

■ 描述

RSC61XXS 系列芯片是一款带有半桥驱动的 LED 恒流控制电路,可用于 LLC 谐振拓扑。电路工作频率可达 130KHz, 输入电压范围高达 600V 以上。

RSC61XXS 内部集成了逻辑输入信号处理电路、欠压检测电路、过压保护电路、过温保护电路、CS 反馈信号整流电路、误差放大器电路、压控振荡电路、电流过零检测电路、电平位移电路、半桥驱动电路等模块。

RSC61XXS VCC 电源电压工作范围为 8V~20V, 静态工作电流为 720uA。该芯片具有电流过零检测功能 (ZCD), 可自动设置死区时间, 防止高端和低端输出功率管的同时导通。

■ 特点

- 无频闪恒流调节
- 集成半桥驱动的 LLC 拓扑
- 自动死区时间控制
- 集成 2mA 高压启动电路
- 极低输出电流纹波 < 2%
- 输出功率可达 400W
- 短路保护
- 开路保护
- 过温保护
- SOP-14 封装

■ 应用领域

- LED 恒流驱动
- LLC 谐振控制



■ 典型应用电路

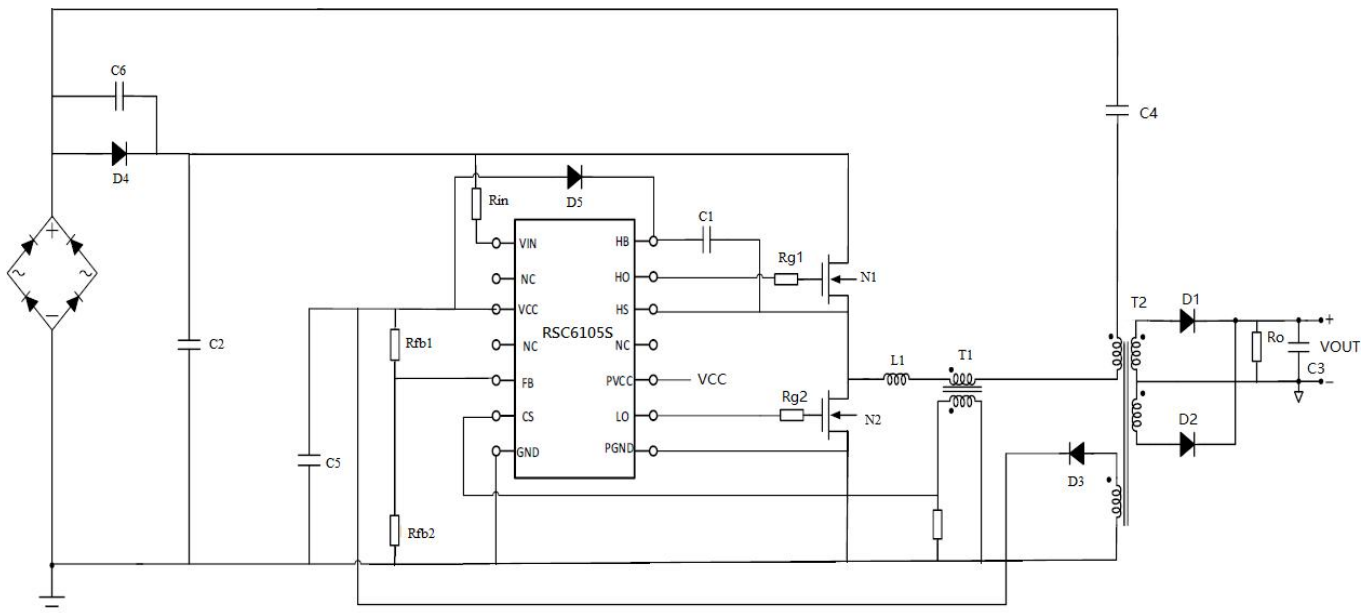
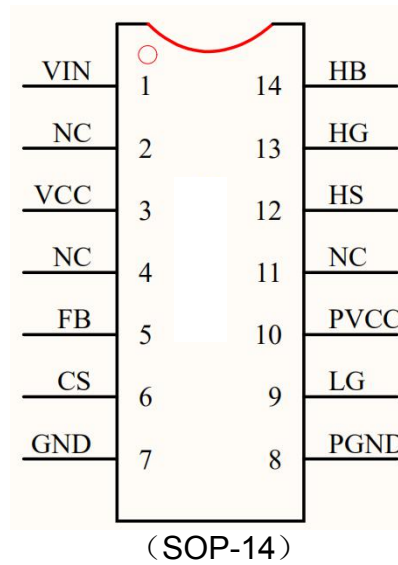


图 1: 典型应用图

■ 封装形式及引脚定义


NO.	Name	Function
1	VIN	高压启动输入
2	NC	空脚
3	VCC	电源
4	NC	空脚
5	FB	电压反馈输入
6	CS	电流采样输入
7	GND	地
8	PGND	功率地
9	LO	半桥驱动低边栅极输出
10	PVCC	功率电源
11	NC	空脚
12	HS	半桥驱动高边地
13	HO	半桥驱动高边栅极输出
14	HB	半桥驱动高边电源

■ 功能框图

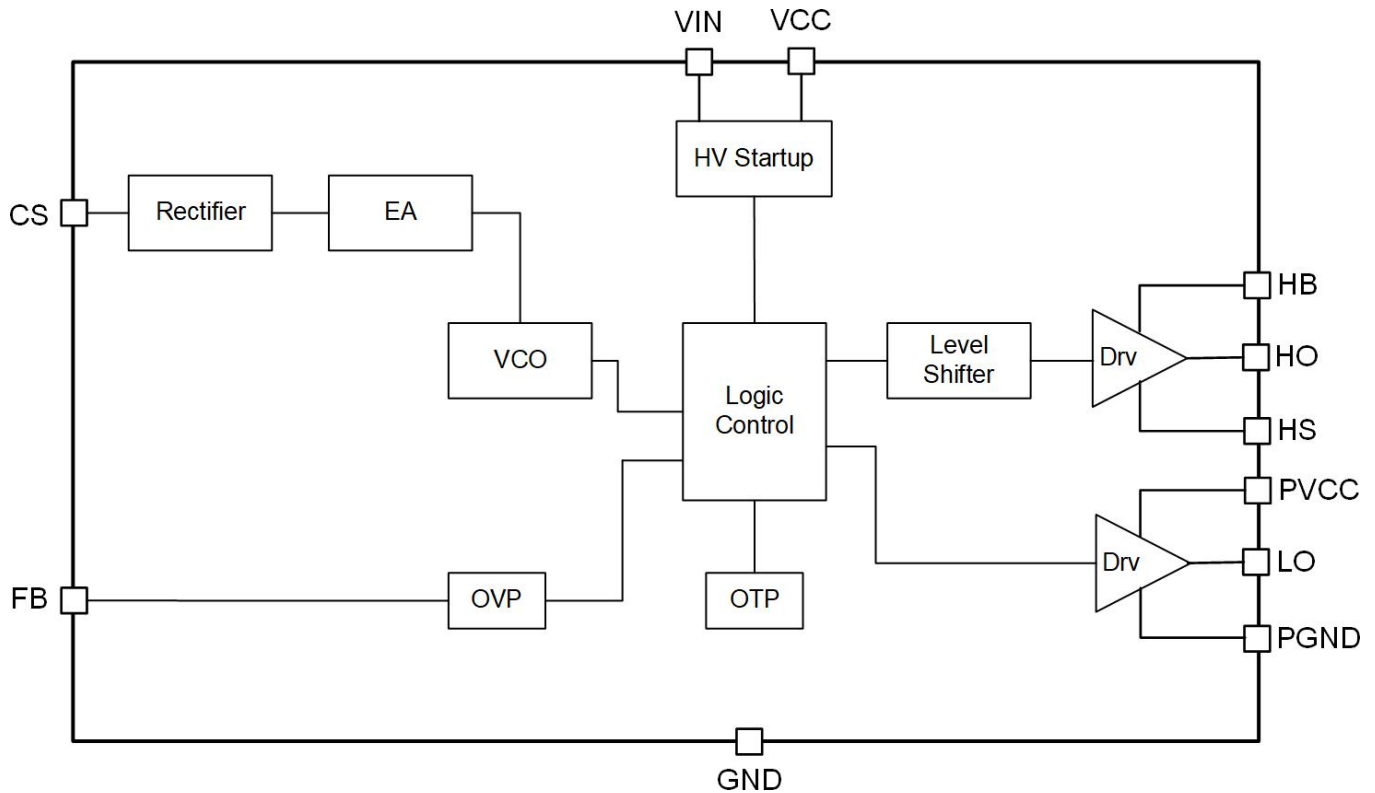


图 2 功能框图

■ 绝对最大额定参数

Symbol	Name	Value	Units
VIN	高压启动输入	150~600	V
VCC	信号电源	-0.3~20	V
FB	电压反馈输入	-0.3~5	V
CS	电流采样输入	-0.3~5	V
LO	半桥驱动低边栅极输出	-0.3~VCC+0.3	V
PVCC	功率电源	-0.3~20	V
HB	半桥驱动高边电源	-0.3~600	V
HS	半桥驱动高边地	HB-20~HB+0.3	V
HO	半桥驱动高边栅极输出	HS-0.3~HB+0.3	V
Tstg	存储温度	-55 to 150	°C
Tsolder	焊接温度	260°C, 10s	
ESD	人体模式	2000	V

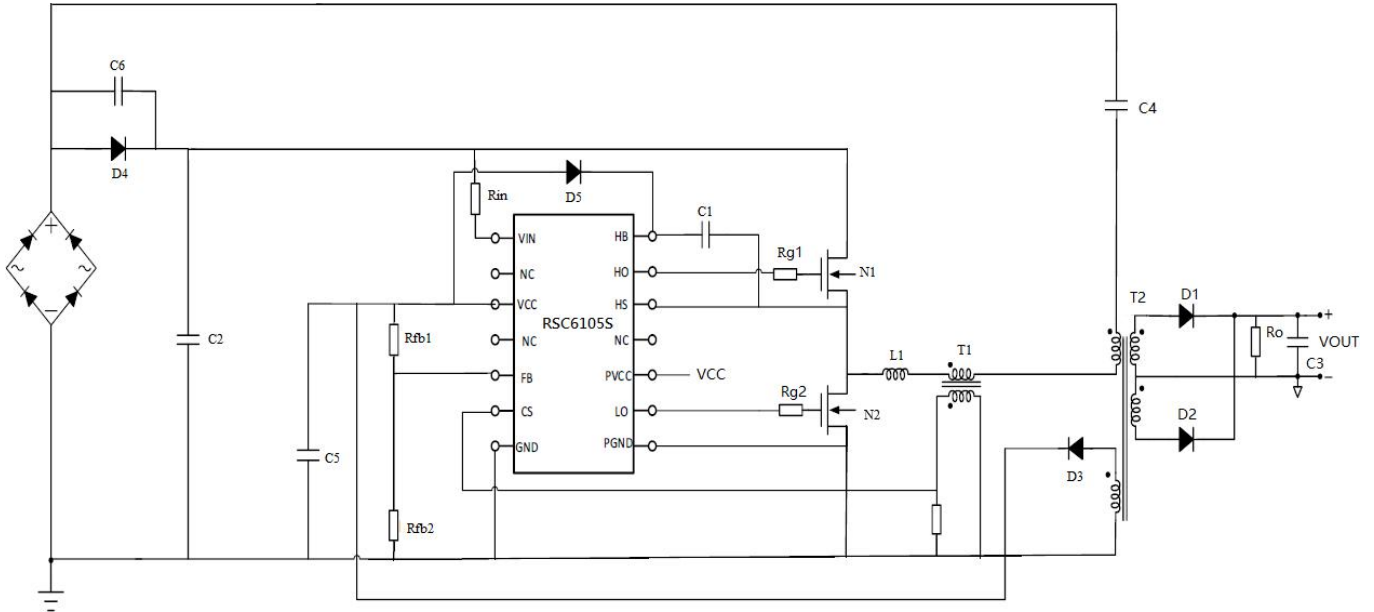
注：超过额定参数所规定的范围将对芯片造成损害，无法预料芯片在额定参数范围外的工作状态，而且若长时间工作在额定参数范围外，可能影响芯片的可靠性。

■ 产品系列型号

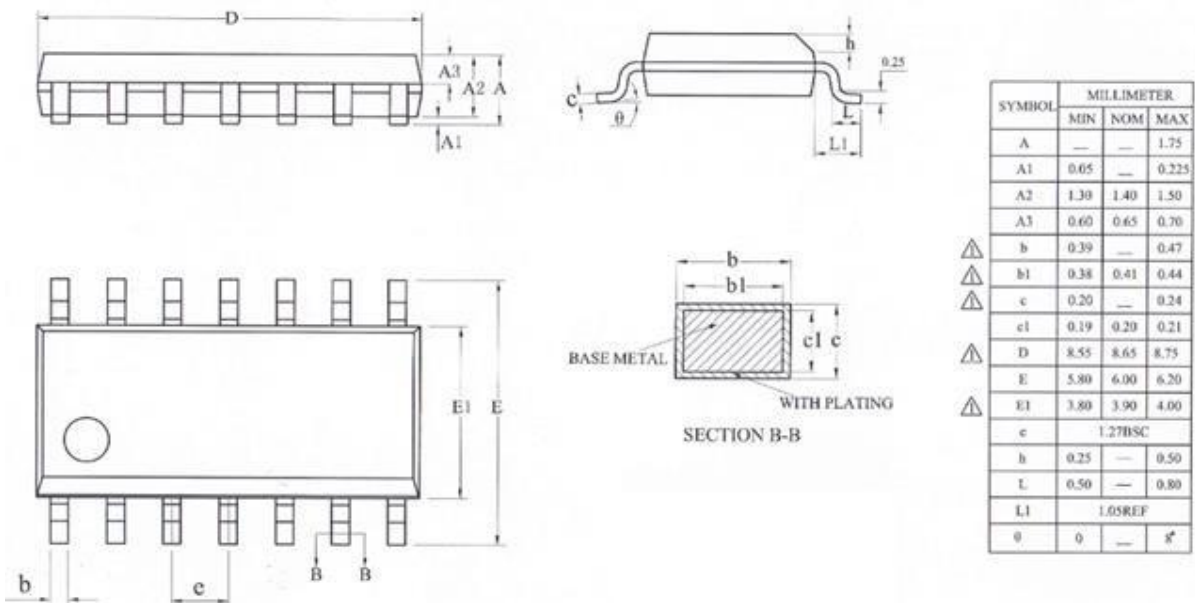
NO.	产品型号	功率范围
1	RSC6105S	单级适应于50W以下
2	RSC6107S	单级适用于 75W以下
3	RSC6112S	单级适用于120W以下
4	RSC6120S	单级适用于150W以上

■ 电气参数(若无其它说明, $V_{in}=V_{CC}=P_{VCC}=12V$, $C_{in}=1\mu F$ Temp=25°C, $V_{FB}=0$, $C_{load}=1nF$)

Parameter	Symbol	Conditions	Min.	Type.	Max.	Units
高压启动电流	I _{IN}	V _{IN} =100V V _{CC} =14V	1	1.7	--	mA
电源电压	V _{CC_On}	--	14.25	15	17.25	V
	V _{CC_Off}	--	8	8.7	9.5	V
电源电流	I _{CC_UV}	V _{CC} :0V to 12V	--	90	--	uA
	I _{CC_ON}	V _{CC} 升到 16V 后再降到 12V V _{CS} =300mV (AC)	--	0.8	1.5	mA
	I _{DD_error}	V _{CC} =0V->16V->12V V _{CS} =0	--	720	--	uA
过压保护电压	V _{FB}	--	1.15	1.20	1.25	V
过压恢复电压	V _{FBH}	--	--	1.08	--	V
电流过零检测	V _{ZCD}	CS输入正弦波信号	--	154	--	mV
过流保护阈值	V _{OCP}	CS输入正弦波信号	480	500	520	mV
LO 上升沿时间	T _{LR}	C _{load} =1nF	--	60	--	nS
LO 下降沿时间	T _{LF}	C _{load} =1nF	--	35	--	nS
HO 上升沿时间	T _{HR}	C _{load} =1nF	--	30	--	nS
HO 下降沿时间	T _{HF}	C _{load} =1nF	--	35	--	nS
LO 峰值电流 (source) HG 峰值电流 (source)	I _{LG_source} I _{HG_source}	RSC6105S	--	300	--	mA
		RSC6107S	--	360	--	mA
		RSC6112S	--	450	--	mA
		RSC6120S	--	550	--	mA
LO 峰值电流 (sink) HG 峰值电流 (sink)	I _{LG_sink} I _{HG_sink}	RSC6105S	--	700	--	mA
		RSC6107S	--	800	--	mA
		RSC6112S	--	900	--	mA
		RSC6120S	--	1000	--	mA
起始脉冲宽度	T _{Start}	C _{load} =1nF	--	2	--	uS
过温保护阈值	OTP	--	--	130	--	°C
过温保护复位迟滞	OTP _{HYS}	--	--	15	--	°C

应用信息

PCB 布板指南

- 1、滤波电容和自举电容尽可能靠近芯片对应管脚。
- 2、驱动端到 MOSFET 的距离尽可能小。
- 3、尽可能减短自举部分走线，可以使线路更稳定的工作。

封装外形尺寸


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