

LED驱动芯片

描述

RSC6218A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200KHz，输入电压范围高达600V以上。

RSC6218A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。

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%
- 输出功率达20W
- 短路保护
- 开路保护
- 过温保护
- WSOP16封装

RSC6218A的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

应用领域

- LED恒流驱动
- LLC谐振控制

典型应用电路

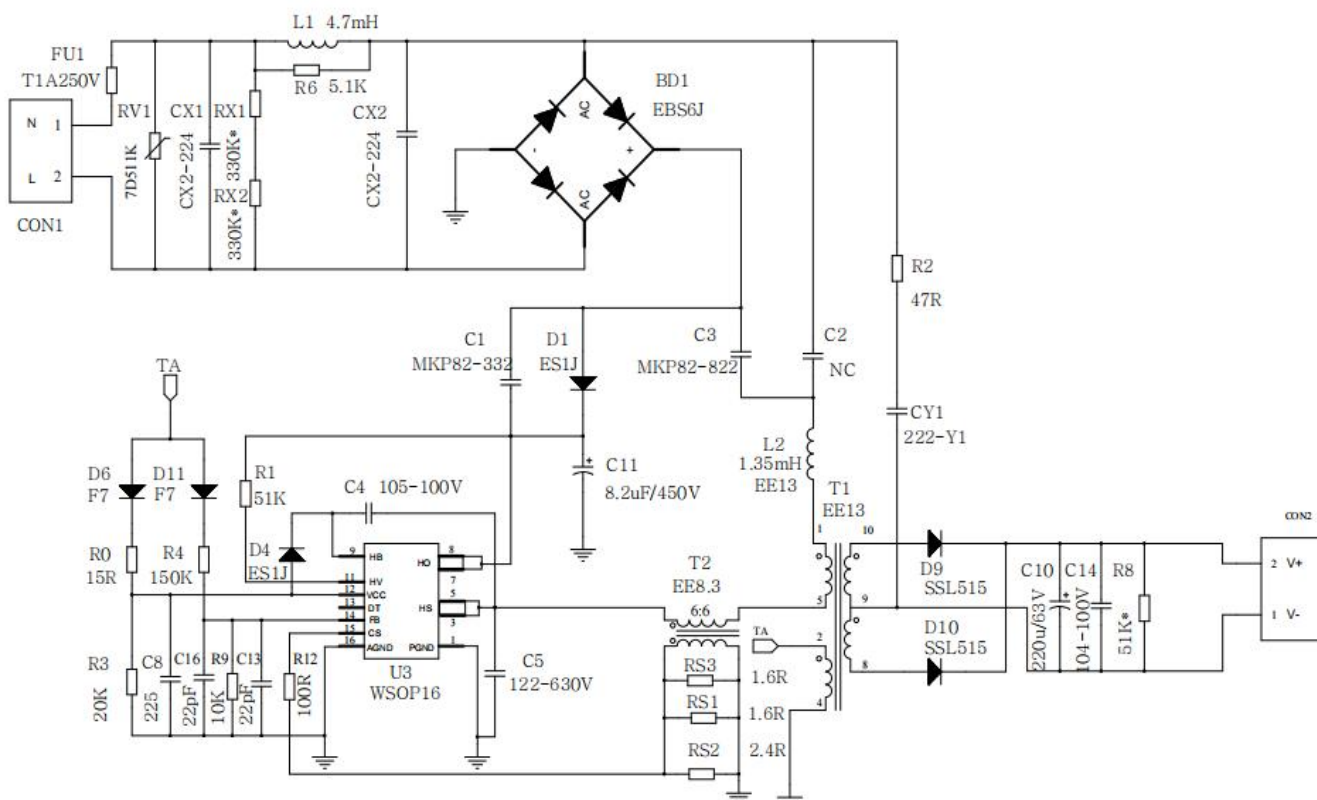
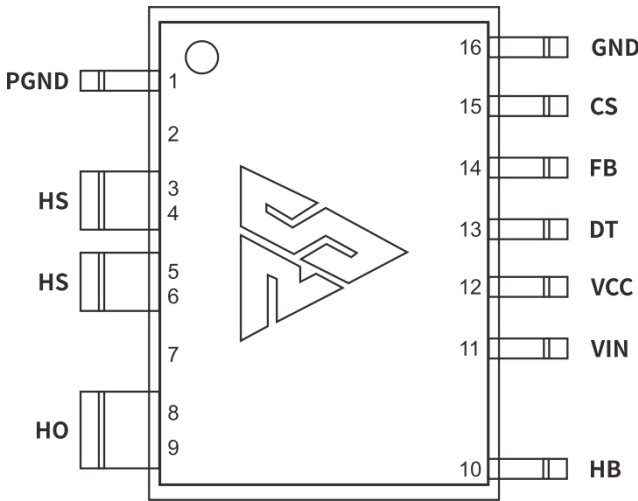


图 1：典型应用图

订购信息

订购代码	封装类型	包装方式	打标信息
RSC6218A	WSOP16	45PCS/管	RSC6218A XXXXXXXX

封装形式及引脚定义



NO	Name	Function
1	PGND	功率地
3 , 4 , 5 , 6	HS	半桥MOS高边地
8 , 9	HO	半桥MOS高边漏极输入
10	HB	半桥驱动高边电源
11	VIN	高压启动输入
12	VCC	电源
13	DT	空脚
14	FB	电压反馈输入
15	CS	电流采样输入
16	GND	信号地
2 , 7	NC	悬空

功能框图

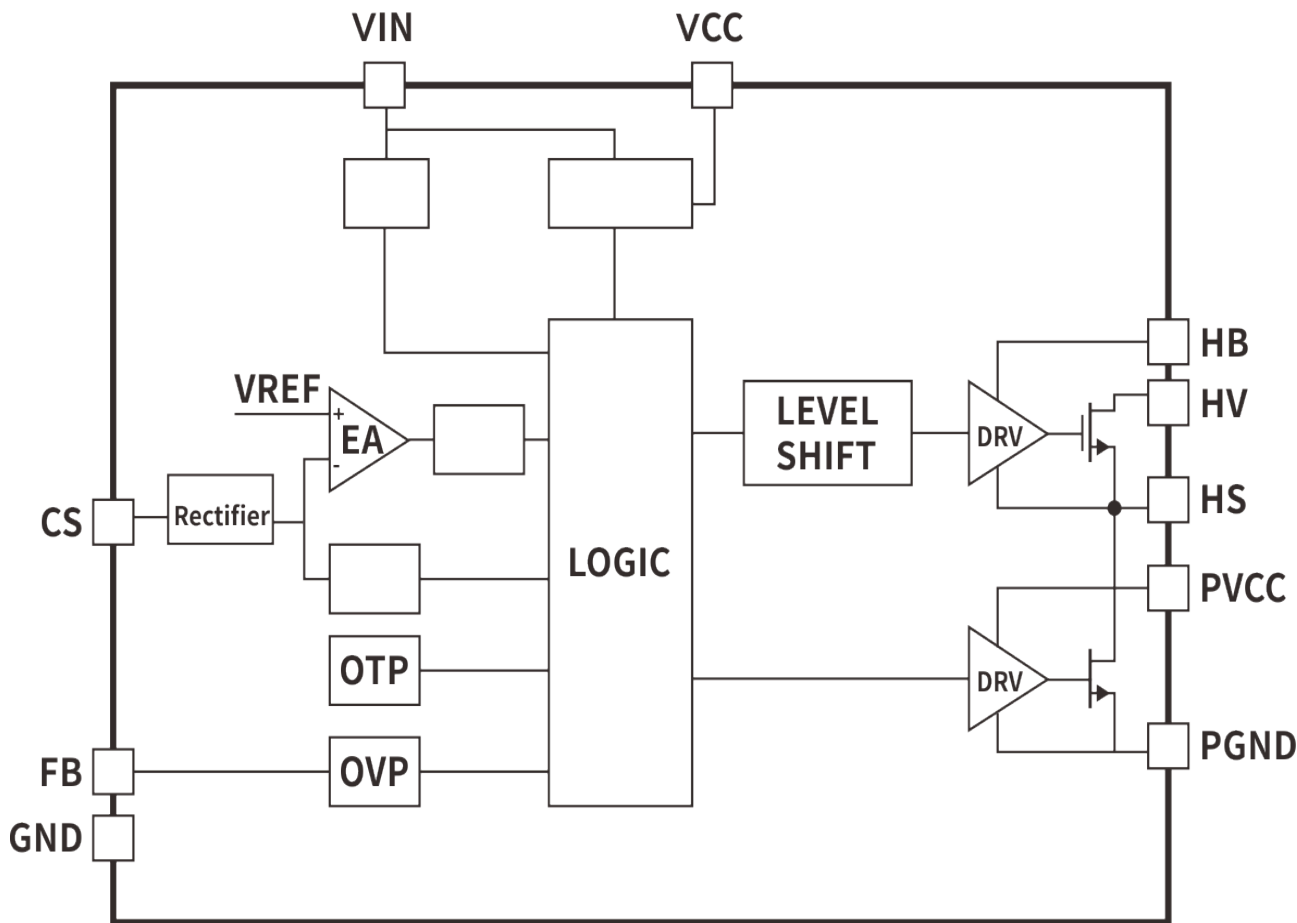


图2 功能框图

绝对最大额定参数

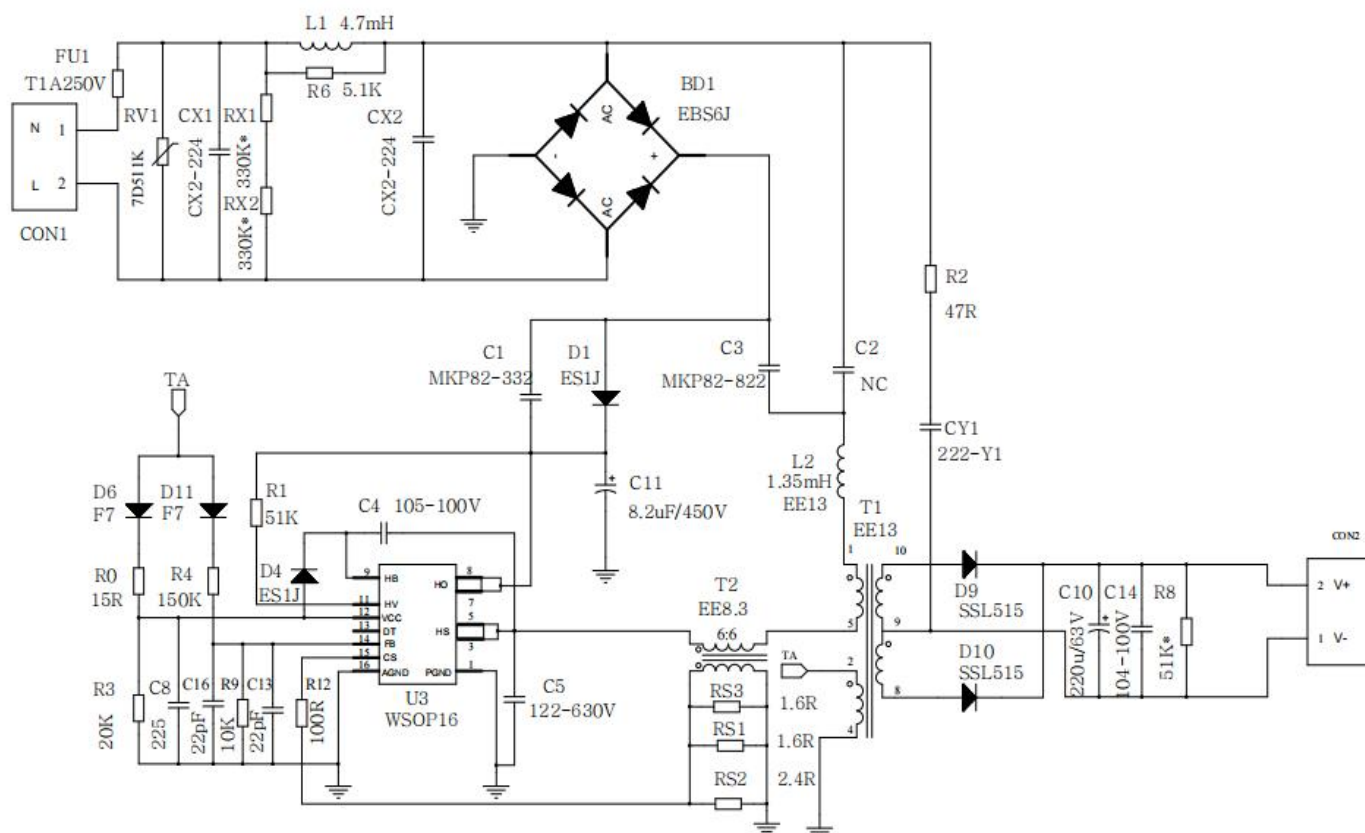
Symbol	Name	Value	Units
VIN	高压启动输入	150~600	V
VCC	信号电源	-0.3~20	V
FB	电压反馈输入	-0.3~5	V
CS	电流采样输入	-0.3~5	V
HB	半桥驱动高边电源	-0.3~600	V
HS	半桥驱动高边地	HB-20~HB+0.3	V
Tstg	存储温度	-55 to 150	°C
Tsolder	焊接温度	260°C, 10s	
ESD	人体模式	2000	V

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。

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

Parameter	Symbol	Conditions	Min.	Typ.	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_{CCON}	启动电压	14.25	15	15.75	V
	V_{CCUV}	欠压检测电压	8	8.7	9.5	V
电源电流	I_{CCUV}	V_{CC} 从 0V 上升到 12V		90		μA
	I_{CCON}	V_{CC} 升到 16V 后再降到 12V $V_{CS}=300mV$ (AC)		0.8	1.5	mA
	$I_{DDERROR}$	$V_{CC}=0V \rightarrow 16V \rightarrow 12V$ $V_{CS}=0$		720		μA
过压保护电压	V_{FB}		1.05	1.15	1.3	V
过压恢复电压	V_{FBH}			1.05		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_{OCPTHR}	CS 输入正弦波信号	450	535	600	mV
起始脉冲宽度	T_{START}	$C_{load}=1nF$		2		μs
MOS 管耐压	V_{DSS}		500			V
漏源漏电流	I_{DSS}				1	μA

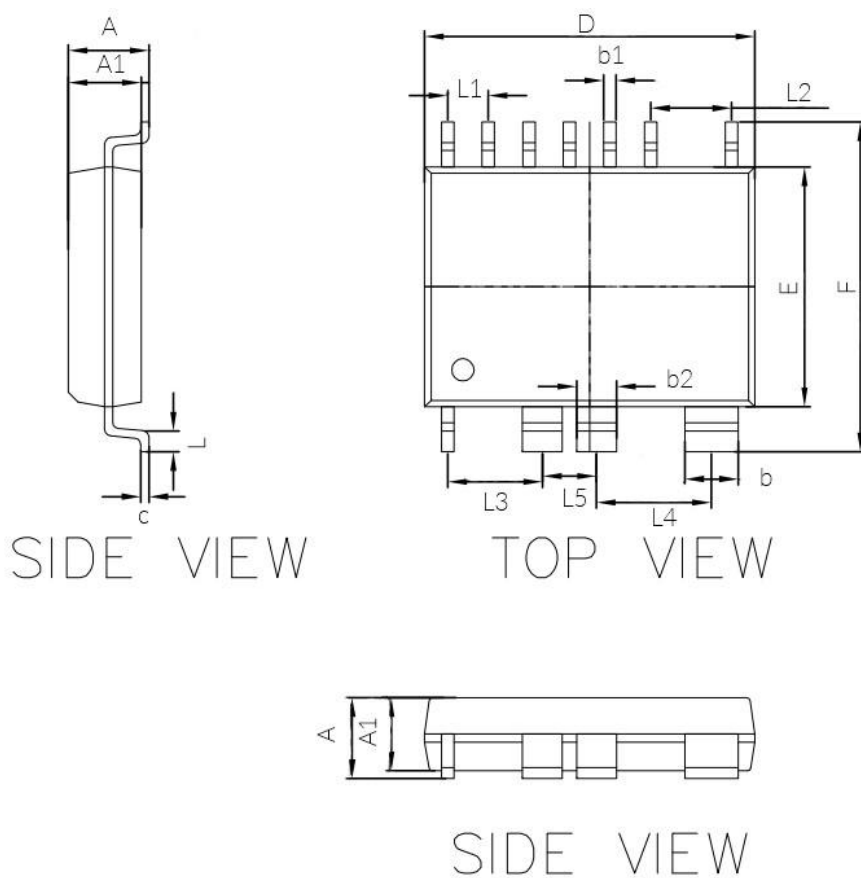
应用信息



PCB 布板指南

- 1、严格遵循功率地、信号地分离的原则；PGND到高压电解的地铜箔与CS电阻的地铜箔分别回到高压电解的地铜箔，且尽可能短；重点注意芯片GND，FB下偏电阻的地先回到芯片的地，芯片的地再回到VCC地，再回到变压器辅助绕组的地，再单独回到高压电解的地铜箔；
- 2、减小主功率环路的面积，包括谐振腔回路、开关功率回路、负载电流回路，可有效减少干扰源的扩大，较少电磁干扰；
- 3、滤波电容和自举电容尽可能靠近芯片对应管脚；
- 4、FB引脚的上偏与下偏采样电阻和滤波电容的结点一定要靠近芯片之FB脚，放置位置较远时会影响OVP点以及可拉载的电压点的一致性与产品稳定性；
- 5、CS引脚的取样电阻R12应靠近芯片PIN6之CS脚，并且要远离存在较高di/dt的走线，减少造成恒流点不稳定因素；
- 6、在使用散热器时，散热器上会有高频电流流过，所以散热器应就近接地，这样可减少干扰源的扩大；
- 7、芯片背面PCB正上方尽量不要放置与芯片地存在较高动态电压差的器件，例如变压器、卧躺式且大平面紧贴PCB朝下的TO-220封装MOSFET；
- 8、谐振电感与电流互感器在线路中放置的位置可以调整，LAYOUT时可以根据实际布线需要放置，方便走线取样与产品稳定性；

封装外形尺寸



SYMBOLS	MILLMETERS		
	Min	typ	Max
A	-	-	2.52
A1	-	-	2.286
C	0.234	-	0.254
L	-	0.65	-
D	-	-	10.34
E	-	-	7.52
F	-	-	10.34
b	-	-	1.66
b1	-	0.39	0.45
b2	-	1.25	-
L1	1.18	1.27	-
L2	-	2.54BSC	-
L3	-	2.96BSC	-
L4	-	3.6	-
L5	-	1.7	-

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