

ZXTD09N50DE6

SuperSOT DUAL 50V NPN SILICON LOW SATURATION SWITCHING TRANSISTOR

SUMMARY

$V_{CE0}=50V$; $R_{SAT} = 160m\Omega$; $I_C= 1A$

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.

FEATURES

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

APPLICATIONS

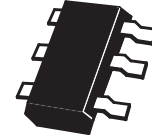
- LCD Backlighting inverter circuits
- Boost functions in DC-DC converters
-

ORDERING INFORMATION

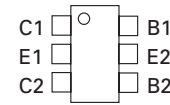
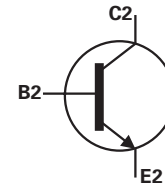
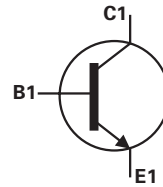
DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXTD09N50DE6TA	7	8mm embossed	3000 units
ZXTD09N50DE6TC	13	8mm embossed	10000 units

DEVICE MARKING

D619



SOT23-6



Top View

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

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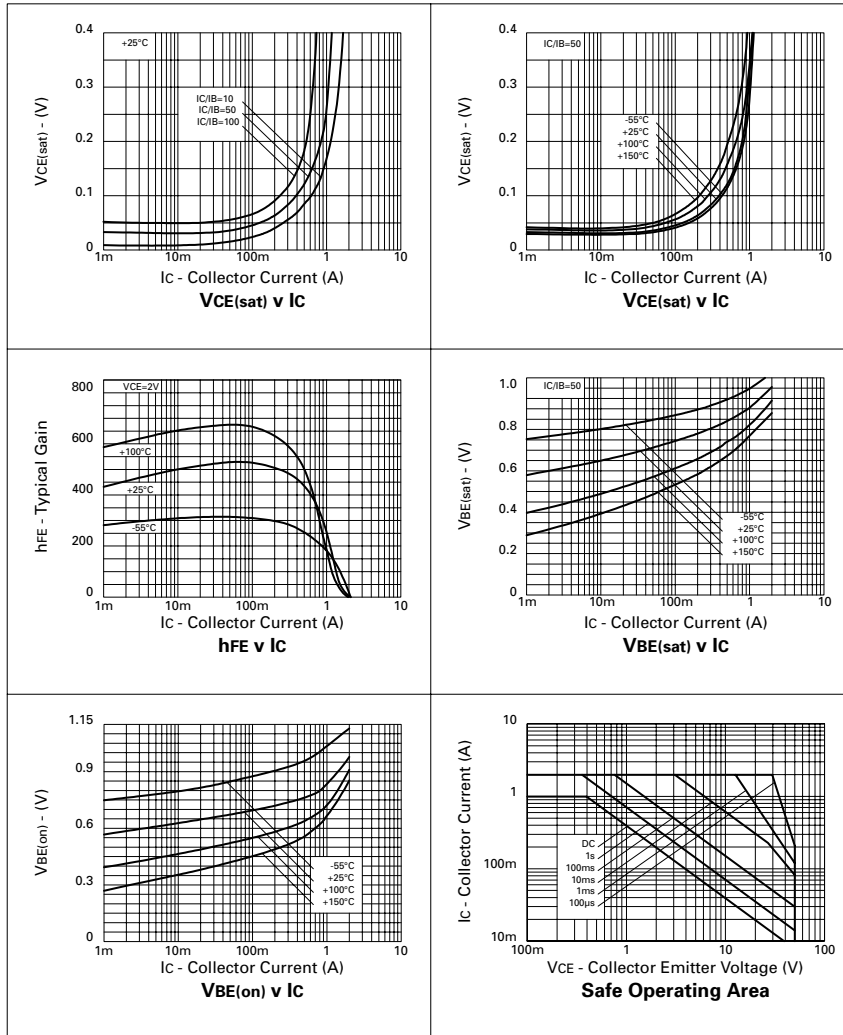
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

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 μs . Duty cycle $\leq 2\%$

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TYPICAL CHARACTERISTICS



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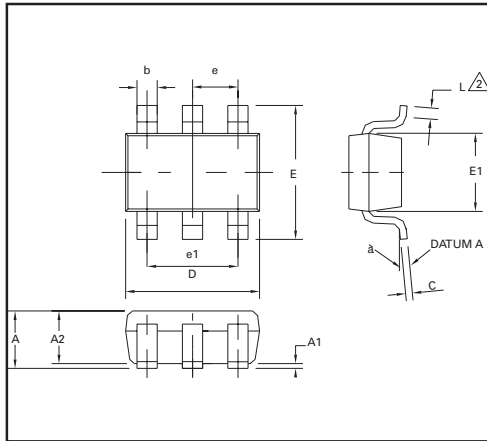
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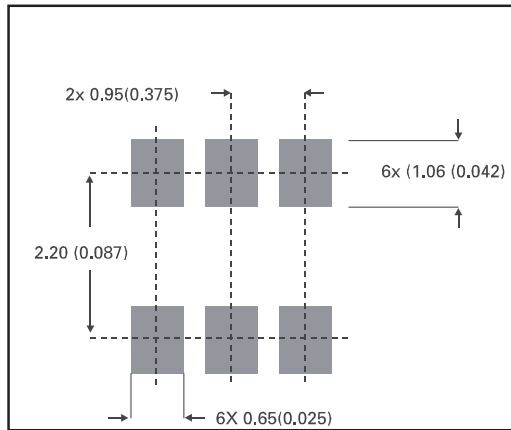


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PACKAGE DIMENSIONS



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°



Zetex plc.
Fields New Road, Chadderton, Oldham, OL9-8NP, United Kingdom.
Telephone: (44)161 622 4422 (Sales), (44)161 622 4444 (General Enquiries)
Fax: (44)161 622 4420

Zetex GmbH
Streitfeldstraße 19
D-81673 München
Germany

Zetex Inc.
Suite 315
700 Veterans Memorial Highway
Hauppauge NY11788
USA

Telefon: (49) 89 45 49 49 0
Fax: (49) 89 45 49 49 49

Telephone: (631) 543-7100
Fax: (631) 864-7630

Zetex (Asia) Ltd.
3701-04 Metroplaza, Tower 1
Hing Fong Road,
Kwai Fong
Hong Kong
Telephone: (852) 26100 611
Fax: (852) 24250 494

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