

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.

FEATURES

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

APPLICATIONS

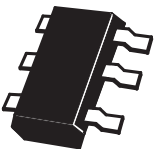
- LCD Backlighting inverter circuits
- Boost functions in DC-DC converters
-

ORDERING INFORMATION

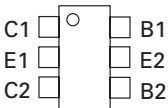
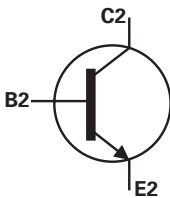
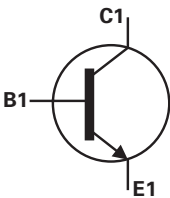
DEVICE	REEL SIZE (inches)	TAPE WIDTH (mm)	QUANTITY PER REEL
ZXTD09N50DE6TA	7	8mm embossed	3000 units
ZXTD09N50DE6TC	13	8mm embossed	10000 units

DEVICE MARKING

D619



SOT23-6



Top View

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	$^{\circ}\text{C/W}$
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.

ZXTD09N50DE6

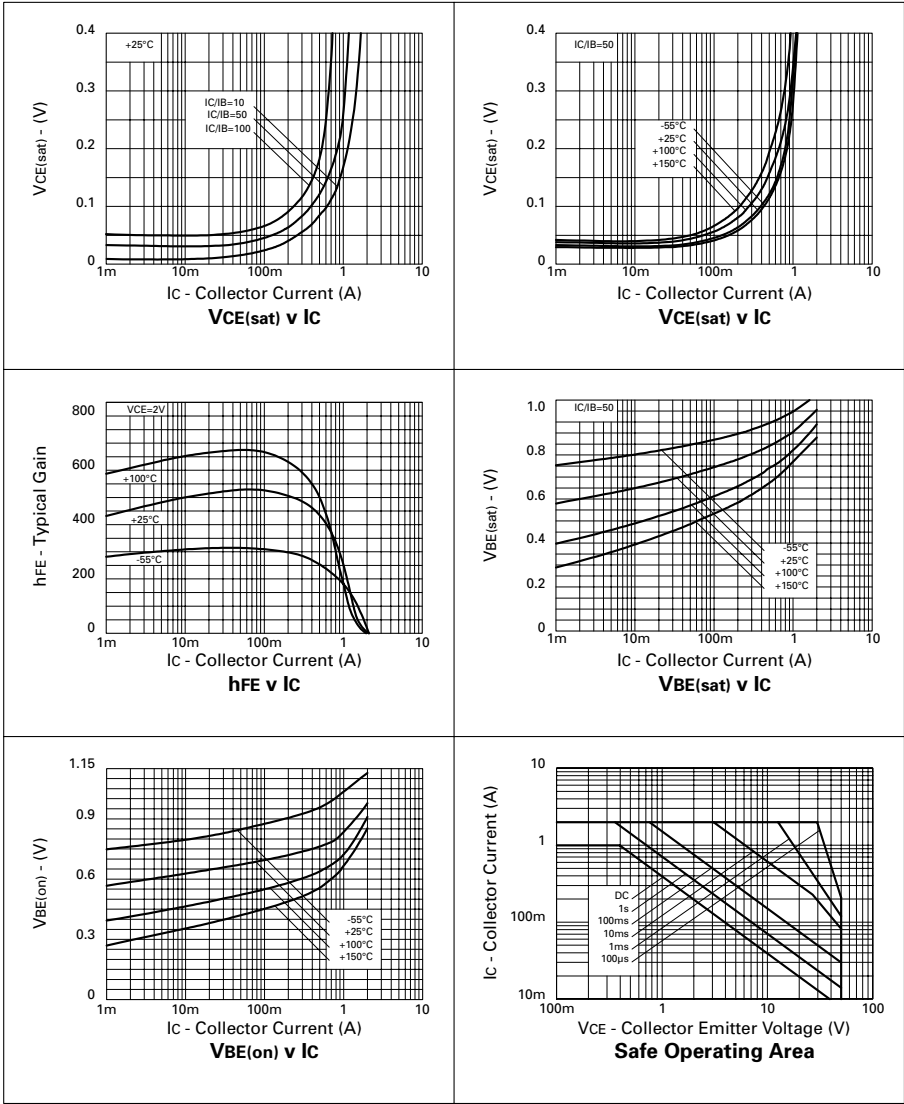
ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^{\circ}\text{C}$ unless otherwise stated).

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 $\leq 2\%$

ZXTD09N50DE6

TYPICAL CHARACTERISTICS



ZXTD09N50DE6

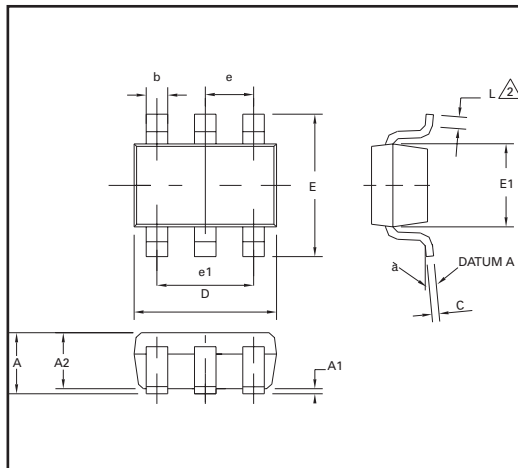
ZXTD09N50DE6

ZXTD09N50DE6

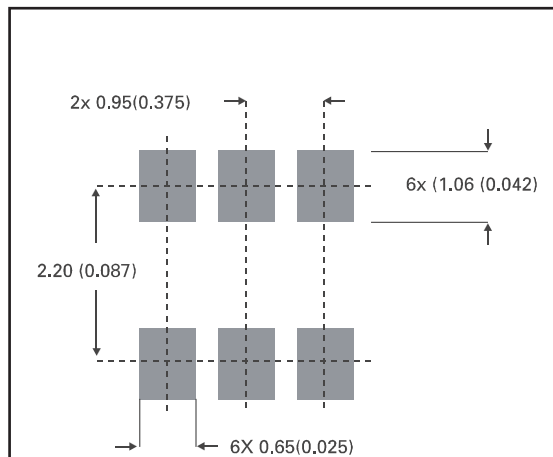
ISSUE 2 - JUNE 2001

ZXTD09N50DE6

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 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

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

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

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

These are supported by
agents and distributors in
major countries world-wide
©Zetex plc 2001

www.zetex.com

This publication is issued to provide outline information only which (unless agreed by the Company in writing) may not be used, applied or reproduced for any purpose or form part of any order or contract or be regarded as a representation relating to the products or services concerned. The Company reserves the right to alter without notice the specification, design, price or conditions of supply of any product or service.

ZETEX

ISSUE 2 - JUNE 2001