

Description

This Bipolar Junction Transistor (BJT) is designed to meet the stringent requirements of Automotive Applications.

Features

- $BV_{CEO} > -60V$
- $R_{SAT} = 53m\Omega$ 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**
- **PPAP Capable (Note 4)**

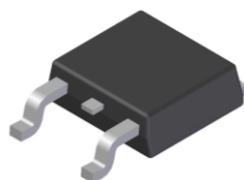
Application

- DC-DC Converters
- Power Switches
- Motor Control
- Automotive Circuits
- Inverter Circuits

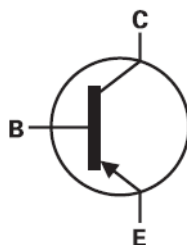
Mechanical Data

- 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 (63)
- Weight: 0.34 grams (Approximate)

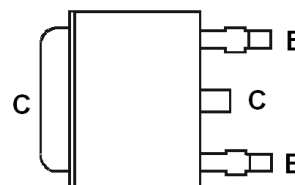
TO252 (DPAK)



Top View



Device Schematic



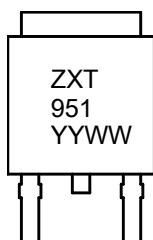
Pin Out Configuration
Top view

Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZXT951KQTC	Automotive	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/quality/lead_free.html 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 are PPAP capable. Refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



ZXT951 = Product Type Marking Code
 YYWW = Date Code Marking
 YY = Last Digit of Year (ex: 16 = 2016)
 WW = Week Code (01 ~ 53)

Absolute 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	P _D	2.1	W
		3.2	
		4.2	
Thermal Resistance, Junction to Ambient Air	R _{θJA}	59	°C/W
		39	
		30	
Thermal Resistance, Junction to Leads	R _{θJL}	1.77	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

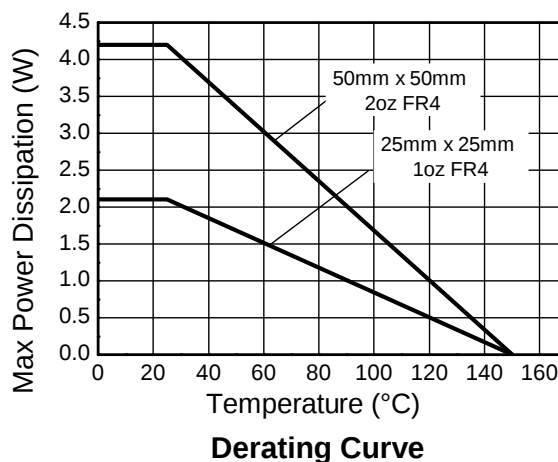
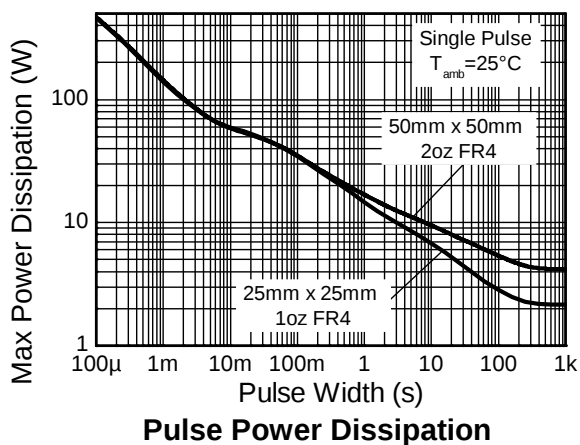
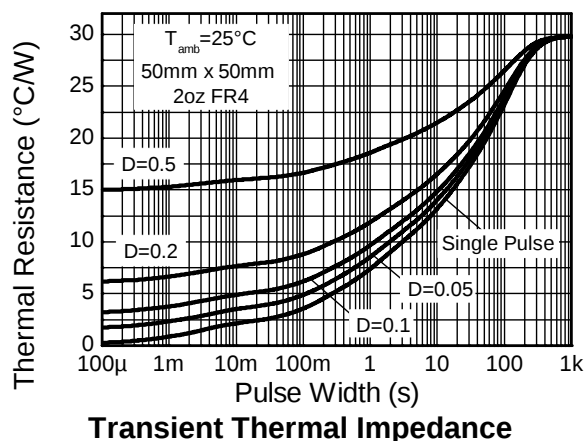
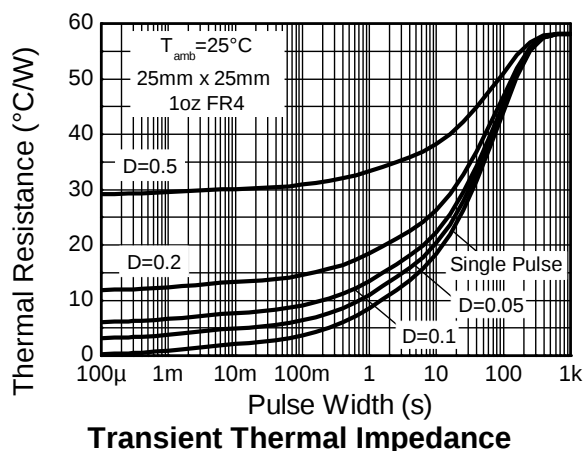
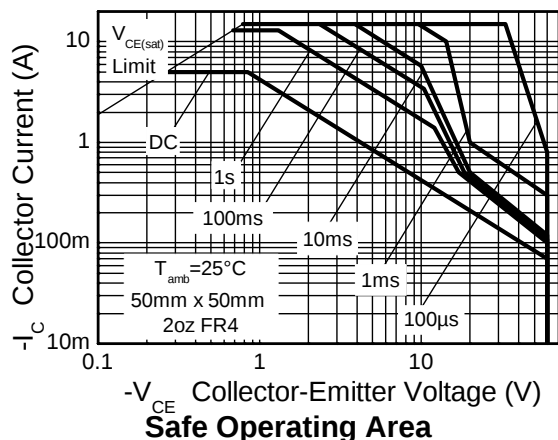
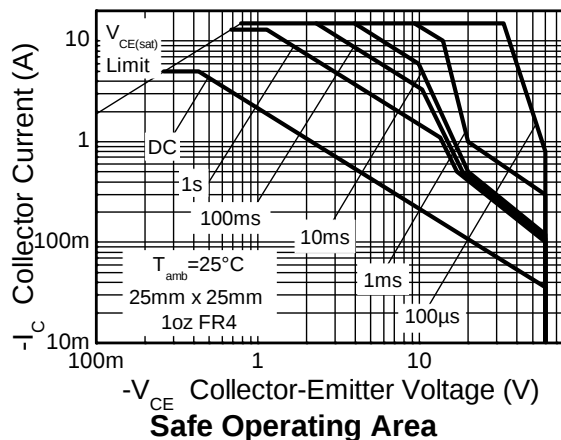
ESD Ratings (Note 10)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge – Human Body Model	ESD HBM	8,000	V	3B
Electrostatic Discharge – Machine Model	ESD MM	400	V	C

Notes:

6. 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.
7. 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
8. 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
9. Thermal resistance from junction to solder-point (at the end of the collector lead)
10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Typical Thermal Characteristics

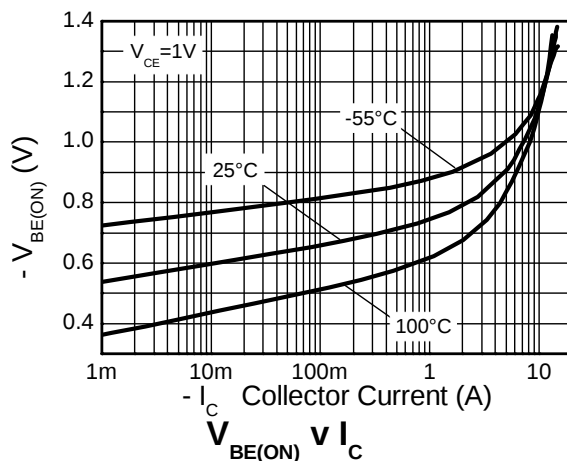
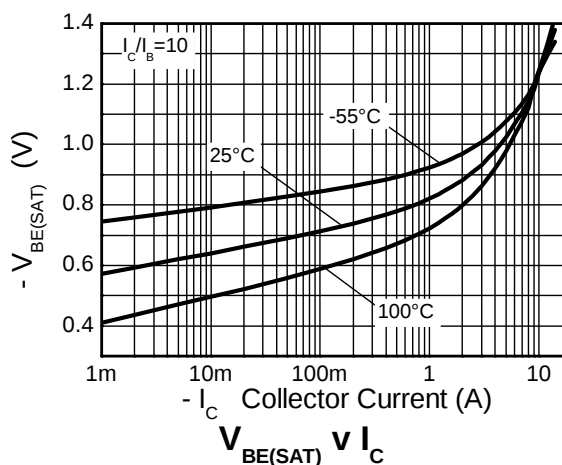
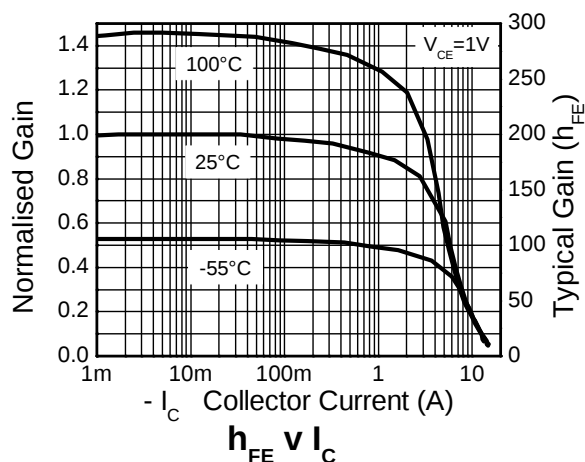
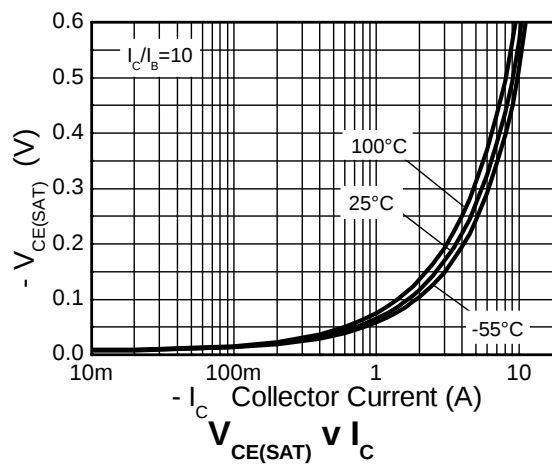
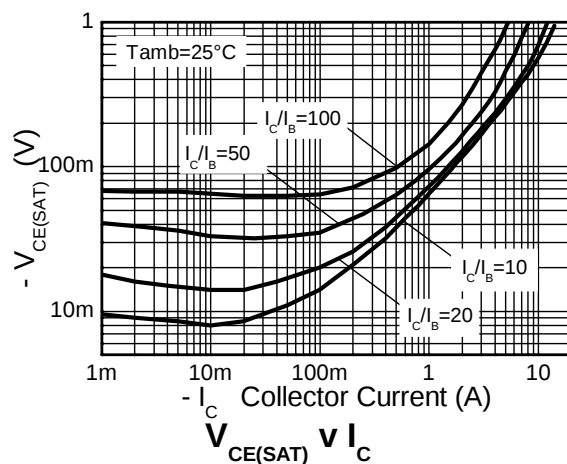


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

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 11)	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 11)	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 11)	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 11)	V _{BE(SAT)}	—	-1.05	-1.2	V	I _C = -6A, I _B = -600mA
Base-Emitter Turn-On Voltage (Note 11)	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

Note: 11. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

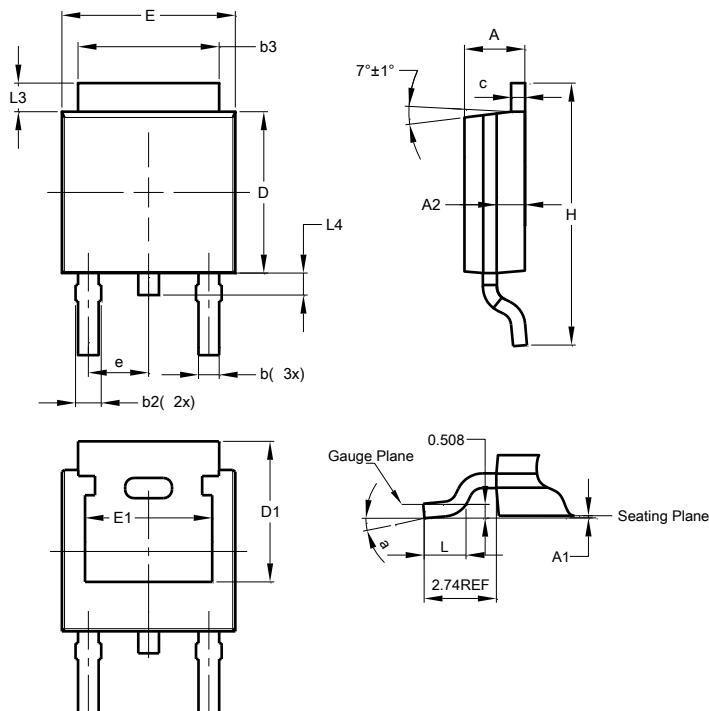
Typical Electrical Characteristics



Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

TO252 (DPAK)

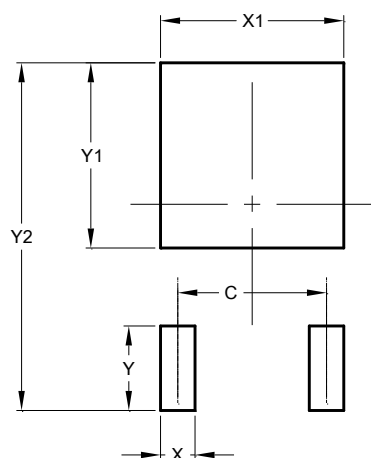


TO252 (DPAK)			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	—	—
e	—	—	2.286
E	6.45	6.70	6.58
E1	4.32	—	—
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°	10°	—
All Dimensions in mm			

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

TO252 (DPAK)



Dimensions	Value (in mm)
C	4.572
X	1.060
X1	5.632
Y	2.600
Y1	5.700
Y2	10.700

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