

ZXTD09N50DE6

50V DUAL NPN LOW SATURATION SWITCHING TRANSISTOR IN SOT26

Features

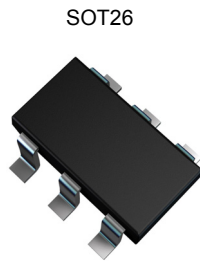
- $BV_{CEO} > 50V$
- $I_C = 1A$ high Continuous Current
- High gain
- $R_{SAT} = 160m\Omega$ for Low Equivalent On Resistance
- Low Saturation Voltage $V_{CE(sat)} < -270mV @ 1A$
- **Totally Lead-Free & Fully RoHS compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP capable (Note 4)**

Mechanical Data

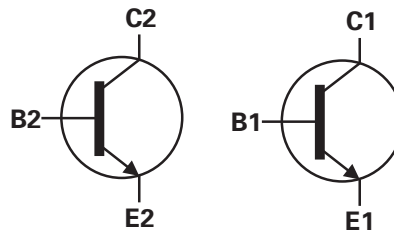
- Case: SOT26
- Case Material: molded plastic, "Green" molding compound
- UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 **(e3)**
- Weight: 0.015 grams (approximate)

Applications

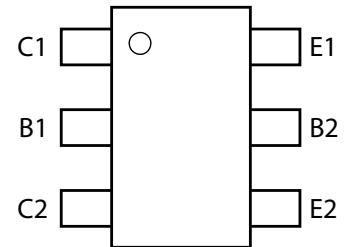
- LCD Backlighting inverter circuits
- Boost functions in DC-DC converters



Top View



Device Symbol



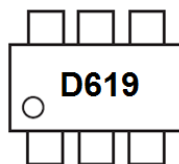
Top View
Pin-Out

Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXTD09N50DE6TA	AEC-Q101	D619	7	8	3,000
ZTD09N50DE6QTA	Automotive	D619	7	8	3,000

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant.
 2. See <http://www.diodes.com/> for more information about Diodes Incorporated's definitions of Halogen and Antimony free, "Green" and Lead-Free.
 3. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. Automotive products are AEC-Q101 qualified and PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified.
 5. For packaging details, go to our website at <http://www.diodes.com>

Marking Information



D619 = Product type Marking Code

ZXTD09N50DE6

Maximum Ratings – Q1 & Q2 Common (@T_A = +25°C, unless otherwise specified.)

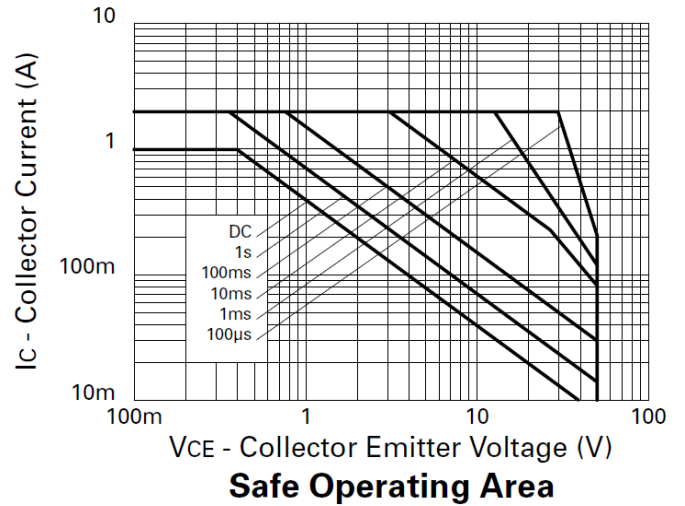
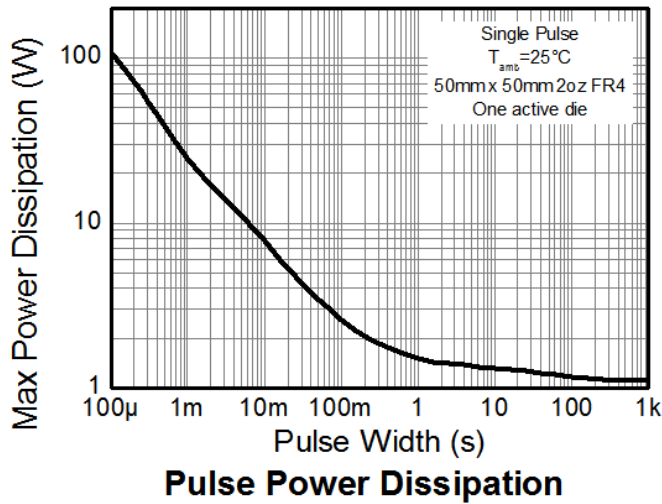
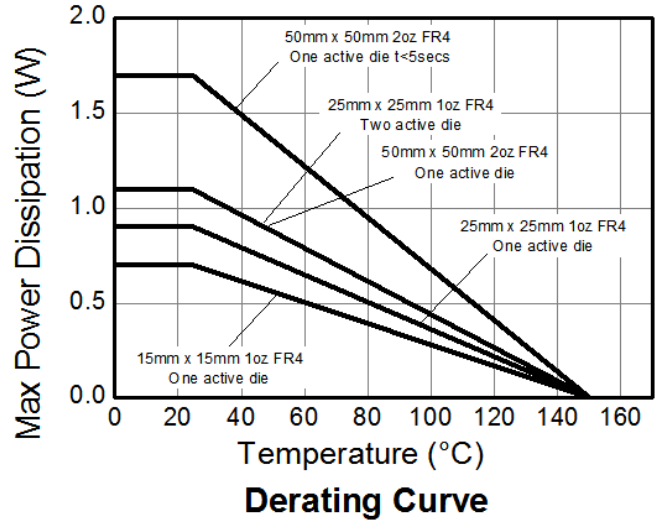
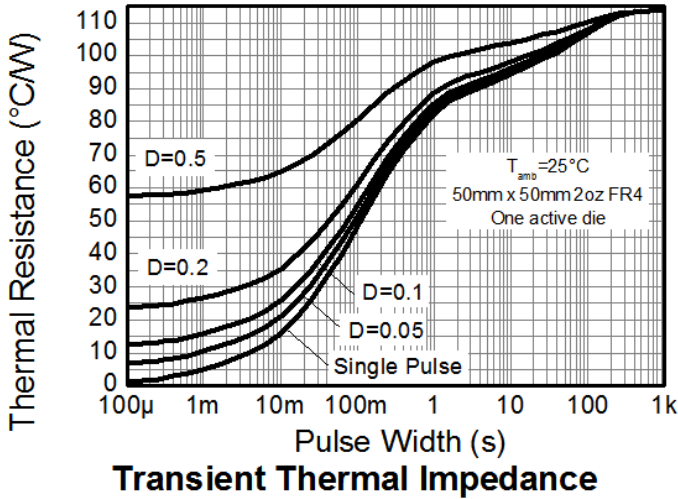
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	50	V
Collector-Emitter Voltage	V _{CEO}	50	V
Emitter-Base Voltage	V _{EBO}	7	V
Continuous Collector Current	I _C	1	A
Peak Pulse Current	I _{CM}	2	A
Base current	I _B	200	mA

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit	
Power Dissipation Linear Derating Factor	P _D	0.7	W mW/°C	
		(Notes 6 & 10)		5.6
		(Notes 7 & 10)		0.9
		(Notes 7 & 11)		7.2
		(Notes 8 & 10)		1.1
		(Notes 9 & 10)		8.8
Thermal Resistance, Junction to Ambient	R _{θJA}	1.1	°C/W	
		(Notes 6 & 10)		179
		(Notes 7 & 10)		139
		(Notes 8 & 10)		113
		(Notes 9 & 10)		73
Thermal Resistance, Junction to Lead	R _{θJL}	95.50		
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C	

- Notes:
6. For a device surface mounted on 15mm x 15mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
 7. Same as note (6), except the device is surface mounted on 25mm x 25mm 1oz copper.
 8. Same as note (6), except the device is surface mounted on 50mm x 50mm 2oz copper.
 9. Same as note (8), except the device is measured at t < 5 seconds.
 10. For device with one active die, both collectors attached to a common heatsink.
 11. For device with two active dice running at equal power, split heatsink 50% to each collector.
 12. Thermal resistance from junction to solder-point (at the end of the collector lead).

Thermal Characteristics and Derating Information

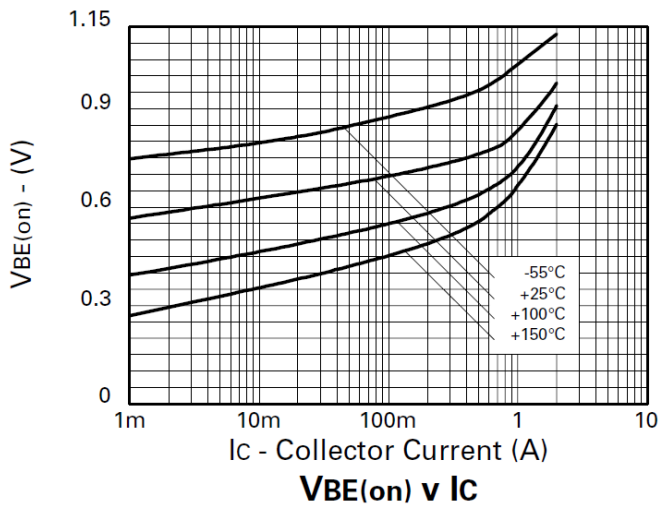
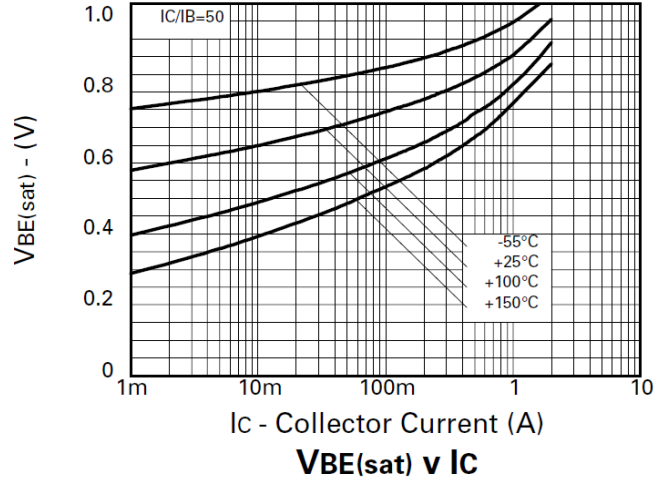
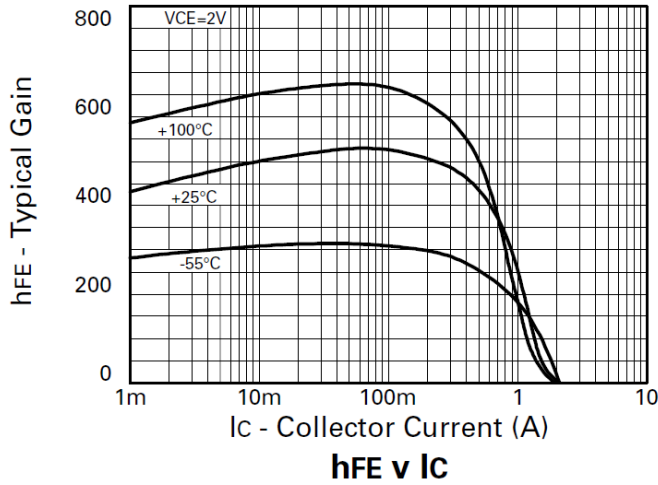
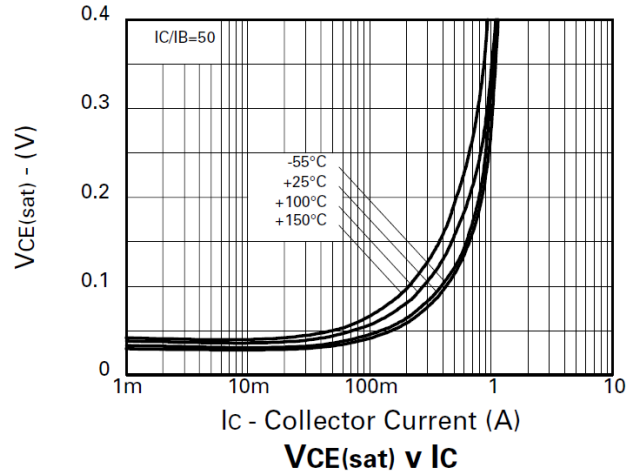
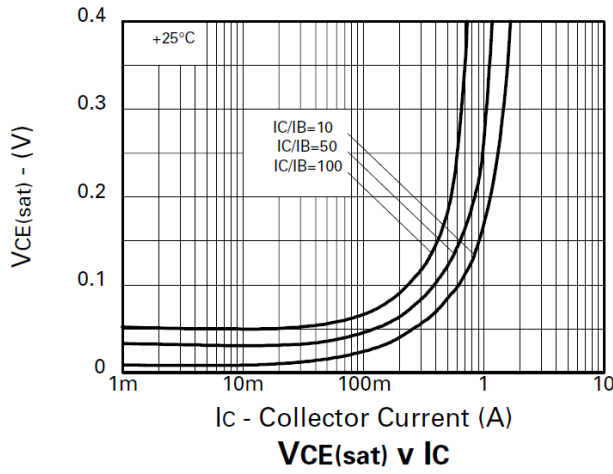


Electrical Characteristics - Q1 & Q2 common (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	50			V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage (Note 13)	BV_{CEO}	50			V	$I_C = 10mA$
Emitter-Base Breakdown Voltage	BV_{EBO}	7			V	$I_E = 100\mu A$
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	$V_{EB} = 5.6V$
DC Current Gain (Note 13)	h_{FE}	200	420			$I_C = 10mA, V_{CE} = 2V$
		300	450			$I_C = 100mA, V_{CE} = 2V$
		200	350			$I_C = 500mA, V_{CE} = 2V$
		75	130			$I_C = 1A, V_{CE} = 2V$
		20	60			$I_C = 1.5A, V_{CE} = 2V$
Collector-Emitter Saturation Voltage (Note 13)	$V_{CE(sat)}$		24	35	mV	$I_C = 100mA, I_B = 10mA$
			60	80		$I_C = 250mA, I_B = 10mA$
			120	200		$I_C = 500mA, I_B = 10mA$
			160	270		$I_C = 1A, I_B = 50mA$
Base-Emitter Saturation Voltage (Note 13)	$V_{BE(sat)}$		940	1100	mV	$I_C = 1A, I_B = 50mA$
Base-Emitter Turn-On Voltage (Note 13)	$V_{BE(on)}$		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: 13. Measured under pulsed conditions. Pulse width $\leq 300 \mu s$. Duty cycle $\leq 2\%$

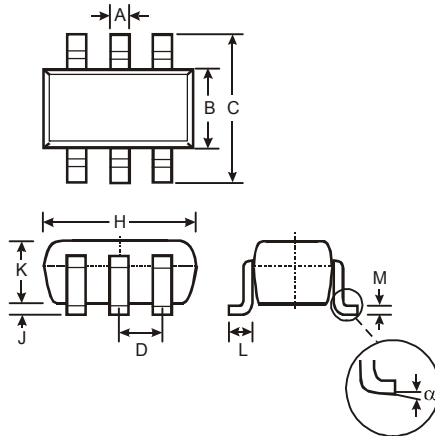
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



ZXTD09N50DE6

Package Outline Dimensions

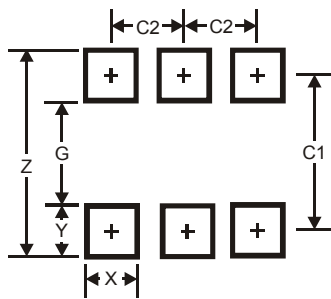
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for latest version.



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

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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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