

ZXTD09N50DE6
50V DUAL NPN SILICON LOW SATURATION SWITCHING TRANSISTOR
Features

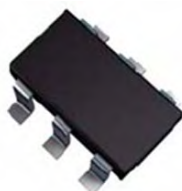
- $BV_{CEO} > 50V$
- $R_{SAT} = 160m\Omega$
- Max continuous Current $I_C = 1A$
- Low Equivalent On Resistance
- Low Saturation Voltage
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Applications

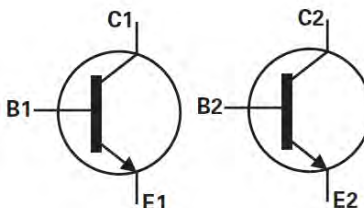
- LCD Backlighting inverter circuits
- Boost functions in DC-DC converters

Mechanical Data

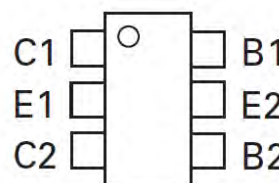
- Case: SOT26
- Case material: Molded Plastic. "Green" Molding Compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.018 grams (Approximate)



SOT26



Device symbol

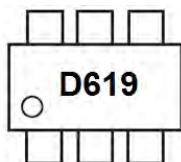


Pin out -top view

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

ZXTD09N50DE6
Absolute Maximum Ratings @T_A = 25°C unless otherwise specified

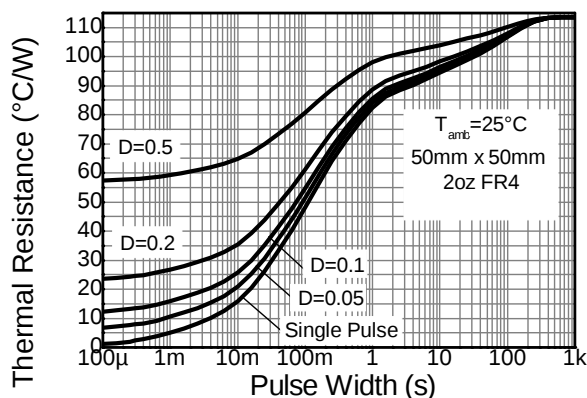
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	50	V
Collector-Emitter Voltage	V _{CEO}	50	V
Emitter-Base Voltage	V _{EBO}	5	V
Continuous Collector Current	I _C	1	A
Base current	I _B	200	mA
Peak Pulse Current	I _{CM}	2	A

Thermal Characteristics @T_A = 25°C unless otherwise specified

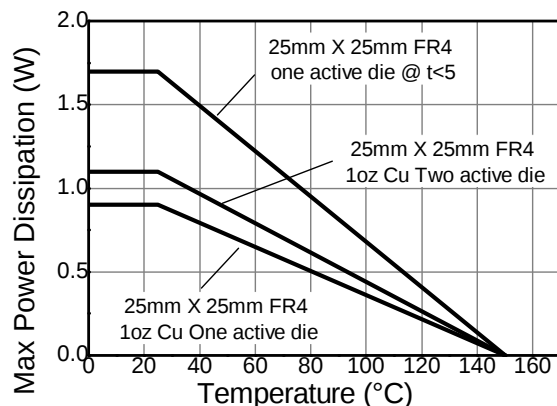
Characteristic	Symbol	Value	Unit
Power Dissipation Linear derating factor	P _D	0.90	W mW /°C
		7.2	
		1.1	
		8.8	
Thermal Resistance, Junction to Ambient	R _{θJA}	1.7	°C/W
		13.6	
		139	
		73	
Thermal Resistance, Junction to Lead	R _{θJL}	113	°C/W
		75.52	
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

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

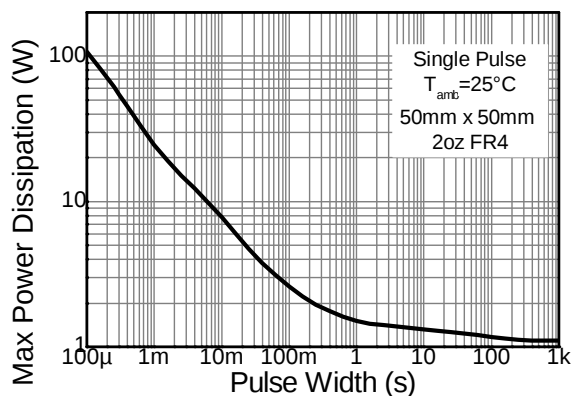
Thermal Characteristics



Transient Thermal Impedance



Derating Curve



Pulse Power Dissipation

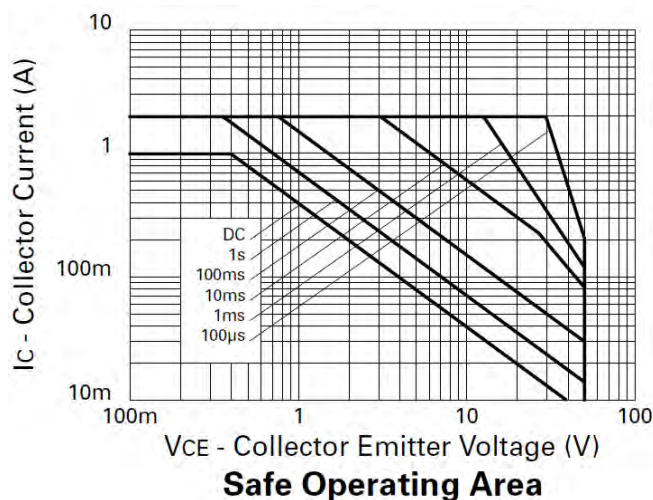
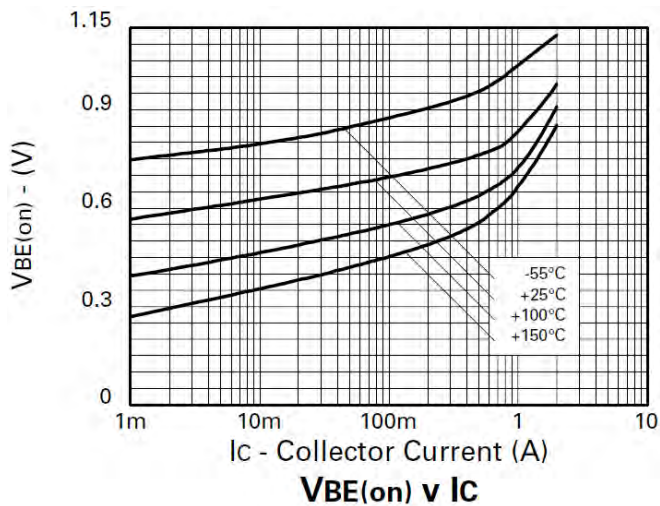
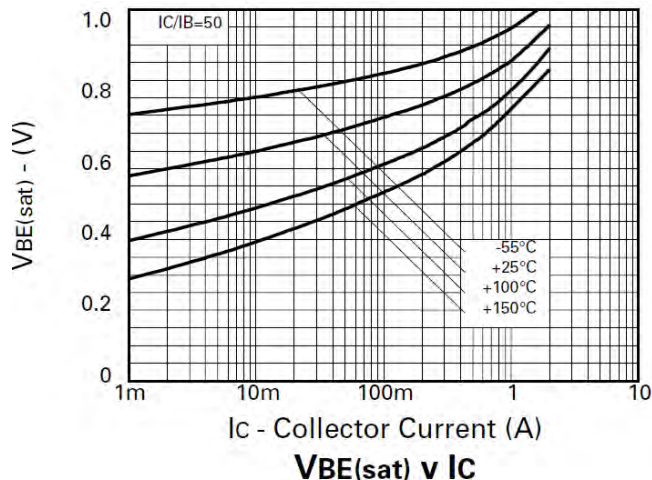
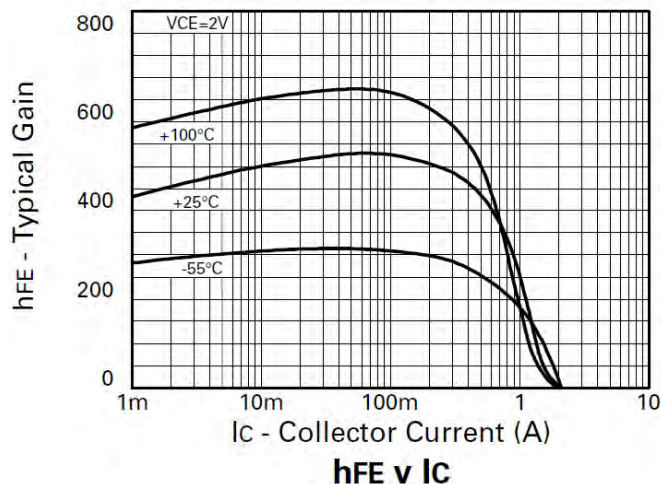
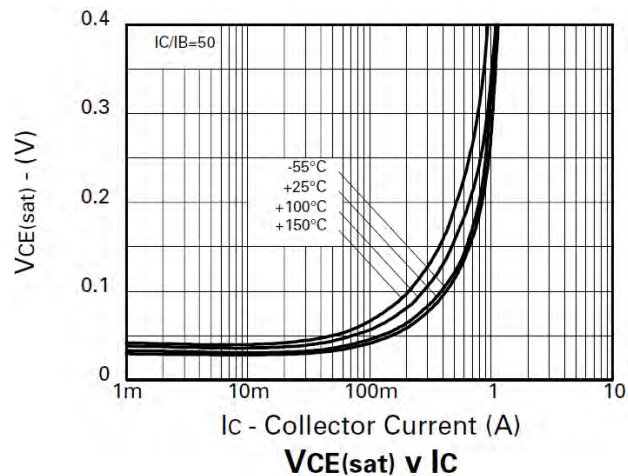
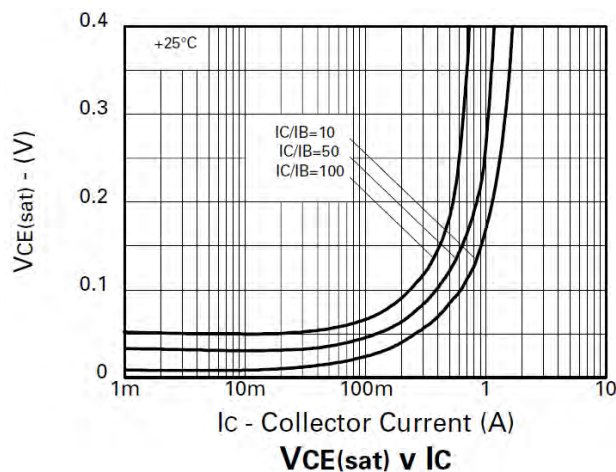
ZXTD09N50DE6
Electrical Characteristics @T_A = 25°C unless otherwise specified (Q1, Q2 common)

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 I _{B1} = I _{B2} = 100mA
Turn-Off Time	t _{off}		425		ns	

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

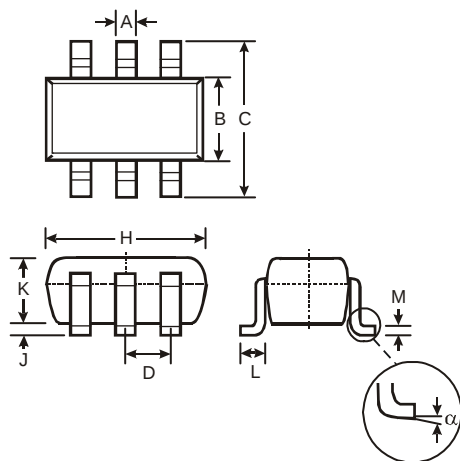
ZXTD09N50DE6

Typical Characteristics



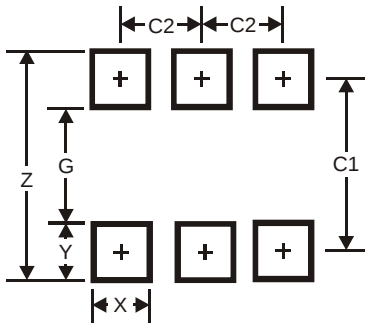
ZXTD09N50DE6

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

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