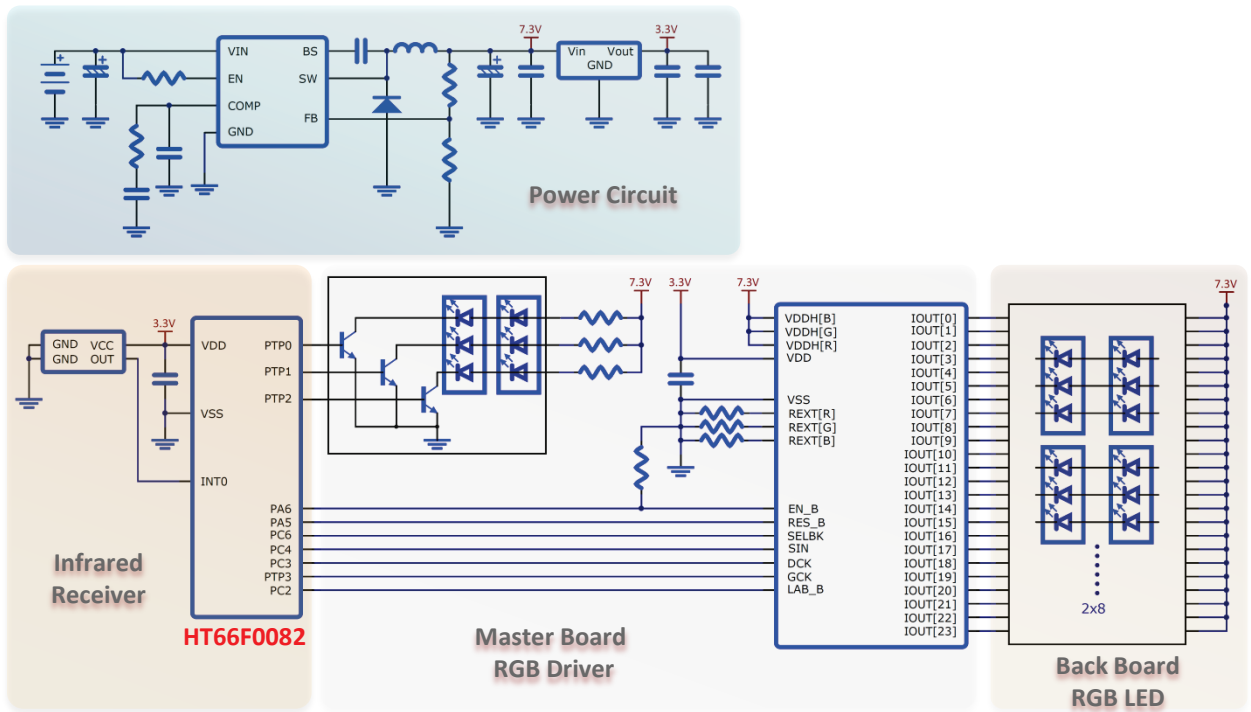
Part No.	ROM	RAM	EEPROM	I/O	A/D	Interface	Stack	Package
HT66F0082	4K×16	128×8	64×8	26	12-bit×8	SPI / UART / I ² C	6	24/28 SOP/SSOP

Part No.	Input Voltage	Output Current	Frequency	V _{OUT} Min.	V _{OUT} Max.	Current Limit	I _{shutdown}	Package
HT7465	24V	2A	380kHz	0.92V	20V	3.4A	20μA	8SOP

Block Diagram



Application Circuit



Full-colour Intelligent Ceiling Light

Master Driver : HT66F0082 + BC9824 + HT7L4661

Remote Controller : BS84C12A-3 + BC9824

Features

- Operating Voltage : Remote controller 3V, Master 3.3V
- Modulation Type : GFSK
- Remote Controller Current Consumption : 2mA in operating mode, 15μA in sleep mode
- Master Current Consumption : LED Off 18mA
- Remote Function : On / Off, Colour Select, Brightness Adjustment, Colour Temperature Adjustment

Applications

Recreation Decoration , Living room, Study and Bedroom Lighting etc.



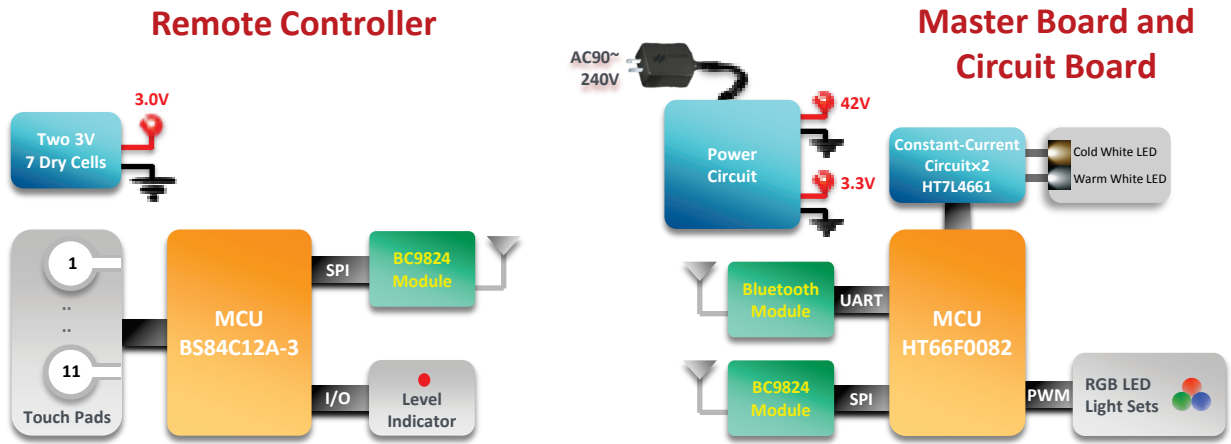
Related Products

Part No.	ROM	RAM	EEPROM	I/O	Timer	A/D	Stack	Package
HT66F0082	4K×16	128×8	64×8	26	10-bit PTM×4 10-bit CTM×2	12-bit×8	6	24/28 SOP/SSOP
BS84C12A-3	4K×16	384×8	64×8	26	8-bit Timer×1	12-bit×8	6	20/24/28 SOP/SSOP

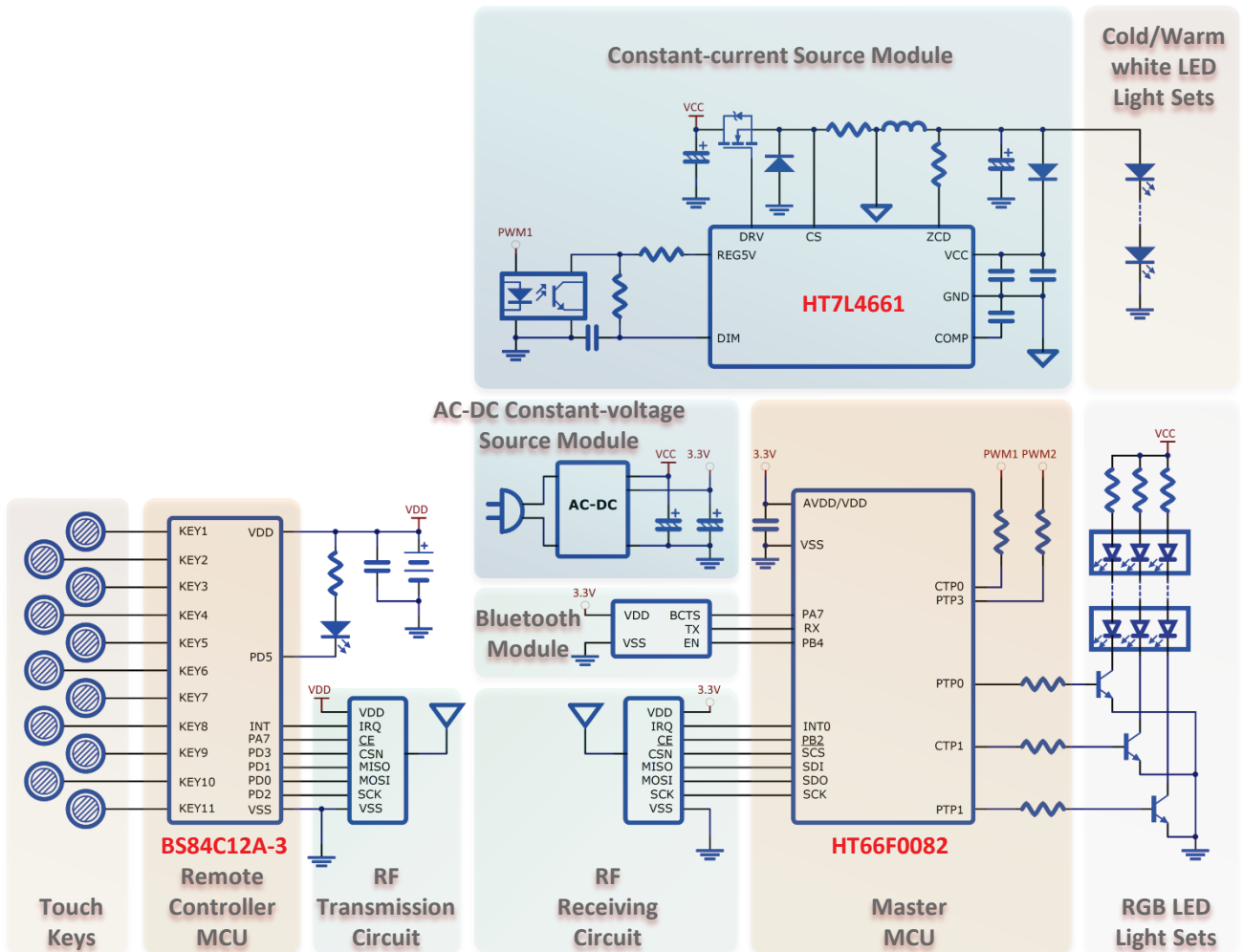
Part No.	Non-Isolation Topology	PFC	Input Voltage	HV Start-up	5V LDO	Dimming Range Brightness (%)	Dimming Range Voltage	Package
HT7L4661	Buck Topology	√	9.5~25V	650V	√	13~100	0.4~3.0V	10MSOP

Part No.	Input Voltage	Operating Frequency	Modulation Type	Mbps	Data Byte	Interface	Package
BC9824	1.9V~3.6V	2400MHz~ 2483.5MHz	GFSK	250Kbps/1Mbps/ 2Mbps	1~32 Bytes	SPI	20QFN

Block Diagram



Application Circuit

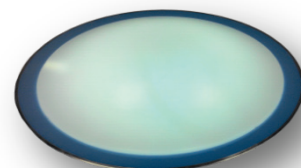


Yellow-white Temperature Ceiling Light

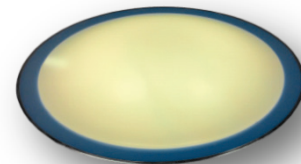
BC66F840 + HT7L4661

Features

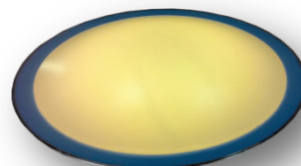
- Operating Frequency : 2.405 ~ 2.485GHz
- Operating Voltage : 3V
- Modulation Type : GFSK
- Data Transmission Rate : 1 Mbps
- Output Power : 0dBm
- Receiver Sensitivity : -91.5dBm
- Remote Controller : CR2032 cell power
 - ▶ Operating Current Consumption : 1.62mA AVG
 - ▶ Current Consumption In Sleep Mode : 3.9μA
 - ▶ Function : On/Off, Yellowish-white Temperature Adjustment Function, Brightness Adjustment
- Master : AC 110V ~ 220V
 - ▶ Operating Current Consumption : 19mA
 - ▶ Current Consumption In Sleep Mode : 5.1mA
 - ▶ LED : 2P×18 S(× 2) 18W, White LED×36 Yellow LED×36



Cold white



White



Warm White

Applications

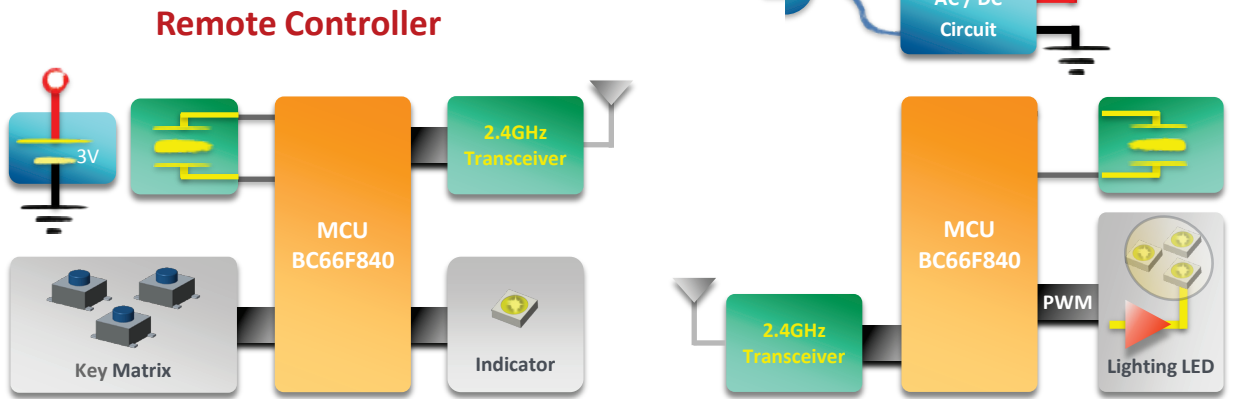
Department Stores, Airports, Libraries, Study Rooms, Living Rooms, Bedrooms etc.

Related Products

Part No.	ROM	RAM	EEPROM	I/O	A/D	Internal 2.4GHz Transceiver	Stack	Package
BC66F840	4K×16	256×8	128×8	21	12-bit×8	√	8	32QFN

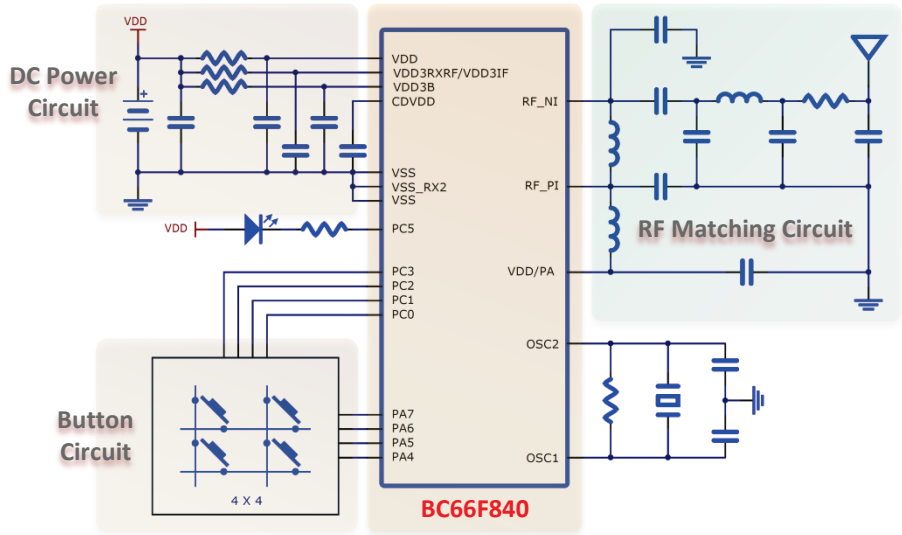
Part No.	Non-Isolation Topology	PFC	Operation Voltage	HV Start-up	5V LDO	Dimming Range Brightness (%)	Dimming Range Voltage	Package
HT7L4661	Buck Topology	√	9.5~25V	650V	√	13~100	0.4~3.0V	10MSOP

Block Diagram

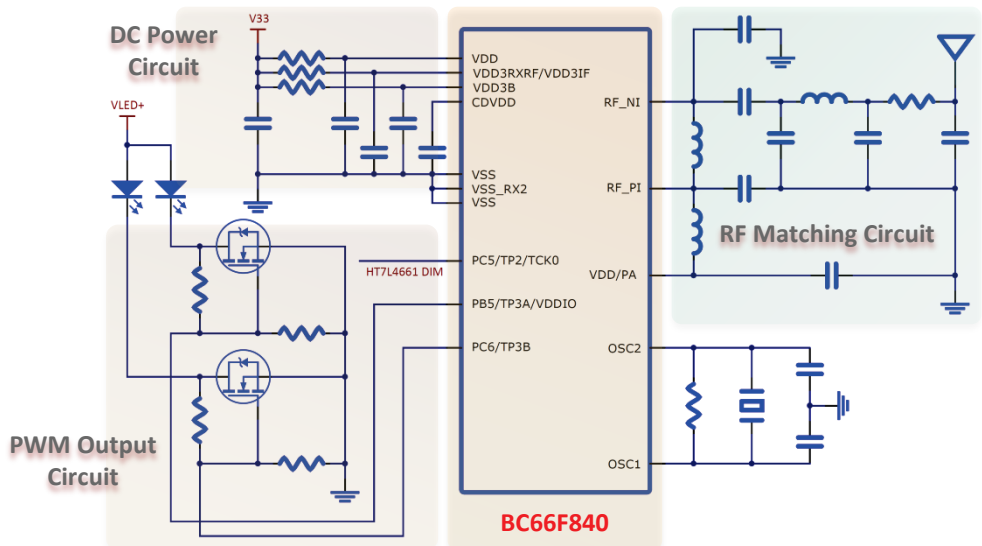


Application Circuit

TX Circuit



RX Circuit



LED Human Body Sensor Bulb

HT7M2126 / 36 / 56 / 76

Features

- Operating Voltage : 2.7V ~ 5.5V
- Low power consumption : Operating Mode < 1.5mA, Standby Mode < 30μA (Operating Voltage 3.0V)
- Internal DSP Intelligent Signal Recognition Algorithm
- Transmission interface can select I²C (Network Mode) or I/O (Stand-alone Mode)
- Externally connected optical sensors eg. Photo Transistor
- Internal temperature sensor with temperature compensation to ensure stable detection distance
- Fast and stable - can operate reliably 3 sec. after power-on
- Complete series contains multiple modules for different application requirements

Applications

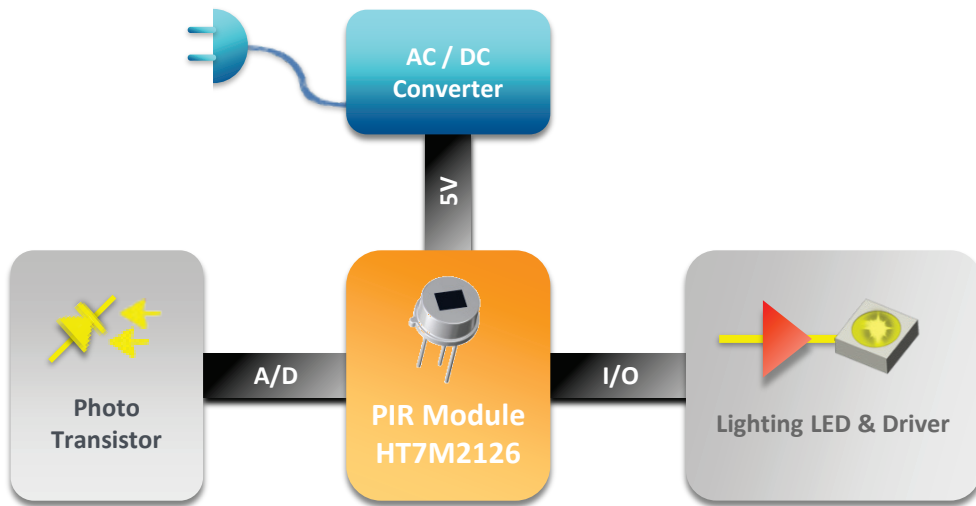
Security Monitoring Systems, Intelligent Lighting Control, Home Appliances Energy-saving Control, Office/factory Equipment Automatic Control.



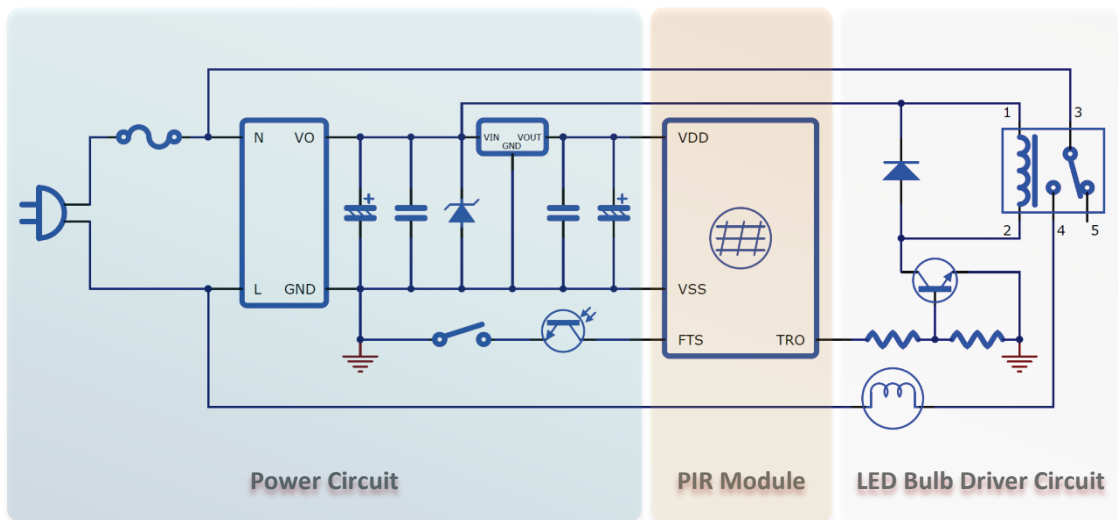
Related Products

Part No.	Visual Angle H/V	Distance
HT7M2126	121°, 77°	4 ~ 7 m
HT7M2136	91°, 10°	5 ~ 7 m
HT7M2156	10°, 20°	8.5 ~ 11 m
HT7M2176	86°, 75°	7 ~ 8 m

Block Diagram



Application Circuit



LED Human Body Sensor Bulb

HT7615A + HT7L4661

Features

- HT7615A PIR controller and HT7L4661 power module
- Input wattage : 9.5W
- Detection range up to 6 ~ 10m
- PWM duty selection – DIM function
- Internal active PFC function
- Full AC Input Range : $85V_{AC} \sim 265V_{AC}$
- High efficiency – when dimming is set to 100%, the efficiency is up to 80%
- High LED current accuracy, strong load regulation ability
- High Power Factor, low THD
- Protection Functions
 - ▶ Short-circuit protection (SCP)
 - ▶ Over-voltage protection (OVP)
 - ▶ Over-temperature protection (OTP)



Applications

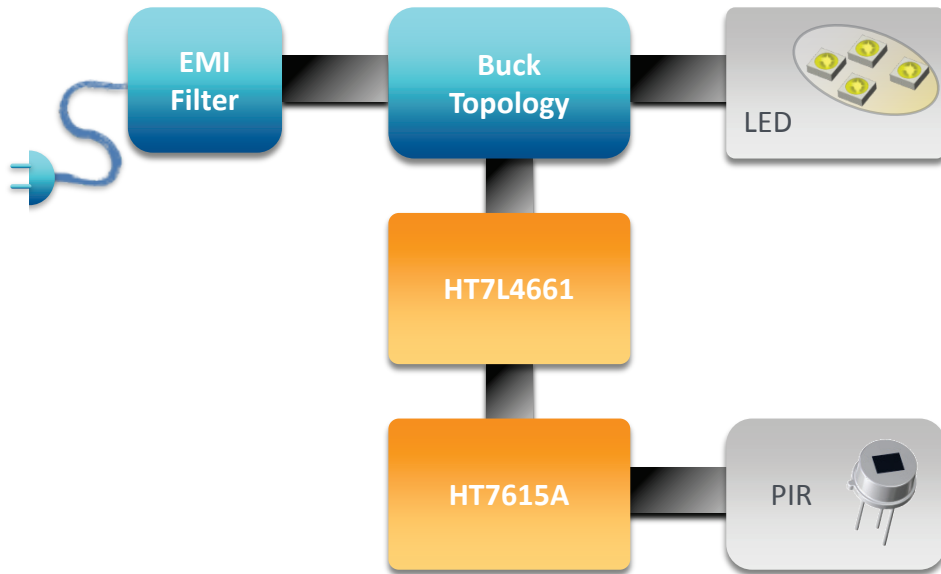
Sensor Lighting, Home Lighting and Indoor Lighting.

Related Products

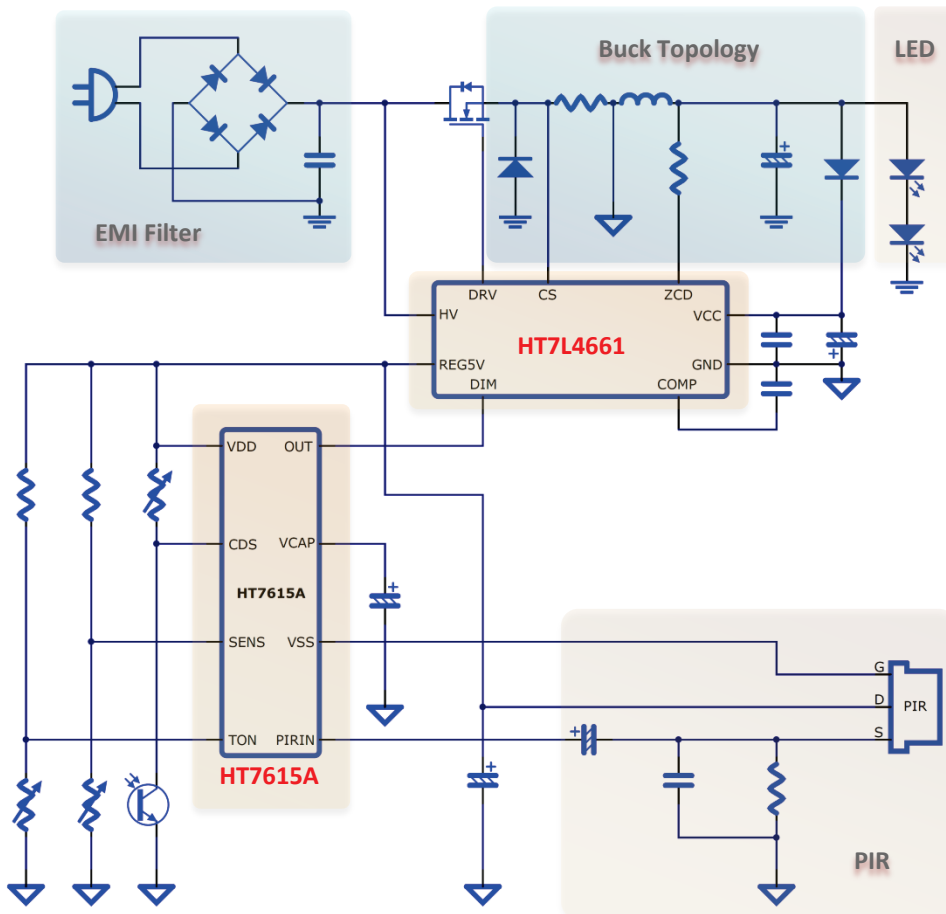
Part No.	Non-Isolation Topology	PFC	Operating Voltage	HV Start-up	5V LDO	Dimming Range		Package
						Brightness (%)	Voltage	
HT7L4661	Buck	✓	9.5~25V	650V	✓	13~100	0.4~3.0V	10MSOP

Part No.	Operating Voltage	Operating Current	Adjustable (TON/SENS)	CDS Debounce Time	Fading Time	PWM Duty (%)	Package
HT7615A	3.0~5.5V	270μA	16 step	2.5sec	3.6sec	0, 5, 10, 20	8SOP

Block Diagram



Application Circuit



E27 LED Bulb

HT7L4811

Features

- Internal active PFC function
- Input wattage : 8W
- AC Input range : $85V_{AC} \sim 265V_{AC}$
- High efficiency : 88%
- High LED current accuracy, strong load regulation ability
- High Power Factor, low THD
- Protections
 - ▶ Short-circuit protection (SCP)
 - ▶ Over-voltage protection (OVP)
 - ▶ Over-temperature protection (OTP)



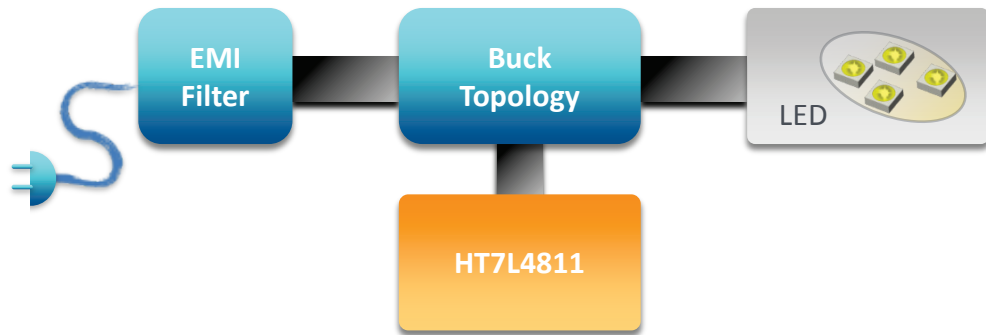
Applications

General Lighting, Home Lighting and Indoor Lighting.

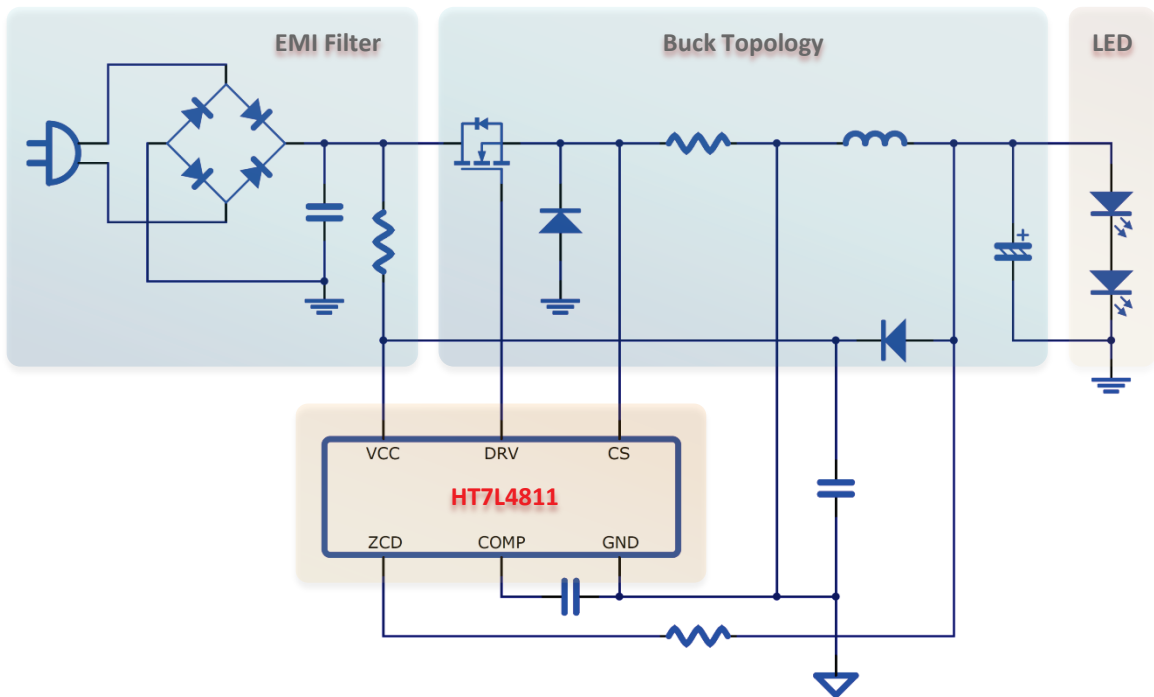
Related Products

Part No.	Non-Isolation Topology	PFC	System Voltage	Operating Voltage	LEB	Package
HT7L4811	Buck	✓	$85 \sim 265V_{AC}$	17~25V	400ns	SOT23-6

Block Diagram



Application Circuit



E27 LED Bulb

HT7L4813

Features

- Internal active PFC function
- Input wattage : 12W
- Internal 500V Power Switch
- AC Input range : $85V_{AC} \sim 265V_{AC}$
- High efficiency : 87%
- High LED current accuracy, strong load regulation ability
- High Power Factor, low THD
- Protections
 - ▶ Short-circuit protection (SCP)
 - ▶ Over-voltage protection (OVP)
 - ▶ Over-temperature protection (OTP)



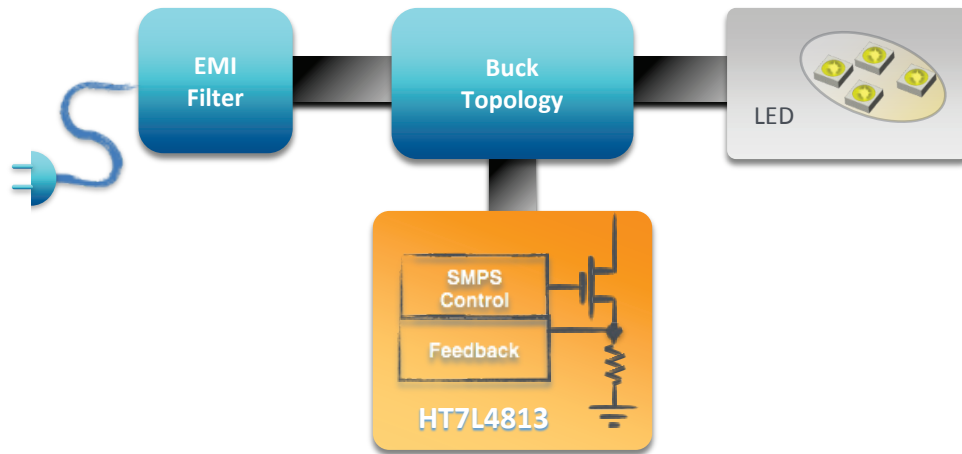
Applications

General Lighting, Home Lighting and Indoor Lighting.

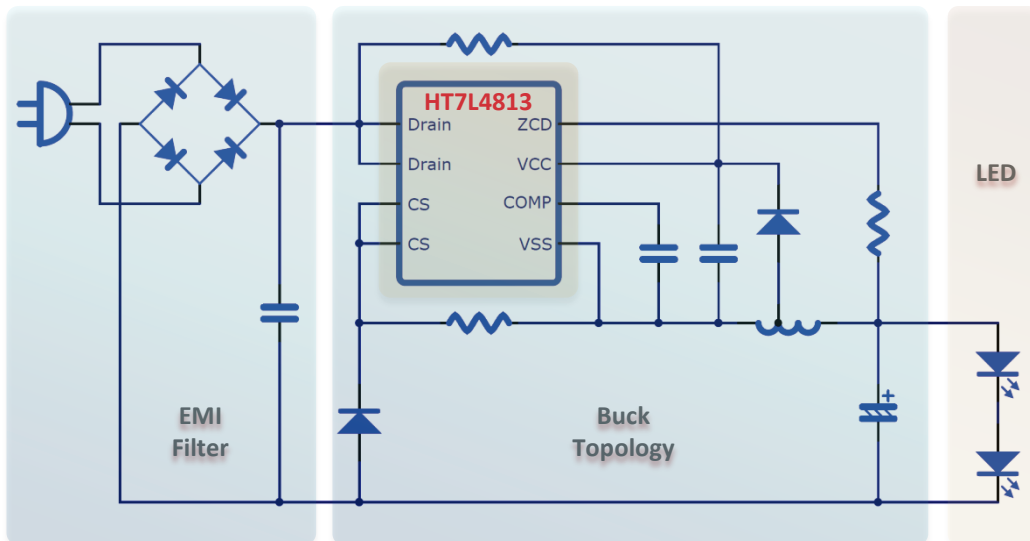
Related Products

Part No.	Non-Isolation Topology	PFC	System Voltage	Power Switch	on-resistance	Operating Voltage	LEB	Package
HT7L4813	Buck	✓	$85 \sim 265V_{AC}$	500V	6Ω	17~25V	400ns	8SOP

Block Diagram



Application Circuit



T8 LED Tube

HT7L4811

Features

- Internal active PFC function
- Input wattage : 18W
- AC Input range : $85V_{AC} \sim 265V_{AC}$
- High efficiency : 90%
- High LED current accuracy, strong load regulation ability
- High Power Factor, low THD
- Protections
 - ▶ Short-circuit protection (SCP)
 - ▶ Over-voltage protection (OVP)
 - ▶ Over-temperature protection (OTP)



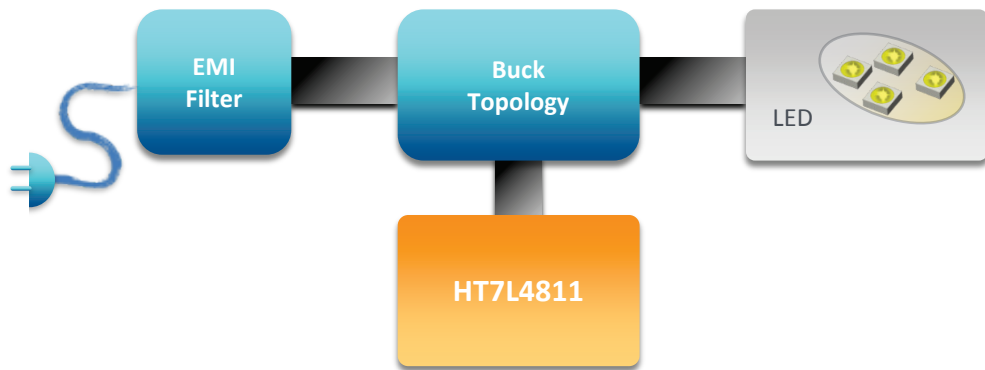
Applications

General Lighting, Home Lighting and Indoor Lighting.

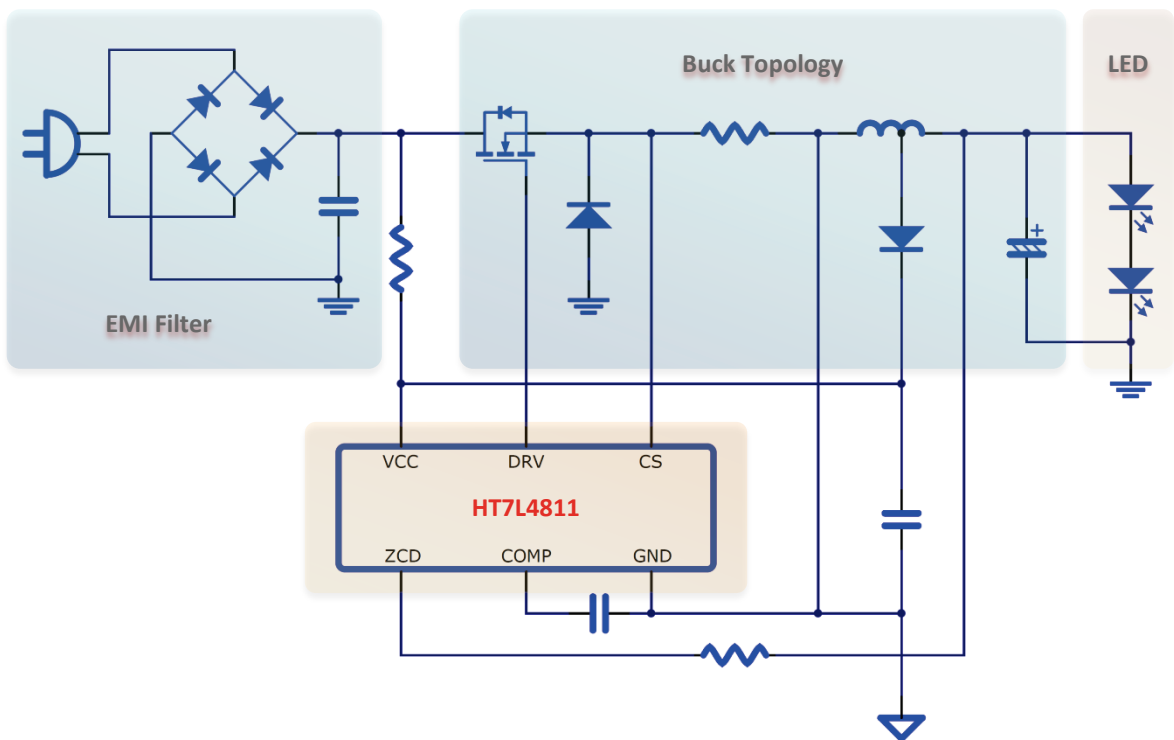
Related Products

Part No.	Non-Isolation Topology	PFC	System Voltage	Operating Voltage	LEB	Package
HT7L4811	Buck	✓	$85 \sim 265V_{AC}$	17~25V	400ns	SOT23-6

Block Diagram



Application Circuit



T8 LED Tube

HT7L4815

Features

- Internal active PFC function
- Input wattage : 18W
- Internal 500V Power Switch
- AC Input range : $85V_{AC} \sim 265V_{AC}$
- High efficiency : 90%
- High LED current accuracy, strong load regulation ability
- High Power Factor, low THD
- Protections
 - ▶ Short-circuit protection (SCP)
 - ▶ Over-voltage protection (OVP)
 - ▶ Over-temperature protection (OTP)



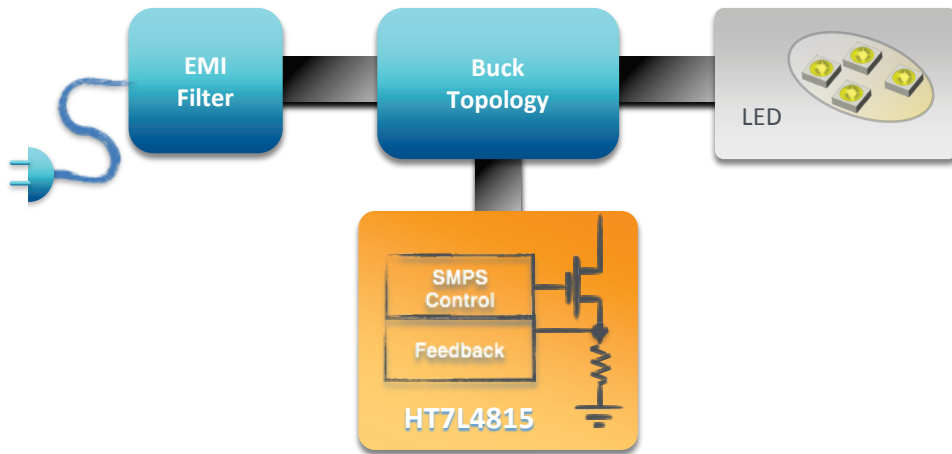
Applications

General Lighting, Home Lighting and Indoor Lighting.

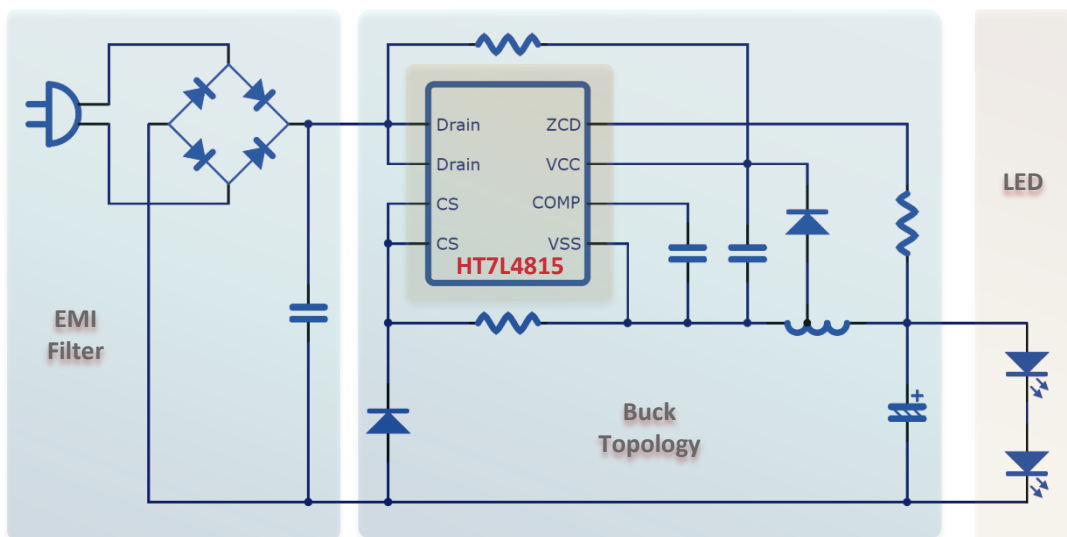
Related Products

Part No.	Non-Isolation Topology	PFC	System Voltage	Power Switch	on-resistance	Operation Voltage	LEB	Package
HT7L4815	<i>Buck</i>	✓	$85 \sim 265V_{AC}$	500V	2.5Ω	17~25V	400ns	8SOP

Block Diagram



Application Circuit



T8 LED Tube

HT7L5600

Features

- Internal active PFC function
- Input wattage : 24W
- AC Input range : $180V_{AC} \sim 265V_{AC}$
- High efficiency : 87%
- High LED current accuracy, strong load regulation ability
- High Power Factor, low THD
- Protections
 - ▶ Short-circuit protection (SCP)
 - ▶ Over-voltage protection (OVP)
 - ▶ Over-temperature protection (OTP)



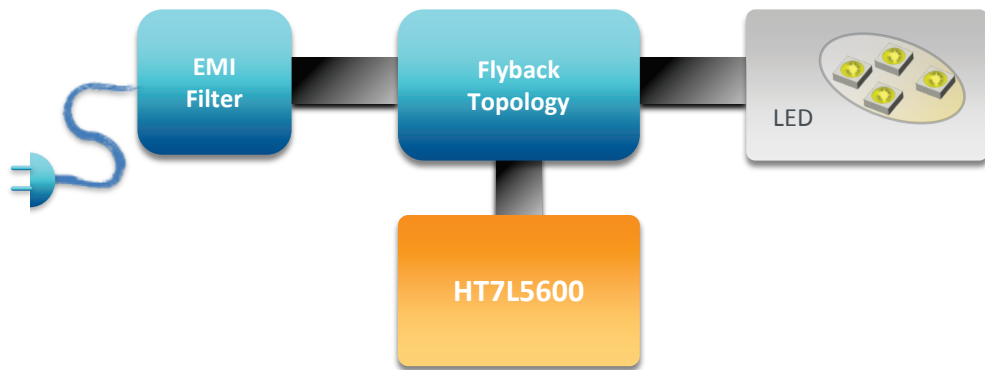
Applications

General Lighting, Home Lighting and Indoor Lighting.

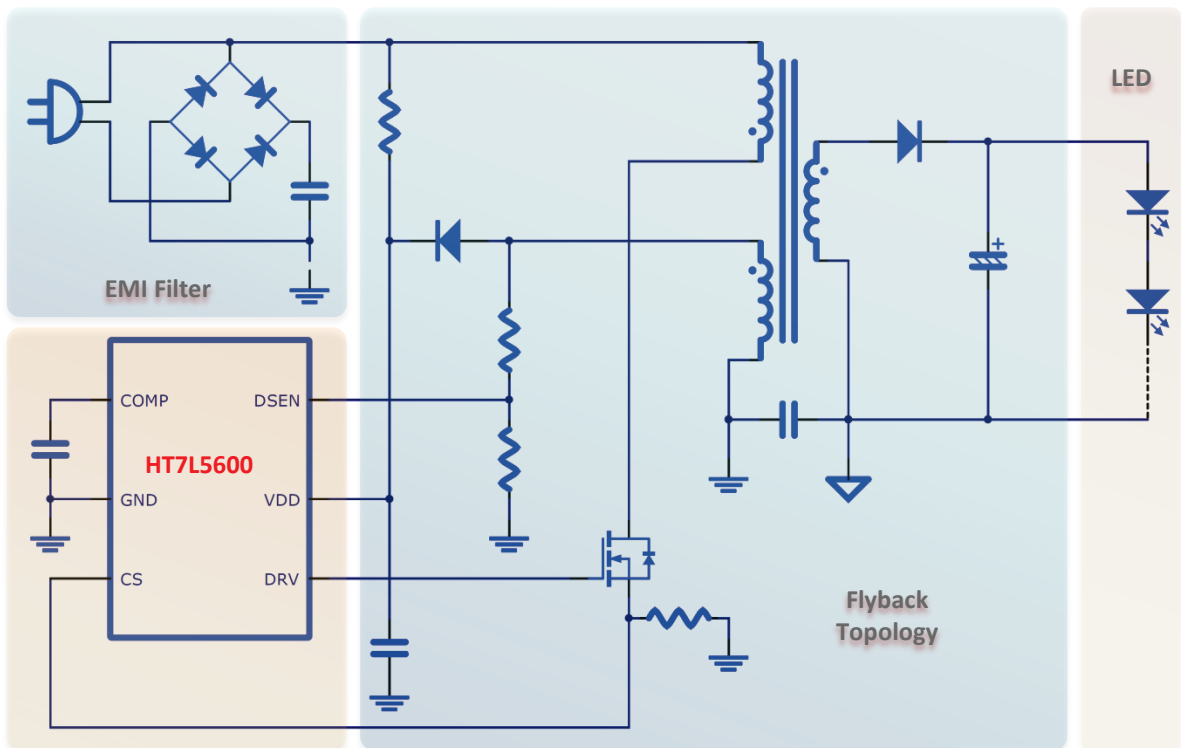
Related Products

Part No.	Isolation Flyback Topology	PFC	System Voltage	Operating Voltage	LEB	Package
HT7L5600	Primary-side Feedback	✓	$90 \sim 265V_{AC}$	$10 \sim 20V$	400ns	SOT23-6

Block Diagram



Application Circuit



LED Outdoor Light

HT7L5821

Features

- Internal active PFC function
- AC Input range : $85V_{AC} \sim 265V_{AC}$
- Maximum Output : 54V / 2.3A / 124W
- High efficiency : 90%
- Power consumption under no-load : < 0.5W
- High Power Factor, low THD
- Protection Features
 - ▶ Short-circuit protection (SCP)
 - ▶ Over-voltage protection (OVP)
 - ▶ Over-temperature protection (OTP)
 - ▶ Over-load protection (OLP)



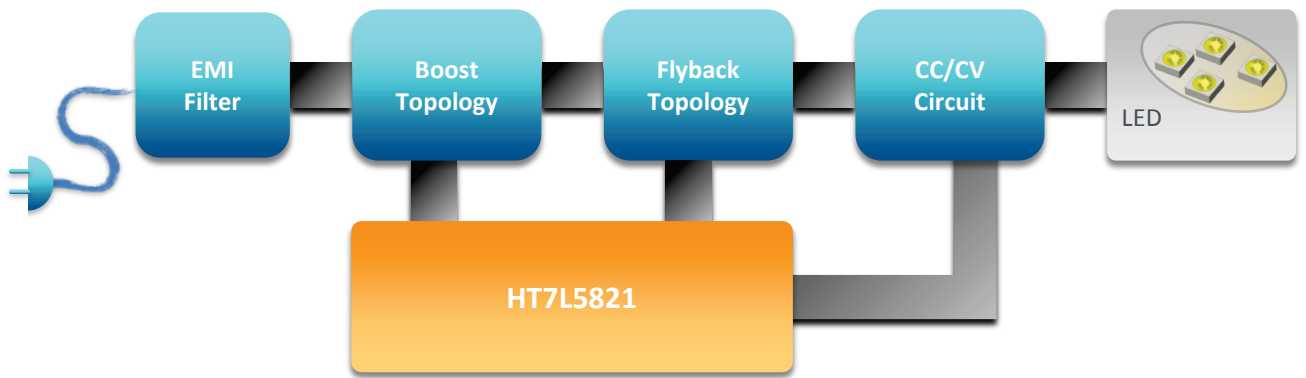
Applications

Outdoor Lighting, Ceiling Lighting and Street Lighting.

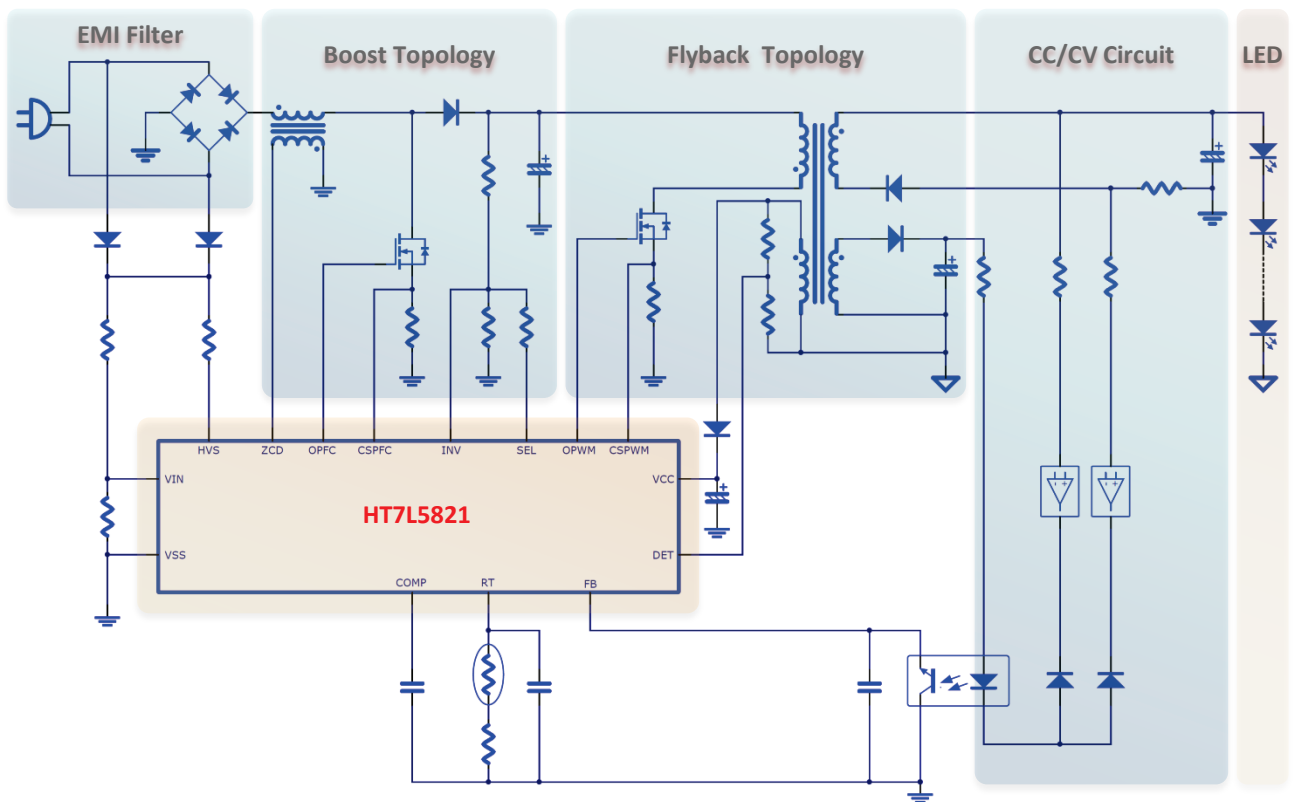
Related Products

Part No.	Non-Isolation Flyback Topology	PFC	System Voltage	Operating Voltage	HV Start-up	LEB	Package
HT7L5821	Secondary-side Feedback	✓	$85 \sim 265V_{AC}$	8~25V	650V	300ns	16SOP

Block Diagram



Application Circuit





Sharing Success Through Excellence



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