

NCV299

Product Preview

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

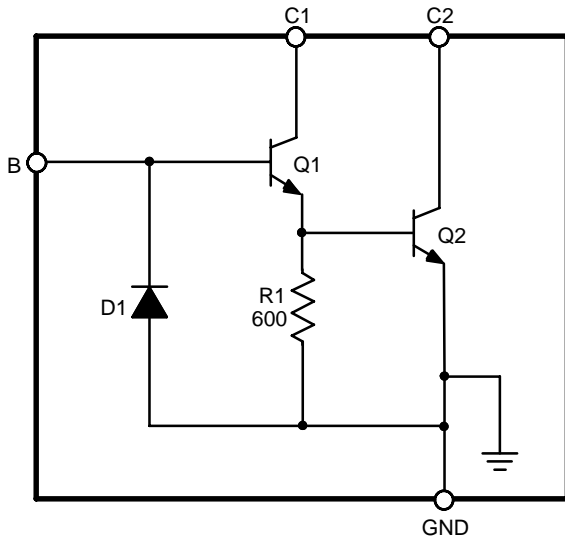


Figure 1. Block Diagram



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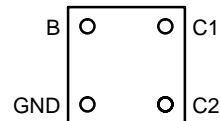
A1

**FLIP-CHIP
CASE 766AF**

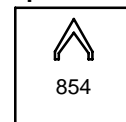
PIN CONNECTIONS

Flip Chip

Bump Side Up



Bump Side Down



ORDERING INFORMATION

Device	Package	Shipping†
NVC299HT1	Flip-Chip	3200 / Tape & Reel
NVC299HW1	Flip-Chip	3200 / Waffle Pack

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

This document contains information on a product under development. ON Semiconductor reserves the right to change or discontinue this product without notice.

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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

Stresses exceeding Maximum Ratings may damage the device. Maximum Ratings are stress ratings only. Functional operation above the Recommended Operating Conditions is not implied. Extended exposure to stresses above the Recommended Operating Conditions may affect device reliability.

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

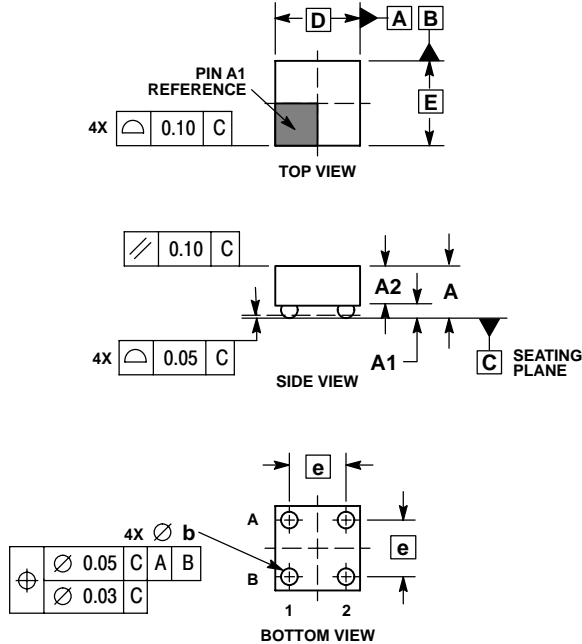
PACKAGE PIN DESCRIPTION

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.

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PACKAGE DIMENSIONS

4 PIN FLIP-CHIP CASE 766AF-01 ISSUE O



NOTES:

1. DIMENSIONS AND TOLERANCING PER ASME Y14.5M, 1994.
2. CONTROLLING DIMENSION: MILLIMETERS.
3. COPLANARITY APPLIES TO SPHERICAL CROWNS OF SOLDER BALLS.

DIM	MILLIMETERS		
	MIN	NOM	MAX
A	---	0.692	0.742
A1	0.142	0.167	0.192
A2	0.500	0.525	0.550
b	0.190	0.220	0.224
D	1.118 BSC		
E	1.118 BSC		
e	0.750 BSC		

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