

2. CIRCUIT DESCRIPTION

The output stage circuitry for a dual lamp configuration is shown in Fig. 10. This is the portion of the ballast that is controlled by the IR21571. For the most part, this design is similar to that for a single lamp; the difference arising only in the portion shown in Fig. 10. The second lamp in parallel is connected in a manner that mirrors the immediate circuitry surrounding the first bulb. This provides the exact same resonant L and C, and basic protective circuitry for both bulbs due to their parallel setting. Protective features include DC Bus Voltage Detection and Half Bridge Current Sensing and Protection. (For additional information on these protective features please see Page 2 of the IR21571 datasheet.)

Figure 10 shows the output stage for the parallel lamp configuration. Each parallel circuit has the exact same resonant L and C components. This circuit operates similar to the first version mentioned earlier, except that when one lamp is removed, the other one stays lit. This is accomplished by using Q1 and the associated circuitry. When one of the lamps is removed, the base of Q1 is pulled high. This turns Q1 on but does not affect SD. When the lamp is reinserted, C18 charges up and momentarily pulls SD above the 2V threshold. As SD falls below 1.8V, the IR21571 is restarted in the preheat mode. This assures proper heating of the filaments before the lamp is struck.

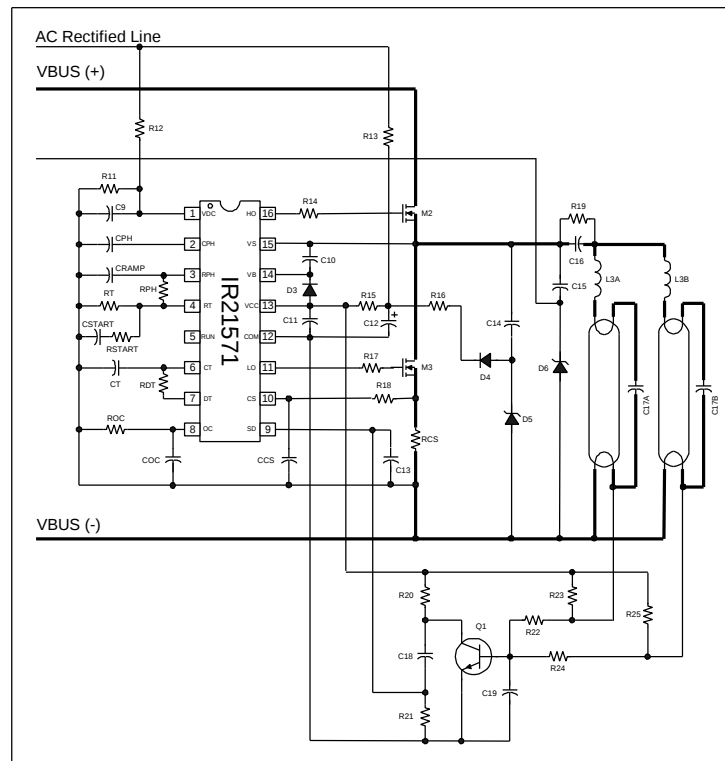


Figure 10: Ballast Output stage circuitry

3. SCHEMATIC DIAGRAM



4. Bill of Materials – SECOND VARIATION

Item #	Qty	Manufacturer	Part Number	Description	Reference
1	1	International Rectifier	DF10S	Bridge Rectifier, 1A 1000V	BR1
2	1	Roederstein	WY0222MCMBF0K	Capacitor, 2.2nF 275 VAC Y Cap	C1
3	1	RG Allen	275MKP334K	Capacitor, 0.33uF 275 VAC	C2
4	2	RG Allen	400MPS104K06A	Capacitor, 0.1uF 400 VDC	C3, C16
5	3	RG Allen	S1206Z103K1HRN	Capacitor, 0.01uF SMT 1206	C4, CSTART, C18
6	3	RG Allen	S1206Z474K1HRN	Capacitor, 0.47uF SMT 1206	C5, C6, C13
7	1	RG Allen	1H2R2M50TB15X11	Capacitor, 2.2uF 50VDC 105C	C7
8	1	RG Allen	2W10M450TB113X21	Capacitor, 10uF 450VDC 105C	C8
9	4	RG Allen	S1206Z104K1HRN	Capacitor, 0.1uF SMT 1206	C9,C10, C11, COC
10	2	RG Allen	S1206Z334K1HRN	Capacitor, 0.33uF SMT 1206	CPH, CRAMP
11	1	RG Allen	S1206Z474K1HRN	Capacitor, 0.47uF SMT 1206	C19
12	1	RG Allen	1H4R7M50TB15X11	Capacitor, 4.7uF 50VDC 105C	C12
13	1	RG Allen	S1812N152K3ARN	Capacitor, 1.5nF 1KV SMT 1812	C14
14	1	RG Allen	S1812N102K3ARN	Capacitor, 1nF 1KV SMT 1812	C15
15	2	RG Allen	1600PPSB103K09A	Capacitor, 10nF,1600V	C17A, C17B
16	1	RG Allen	S1206N471K2ARN	Capacitor, 470pF SMT 1206	CT
17	1	RG Allen	S1206N101K2ARN	Capacitor, 100pF SMT 1206	CCS
18	2	Diodes	LL4148DICT-ND	Diode, 1N4148 SMT DL35	D1, D4
19	2	International Rectifier	10BF60	Diode, SMT SMB	D2, D3
20	2	Diodes	ZMM5250BCT	Diode, Zener 20V SMT DL35	D5, D6
21	1	ST	L6560	IC, Power Factor Controller	IC1
22	1	International Rectifier	IR21571	IC, Ballast Driver	IC2
23	1	Panasonic	ELF-15N007A	EMI Inductor, 1X10mH 0.7Apk	L1
24	1	RG Allen	RGA-K86960	PFC Inductor, 2.0mH 2.0Apk	L2
25	2	RG Allen	RGA97408C	Inductor, 2.0mH, 3.0Apk	L3A, L3B
26	3	International Rectifier	IRF840	Transistor, MOSFET	M1, M2, M3
27	4	RG Allen	CR32C684JT	Resistor, 680K ohm SMT 1206	R1, R2, R4, R5
28	2	RG Allen	CR32C103JT	Resistor, 10K ohm SMT 1206	R3, RSTART
29	1	RG Allen	CR32C822JT	Resistor, 8.2K ohm SMT 1206	R6
30	5	RG Allen	R25G104JT	Resistor, 100K ohm ¼ watt	R7, R19, R20, R22, R24
31	1	RG Allen	CR32C223JT	Resistor, 22K ohm SMT 1206	R8
32	3	RG Allen	CR32C220JT	Resistor, 22 ohm SMT 1206	R9, R13, R17
33	1	RG Allen	RSMF1/2W0R5FT	Resistor, 0.5 ohm ½ watt	R10
34	1	RG Allen	CR32C563JT	Resistor, 56K ohm SMT 1206	R11
35	1	RG Allen	R25G225JT	Resistor, 2.2Mohm ¼ watt	R12
36	1	RG Allen	R25G394JT	Resistor, 390K ohm ¼ watt	R14
37	2	RG Allen	CR32C100JT	Resistor, 10 ohm SMT 1206	R15, R16
38	1	RG Allen	CR32C102JT	Resistor, 1K ohm SMT 1206	R18
39	1	RG Allen	CR32C514JT	Resistor, 510K ohm SMT 1206	R21

40	2	RG Allen	CR32C105JT	Resistor, 1.0M ohm SMT 1206	R23, R25
41	1	RG Allen	RSMF1/2W0R7FT	Resistor, 0.7 ohm ½ watt	RCS
42	1	RG Allen	CR32C562JT	Resistor, 5.6K ohm SMT 1206	RDT
43	1	RG Allen	CR32C513JT	Resistor, 51K ohm SMT 1206	ROC
44	1	RG Allen	CR32C823JT	Resistor, 82K ohm SMT 1206	RPH
45	1	RG Allen	CR32C203JT	Resistor, 20K ohm SMT 1206	RT
46	1	Zetex	FMMT2222ACT	Transistor, Bipolar, NPN SMT	Q1
47	1	RG Allen	RV05K300	Transient Suppressor	RV1
Total	75				