

# ZXTD09N50DE6

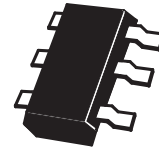
## SuperSOT DUAL 50V NPN SILICON LOW SATURATION SWITCHING TRANSISTOR

### SUMMARY

$V_{CEO}=50V$ ;  $R_{SAT} = 160m\Omega$ ;  $I_C = 1A$

### DESCRIPTION

A dual NPN low saturation transistor combination contained in a single 6 lead SOT23 package. Each transistor is the equivalent to the ZUMT619 device.



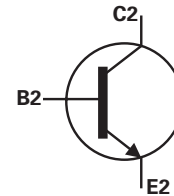
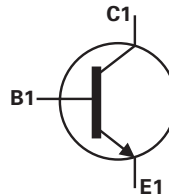
SOT23-6

### FEATURES

- Low Equivalent On Resistance
- Low Saturation Voltage
- $I_C=1A$  Continuous Collector Current
- SOT23-6 package

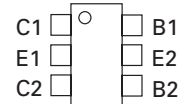
### APPLICATIONS

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



### ORDERING INFORMATION

DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXTD09N50DE6TA	7	8mm embossed	3000 units
ZXTD09N50DE6TC	13	8mm embossed	10000 units



Top View

### DEVICE MARKING

D619

# ZXTD09N50DE6

## ABSOLUTE MAXIMUM RATINGS.

PARAMETER	SYMBOL	LIMIT	UNIT
Collector-Base Voltage	$V_{CBO}$	50	V
Collector-Emitter Voltage	$V_{CEO}$	50	V
Emitter-Base Voltage	$V_{EBO}$	5	V
Peak Pulse Current	$I_{CM}$	2	A
Continuous Collector Current	$I_C$	1.0	A
Base Current	$I_B$	200	mA
Power Dissipation at $T_A=25^\circ\text{C}$ (a)(d) Linear Derating Factor	$P_D$	0.90 7.2	W mW/ $^\circ\text{C}$
Power Dissipation at $T_A=25^\circ\text{C}$ (a)(e) Linear Derating Factor	$P_D$	1.1 8.8	W mW/ $^\circ\text{C}$
Power Dissipation at $T_A=25^\circ\text{C}$ (b)(d) Linear Derating Factor	$P_D$	1.7 13.6	W mW/ $^\circ\text{C}$
Operating and Storage Temperature Range	$T_j; T_{stg}$	-55 to +150	$^\circ\text{C}$

## THERMAL RESISTANCE

PARAMETER	SYMBOL	VALUE	UNIT
Junction to Ambient (a)(d)	$R_{\theta JA}$	139	$^\circ\text{C}/\text{W}$
Junction to Ambient (b)(d)	$R_{\theta JA}$	73	$^\circ\text{C}/\text{W}$
Junction to Ambient (a)(e)	$R_{\theta JA}$	113	$^\circ\text{C}/\text{W}$

### NOTES

(a) For a device surface mounted on 25mm x 25mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions

(b) For a device surface mounted on FR4 PCB measured at  $t \leq 5$  secs.

(c) Repetitive rating - pulse width limited by maximum junction temperature. Refer to Transient Thermal Impedance graph.

(d) For device with one active die.

(e) For device with two active die running at equal power.



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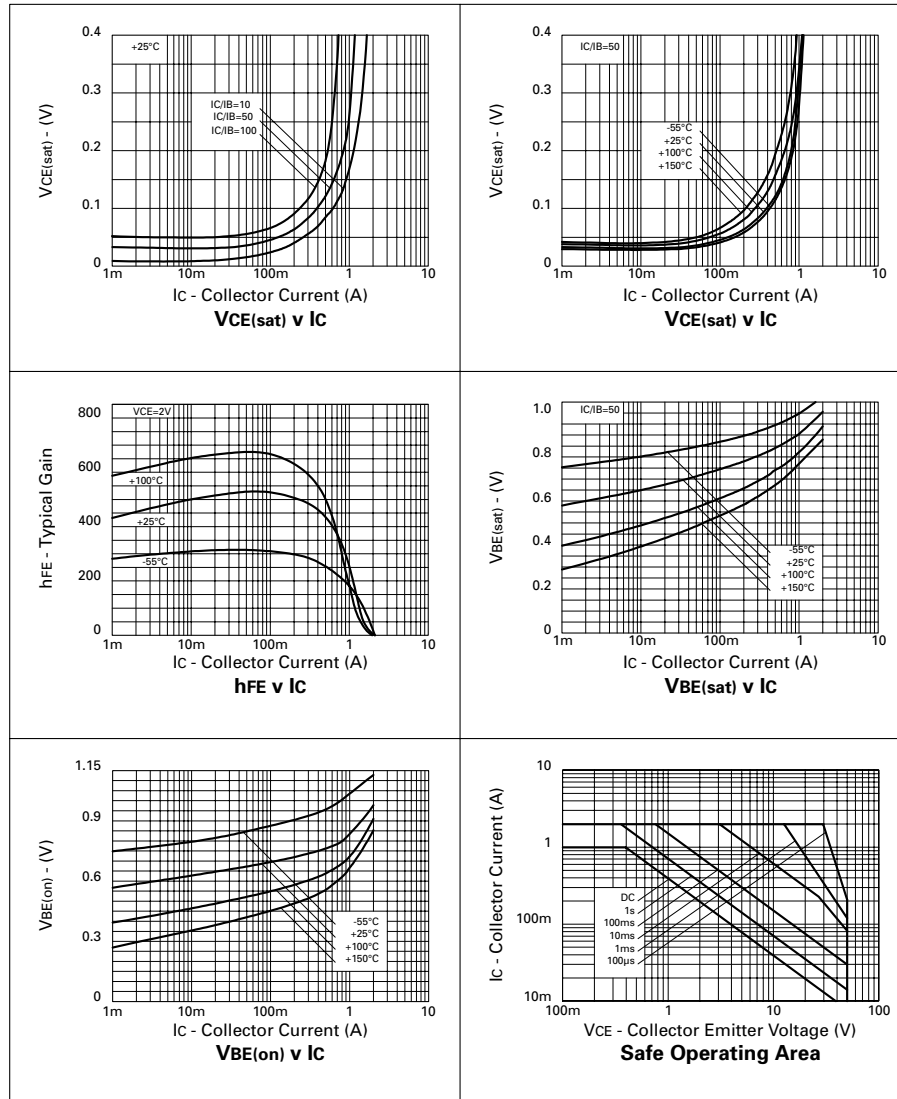
### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

PARAMETER	SYMBOL	MIN.	TYP.	MAX.	UNIT	CONDITIONS.
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	50			V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	50			V	$I_C = 10\text{mA}^*$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5			V	$I_E = 100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$			10	nA	$V_{CB} = 40\text{V}$
Emitter Cut-Off Current	$I_{EBO}$			10	nA	$V_{EB} = 4\text{V}$
Collector Emitter Cut-Off Current	$I_{CES}$			10	nA	$V_{CES} = 40\text{V}$
Collector-Emitter Saturation Voltage	$V_{CE(sat)}$		24 60 120 160	35 80 200 270	mV mV mV mV	$I_C = 100\text{mA}, I_B = 10\text{mA}^*$ $I_C = 250\text{mA}, I_B = 10\text{mA}^*$ $I_C = 500\text{mA}, I_B = 10\text{mA}^*$ $I_C = 1\text{A}, I_B = 50\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{BE(sat)}$		940	1100	mV	$I_C = 1\text{A}, I_B = 50\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{BE(on)}$		850	1100	mV	$I_C = 1\text{A}, V_{CE} = 2\text{V}^*$
Static Forward Current Transfer Ratio	$h_{FE}$	200 300 200 75 20	420 450 350 130 60			$I_C = 10\text{mA}, V_{CE} = 2\text{V}^*$ $I_C = 100\text{mA}, V_{CE} = 2\text{V}^*$ $I_C = 500\text{mA}, V_{CE} = 2\text{V}^*$ $I_C = 1\text{A}, V_{CE} = 2\text{V}^*$ $I_C = 1.5\text{A}, V_{CE} = 2\text{V}^*$
Transition Frequency	$f_T$		215		MHz	$I_C = 50\text{mA}, V_{CE} = 10\text{V}$ $f = 100\text{MHz}$
Output Capacitance	$C_{obo}$		10		pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$
Turn-On Time	$t_{(on)}$		150		ns	$V_{CC} = 10\text{V}, I_C = 1\text{A}$ $I_{B1} = I_{B2} = 100\text{mA}$
Turn-Off Time	$t_{(off)}$		425		ns	

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

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## TYPICAL CHARACTERISTICS



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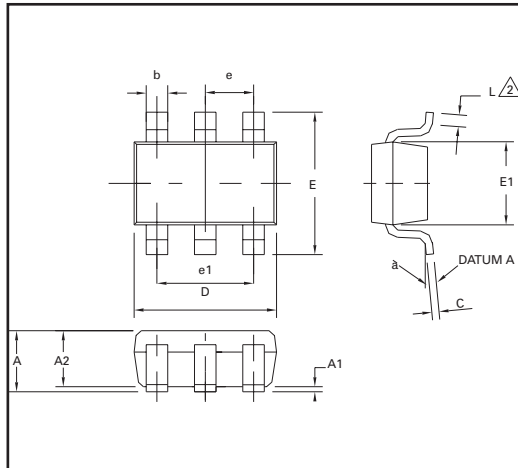
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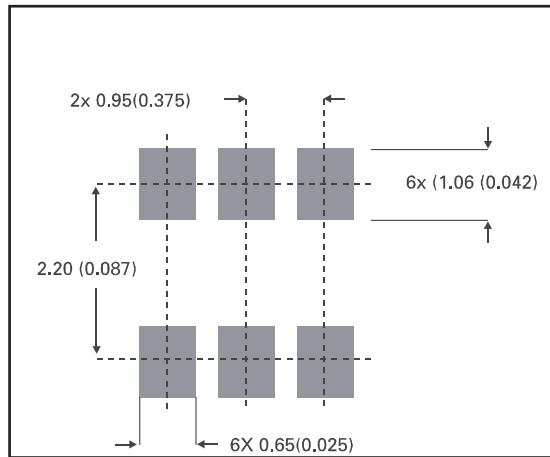


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## PACKAGE DIMENSIONS



## PAD LAYOUT DETAILS



DIM	Millimetres		Inches	
	Min	Max	Min	Max
A	0.90	1.45	0.35	0.057
A1	0.00	0.15	0	0.006
A2	0.90	1.30	0.035	0.051
b	0.35	0.50	0.014	0.019
C	0.09	0.20	0.0035	0.008
D	2.80	3.00	0.110	0.118
E	2.60	3.00	0.102	0.118
E1	1.50	1.75	0.059	0.069
L	0.10	0.60	0.004	0.002
e	0.95 REF		0.037 REF	
e1	1.90 REF		0.074 REF	
L	0°	10°	0°	10°

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