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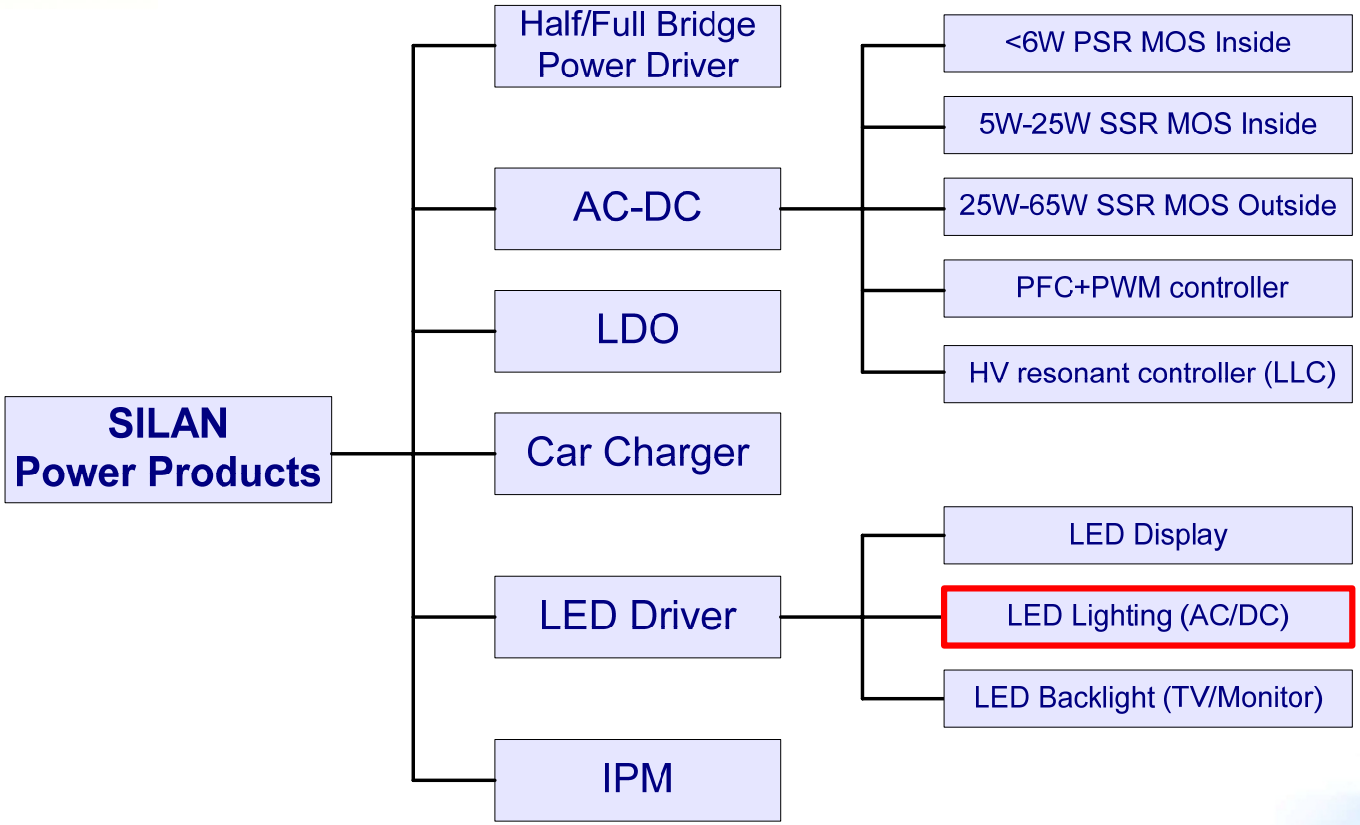
SILAN LED Lighting Solutions

Find what we can do……

Update
2011.9

SILAN Power Management



We are very optimistic about the LED lighting market and have already released a variety of products and solutions.

LED LIGHTING SOLUTIONS

DC-DC LED LIGHTING SOLUTIONS

- SD4252X SERIES - BUCK
- SD42560 – BUCK-BOOST
- SD42530 - 4 CHANNEL BUCK

AC-DC LED LIGHTING SOLUTIONS

- SD7529 - PFC Controller with SCP OPTIMIZATION
- SD6856 - PSR
- SD6857 - PSR + PFC
- SD6858 - PSR + PFC + TRIAC DIMMING

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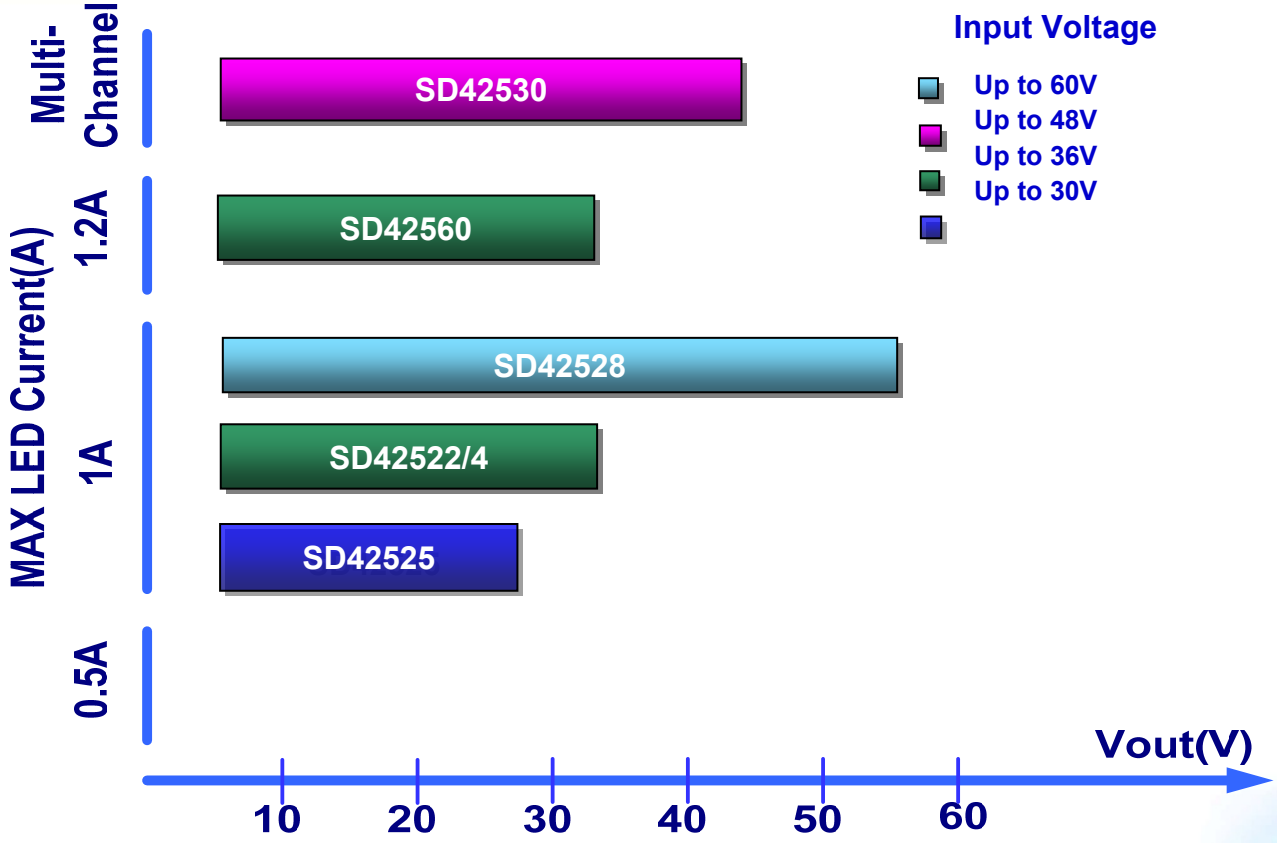
DC-DC LED LIGHTING SOLUTIONS

DC-DC LED Lighting Solutions



DC-DC LED Lighting Solutions

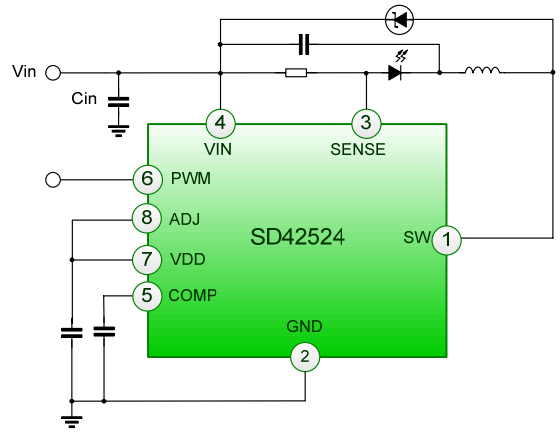
Part No.	Topology	Input Voltage	Frequency jitter	Max. Output Current	CC Accuracy	Efficiency	CH	Dimming
SD42522	BUCK	6V-36V	Y	1A	±1.5%	96%	1	/
SD42524	BUCK	6V-36V	Y	1A	±1.5%	96%	1	PWM/Liner dimming
SD42525	BUCK	6V-36V	Y	1A	±3%	96%	1	/
SD42528	BUCK	6V-60V	Y	1A	±1.5%	96%	1	PWM/Liner dimming
SD42560	BUCK-BOOST	6V-36V	Y	1.2A	±1.5%	96%	1	PWM dimming
SD42530	BUCK	6V-48V	Y	1A	±1.5%	96%	4	PWM dimming

SD42522/4 36V / 1A Buck LED driver

Key Features

- 6V~36V input voltage range
- Buck average current mode
- Maximum 1A output current
- Efficiency up to 96%
- Excellent constant current accuracy ±1.5%
- Built-in temperature shutdown and over current protection
- Frequency jitter
- Linear/PWM dimming, and the ratio is 500:1
- Temperature compensation

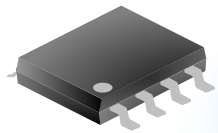
TYPICAL APPLICATION CIRCUIT



Applications

- MR16 (1*1W,1*3W,3*1W)
- Automotive, industry and general lighting

Package: ESOP8 / SOP8

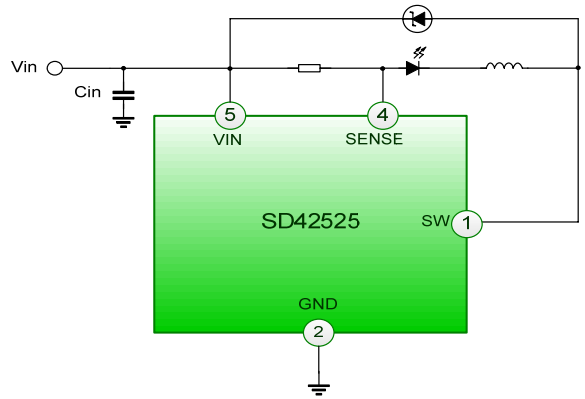


SD42525 36V / 1A Buck LED driver

Key Features

- 5V~36V input voltage range
- Buck hysteretic mode
- Maximum 1A output current
- Efficiency up to 96%
- Excellent constant current accuracy ±3%
- Built-in temperature shutdown and over current protection
- Built-in line voltage compensation (patent), improving the line regulation
- Low dropout overshoot current compensation (patent)

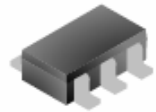
TYPICAL APPLICATION CIRCUIT



Applications

- MR11/16 (1*1W,1*3W,3*1W)
- LED Constant Current

Package: SOP8 / SOT-23

SD42560 36V /1.2A Buck Boost LED driver

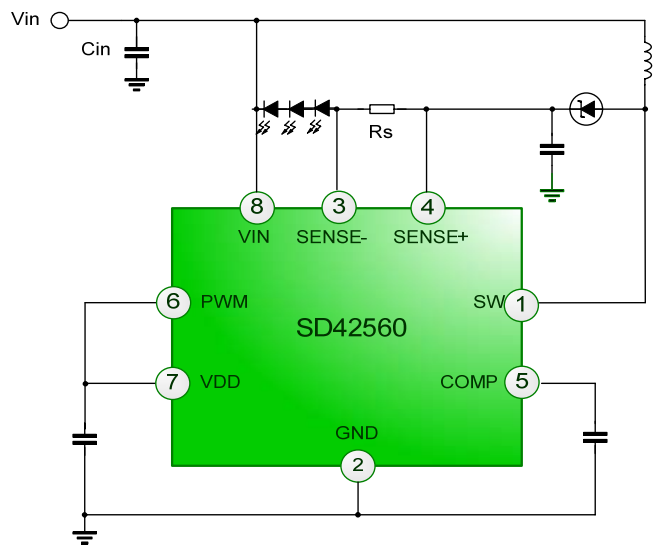
Key Features

- 5V~36V input voltage range
- Buck-boost average current mode
- Maximum 1.2A output current (Buck mode)
- Efficiency up to: Buck 96%/ Boost 95%/Buck-Boost 83%
- Excellent constant current accuracy ±1.5%
- Threshold value of over voltage protection: 40V(Boost/Buck-Boost)
- Built-in temperature shutdown and over current protection
- PWM dimming and the ratio is 500: 1
- Frequency jitter

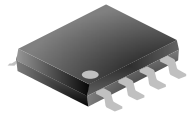
Applications

- MR16 (4*1W, 5*1W)
- Electronic transformer
- Solar LED Lighting

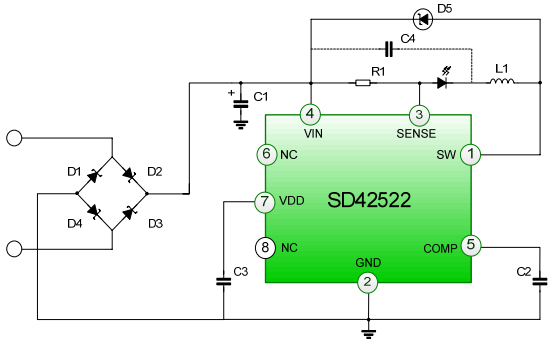
TYPICAL APPLICATION CIRCUIT



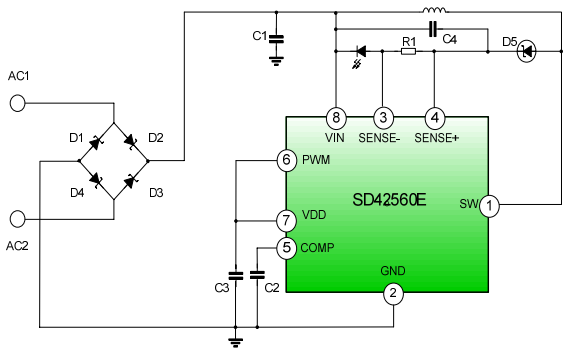
Package: SOP8



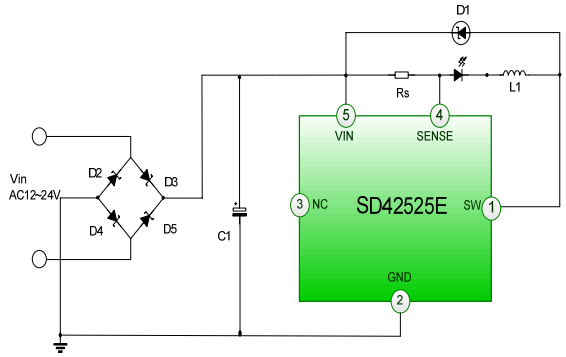
MR16 powered by AC12V-AC24V



3*1W **SD42522** Solution



5*1W **SD42560** Solution



3*1W **SD42525** Solution

Advantages

1.The efficiency of SD42522 and SD42525 solutions are up to 88％ with easy heat sink processing

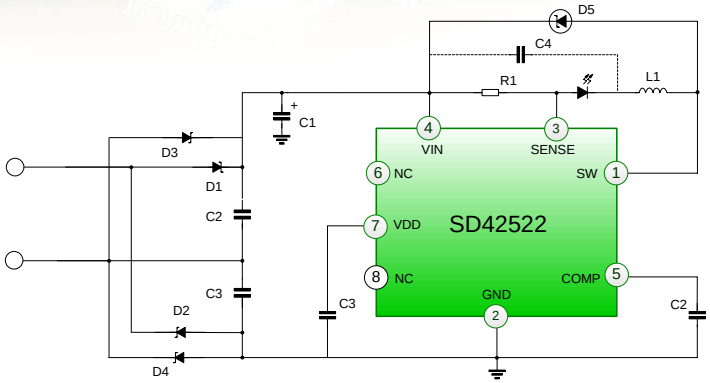
2.SD42560 boost-buck solution is suitable for applications with changing input voltage. It is can be used in 5W solution.

Customers

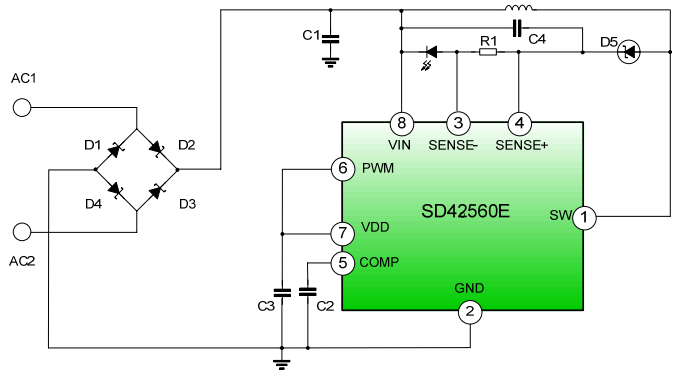
1.SD42522 solution is the mainstream in China with largest delivery.

2.SD42522 solution has been mass used in HANSOL LCD,SAMJIN LND of Korea, etc.

MR16 powered by Electronic Transformer



3*1W **SD42522** Voltage Doubling Solution



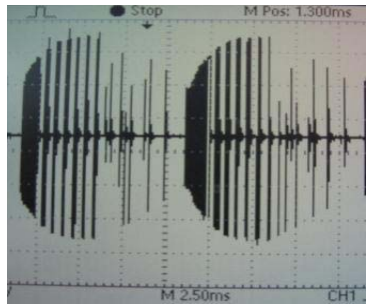
3*1W **SD42560** Buck-Boost Solution

Advantages

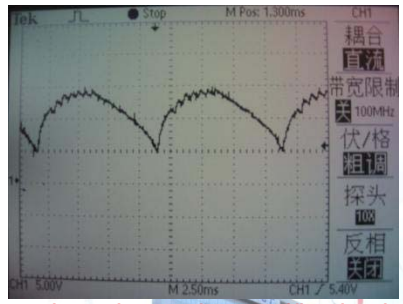
1. Current change on LED is less than 3% when the input power supply on the electronic transformer is from narrow voltage (AC85V~AC132V or AC190V~AC265V)
2. Efficiency of SD42522 Voltage Doubling solution is up to 85%.
3. SD42560 Buck-Boost Solution features small PCB size.

Customers

1. SD42522 voltage doubling solution has already past the test held by Japan's SHARP
2. SD42560 solution has been tested by OSRAM Sunny World (Shaoxing) and compatible with about 80% of the OSRAM Electronic transformers.



Uncontinuous waveform from electronic transformer with light load



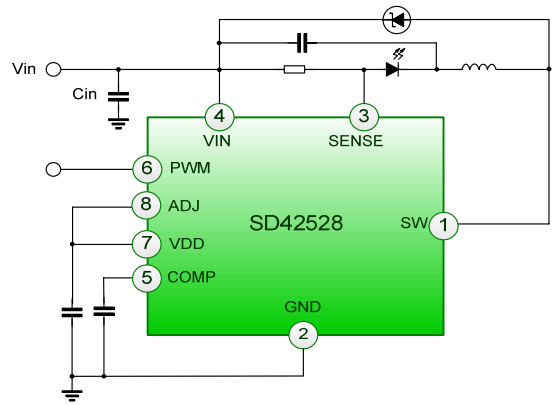
The voltage after rectification less than the normal working voltage of IC will cause the LED flicking.

SD42528 60V /1A Buck LED driver

Key Features

- 6V~60V input voltage range
- Buck average current mode
- Maximum 1.0A output current
- Efficiency up to 96%
- Excellent constant current accuracy ±1.5%
- Built-in temperature shutdown and over current protection
- PWM dimming and the ratio is 500: 1
- Frequency jitter
- Thermal compensation
- Optimized for instantaneous current

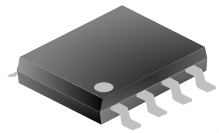
TYPICAL APPLICATION CIRCUIT



Applications

- Daylight lamp, street lights
- High power LED driver
- Automotive Lighting, general lighting

Package: ESOP-8



Customers

1. Test is going on in **LG**, **Hansol (for Samsung)** of South Korea and **FSP** of Taiwan.
2. Some customers in China has run the small patch production.

SD42528 60V /1A Buck LED driver

Comparison with major competitors

Features	SD42528	MPS2481	LM3404HV	AP8802H
Max. Input Voltage	60V	40V	75V	60V
Max. Output Current	1A	1.2A	1.2A	1A
Work Method	Average Current Mode	Average Current Mode	Controlled on-time Mode	Hysteretic PFM Mode
Sense Voltage	100mV	200mV	200mV	200mV
Current Accuracy	+/-1.5%	+/-1.5%	+/-3%	+/-5%
Dimming Method	Analog or PWM Dimming	Analog or PWM Dimming	PWM Dimming Only	Analog or PWM Dimming

SD42528 32W / 700mA DEMO BOARD

Key Features

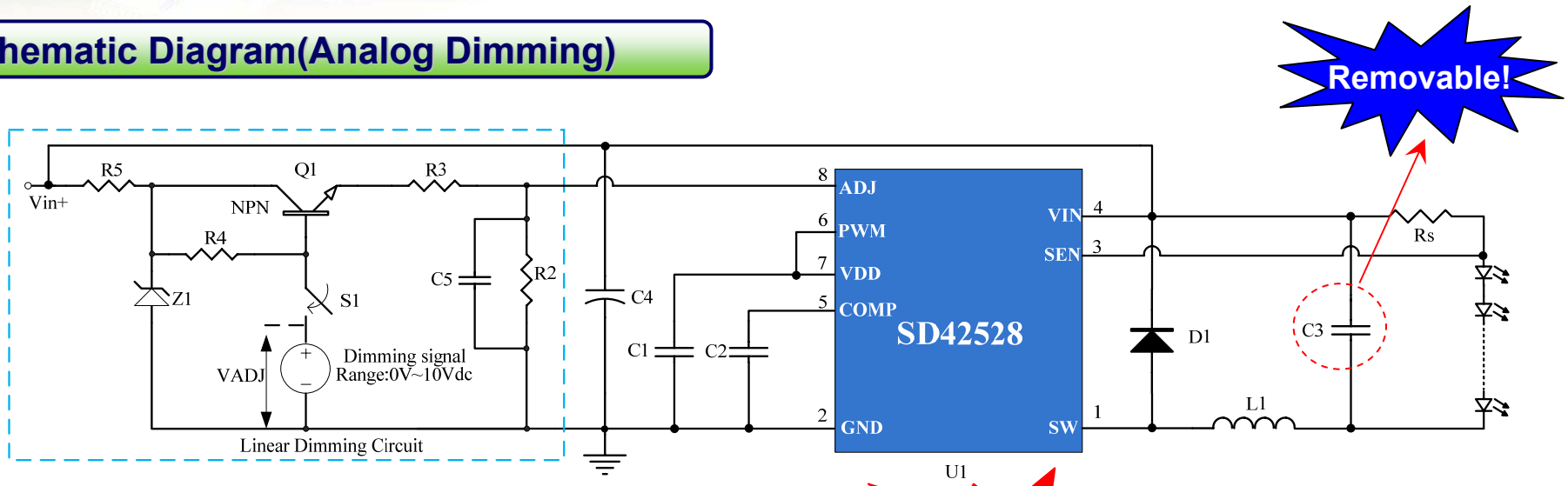
- High input voltage(60Vdc)
- High efficiency (up to 96%)
- Excellent constant current accuracy ±1.5%
- Linear Dimming (0-10V dimming signal)
- Short LED protection
- Thermal shut down and auto-recovery

DEMO Spec

Description	Symbol	Min.	Typ.	Max.	Unit	Notes
Input Votage Range	Vin		48	60	Vdc	
Output Voltage Range	Vo		42		Vdc	
Output Current Range	Io		700		mA	0.5% Accuracy Current sense resistor is recommended
Current Ripple(pk-pk)			50		mA	Vin=48V, 12LED in Series
Voltage Ripple(pk-pk)			0.5		V	Vin=48V, 12LED in Series
Current Regulation			1%	1.5%		Vin varies within the spec
Efficiency	η		96%	99%		
DEMO Size			37×63		mm	W×L

SD42528 32V / 700mA DEMO BOARD

Schematic Diagram(Analog Dimming)



Efficiency Test and Load Regulation

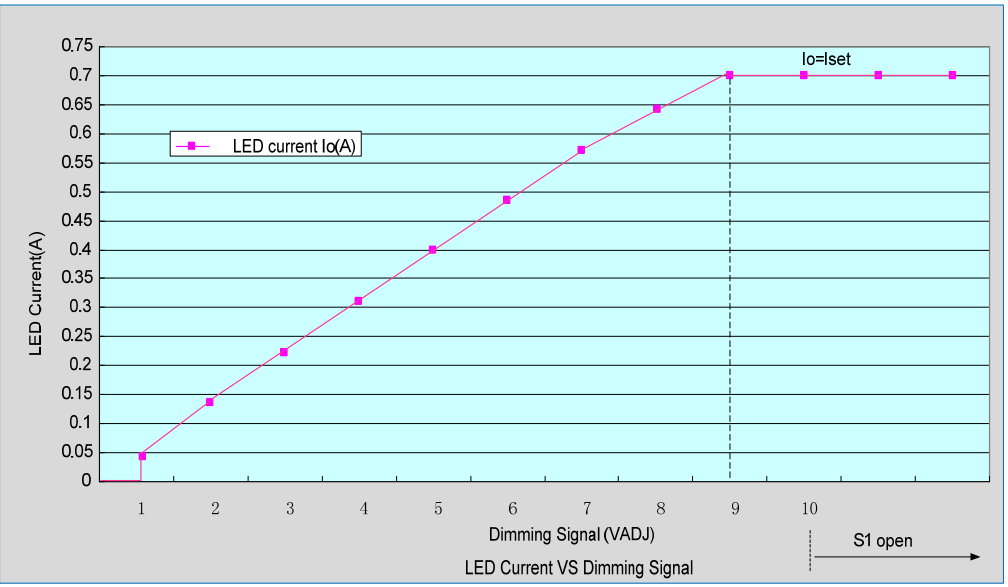
Constant !

Series	Vin	Iin	Vo	Io	efficiency
9LED	48	0.451	28.63	0.701	0.9271
10LED	48	0.492	31.76	0.701	0.9427
11LED	48	0.532	34.89	0.701	0.9578
12LED	48	0.578	38.19	0.701	0.9649

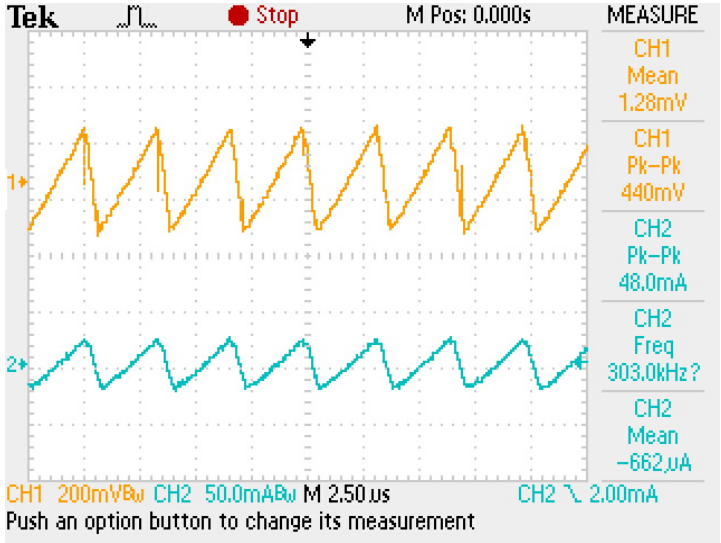
>96% !

SD42528 32W / 700mA DEMO BOARD

Analog Dimming Test



LED Current and Voltage Ripple



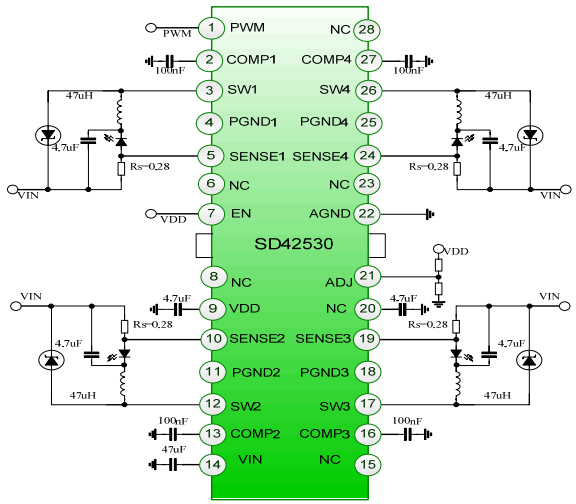
Dimming Method:
- **Io=0A, when Vadj<1V or Vadj open**
- **Io varies linearly, when 1V<Vadj<9V**

SD42530 4 Channel 48V Buck LED driver

Key Features

- 6-48V input voltage range
- 4 channel outputs
- PWM dimming and analog dimming
- Enable function and external shut down
- Maximum 1.0A output current
- 0.60Ω built-in Power NMOSFET
- Frequency jitter
- 300KHz fixed switching frequency
- Excellent constant current accuracy ±1.5%
- Built-in over temperature, over current protections
- Efficiency up to 96%

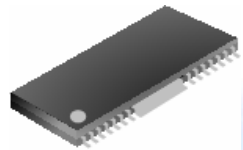
TYPICAL APPLICATION CIRCUIT



Applications

- High power LED lighting
- General lighting

Package: HSOP-28



HSOP-28

Advantages

- Four inductors using the same magnetic core can be used to reduce the BOM cost.
- The typical operating current of open circuit is 3mA，which make the power dissipation of the circuit meet the 500mW requirements of Energy-star.

SD42530 50W LED DRIVER DEMO BOARD

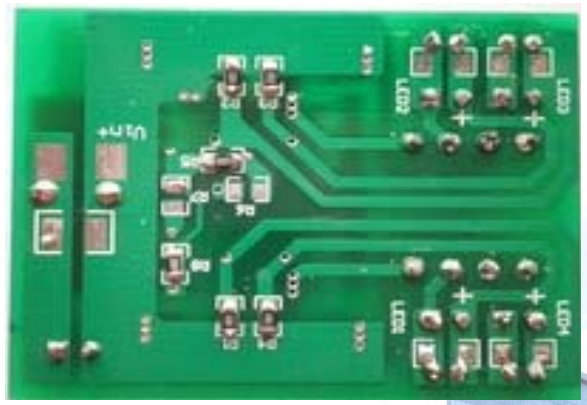
Key Features

- Maximum 48V input
- 4 channel outputs
- One Magnetic core for 4 output inductors
- Efficiency up to 98%
- Very low cost for high power LED drivers

DEMO is available !

DEMO PHOTO

TOP VIEW



BOTTOM VIEW

SD42530 50W LED DRIVER DEMO BOARD

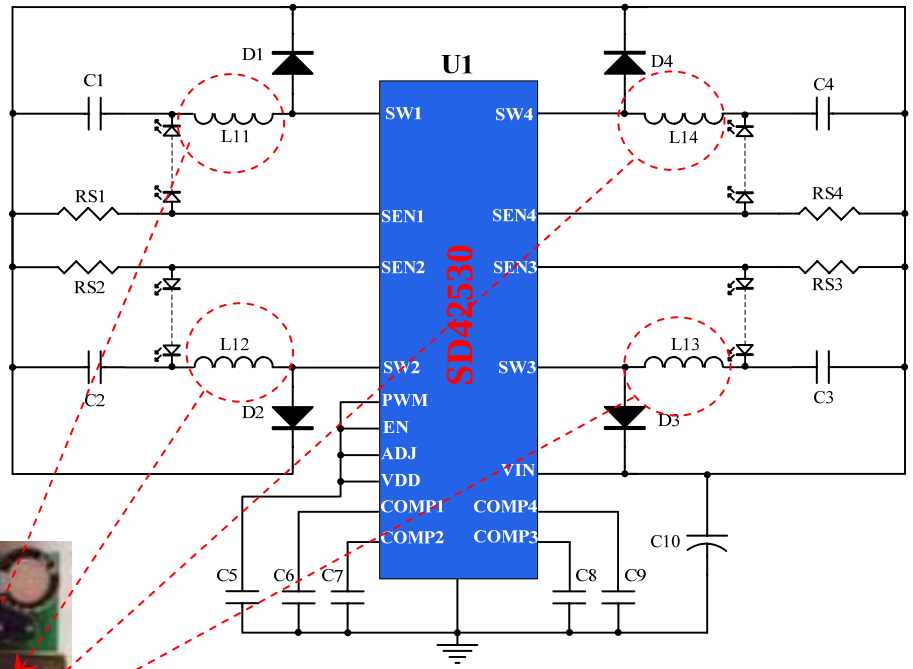
DEMO SPEC

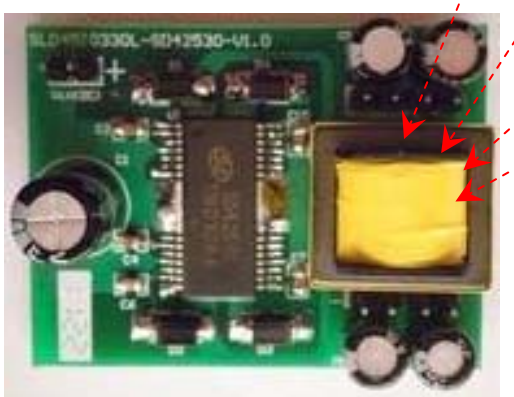
Description	symbol	Min.	Typical	Max.	Unit	Notes
Input voltage Range	Vin	38		48	Vdc	See (1)
Output Voltage	Vo		33		Vdc	
Output Current	Io	310	330	350	mA	0.5% Accuracy resistor is recommended
Output Current Ripple			20		mA	Vin=42V, with output capacitor
Output Voltage Ripple			130		mV	Vin=42V, with output capacitor
Delay Time			12		ms	
Hold Time			30		ms	
Current Accuracy				+/-1.5%		
Efficiency	η		**98%**			
DEMO Size		45.5*34.3			mm	

(1) The Maximum Duty Cycle is about 87%, make sure that Vin*0.87>Vo

SD42530 50W LED DRIVER DEMO BOARD

SCHEMATIC DIAGRAM





Integrated in One Core !

SD42530 50W LED DRIVER DEMO BOARD

EFFICIENCY TEST

Vout=36V									
Vin(V)	Iin(A)	Ich(A)				Pin(W)	Po(W)	η(%)	Δ(mA)
		ch1	ch2	ch3	ch4				
41	1.185	0.330	0.339	0.335	0.320	48.59	47.66	0.981	19
42	1.159	0.331	0.339	0.335	0.321	48.68	47.74	0.981	18
44	1.109	0.331	0.340	0.336	0.321	48.8	47.81	0.980	19
46	1.062	0.331	0.341	0.336	0.320	48.85	47.81	0.979	21
48	1.019	0.330	0.342	0.337	0.320	48.91	47.84	0.978	22
Δ (mA)	/	1	3	2	1	/	/	/	/

Efficiency is up to 98%

Max. current variation between each channel

LOAD REGULATION TEST

Vin=42V				
Vout(V)	Ich(A)			
	ch1	ch2	ch3	ch4
26	0.333	0.340	0.335	0.322
28	0.333	0.340	0.336	0.322
30	0.332	0.341	0.336	0.321
32	0.332	0.341	0.336	0.322
34	0.332	0.342	0.336	0.320
36	0.331	0.340	0.336	0.321

Voltage changes

Max. current changing is 2mA

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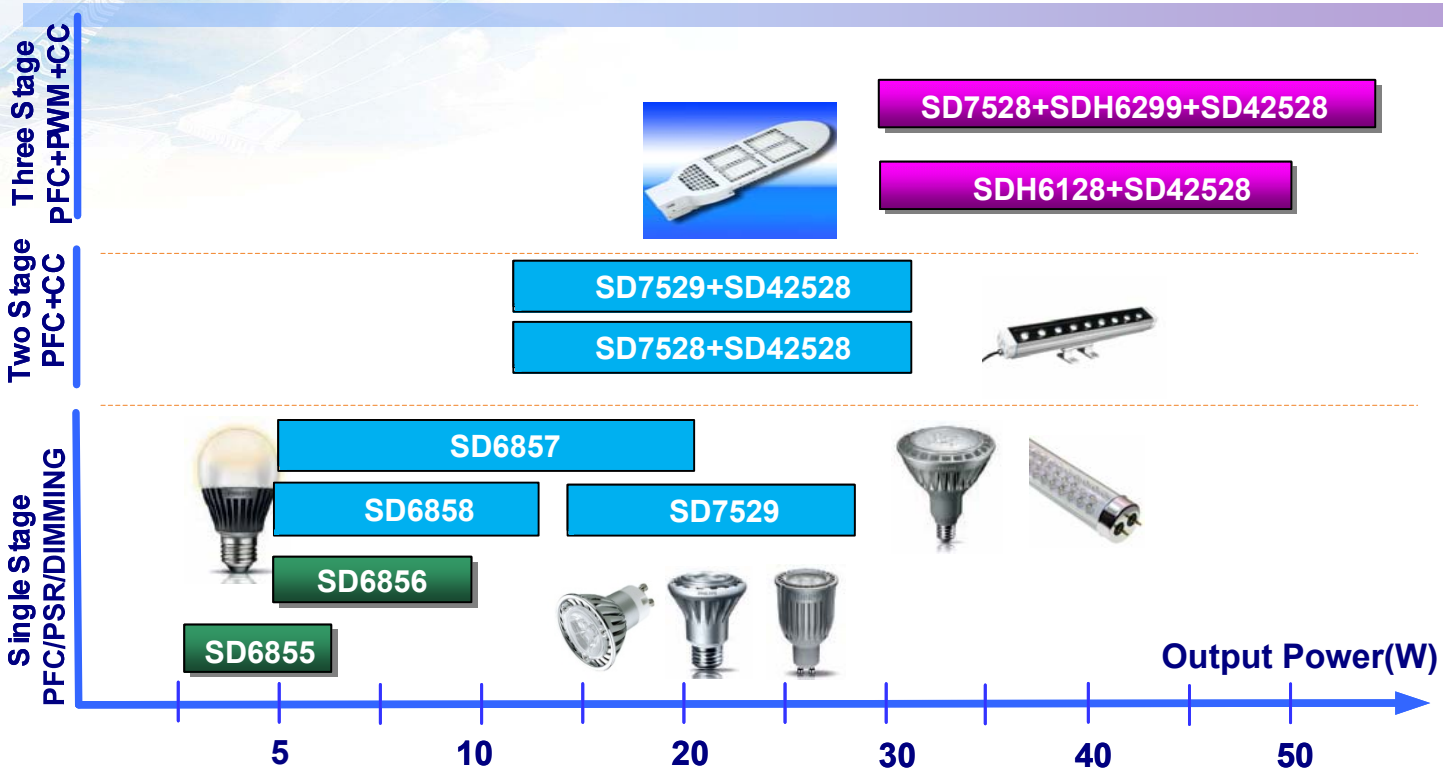
AC-DC LED LIGHTING SOLUTIONS

AC-DC LED Lighting Solutions



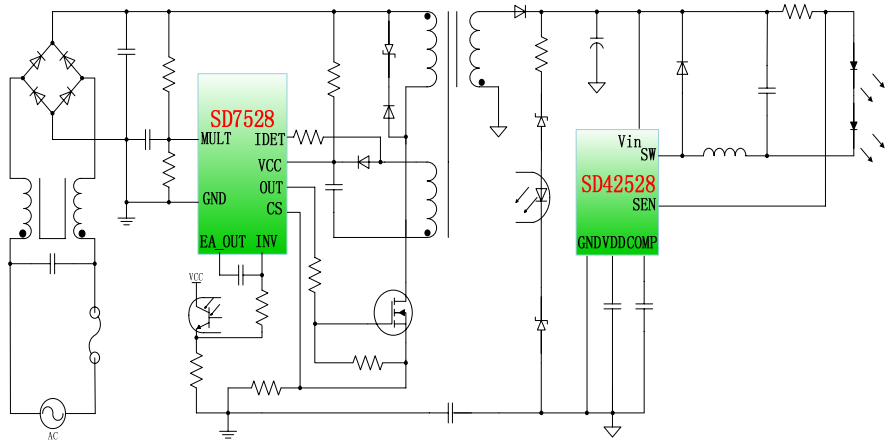
Part No.	Application	Output power	CC Accuracy	Efficiency	Min.PF	TRIACdimming	Features
SD6855	HV spotlight	5W	±5%	75%	0.6	N	PSR Drive TR
SD6856	Bulb lamp	7W	±5%	77%	0.6	N	PSR
SD6857	Bulb,daylight	5W-28W	±3%	90%	0.95	N	PSR PFC
SD6858	Bulb lamp	5W-20W	±5%	80%	0.9	Y	PSR PFC DIMMING
SD7529	Daylight	18W	±1.5%	87%	0.96	N	PFC
SD7528	Street light	*	±1.5%	86%	0.96	N	PFC

SD7528 PFC Controller(2012 Q1 Release)

Key Features

- Low start current: 30uA
- High performance linear multiplier
- Proprietary THD optimizer （patent pending）
- Built-in restart timer
- Integrate digital LEB
- Precision adjustable over-voltage protection

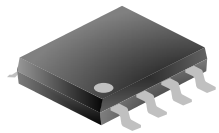
TYPICAL APPLICATION CIRCUIT



Applications

- LED daylight lamp
- Electronic ballast

Package: SOP-8



SD7529LV/HV PFC Controller

Key Features

- Low start current: 5uA(HV)
- Optimized for LED lighting with high PF
- Wide Vdd operating voltage(HV)
- Wide Vdd hysteresis for easy start design
- Precision output over-voltage protection
- Built-in soft start
- Primary-side over-current protection
- Output short-circuit protection （patent-pending）

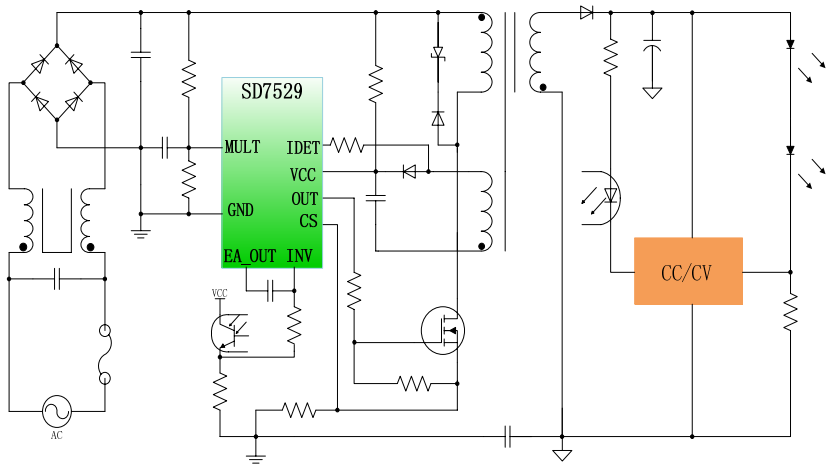
Applications

- LED Daylight lamp
- General lighting with PFC requirement

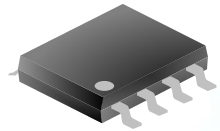
Advantages

- Output short circuit protection. Can protect the system from damage when output is shorted and restart automatically, without any other external protection circuitry. Input power is below 0.5W !!

TYPICAL APPLICATION CIRCUIT



Package: SOP-8

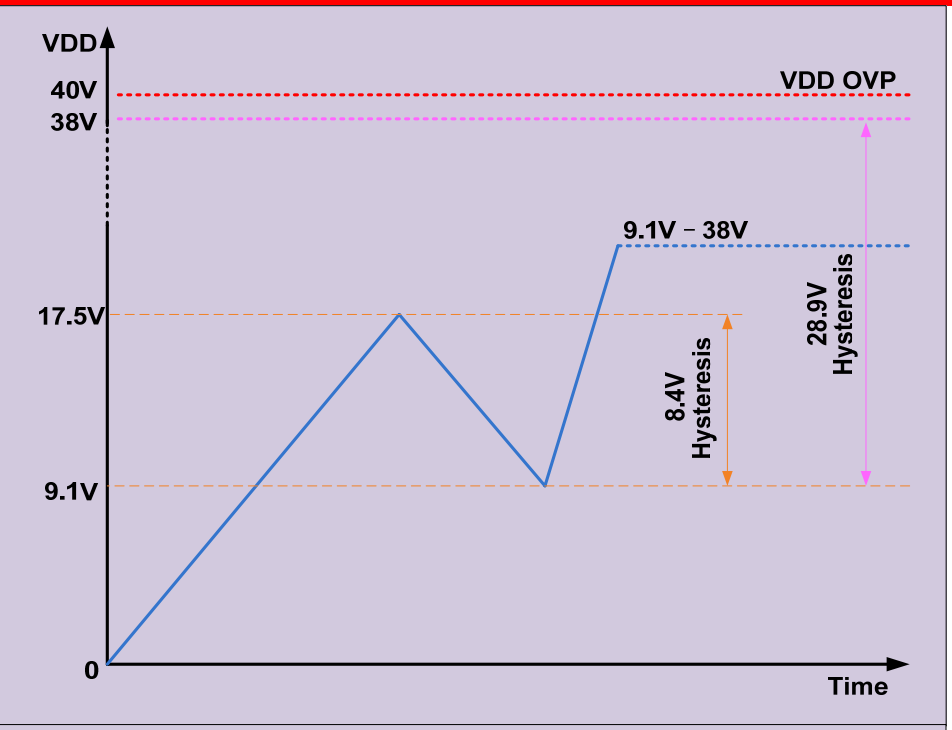


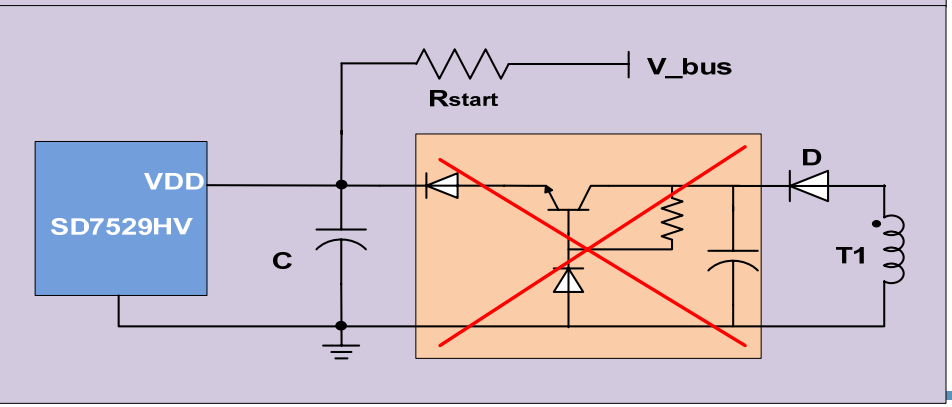
SD7529HV PFC Controller(2012 Q1 Release)

Comparison with Major Competitors

Parameter	SD7529HV	SD7529LV	SD7528	SN03A	L6562	L6562A
Vdd Max	41.5V	25	25	38V	25V	25V
Operating Voltage	38	22.5	22.5	32	22	22
Vdd On	17.5V	16.2	12.5	16.5V	12V	12.5V
Vdd Off	9.1V	10.2	10	8.8V	9.5V	10V
Vdd OVP	40V	24V	NA	36.5V	NA	NA
Icc_start	5uA	44uA	30uA	5uA	70uA	60uA
Vcs	1.08V	1.08V	1.08V	1V	1.7V	1.08V
K	0.38	0.38	0.38	0.36	0.6	0.38
Vzcd	1.4V	1.4V	1.4V	0.25V	1.4V	0.7V
Vzcd_hys	0.7V	0.7V	0.7V	0.75V	0.7V	0.7V
SCP	YES	YES	NA	NA	NA	NA

SD7529HV PFC Controller





Advantages:

1, Big VDD start up hysteresis allows higher start resistance(Rstart) and lower VDD capacitor(C). This makes lower standby power and higher system efficiency.

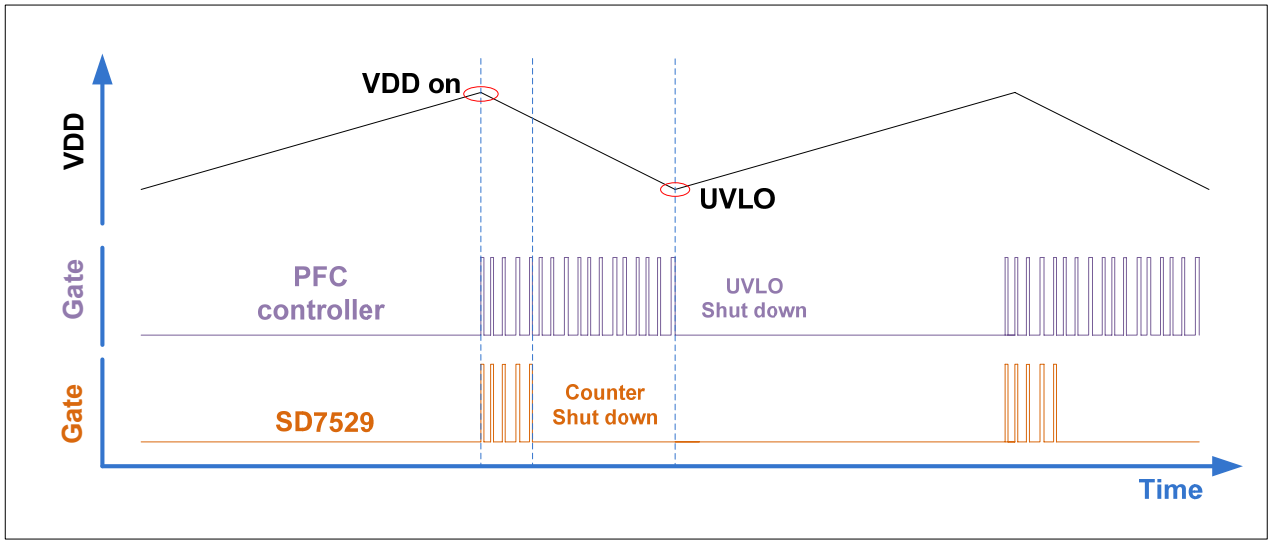
2, High VDD operation voltage make it possible to remove the “constant vol -tage circuit”, which is used to protect IC from damage when load shifting bet ween no-load and full load.

3, Also there is a VDD Over Voltage Pro tection to prevent IC fail when VDD goes beyond 40V.

4, Wide VDD operating voltage range means that it can drive a wide range of LED strings.

SD7529LV/HV PFC Controller

Unique output short circuit protection



Advantages:

1, There is no additional circuitry used to short circuit protect, helps to low down the BOM COST and simplify the system.

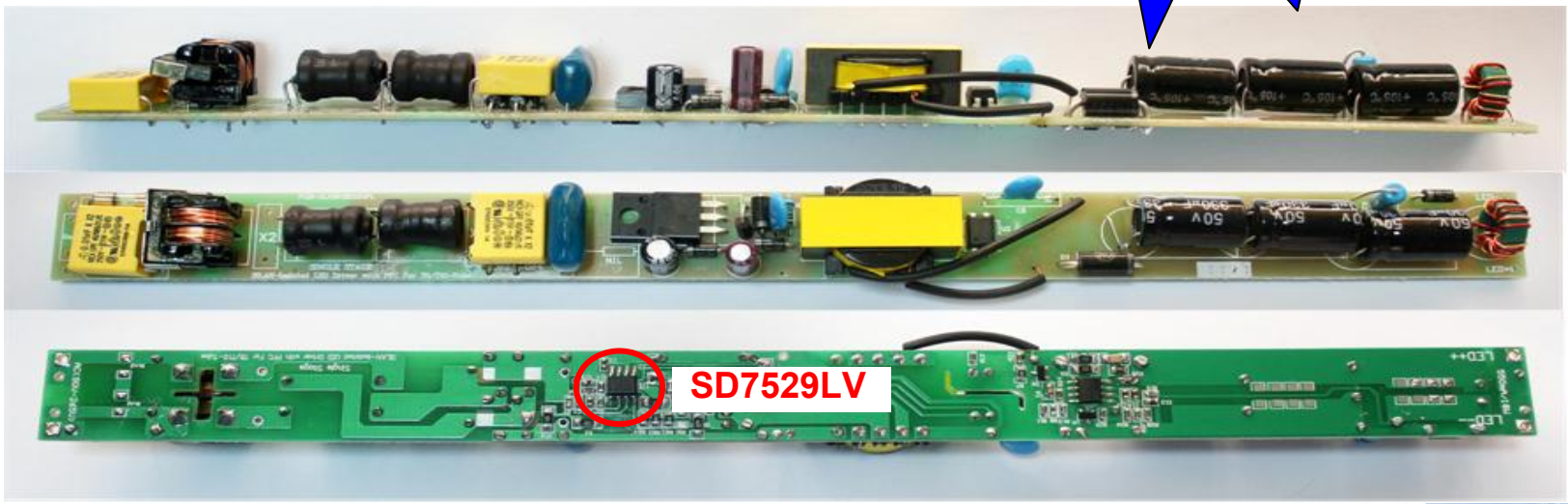
2, Shut down Gate signal quickly, not like other PFC controller which is used to turn off Gate at UVLO, helps to minimize the power dissipation and to reduce the components stress.

18W LED Daylight Lamp Driver Solution With SD7529LV

Key Features

- 85～265V input voltage range
- PFC function, PF>0.96@265V
- THD<15%
- Isolated single stage flyback topology
- Change in output current is less than ±1.5% with full-range input
- High Efficiency: >86%
- Optimized output short circuit protection

Maximum instantaneous Power dissipation below 0.8W when shorted !



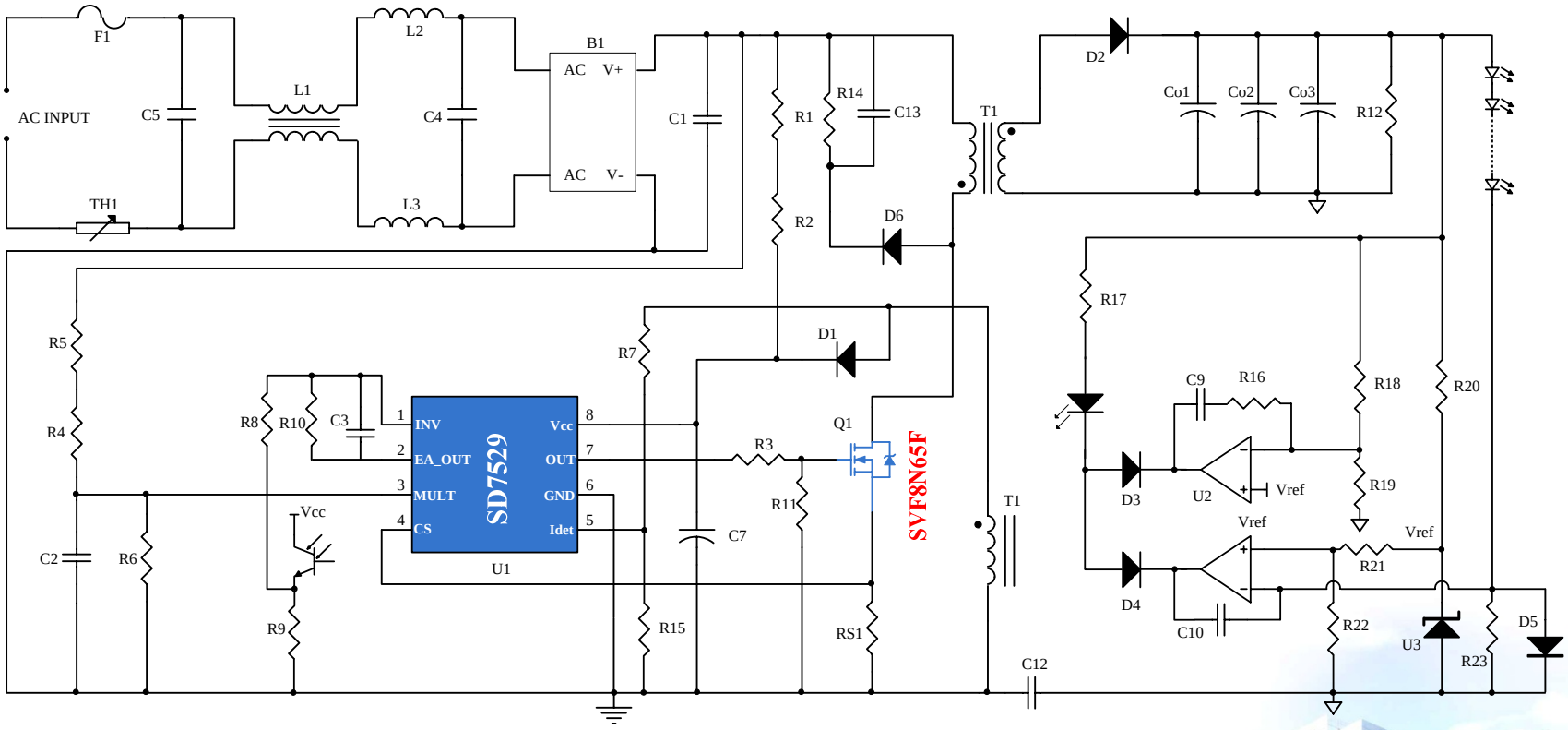
18W LED Daylight Lamp Driver Solution With SD7529LV

18W DEMO SPEC

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Remark
Input voltage	V_{IN}	90	220	265	VAC	
Input voltage frequency	f	47	50/60	64	Hz	
Output voltage	Vo	-	33	-	V	
Output current	Io	0.52	0.55	0.58	A	It is recommended to use the resistor with accuracy of 0.5%
Output current ripple (peak-to-peak)	-	-	0.3	-	A	Io=550mA, Vin=220VAC
Output voltage ripple (peak-to-peak)	-	-	2	3	V	Io=550mA, Co=330uF*3
Output current line regulation	-	-		1.5%	-	Io=550mA, full range voltage input
Conversion efficiency	η	85	87	-	%	Typ. Value is obtained with V_{IN} =220VAC, full-load.
Power factor	-	0.96	0.98	-		Typ. Value is obtained with V_{IN} =265V, full-load.
Stand-by power dissipation	Pin	-	-	0.8	W	Output open
Short-circuit power dissipation	Pin	-	-	0.5	W	At Max. input voltage(265vac)
Tune-on delay	-	-	-	1.5	S	The duration from input power on to output voltage built-up
Demo dimension	L*W*H		25*1.8*1.4		cm	

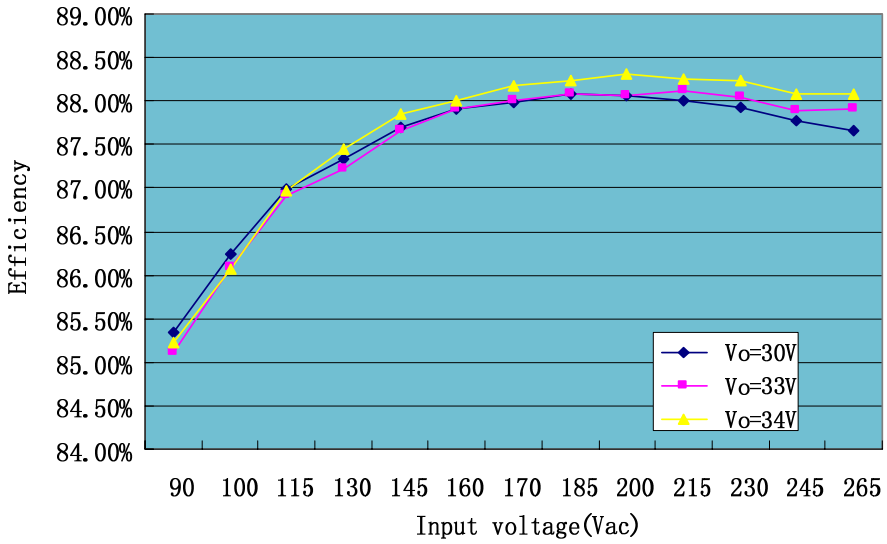
18W LED Daylight Lamp Driver Solution With SD7529LV

18W DEMO Schematic Diagram



18W LED Daylight Lamp Driver Solution With SD7529LV

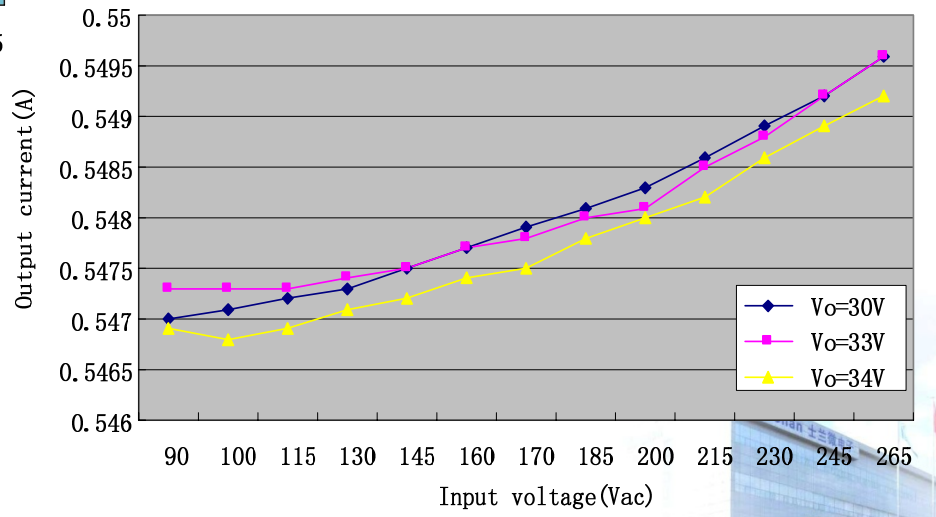
Efficiency Test



The efficiency is beyond 88%
And keeps over 85% with wide
Input range !

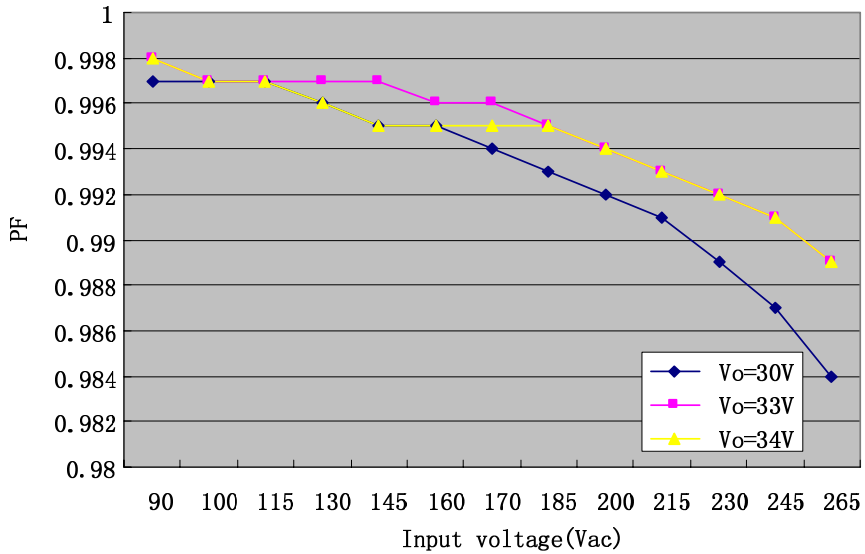
The LED changes with 2mA
With input voltage varies
From 85v to 265vac !

LED Current Line Regulation test

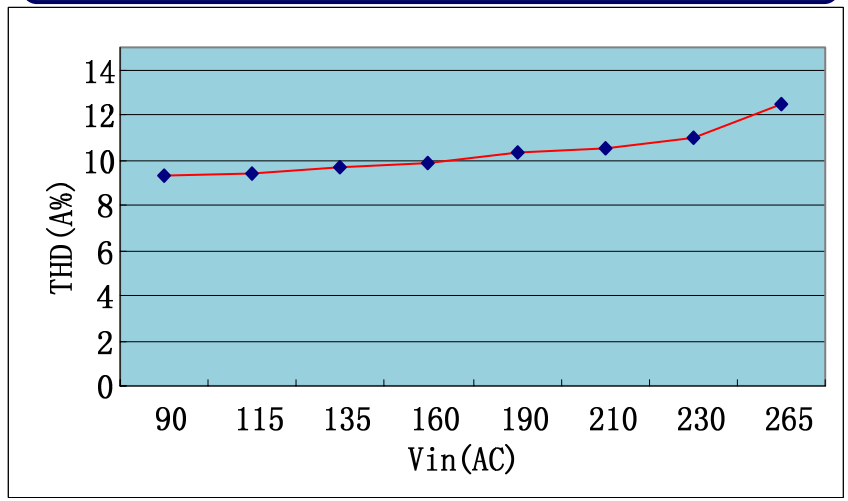


18W LED Daylight Lamp Driver Solution With SD7529LV

System Power Factor Test



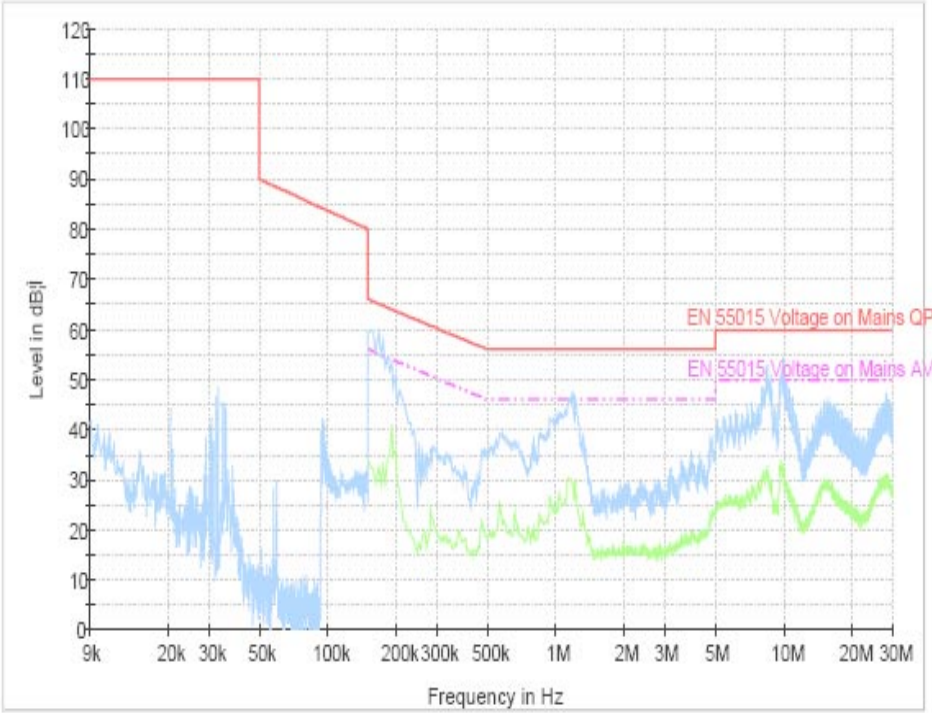
System THD Test



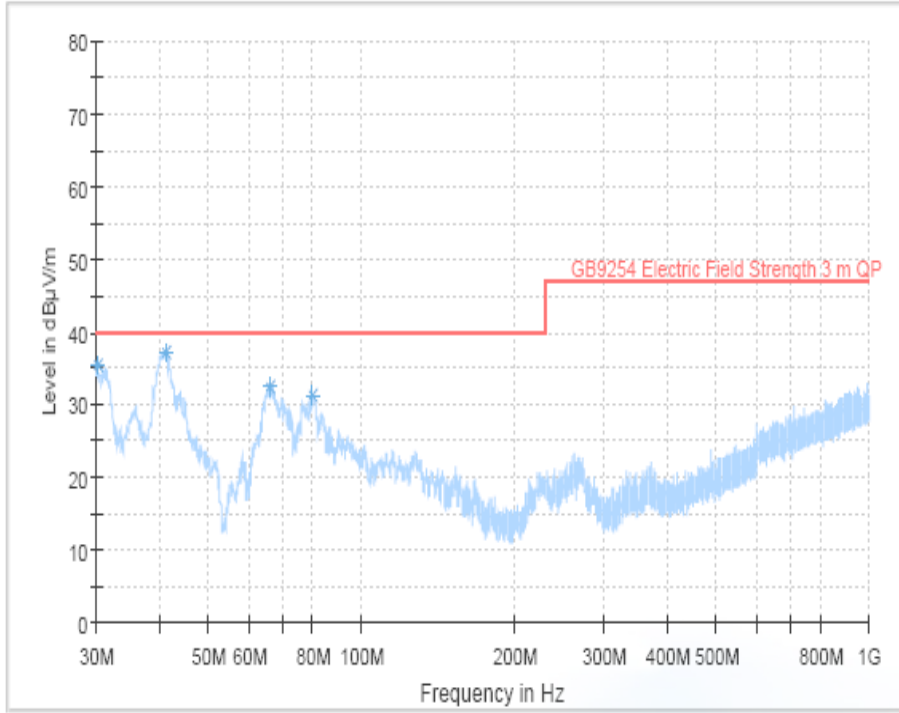
The Power Factor always keep as high as 0.98, And THD is below 15% due to THD optimization Design inside the SD7529 !

18W LED Daylight Lamp Driver Solution With SD7529LV

Conduction test



Radiation test



MEETS THE EN55015B !

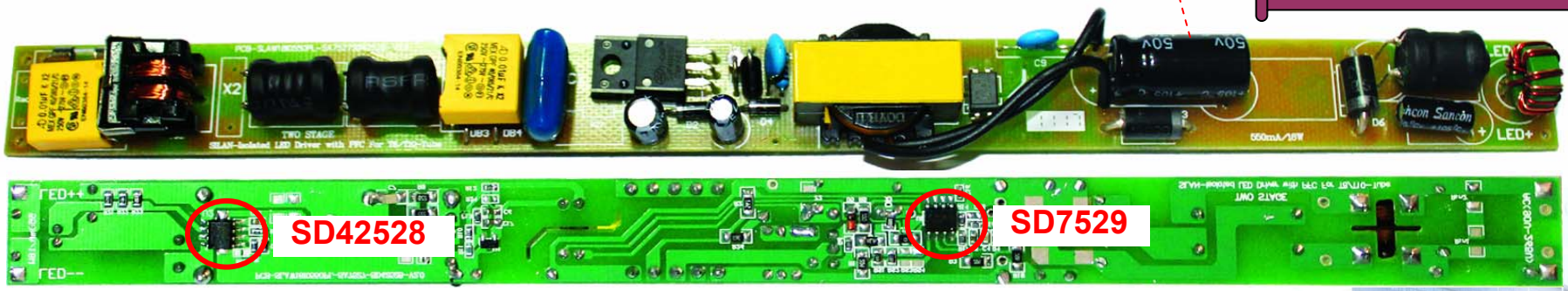
18W LED Daylight Lamp Driver Solution (SD7529LV+SD42528)

Key Features

- 85～265V input voltage range
- PF>0.96
- THD<15%
- Current line regulation ±1.5%
- Efficiency: >85%
- Output voltage ripple < 200mV
- Output current ripple< 20mA

Lower Capacitance used here ! Compared with single stage Topology !

Low LED ripple !



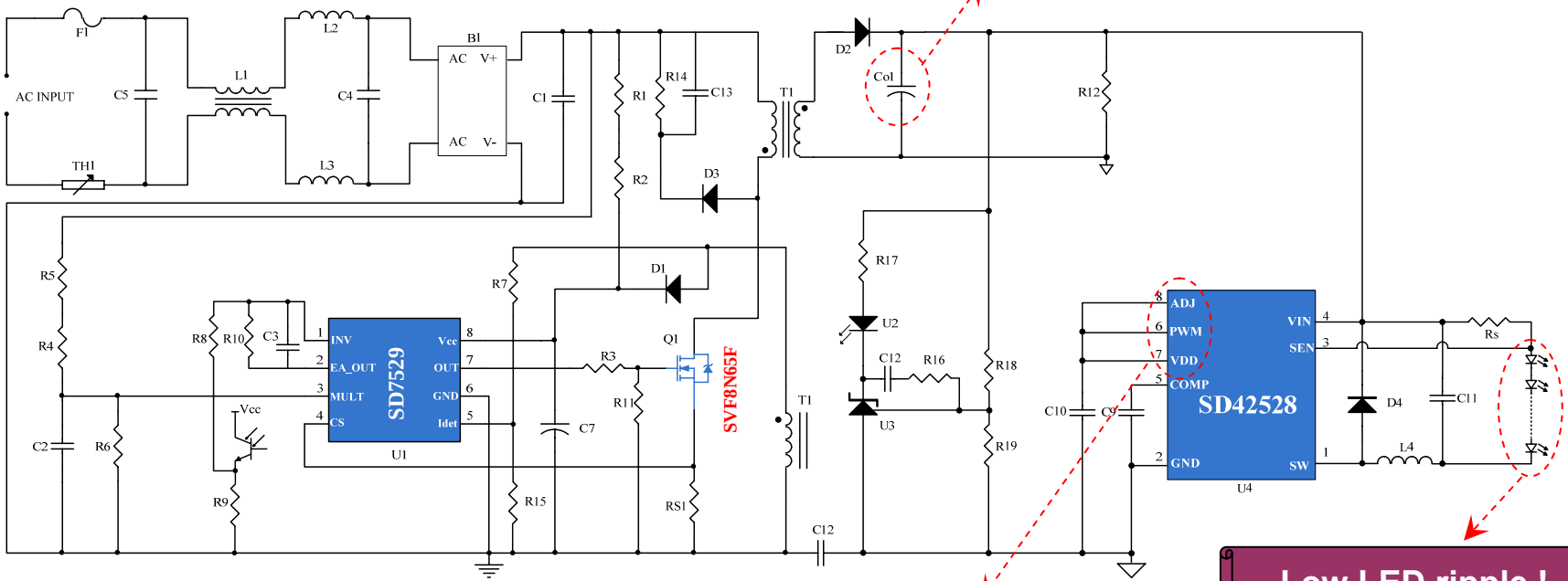
18W LED Daylight Lamp Driver Solution (SD7529LV+SD42528)

18W DEMO SPEC

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Remark
Input voltage	V_{IN}	90	220	265	VAC	
Input voltage frequency	f	47	50/60	64	Hz	
Output voltage	Vo	-	33	-	V	
Output current	Io	0.52	0.55	0.58	A	It is recommended to use the resistor with accuracy of 0.5%
Output current ripple (peak-to-peak)	-	-	0.05	0.1	A	Io=550mA, Vin=220VAC
Output voltage ripple (peak-to-peak)	-	-	0.15	0.2	V	Io=550mA, Co=330uF*3
Output current line regulation	-	-	-	1.5%	-	Io=550mA, full range voltage input
Conversion efficiency	η	84	85	-	%	Typ. Value is obtained with V_{IN} =220VAC, full-load.
Power factor	-	0.95	0.97	-		Typ. Value is obtained with V_{IN} =265V, full-load.
Stand-by power dissipation	Pin	-	-	0.8	W	Output open
Short-circuit power dissipation	Pin	-	-	1.5	W	At Max. input voltage(265vac)
Tune-on delay	-	-	-	1.5	S	The duration from input power on to output voltage built-up
Demo dimension	L*W*H		25*1.8*1.4		cm	

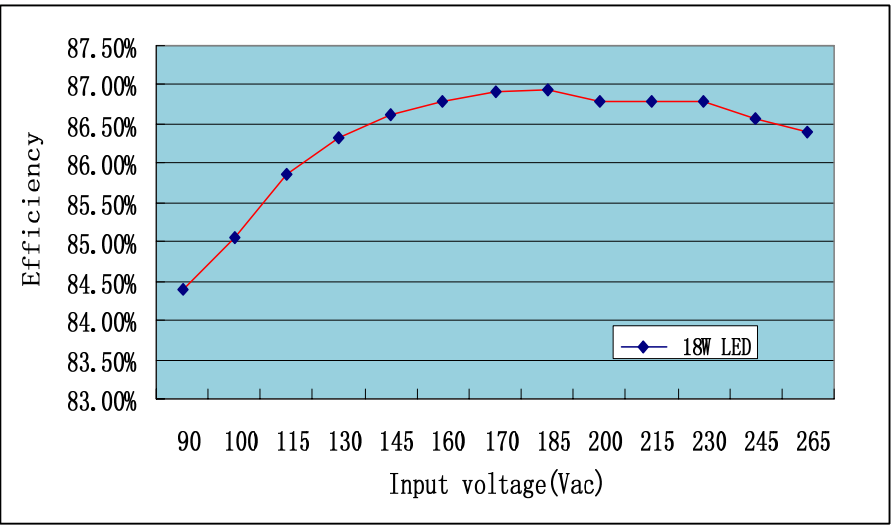
18W LED Daylight Lamp Driver Solution (SD7529LV+SD42528)

18W DEMO Schematic Diagram

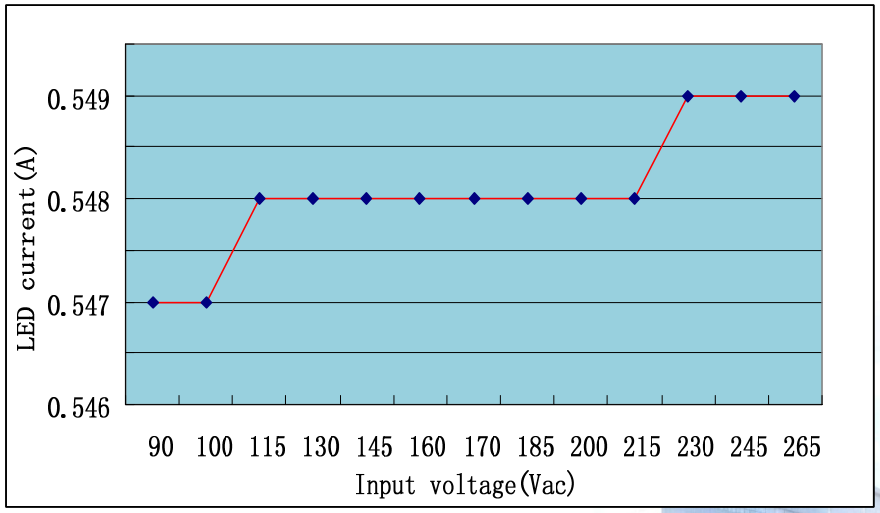


18W LED Daylight Lamp Driver Solution (SD7529LV+SD42528)

Efficiency Test

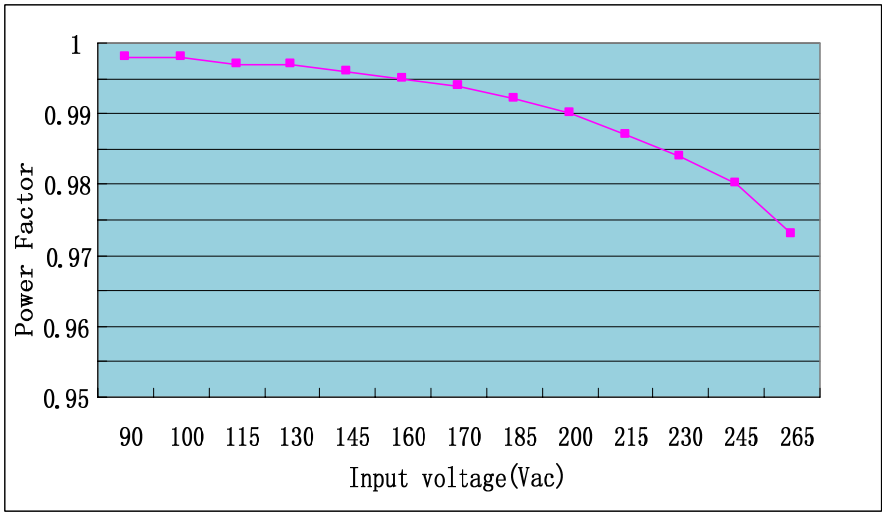


LED Current Line Regulation test

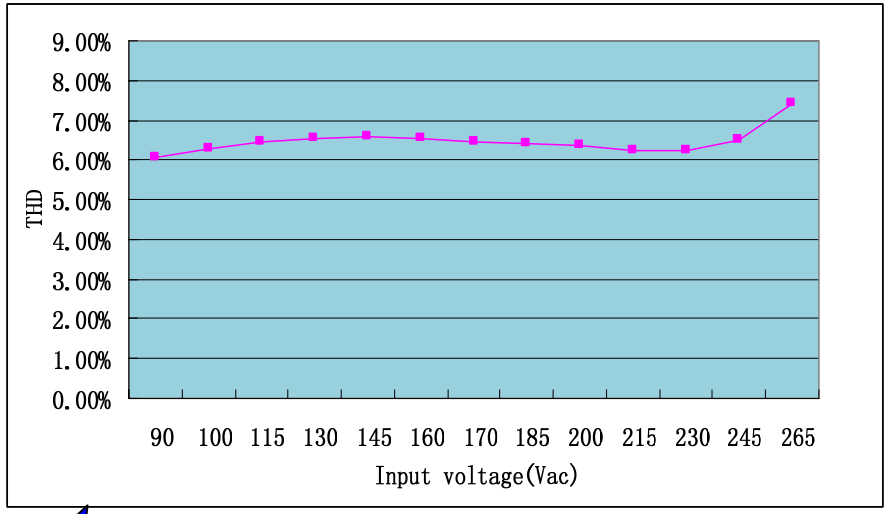


18W LED Daylight Lamp Driver Solution (SD7529LV+SD42528)

System Power Factor Test



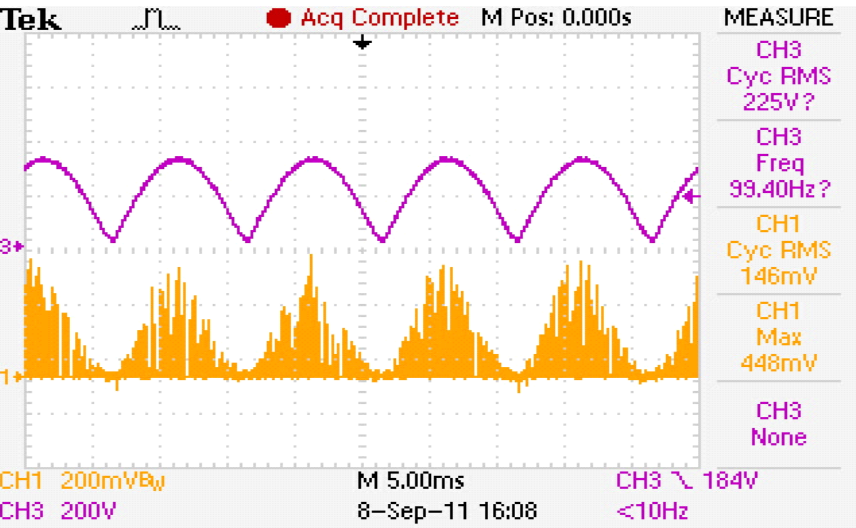
System THD Test



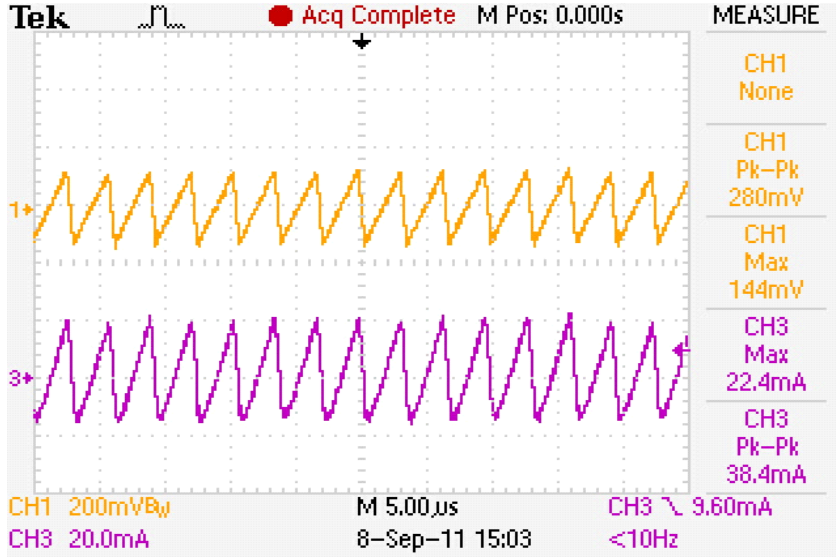
High PF, Low THD !

18W LED Daylight Lamp Driver Solution (SD7529LV+SD42528)

Input voltage and Primary current(220V)



Output current and voltage ripple(220v)



Summary

- High frequency ripple, no 100HZ/120HZ ripples
- Ripple PK-PK value is very low compared to single-stage system
- Smaller E-Cap is required
- High safety when output is shorted

SD6855/6 PSR LED Lighting Controller

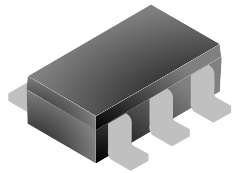
Key Features

- Low start current: < 3uA
- SD6855 is for BJT driving, SD6856 is for MOSFET driving
- CV/CC control mode
- Over voltage, under voltage, open-circuit and over temperature protections
- Tight current regulation
- Primary side constant current control, No need of opto-coupler and 431

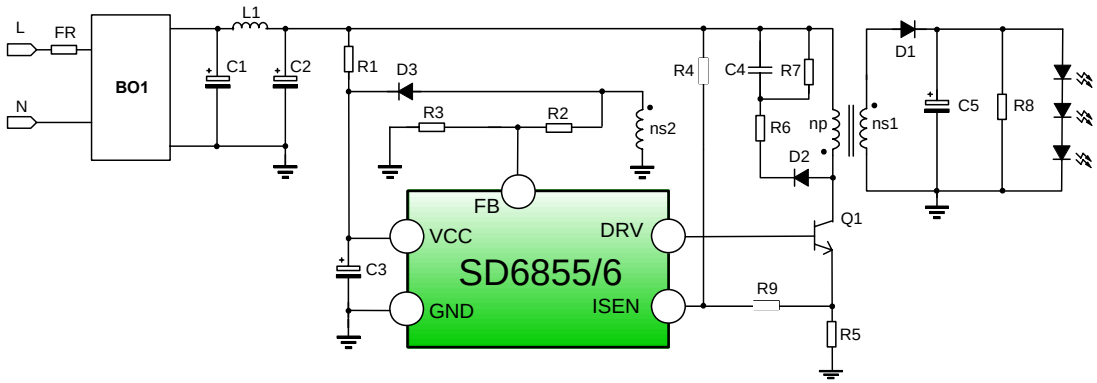
Applications

- Spotlight, bulb lamp, PAR lamp
- Commercial and industry Lighting
- General lighting

Package: SOT-23-6



Typical Application Circuit



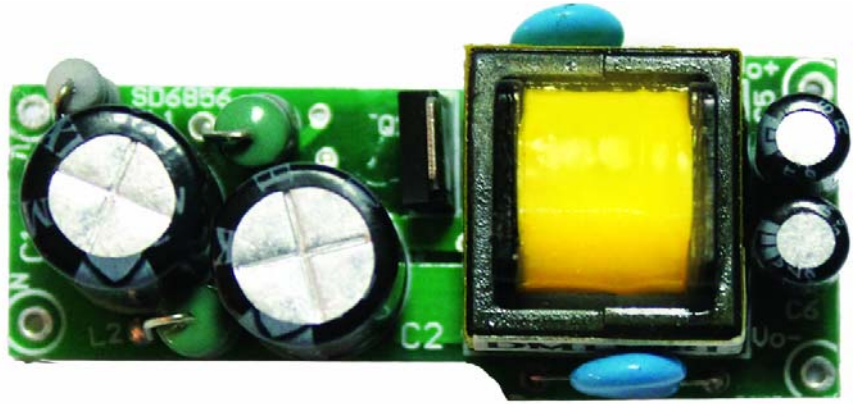
7W LED Bulb Solution with SD6856

Key Features

- Primary side constant current control
- Simplify the system design
- Over voltage, under voltage, open-circuit and over temperature protections
- Current line regulation: ±5%
- Very low BOM cost
- For replacing the traditional incandescence bulb
- Small size and low external components count
- Meet EN55015, more than 10dB

Sample is available

DEMO PHOTO



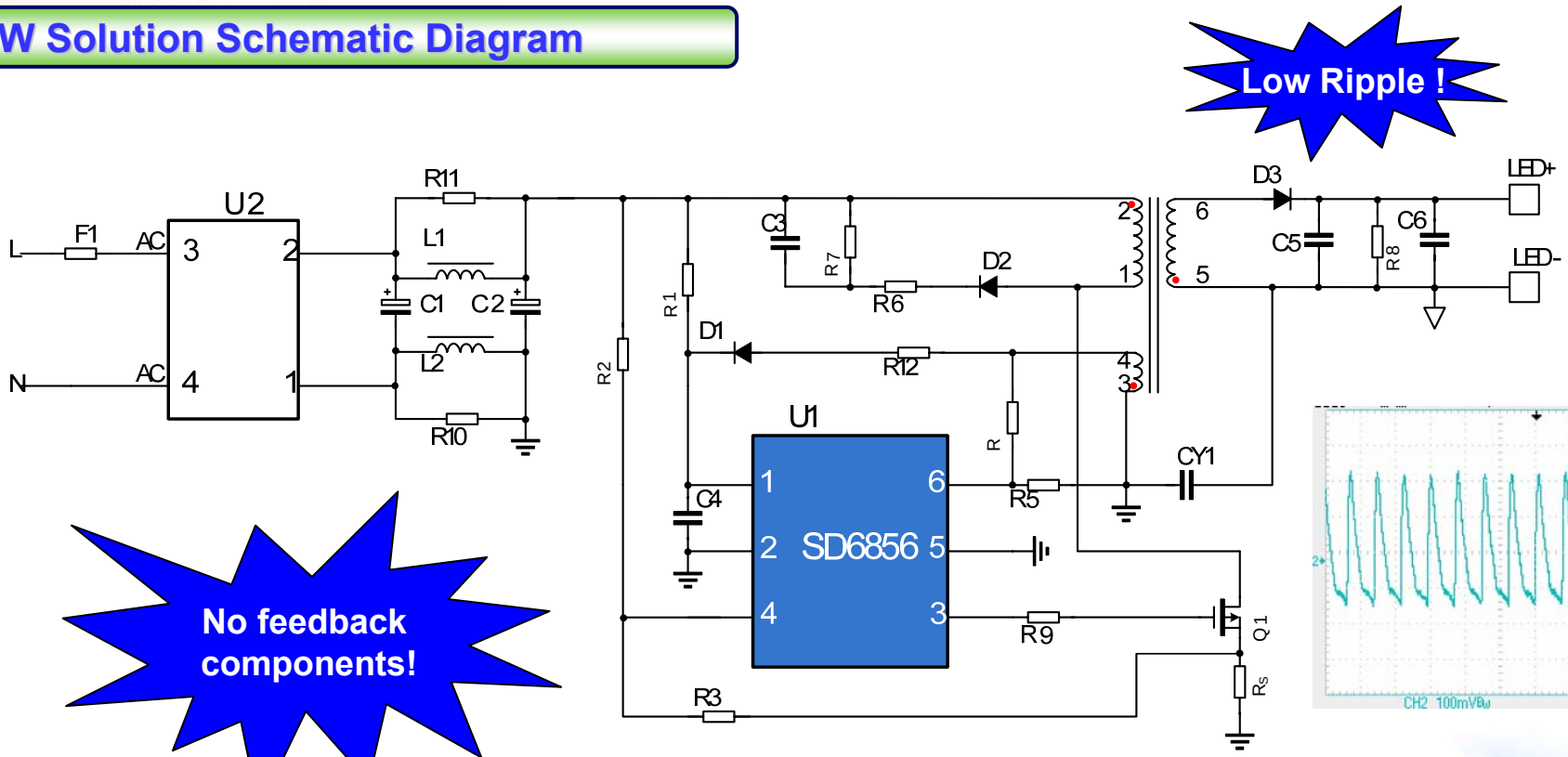
7W LED Bulb Solution with SD6856

7W DEMO SPEC

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Remark
Input voltage	V_{IN}	90	220	265	VAC	
Input voltage frequency	f	47	50/60	64	Hz	
Output voltage	Vo	-	23	-	V	
Output current	Io	0.31	0.33	0.34	A	0.5% resistor is recommended
Output current ripple (peak-to-peak)	-	-	0.08	0.15	A	Io=330mA, Vin=220VAC
Output voltage ripple (peak-to-peak)	-	-	-	0.3	V	Lower with more caps
line regulation	-	-		±5%	-	
efficiency	η	-	80	-	%	Typ. Value is obtained with V_{IN} =220VAC, full-load.
Power factor	-		/	-		NO PFC FUNCTION
Stand-by power dissipation	Pin	-	-	0.2	W	Output open
Short-circuit power dissipation	Pin	-	-	0.3	W	At Max. input voltage(265vac)
Tune-on delay	-	-	-	1	S	The duration from input power on to output voltage built-up

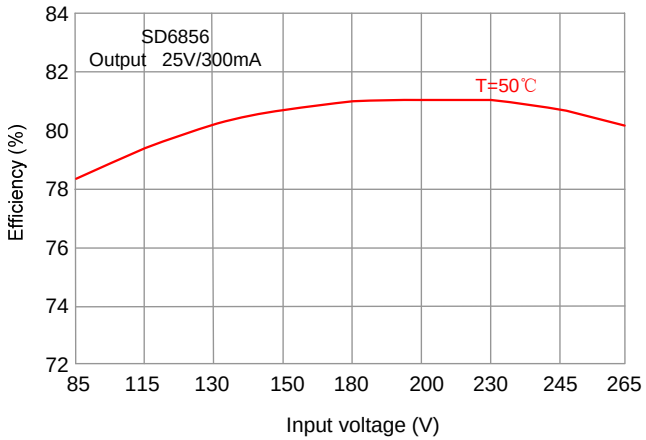
7W LED Bulb Solution with SD6856

7W Solution Schematic Diagram

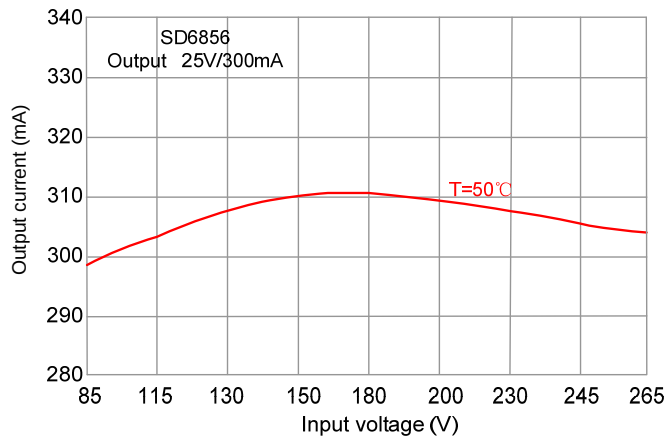


7W LED Bulb Solution with SD6856

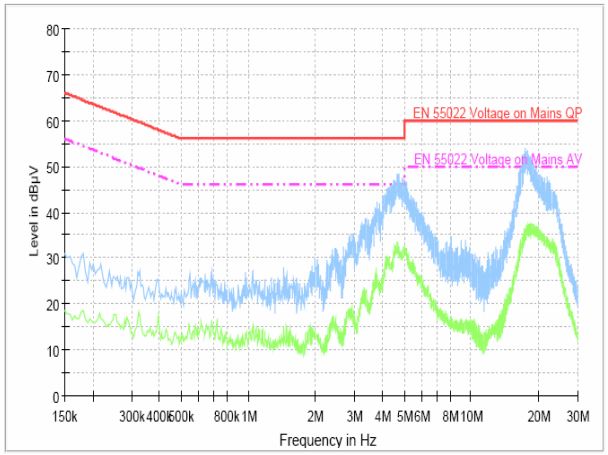
Efficiency Curve



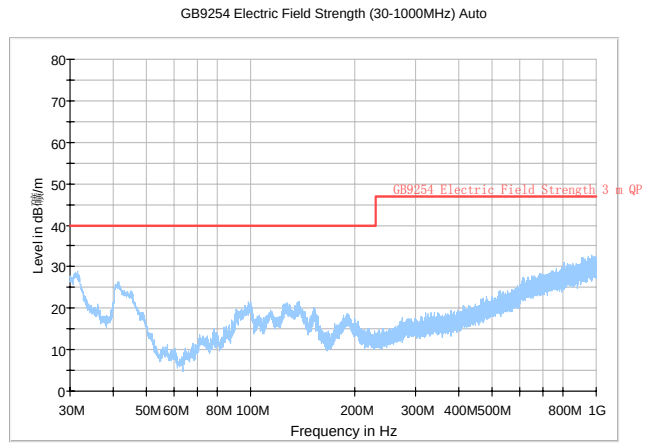
LED current line regulation



Conduction test



Radiation test

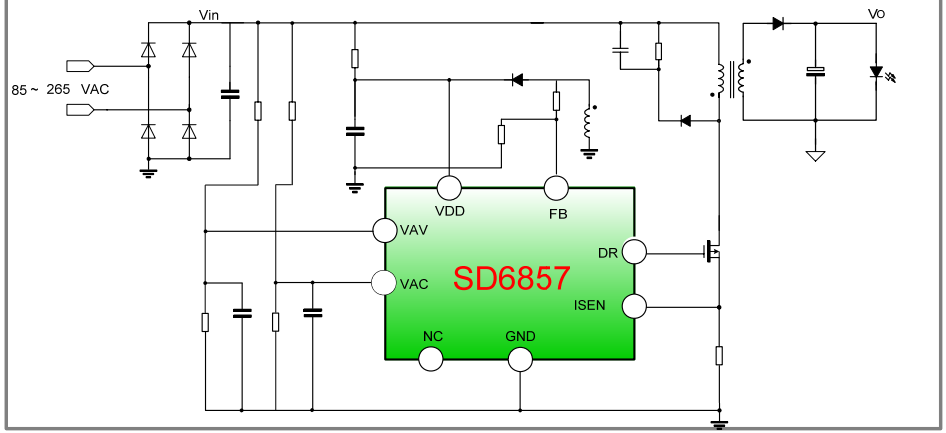


SD6857 PSR + PFC LED Lighting Controller

Key Features

- Primary constant current control
- Integrated PFC function
- Very tight current regulation
- Very low start up current
- Built-in soft start
- Built-in VCC under voltage protection
- Cycle-by-cycle current limit
- Output short-circuit and over-voltage protections

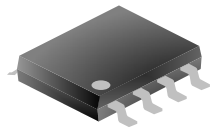
TYPICAL APPLICATION CIRCUIT



Applications

- Spotlight, bulb lamp, PAR lamp
- Industry and commercial lighting

Package: SOP-8



SD6857 PSR + PFC LED Lighting Controller

Detailed Parameters

Parameter	Symbol	Min.	Typ.	Max.	Unit
Start-up current	I_{start}	--	5	10	μA
Start threshold voltage	V_{start}	14	16	18	V
Stop threshold voltage	V_{stop}	7.0	8.0	9.0	V
Over voltage protection	V_{OVP}	2.5	2.7	2.9	V
CS over current threshold	V_{cs1}	1.3	1.4	1.5	V
CS compare point clamp-high	$V_{csclamp}$	0.7	0.8	0.9	V
Over temperature detection	T_{sd}	125	140	--	°C
Over temperature hysteresis	T_{sdhys}	15	25	40	°C

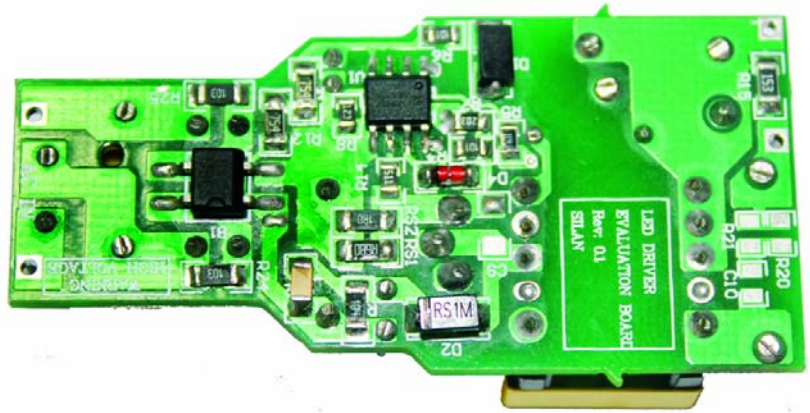
9W LED Bulb Solution with SD6857

Key Features

- Primary side constant current control
- High PF, PF>0.95
- Output over voltage protection
- Over voltage, under voltage, open-circuit and over temperature protections
- Current line regulation: ±3%
- Very low BOM cost
- Replacement of the traditional incandescence bulb
- Small size and low external components count
- Meet EN55015

Sample is available

DEMO PHOTO



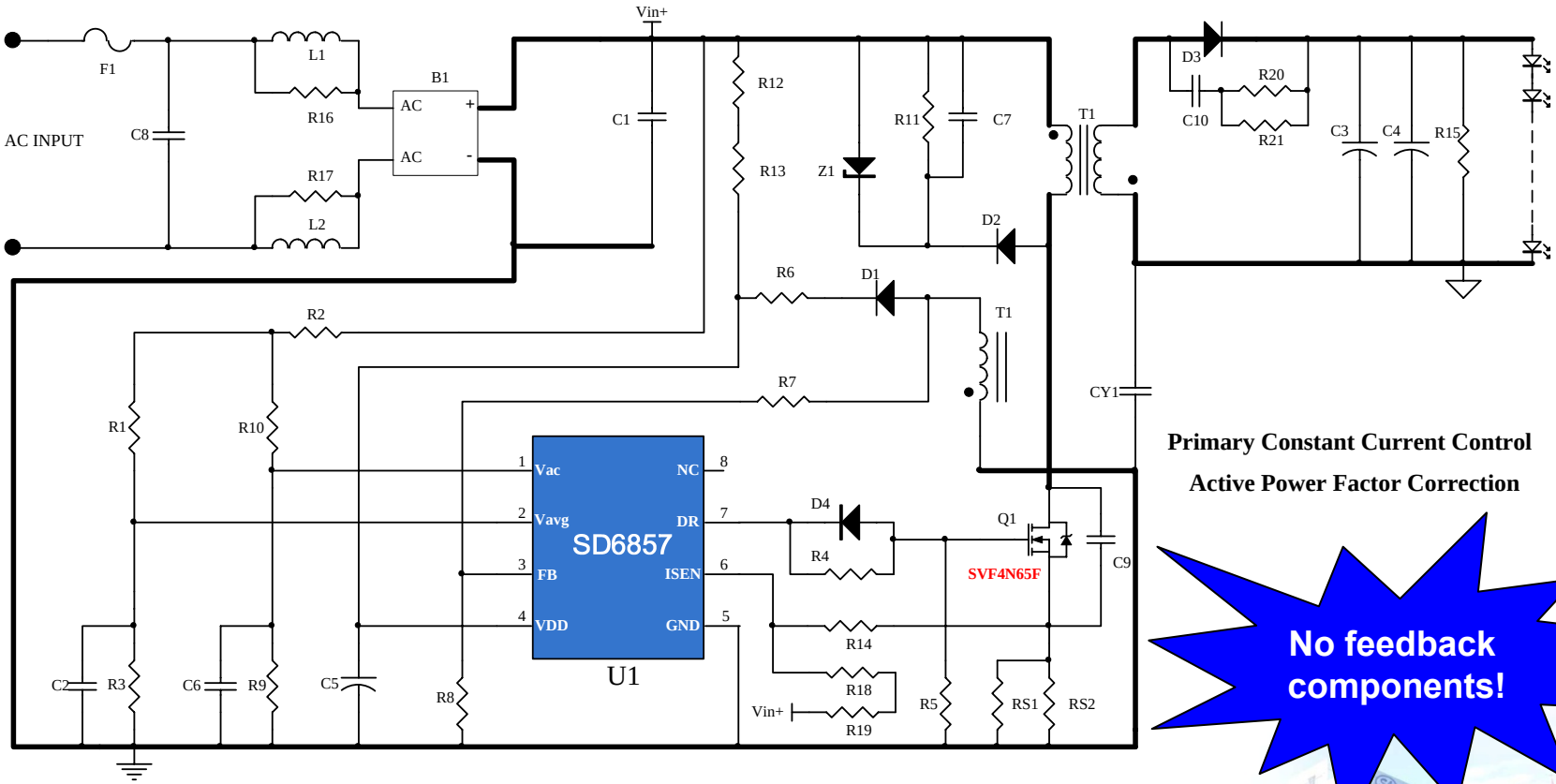
9W LED Bulb Solution with SD6857

9W Bulb Solution Spec

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Remark
Input voltage	V_{IN}	90	220	265	VAC	
Input frequency	f	47	50/60	64	Hz	
Output voltage	Vo	12	26	31	V	
Output current	Io	0.33	0.35	0.37	A	It is recommended to use the resistor with accuracy of 0.5%
Output current ripple (peak-to-peak)	-	-	0.18	-	A	Io=350mA, Vin=220VAC
Load Regulation	-	-	-	±3%		
Line Regulation	-	-	-	±3%	-	
Conversion efficiency	η	-	85	-	%	Typ. Value is obtained with V_{IN} =220VAC, full-load.
Power factor	PF	0.95	-	-		AT Vin=265Vac
Stand-by power dissipation	Pin	-	-	0.3	W	Output open at Vin=220Vac
Short-circuit power dissipation	Pin	-	-	0.8	W	At Max. input voltage(265vac)
Tune-on delay	-	-	-	0.5	S	The duration from input power on to output voltage built-up

9W LED Bulb Solution with SD6857

9W PSR+PFC Schematic



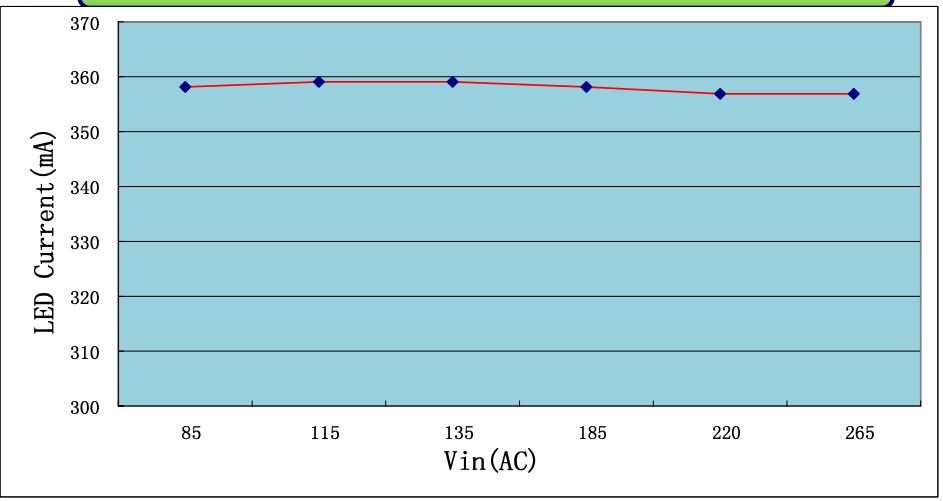
Primary Constant Current Control

Active Power Factor Correction

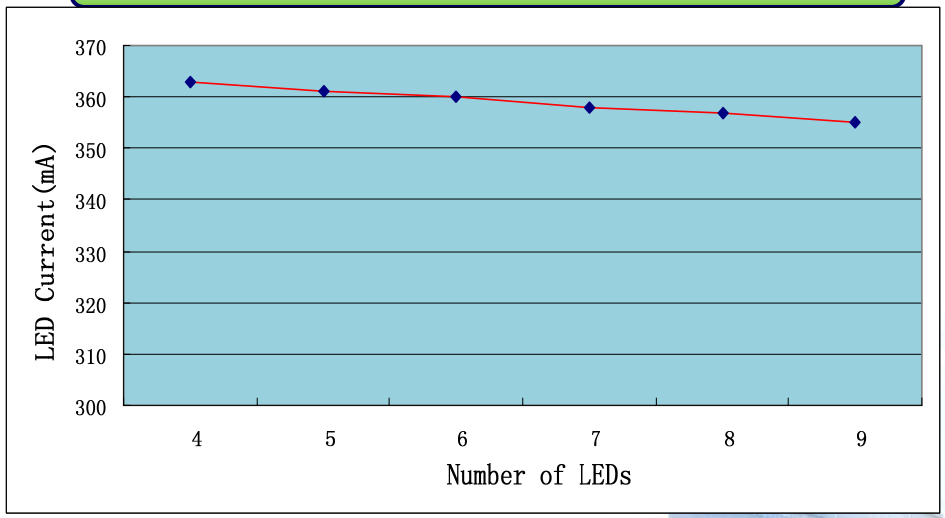
No feedback components!

9W LED Bulb Solution with SD6857

LINE REGULATION

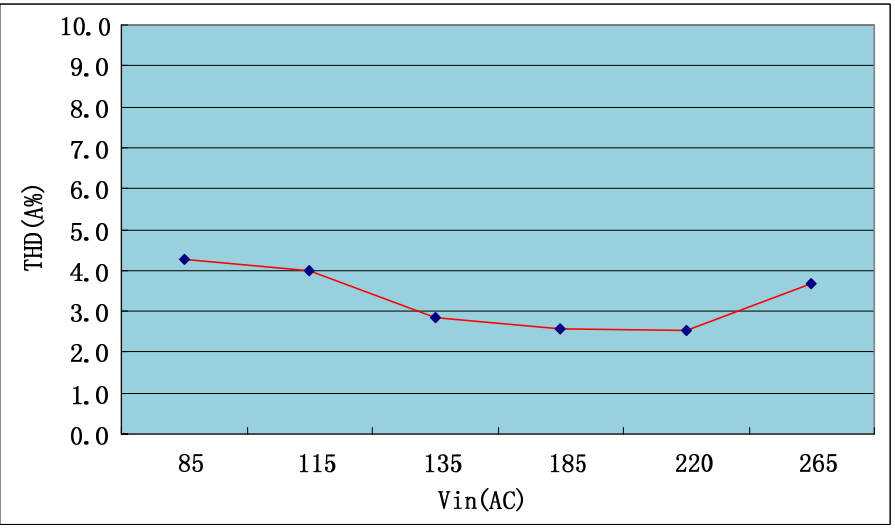


LOAD REGULATION

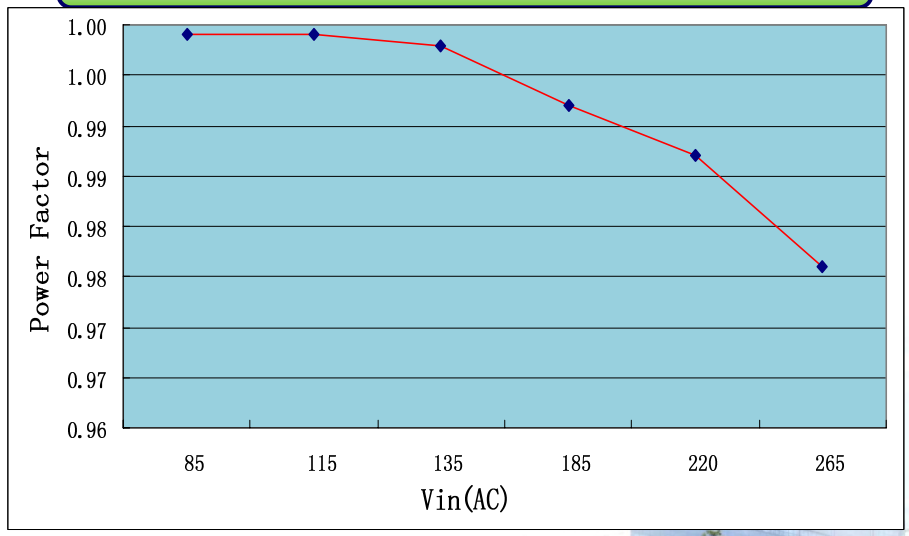


9W LED Bulb Solution with SD6857

THD Vs Vin

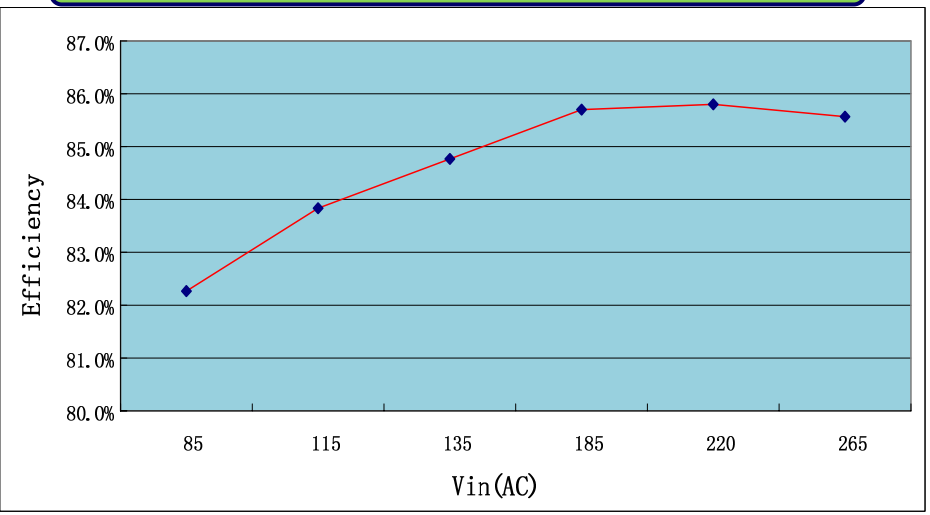


PF Vs Vin

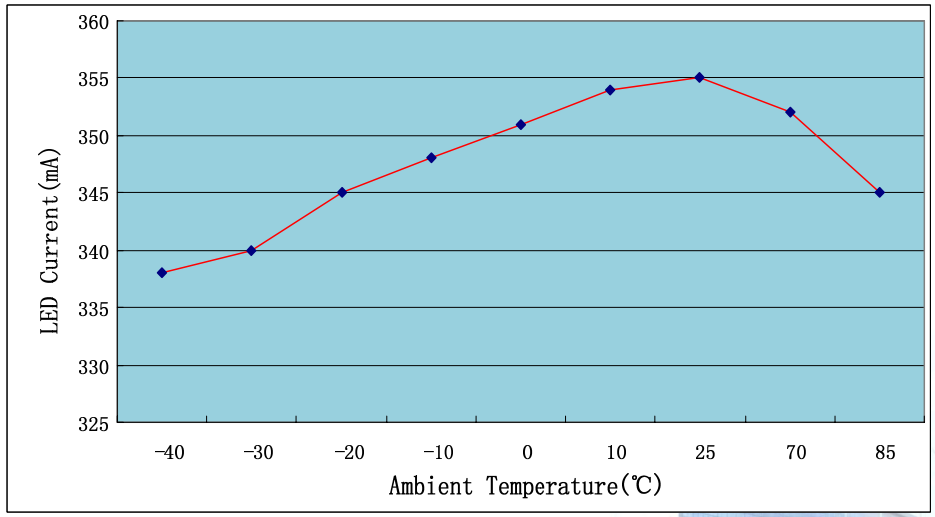


9W LED Bulb Solution with SD6857

Efficiency Vs Vin

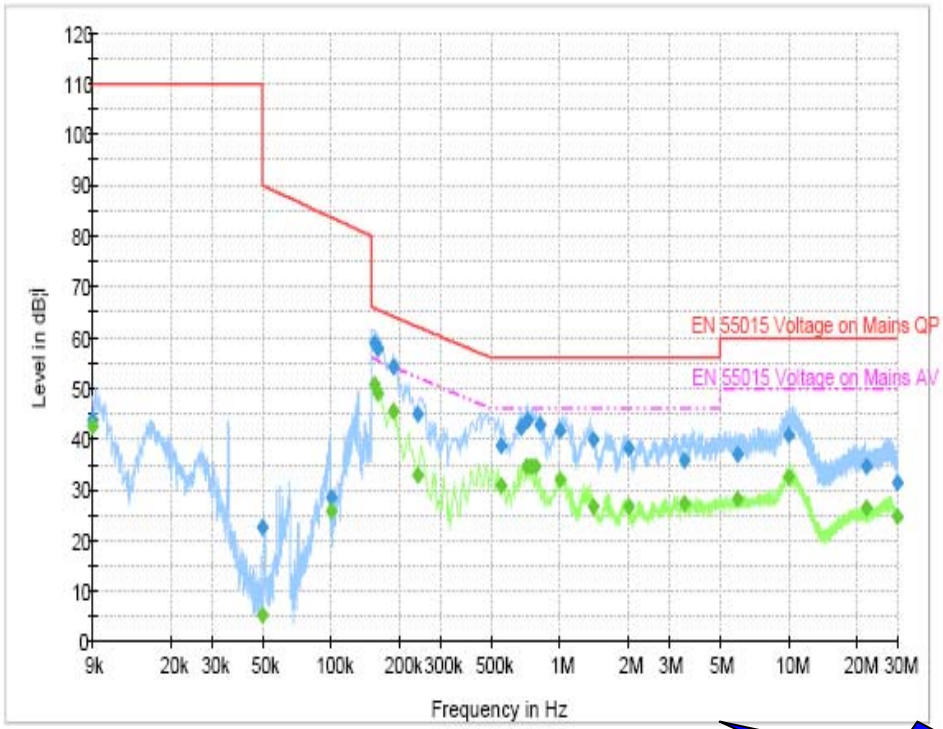


LED Current Vs Temperature

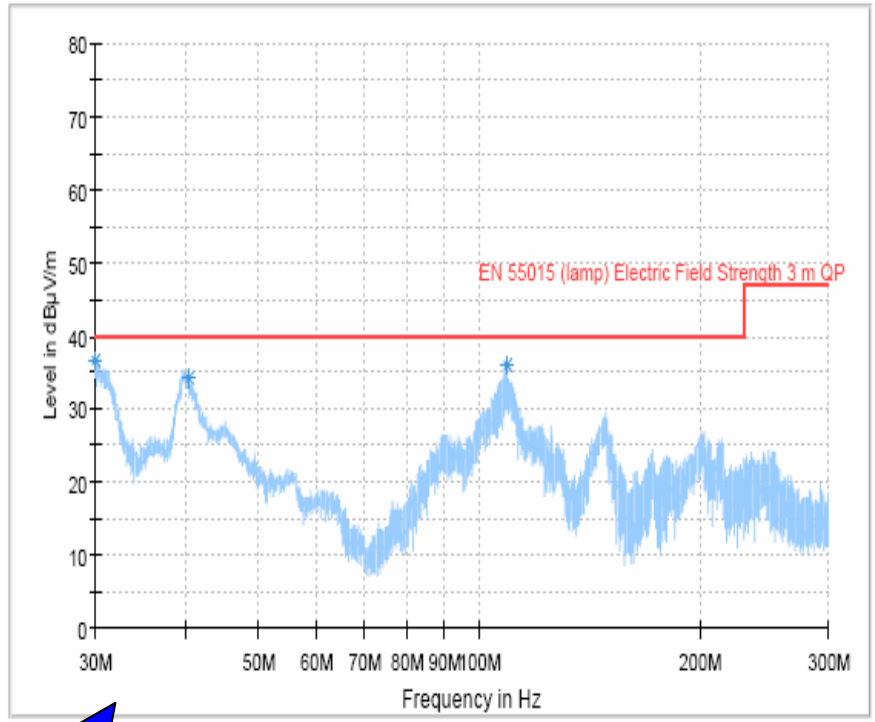


9W LED Bulb Solution with SD6857

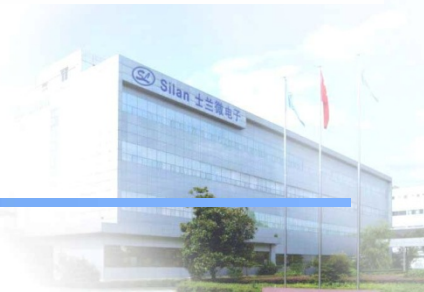
Conduction test



Radiation test



MEETS EN55015 !



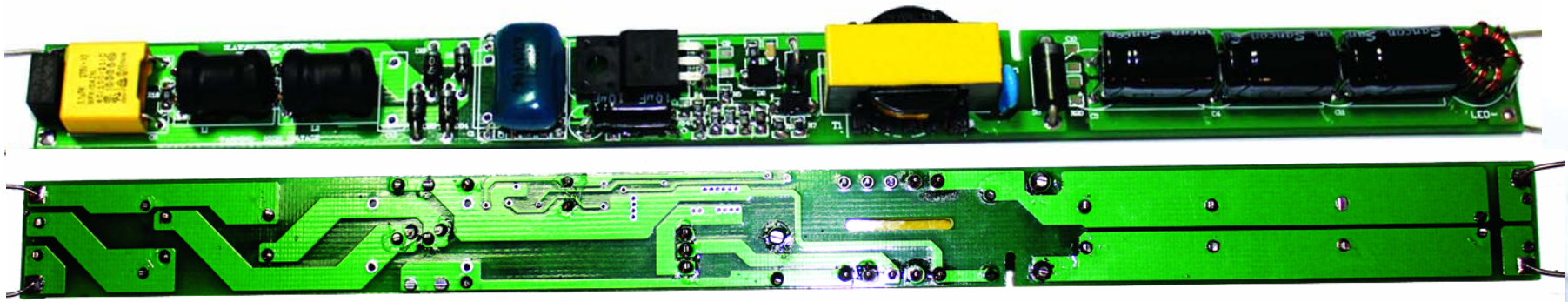
18W LED Daylight Lamp Solution with SD6857

Key Features

- Primary side constant current control
- High PF, PF>0.95
- Isolated single stage flyback topology
- Output over voltage protection
- Over voltage, under voltage, open-circuit and over temperature protections
- Current line regulation: ±3%
- Very low BOM cost
- Replacement of the traditional incandescence bulb
- Small size and low external components count
- Meet EN55015

DEMO Board Available !

DEMO PHOTO



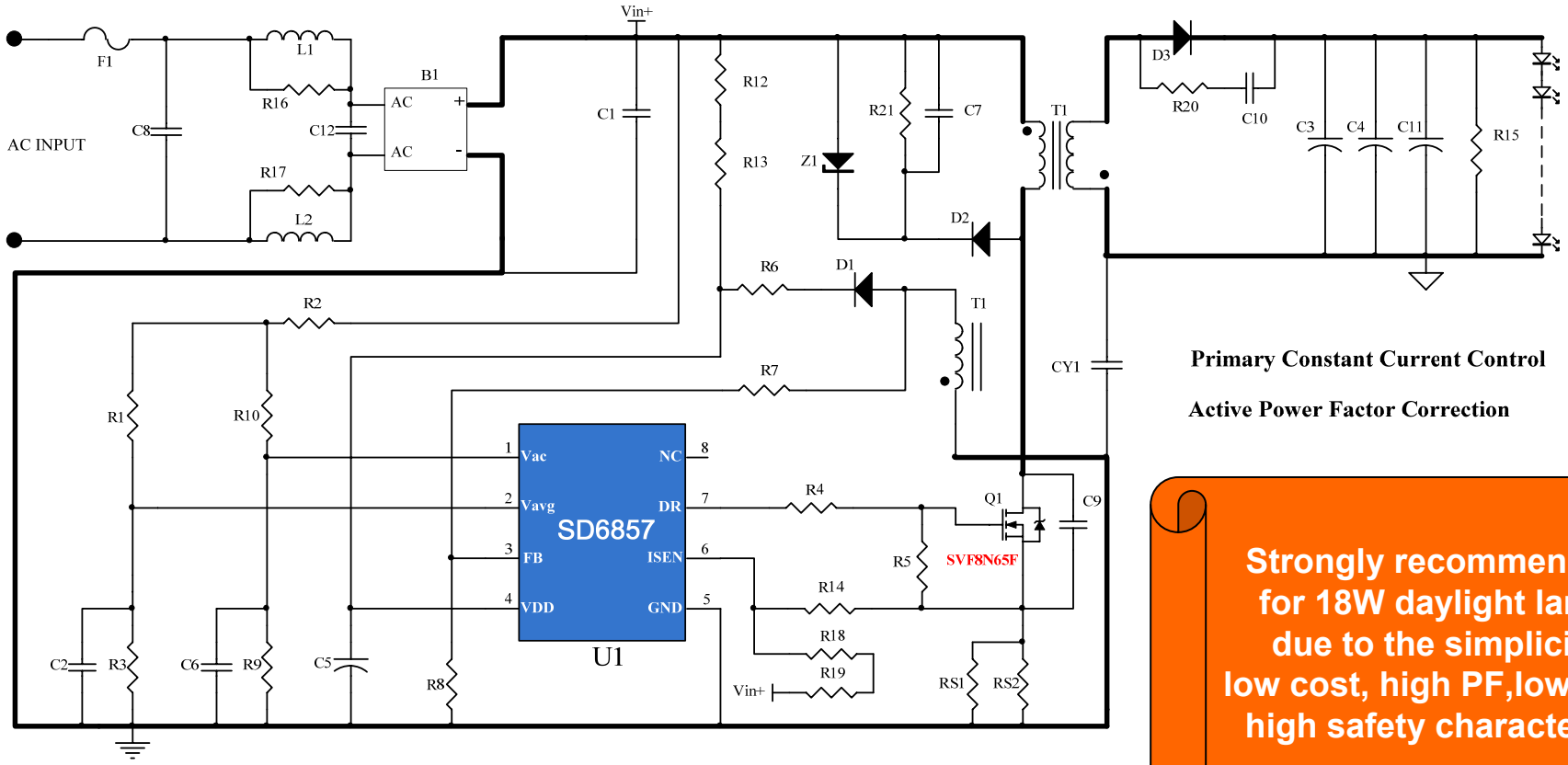
18W LED Daylight Lamp Solution with SD6857

Key Features

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Remark
Input voltage	V_{IN}	85	220	265	VAC	
Input frequency	f	47	50/60	64	Hz	
Output voltage	Vo	14	33	36	V	
Output over voltage			37		V	
Output current	Io	0.53	0.55	0.57	A	0.5% resistor is recommended
Output current ripple	-	-	0.2	-	A	Io=550mA, Vin=220VAC
Load Regulation	-	-	-	±3%		
Line Regulation	-	-	-	±3%	-	
Conversion efficiency	η	-	88	-	%	AT V_{IN} =220VAC, full-load.
Power factor	PF	0.95	-	-		AT Vin=265Vac
Stand-by power dissipation	Pin	-	-	0.3	W	Output open at Vin=220Vac
Short-circuit power dissipation	Pin	-	-	0.8	W	At Max. input voltage(265vac)
Tune-on delay	-	-	-	0.5	S	

18W LED Daylight Lamp Solution with SD6857

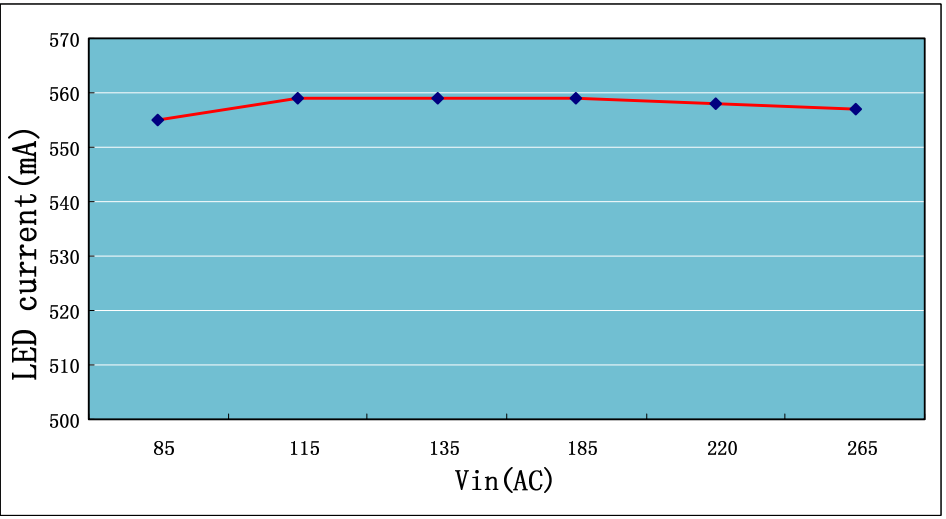
18W PSR+PFC Schematic



Strongly recommended for 18W daylight lamp due to the simplicity low cost, high PF,low THD high safety characters !

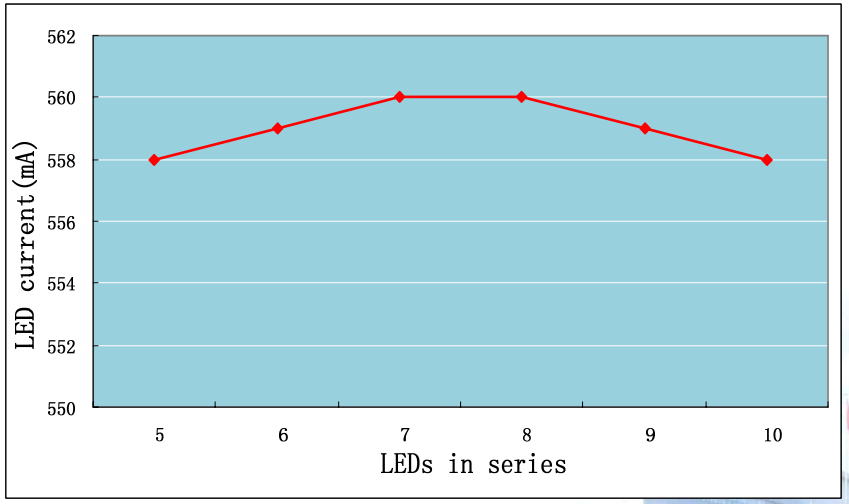
18W LED Daylight Lamp Solution with SD6857

LINE REGULATION



The Max. △Io is about 5mA
That's 0.9% !

LOAD REGULATION

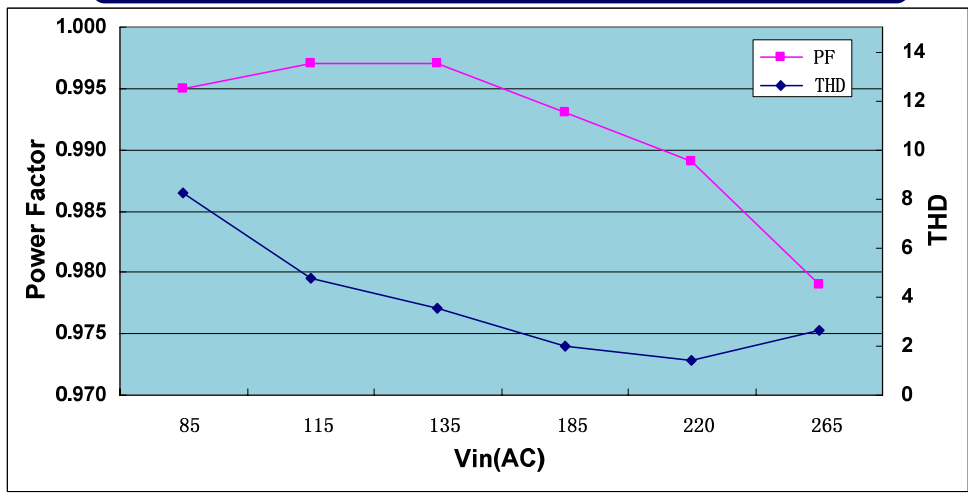


1, wide range of load capability
2, LED current changes only 2mA
When LED strings from 5 to 10

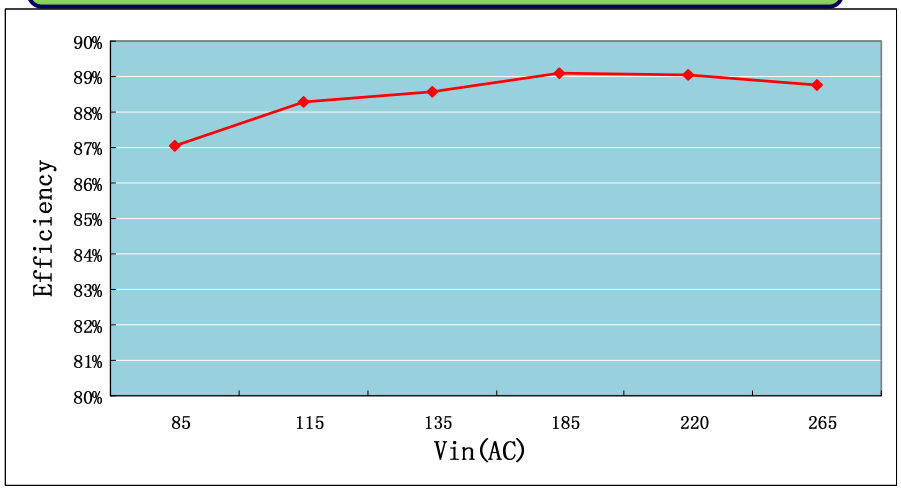
18W LED Daylight Lamp Solution with SD6857

The PF is beyond 0.97
At high input, THD<10% !

PF(THD) Vs Vin



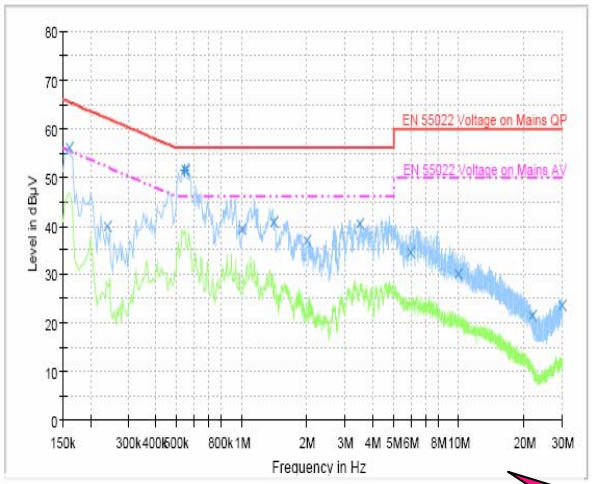
Efficiency Curve

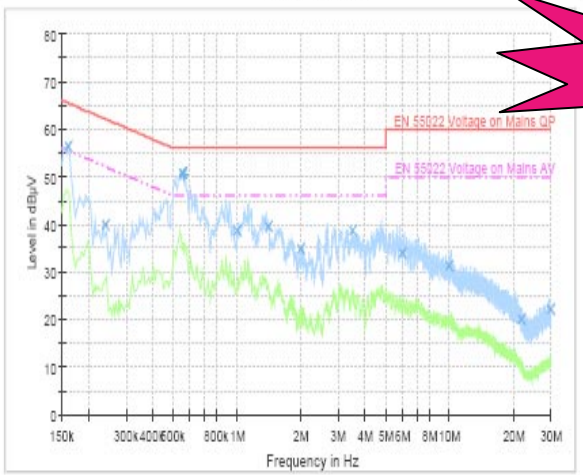


Efficiency is up to 89% !

18W LED Daylight Lamp Solution with SD6857

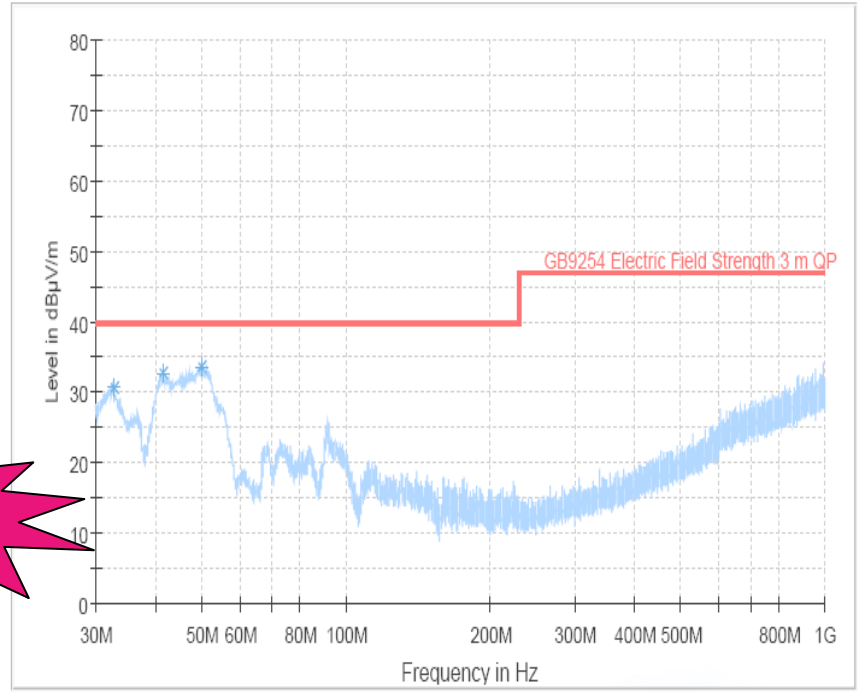
Conduction test





PASS !

Radiation test

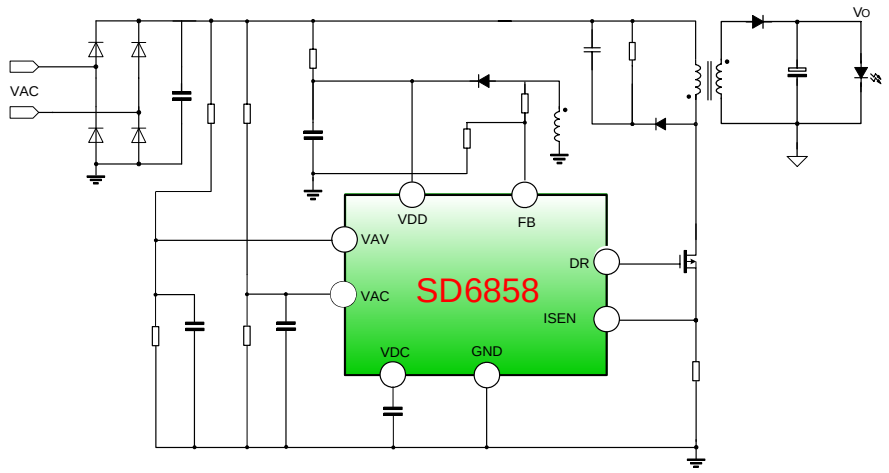


SD6858 PSR+PFC+TRIAC DIMMABLE LED Lighting Controller

Key Features

- Primary constant current control
- Integrated PFC function
- Support TRIAC Dimming
- Very low start up current
- Built-in soft start
- Built-in VCC under voltage protection
- Cycle-by-cycle current limit
- Output short-circuit and over-voltage protections

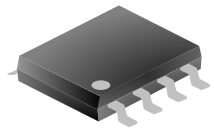
TYPICAL APPLICATION CIRCUIT



Applications

- Spotlight, bulb lamp, PAR lamp
- Industry and commercial lighting

Package: SOP-8



SD6857 PSR + PFC LED Lighting Controller

Detailed Parameters

Parameter	Symbol	Min.	Typ.	Max.	Unit
Start-up current	I_{start}	--	5	10	μA
Start threshold voltage	V_{start}	14	16	18	V
Stop threshold voltage	V_{stop}	7.0	8.0	9.0	V
Over voltage protection	V_{OVP}	2.5	2.7	2.9	V
CS over current threshold	V_{cs1}	1.3	1.4	1.5	V
CS compare point clamp-high	$V_{csclamp}$	0.7	0.8	0.9	V
Over temperature detection	T_{sd}	125	140	--	°C
Over temperature hysteresis	T_{sdhys}	15	25	40	°C

SD6858 PSR+PFC+TRIAC DIMMABLE LED Lighting Controller

Comparison with major competitors

Feature	SD6857	SD6858	ICL8001G	LNK405EG	MP4021
PFC	YES	YES	YES	YES	YES
Primary side constant current	YES	YES	YES	YES	YES
Support TRIAC Dimming	NO	YES	YES	YES	YES
THD optimization	YES	YES	NA	NA	NA
Start up current	5uA	5uA	300uA	NA	20uA
Vcc on	16V	16V	18V	NA	12V
Vcc off	8VA	8V	10.5V	NA	7.6V
Output over voltage protection	AUTO RESTART	AUTO RESTART	LATCH OFF	LATCH OFF	AUTO RESTART
Output short circuit protection	YES	YES	YES	YES	YES
Thermal shut down	YES	YES	YES	YES	YES

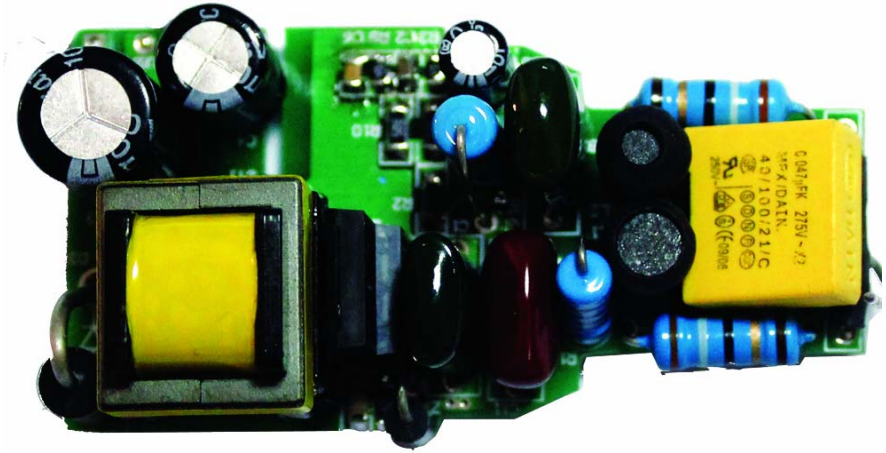
9W Dimmable LED Bulb Solution with SD6858

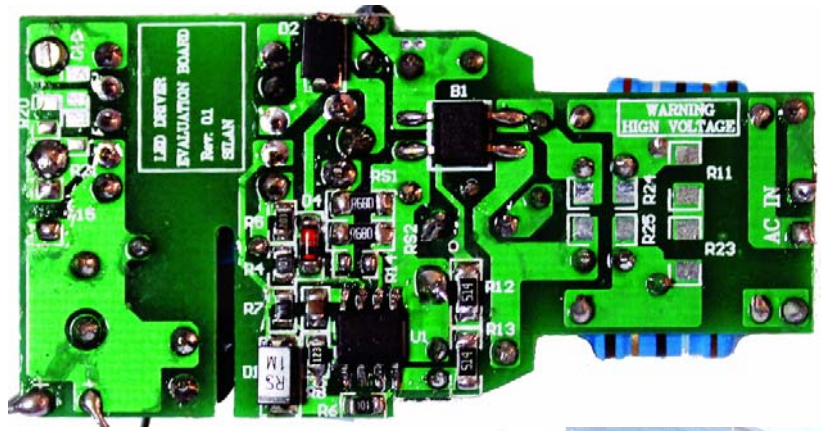
Key Features

- Primary side constant current control
- High PF, PF>0.9(no dimmer)
- Compatible with TRIAC DIMMER
- Output over voltage protection
- Over voltage, under voltage, open-circuit and over temperature protections
- Replacement of the traditional incandescence bulb
- Small size and low external components count
- Meet EN55015

Sample is available

DEMO PHOTO





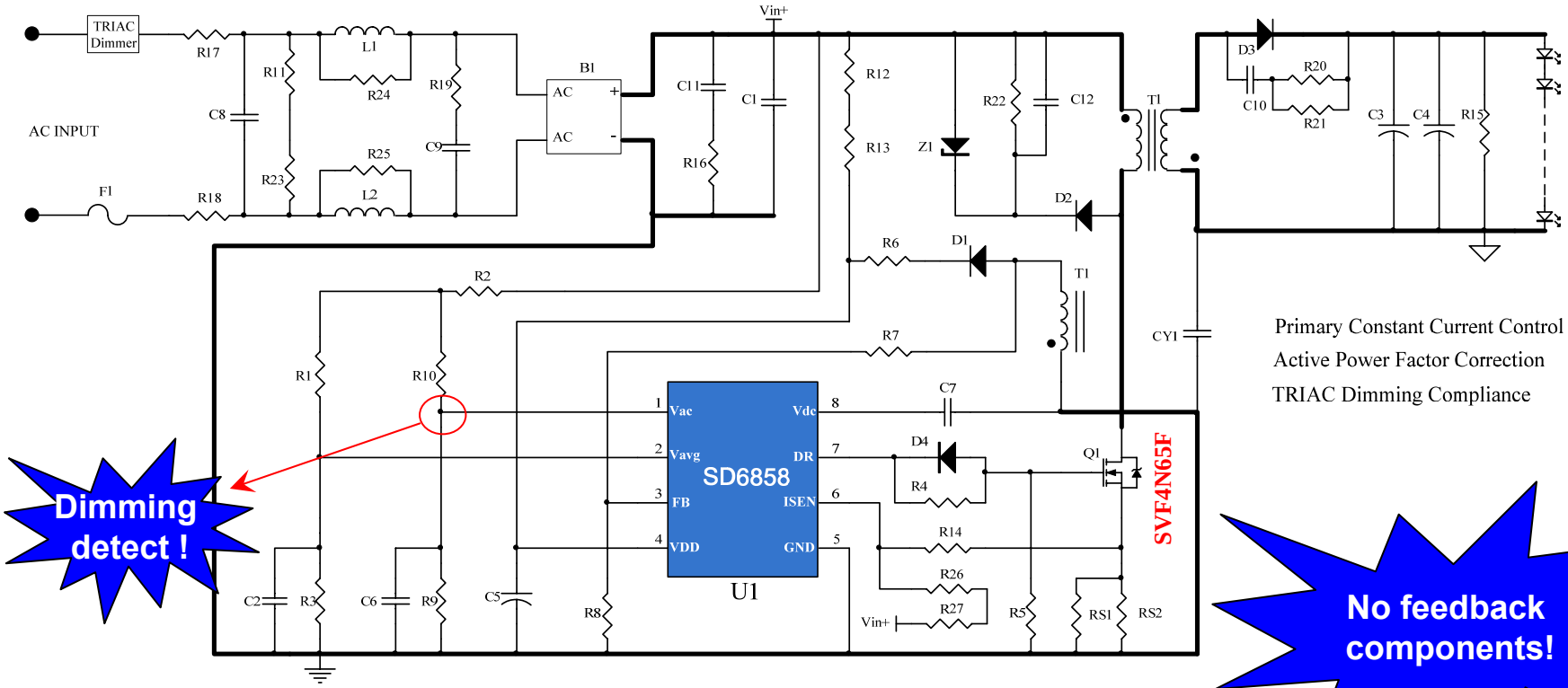
9W Dimmable LED Bulb Solution with SD6858

9W Demo Board Spec

Characteristics	Symbol	Min.	Typ.	Max.	Unit	Remark
Input voltage	V_{IN}	90	110/220	265	VAC	
Input frequency	f	47	50/60	64	Hz	
Output voltage	Vo	-	26	-	V	
Output current	Io	-	0.35	-	A	
Output over voltage		-	32	-	V	
Line Regulation	-	-	-	±5%	-	90V-135V, 185V-245V,With Dimmer
Conversion efficiency	η	76	-	82	%	at V_{IN} =220VAC, TRIAC full on
Power factor	PF	0.8	-	-		With Dimmer
Stand-by power dissipation	Pin	-	-	0.3	W	Output open at Vin=220Vac
Short-circuit power dissipation	Pin	-	-	0.8	W	At Max. input voltage(265vac)
Tune-on delay	-	-	-	0.5	S	

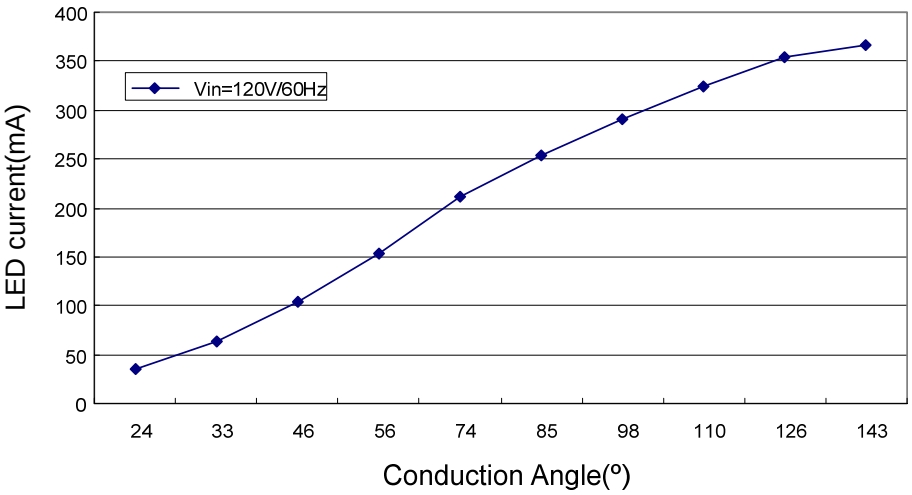
9W Dimmable LED Bulb Solution with SD6858

9W PSR+PFC Schematic



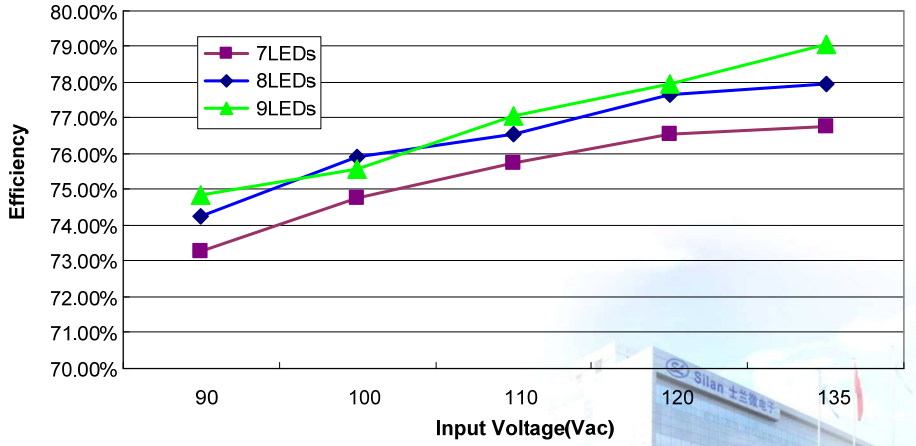
9W Dimmable LED Bulb Solution with SD6858

9W DEMO BOAR Dimming curve



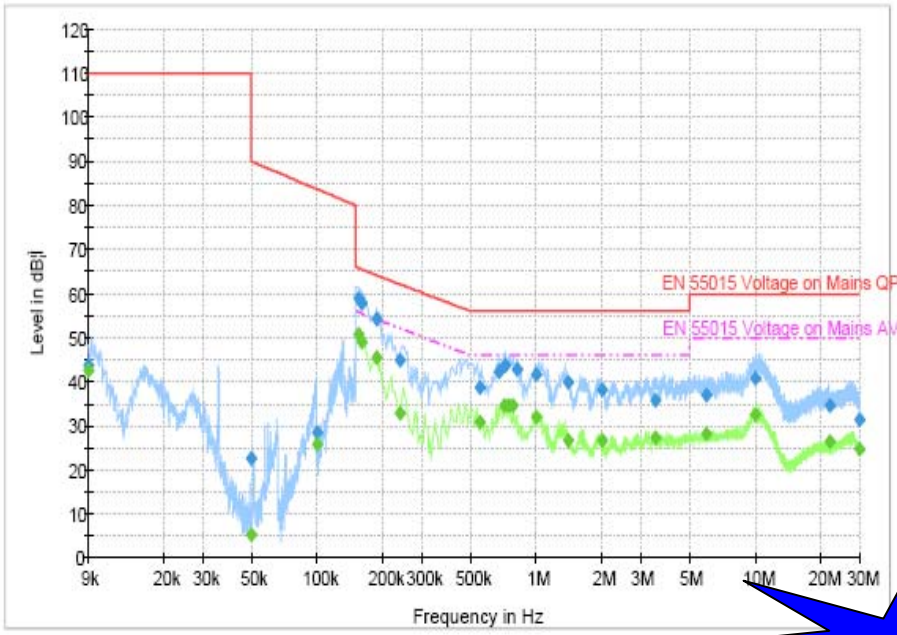
Fully dimming Within the TRIAC DIMMING range!

9W DEMO BOARD EFFICIENCY CURVE

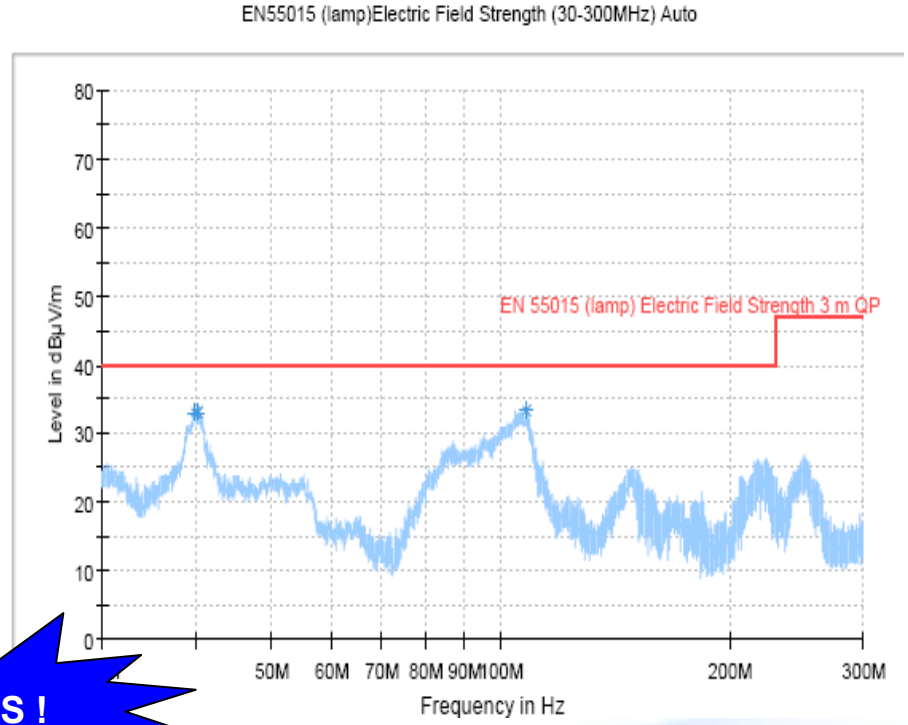


9W Dimmable LED Bulb Solution with SD6858

Conduction test



Radiation test



PASS !

9W Dimmable LED Bulb Solution with SD6858

Dimmer List

BRAND	TYPE	Max.LED current(mA)	Min.LED current(mA) without off the switch
LUTRON	S-600-WH	377	13
	S-600P-WH	368	12
	DV-600P	383	31
	TG-600P	386	70
	AY-600P	382	39
	DV-603PG	358	24
	GL-600H-WH	375	19
	D-600PH-DK	324	0
	CN-600PHW-WH	372	21
	TG-603PGHOWH	365	18
LEVITON	6633-P	388	0
	6631-LW	371	0

AND FIND US……

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Thank you for your attention !