60V PNP LOW SATURATION MEDIUM POWER TRANSISTOR

Features

- BV_{CEO} > -60V
- R_{SAT} = 53mΩ Typical
- Continuous Collector Current I_C = -6A
- Up to 15A Peak Current
- Low Equivalent On Resistance
- Low Saturation Voltage
- High Gain Holds Up (100 min @ 2A)
- **Lead-Free Finish; RoHS compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

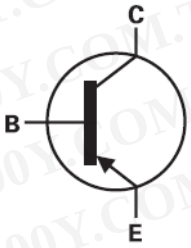
- Case: TO252 (DPAK)
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin; Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.34 grams (approximate)

Application

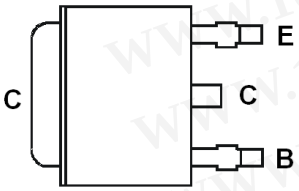
- DC – DC converters
- Power Switches
- Motor Control
- Automotive Circuits
- Inverter Circuits

TO252

Top View



Device Schematic



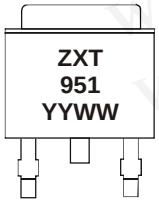
Pin Out Configuration
Top view

Ordering Information (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXT951KTC	ZXT951	13	16	2,500

Notes:
1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
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. For packaging details, go to our website at http://www.diodes.com.

Marking Information



ZXT951 = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Digit of Year (ex: 09 = 2009)
WW = Week Code (01 – 53)

Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

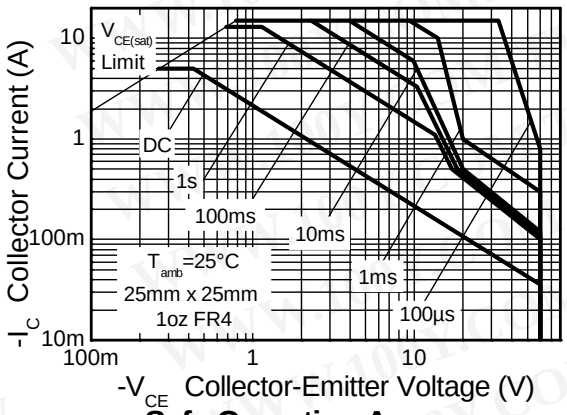
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	BV_{CBO}	-100	V
Collector-Base Voltage	BV_{CER}	-100	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-6	A
Base Current	I_B	-0.5	A
Peak Pulse Collector Current	I_{CM}	-15	A

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

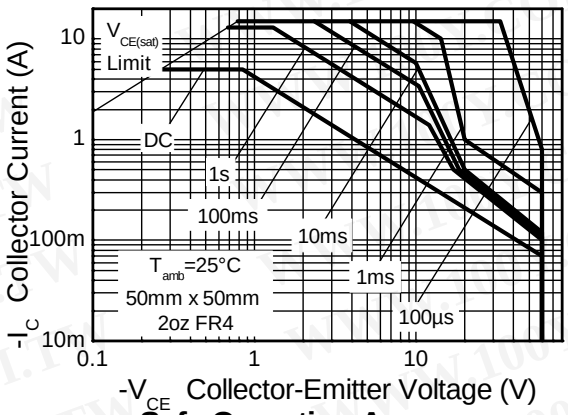
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	2.1	W
	(Note 6)		3.2	
	(Note 7)		4.2	
Thermal Resistance, Junction to Ambient Air	(Note 5)	$R_{\theta JA}$	59	°C/W
	(Note 6)		39	
	(Note 7)		30	
Thermal Resistance, Junction to Leads	(Note 8)	$R_{\theta JL}$	1.77	°C/W
Operating and Storage Temperature Range		T_J,T_{STG}	-55 to +150	°C

Notes:
5. For the device mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
6. For the device mounted on 50mm x 50mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions
7. For the device mounted on 25mm x 25mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions
8. Thermal resistance from junction to solder-point (at the end of the collector lead)

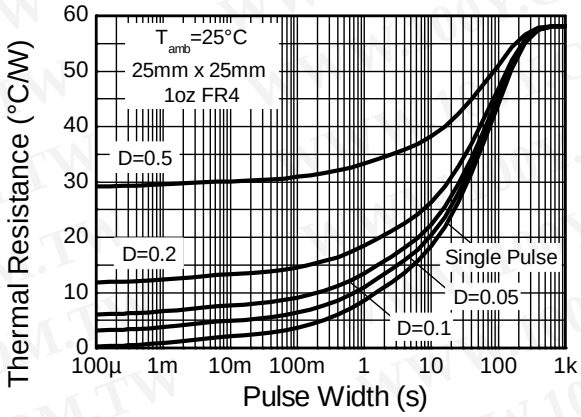
Typical Thermal Characteristics



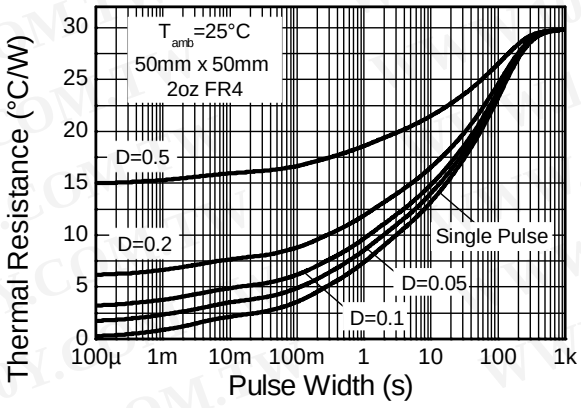
Safe Operating Area



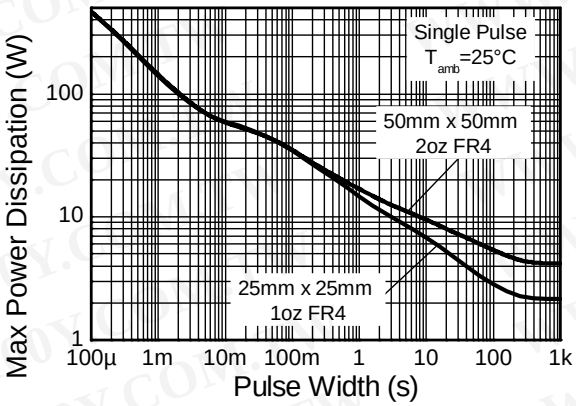
Safe Operating Area



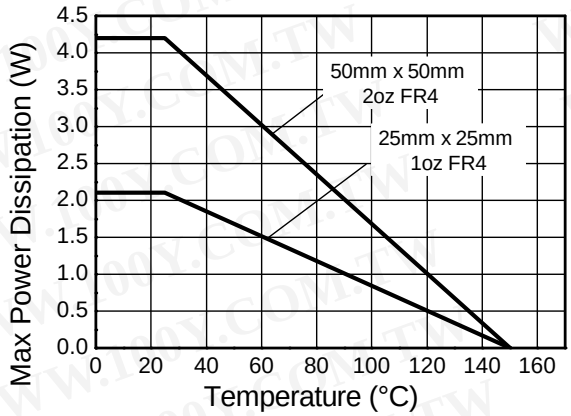
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



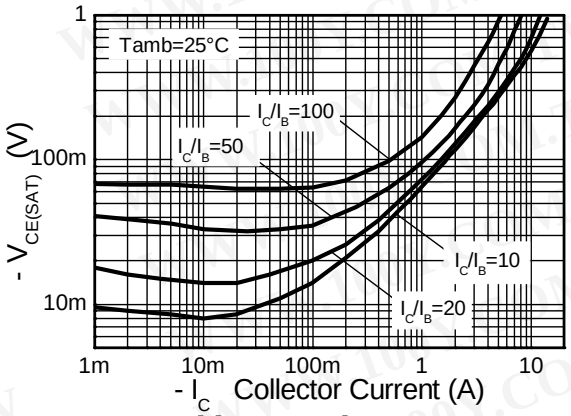
Derating Curve

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

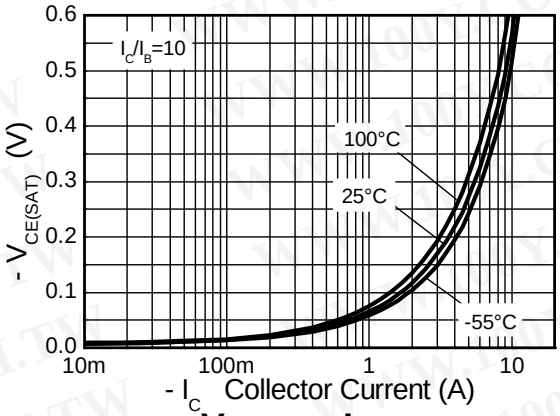
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-100	-125	-	V	I_C = -100µA
Collector-Base Breakdown Voltage	BV_{CER}	-100	-125	-	V	I_C = -100µA, R_{BE} ≤1kΩ
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	-60	-80	-	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.1	-	V	I_E = -100µA
Collector Cutoff Current	I_{CBO}	-	<1	-20	nA	V_{CB} = -80V
Emitter Cutoff Current	I_{EBO}	-	<1	-10	nA	V_{EB} = -6V
Emitter Cutoff Current	I_{CER}	-	<1	-20	nA	V_{CE} = -80V, R_{BE} ≤1kΩ
DC current transfer Static ratio (Note 9)	h_{FE}	100 100 50 15	230 200 110 40	- 300 - -	-	I_C = -10mA, V_{CE} = -1V I_C = -2A, V_{CE} = -1V I_C = -6A, V_{CE} = -1V I_C = -10A, V_{CE} = -1V
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	- - - -	-13 -60 -115 -315	-25 -90 -165 -400	mV	I_C = -0.1A, I_B = -10mA I_C = -1A, I_B = -100mA I_C = -2A, I_B = -200mA I_C = -6A, I_B = -600mA
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	-	-1.05	-1.2	V	I_C = -6A, I_B = -600mA
Base-Emitter Turn-on Voltage (Note 9)	$V_{BE(on)}$	-	-0.92	-1.05	V	I_C = -6A, V_{CE} = -1V
Transitional Frequency	f_T	-	120	-	MHz	I_C = -100mA, V_{CE} = -10V f = 50MHz
Output capacitance	C_{OBO}	-	74	-	pF	V_{CB} = -10V, f = 1MHz,
Switching times	t_{ON} t_{OFF}	-	82 350	-	nS	I_C = -2A, V_{CC} = -10V, I_{B1} = I_{B2} = -200mA

Notes: 9. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤2%.

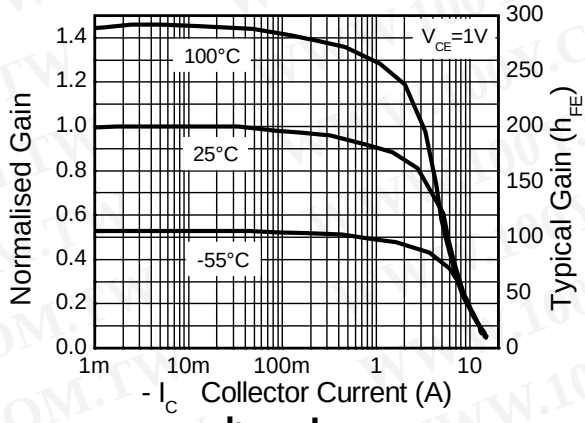
Typical Electrical Characteristics



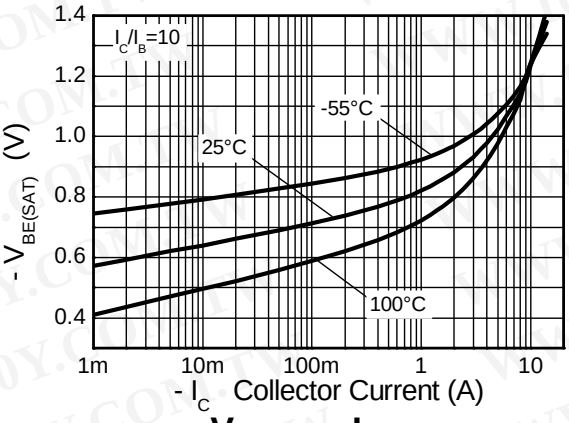
$V_{CE(SAT)}$ v I_C



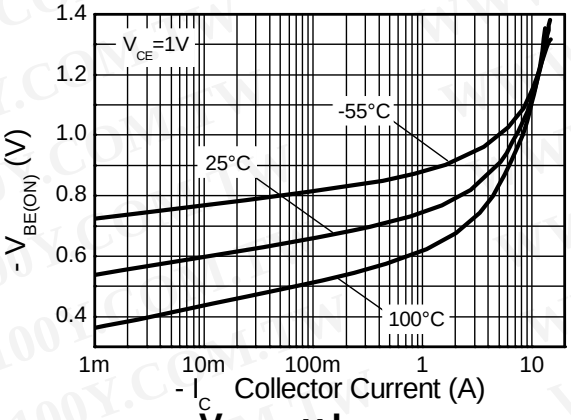
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



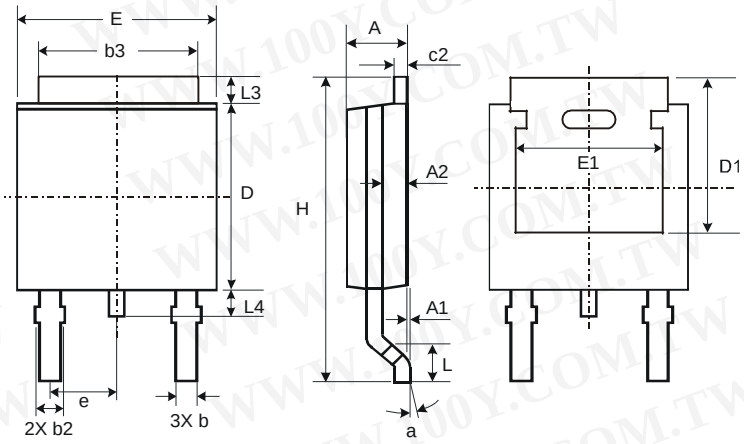
$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

Package Outline Dimensions

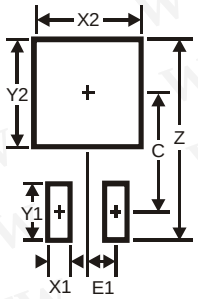
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for latest version.



TO252			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c2	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	–	–
e	–	–	2.286
E	6.45	6.70	6.58
E1	4.32	–	–
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	–
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	11.6
X1	1.5
X2	7.0
Y1	2.5
Y2	7.0
C	6.9
E1	2.3

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