Excellent Integrated System Limited

Stocking Distributor

Click to view price, real time Inventory, Delivery & Lifecycle Information:

Diodes Incorporated
ZTD09N50DE6QTA

For any questions, you can email us directly:
sales@integrated-circuit.com

A Product Line of
Diodes Incorporated

Lead-free Green

ZXTD09N50DE6

50V DUAL NPN SILICON LOW SATURATION SWITCHING TRANSISTOR

Features

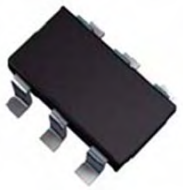
- BV_{CEO} > 50V
- R_{SAT} = 160mV
- Max continuous Current I_C = 1A
- Low Equivalent On Resistance
- Low Saturation Voltage
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

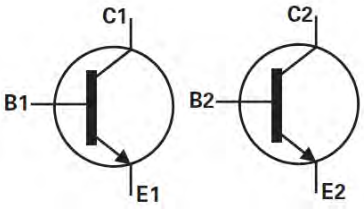
- Case: SOT26
- Case material: Molded Plastic. “Green” Molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.018 grams (Approximate)

Applications

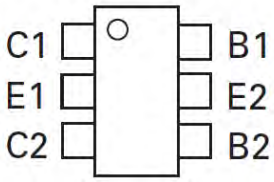
- LCD Backlighting inverter circuits
- Boost functions in DC-DC converters



SOT26



Device symbol



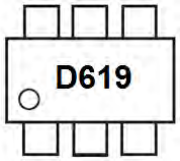
Pin out –top view

Ordering Information (Note 3 & 4)

Product	Grade	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTD09N50DE6TA	Commercial	D619	7	8	3,000
ZTD09N50DE6QTA	Automotive	D619	7	8	3,000

Notes:
1. No purposefully added lead.
2. Diodes Inc.`s “Green” Policy can be found on our website at http://www.diodes.com
3. For more packaging details, go to our website at http://www.diodes.com.
4. Products with Q-suffix are automotive grade.

Marking Information



D619 = Product type Marking Code

Absolute Maximum Ratings @T_A = 25°C unless otherwise specified

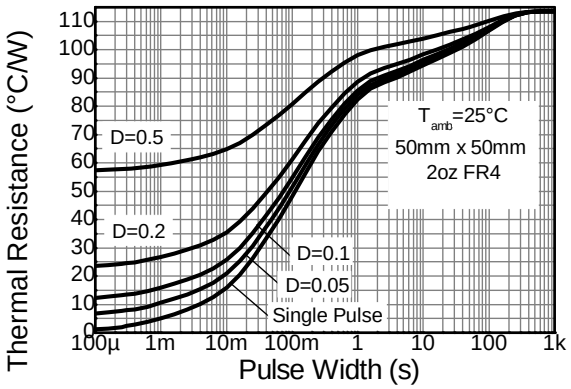
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	50	V
Collector-Emitter Voltage	V_{CEO}	50	V
Emitter-Base Voltage	V_{EBO}	5	V
Continuous Collector Current	I_C	1	A
Base current	I_B	200	mA
Peak Pulse Current	I_{CM}	2	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

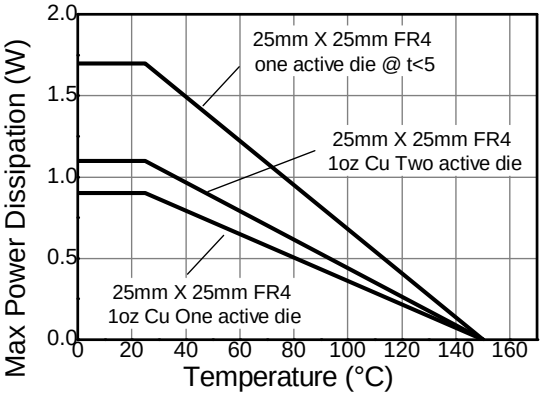
Characteristic		Symbol	Value	Unit
Power Dissipation Linear derating factor	(Note 5 & 8)	P_D	0.90 7.2	W mW /°C
	(Note 5 & 9)		1.1 8.8	
	(Note 6 & 8)		1.7 13.6	
Thermal Resistance, Junction to Ambient	(Note 5 & 8)	$R_{\theta JA}$	139	°C/W
	(Note 5 & 9)		73	
	(Note 6 & 8)		113	
Thermal Resistance, Junction to Lead	(Note 10)	$R_{\theta JL}$	75.52	°C/W
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

Notes:
5. For a device surface mounted on 25mm X 25mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions
6. For a device surface mounted on FR4 PCB measured at < 5sec
7. Repetitive rating – pulse width limited by maximum junction temperature. Refer to transient thermal impedance graph
8. For a device with one active die
9. For a device with two die running at equal power
10. Thermal resistance from junction to solder-point (at the end of the collector lead).

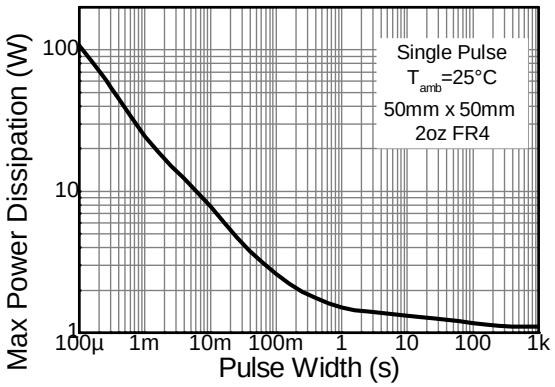
Thermal Characteristics



Transient Thermal Impedance



Derating Curve



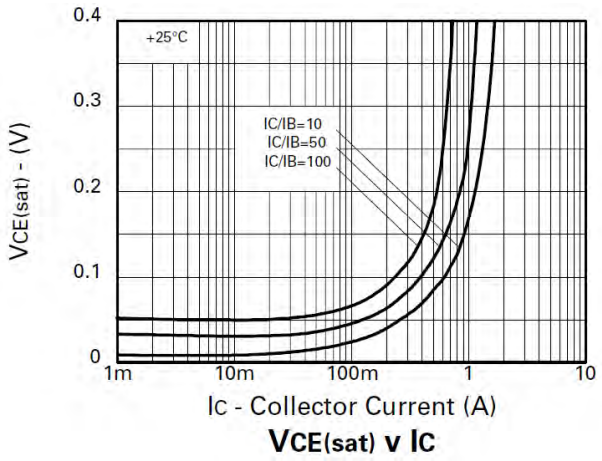
Pulse Power Dissipation

Electrical Characteristics @T_A = 25°C unless otherwise specified (Q1, Q2 common)

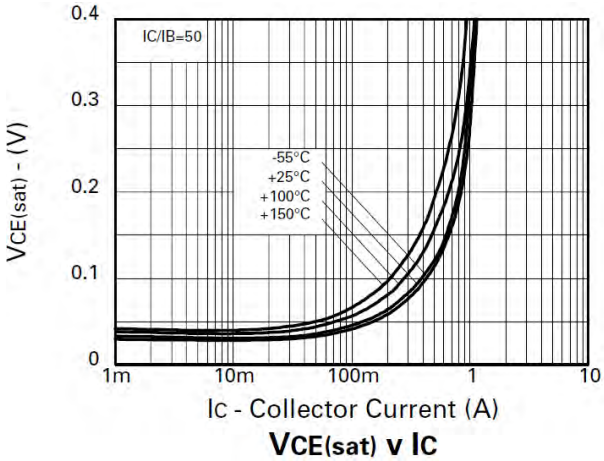
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	50			V	I_C = 100µA
Collector-Emitter Breakdown Voltage (Note 11)	BV_{CEO}	50			V	I_C = 10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	5			V	I_E = 100µA
Collector-Base Cutoff Current	I_{CBO}			10	nA	V_{CB} = 40V
Collector-Emitter Cutoff Current	I_{CES}			10	nA	V_{CES} = 40V
Emitter Cutoff Current	I_{EBO}			10	nA	V_{EB} = 4V
DC Current Gain (Note 11)	h_{FE}	200 300 200 75 20	420 450 350 130 60			I_C = 10mA, V_{CE} = 2V I_C = 100mA, V_{CE} = 2V I_C = 500mA, V_{CE} = 2V I_C = 1A, V_{CE} = 2V I_C = 1.5A, V_{CE} = 2V
Collector-Emitter Saturation Voltage (Note 11)	$V_{CE(sat)}$		24 60 120 160	35 80 200 270	mV	I_C = 100mA, I_B = 10mA I_C = 250mA, I_B = 10mA I_C = 500mA, I_B = 10mA I_C = 1A, I_B = 50mA
Base-Emitter Saturation Voltage (Note 11)	$V_{BE(sat)}$		940	1100	mV	I_C = 1A, I_B = 50mA
Base-Emitter Turn-On Voltage (Note 11)	$V_{BE(on)}$		850	1100	mV	I_C = 1A, V_{CE} = 2V
Output Capacitance	C_{obo}		10		pF	V_{CB} = 10V. f = 1MHz
Current Gain-Bandwidth Product	f_T		215		MHz	V_{CE} = 10V, I_C = 50mA f = 100MHz
Turn-On Time	t_{on}		150		ns	V_{CC} = 10V, I_C = 1A
Turn-Off Time	t_{off}		425		ns	I_{B1} = I_{B2} = 100mA

Notes: 11. Measured under pulsed conditions. Pulse width ≤ 300 µs. Duty cycle ≤ 2%

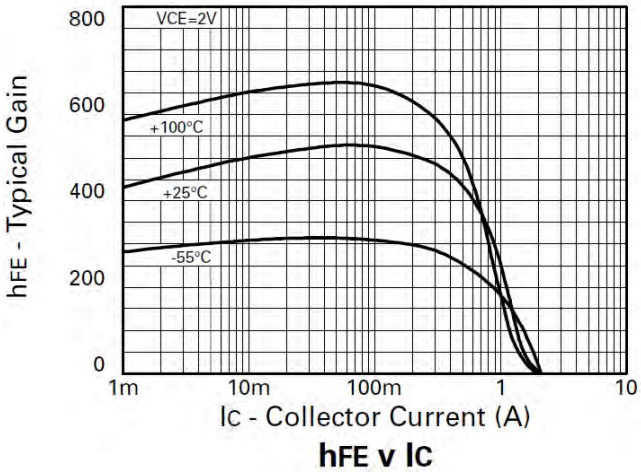
Typical Characteristics



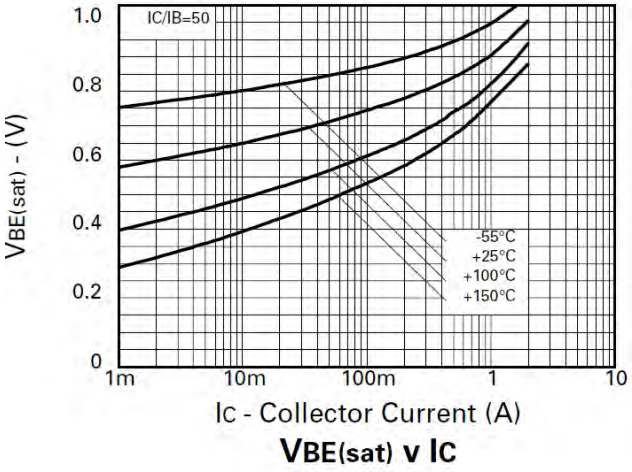
VCE(sat) v IC



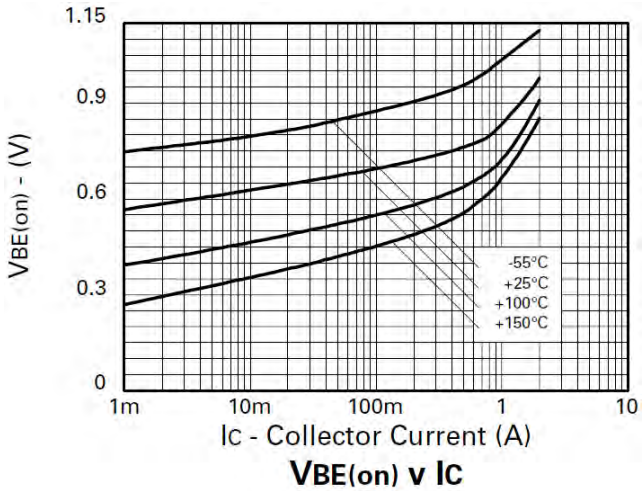
VCE(sat) v IC



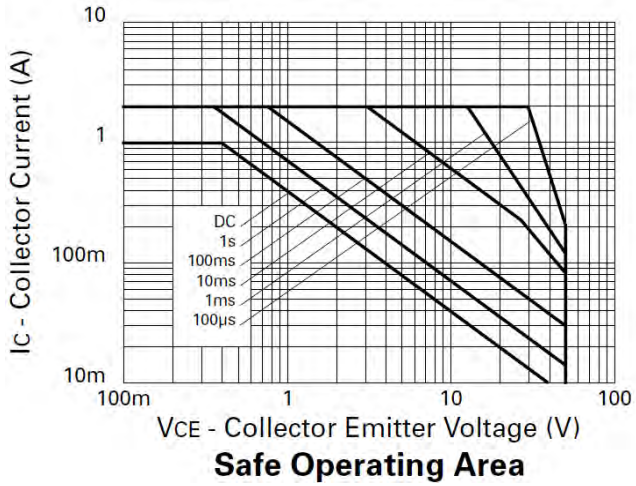
hFE v IC



VBE(sat) v IC

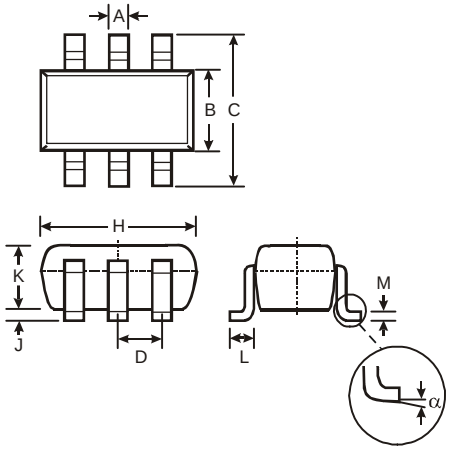


VBE(on) v IC



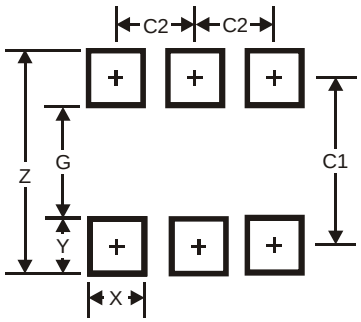
Safe Operating Area

Package Outline Dimensions



SOT26			
Dim	**Min**	**Max**	**Typ**
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	—	—	0.95
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
α	0°	8°	—
All Dimensions in mm			

Suggested Pad Layout



Dimensions	Value (in mm)
Z	3.20
G	1.60
X	0.55
Y	0.80
C1	2.40
C2	0.95

IMPORTANT NOTICE

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

A. Life support devices or systems are devices or systems which:

1. are intended to implant into the body, or

2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.

B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

www.diodes.com