

Darlington Lamp Driver

This integrated circuit is a flip chip lamp driver for use in an automotive alternator system. The circuit drives an indicator lamp located on the dashboard. Reverse battery protection is provided with internal diode, D1, and external resistance on B, C1, C2.

Features

- DC Current Gain 1000
- 80 V Breakdown Voltage
- Reverse Battery Protection

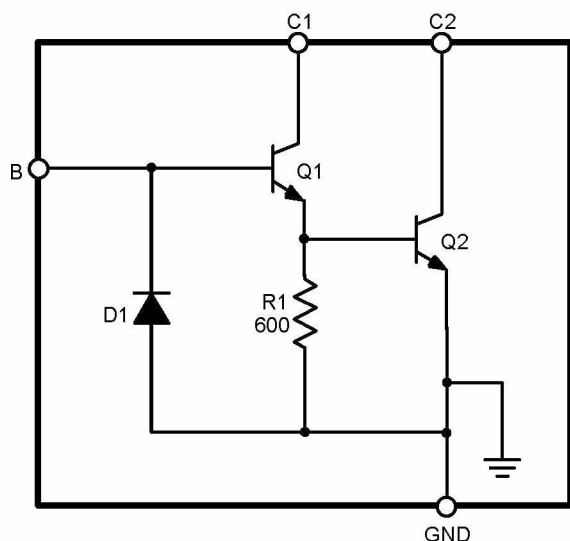


Figure 1. Block Diagram

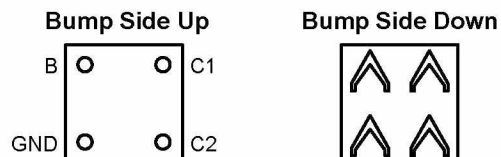


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PIN CONNECTIONS

Flip Chip



ORDERING INFORMATION

Device	Package	Shipping
CS299H	Flip Chip	Contact Sales

CS299

MAXIMUM RATINGS*

Rating	Value	Unit
Storage Temperature Range, T_S	-65 to +150	°C
Ambient Operating Temperature	-40 to 140	°C
Collector Breakdown Voltage	80	V

*The maximum package power dissipation must be observed.

ELECTRICAL CHARACTERISTICS ($T_A = 25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Test Conditions	Min	Typ	Max	Unit
Supply Requirements					
Saturation Voltage	$I_{B1} = 0.6 \text{ mA}$, $I_{C2} = 350 \text{ mA}$	–	–	0.60	V
	$T_J = -30^\circ\text{C}$	–	–	0.55	V
	$T_J = 150^\circ\text{C}$	–	–	0.65	V
Collector Breakdown Voltage	$I_{C1} = I_{C2} = 1.0 \text{ mA}$, $R_{BE} = 200$, $V_{C1} = V_{C2}$	80	–	–	V
Collector Cut Off Current (I_{CEO})	$V_{CE1} = V_{CE2} = 60 \text{ V}$, $R_{BE} = 200$	–	–	10	μA
DC Current Gain (HFE)	$V_{C1} = V_{C2} = 1.0 \text{ V}$, $I_{B1} = 100 \mu\text{A}$	1000	–	–	$(I_{C1} + I_{C2})/I_{B1}$
NPN β (Q1)	$I_{B1} = 1.0 \mu\text{A}$, $V_{CE2} = 0 \text{ V}$, $V_{CE1} = 1.5 \text{ V}$	50	–	–	I_{C1}/I_{B1}
V_{BE} (in saturation)	$I_{B1} = 0.6 \text{ mA}$, $I_{C1} = 50 \text{ mA}$, $I_{C2} = 350 \text{ mA}$	–	–	2.0	V
Diode Forward Voltage (D1)	$I_{D1} = 25 \text{ mA}$	0.5	–	1.5	V

PACKAGE PIN DESCRIPTION

PIN SYMBOL	FUNCTION
B	Base of input darlington.
C1	Collector of darlington input device.
C2	Collector of darlington output driver.
GND	Ground. Emitter of darlington driver. Base/Emitter resistor and substrate are also connected here.

CS299

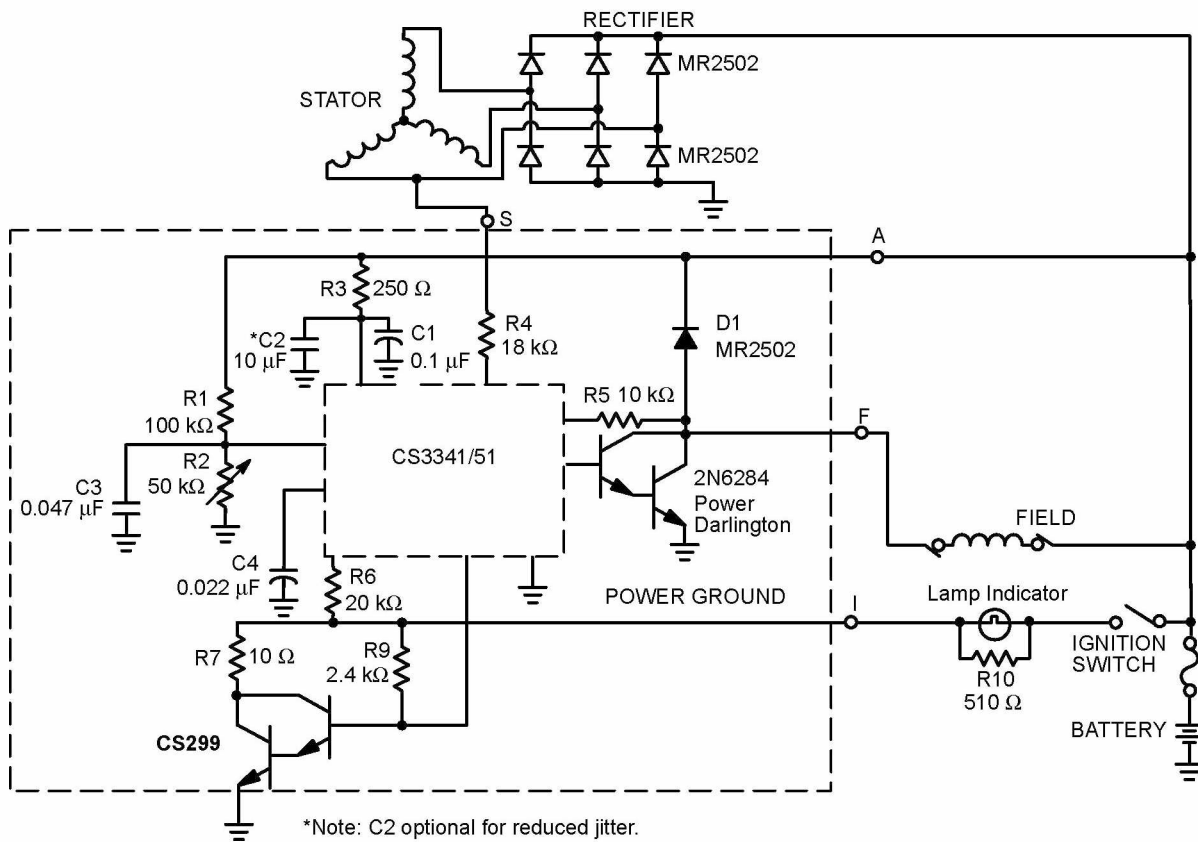
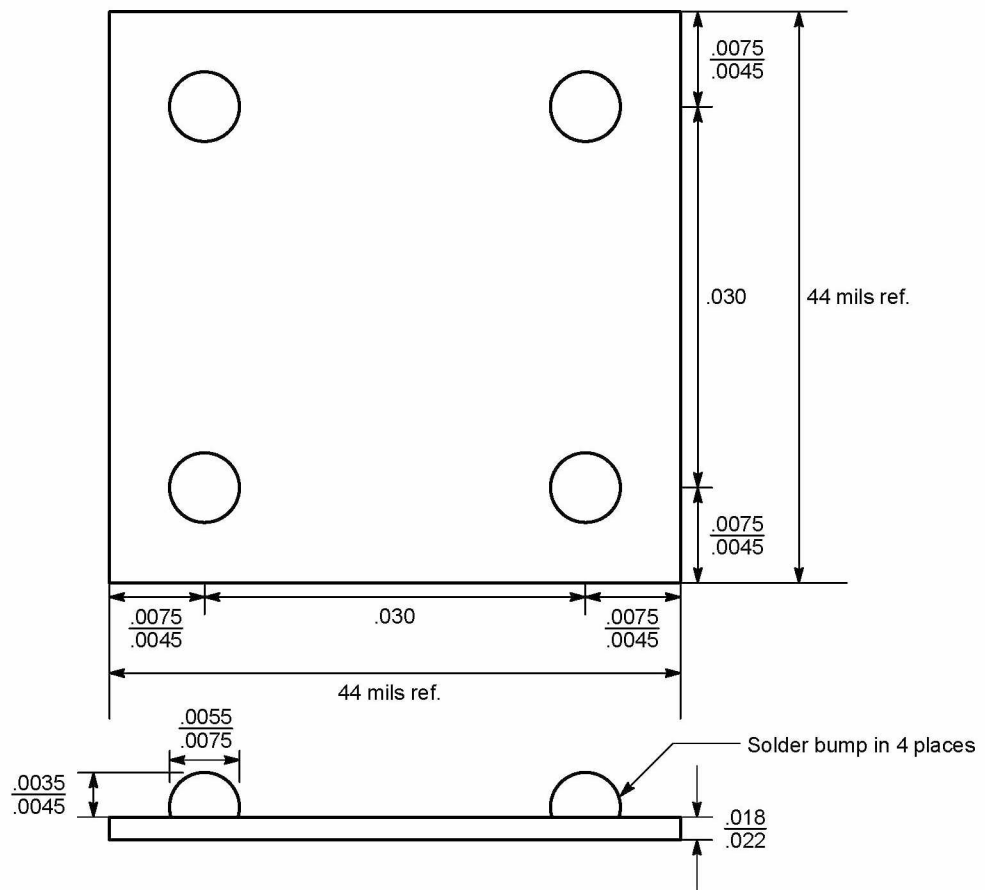


Figure 2. Typical Application Diagram



Note: All dimensions are in inches.

Figure 3. Flip Chip Dimensions and Solder Bump Locations, Bump Side Up