

100V PNP LOW SATURATION MEDIUM POWER TRANSISTOR

Features

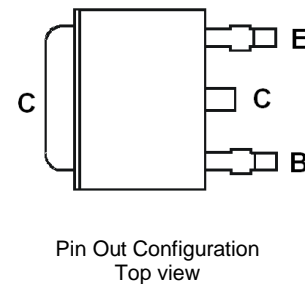
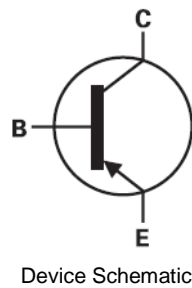
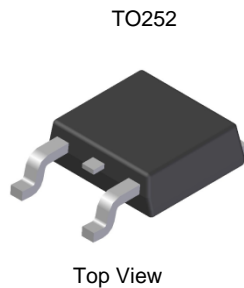
- $BV_{CEO} > -100V$
- $I_C = -5A$ Continuous Collector Current
- $I_{CM} = -10A$ Peak Collector Current
- $R_{SAT} = 67m\Omega$ Typical for Low Equivalent On Resistance
- Low Saturation Voltage
- High Gain Hold-Up (100 min @ 1A)
- **Lead-Free Finish; RoHS Compliant (Note 1 & 2)**
- **Halogen and Antimony 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 @3
- Weight: 0.34 grams (Approximate)

Application

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



Ordering Information (Note 4)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXT953KTC	AEC-Q101	ZXT953	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. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



ZXT953 = Product Type Marking Code
YYWW = Date Code Marking
YY = Last Digit of Year (ex: 15 = 2015)
WW = Week Code (01 – 53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	BV _{CBO}	-140	V
Collector-Base Voltage	BV _{CER}	-140	V
Collector-Emitter Voltage	V _{CEO}	-100	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	I _C	-5	A
Base Current	I _B	-0.5	A
Peak Pulse Collector Current	I _{CM}	-10	A

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

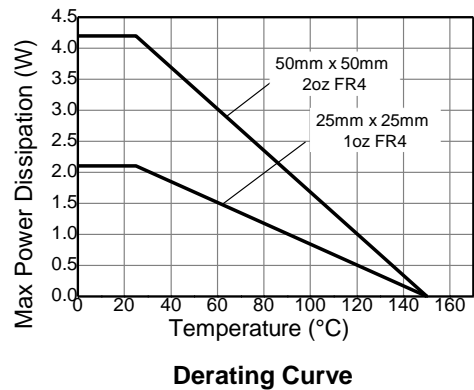
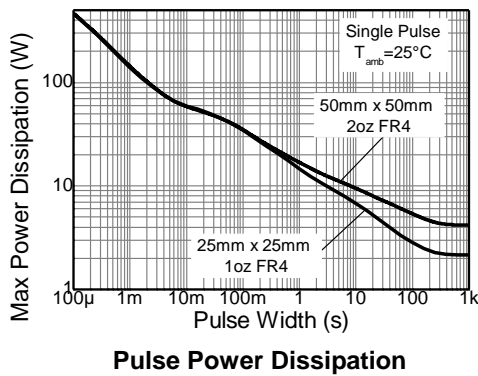
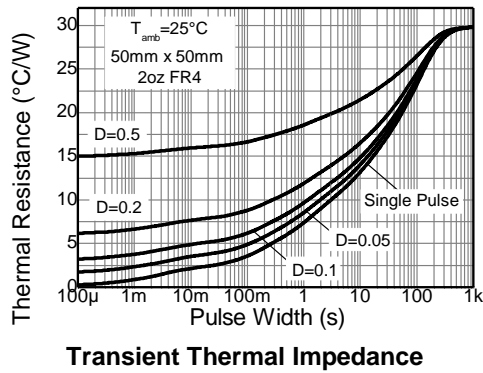
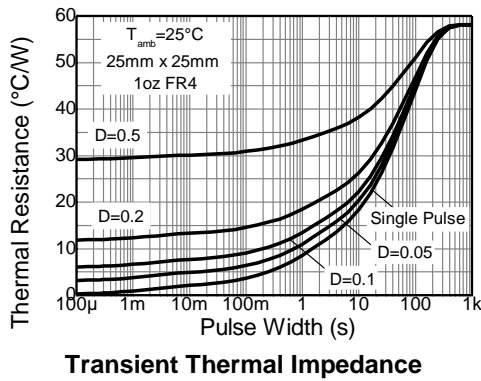
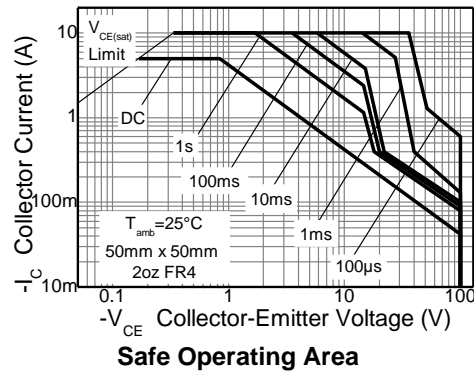
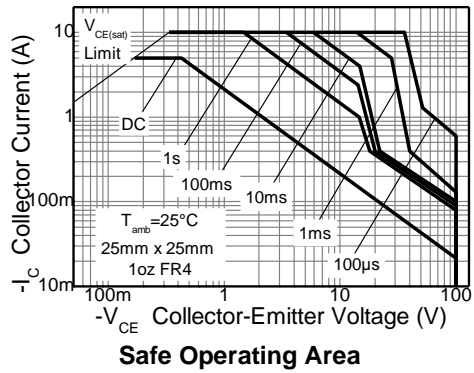
Characteristic	Symbol	Value	Unit
Power Dissipation	P _D	(Note 5)	2.1
		(Note 6)	3.2
		(Note 7)	4.2
Thermal Resistance, Junction to Ambient Air	R _{θJA}	(Note 5)	59
		(Note 6)	39
		(Note 7)	30
Thermal Resistance, Junction to Leads	R _{θJL}	1.8	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-55 to +150	°C

ESD Ratings (Note 9)

Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
- For a device mounted with the exposed collector pad on 25mm x 25mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 - Same as Note 5, except the device is mounted on 50mm x 50mm with 1oz copper.
 - Same as Note 5, except the device is mounted on 50mm x 50mm with 2oz copper.
 - Thermal resistance from junction to solder-point (at the end of the collector lead).
 - Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

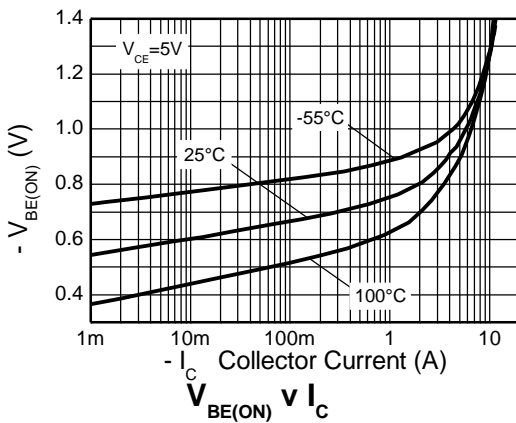
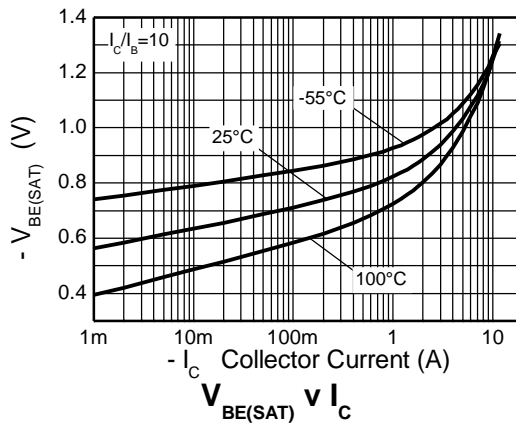
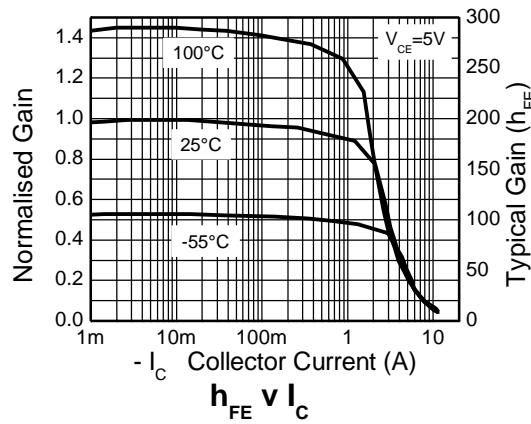
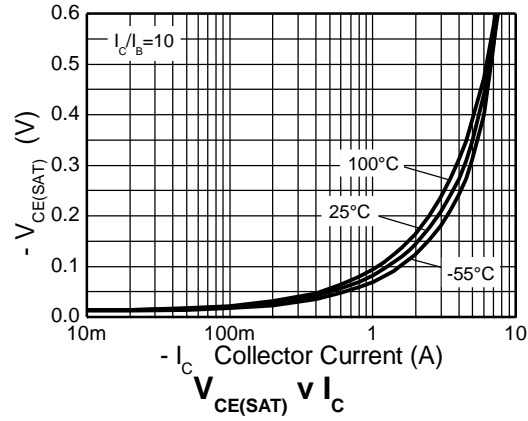
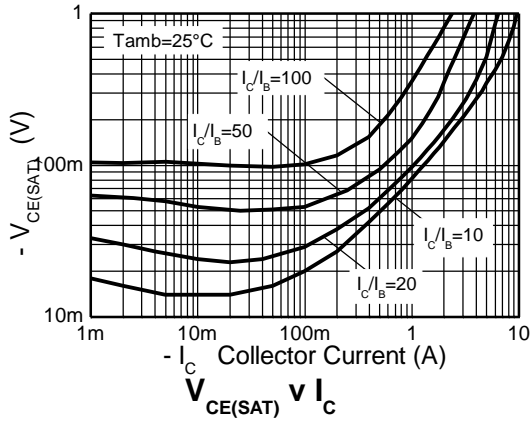


Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-140	-170	-	V	I _C = -100μA
Collector-Base Breakdown Voltage	BV _{CER}	-140	-170	-	V	I _C = -1μA, R _{BE} ≤ 1kΩ
Collector-Emitter Breakdown Voltage (Note 10)	BV _{CEO}	-100	-125	-	V	I _C = -10mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-7	-8.1	-	V	I _E = -100μA
Collector Cut-Off Current	I _{CBO}	-	<1	-20	nA	V _{CB} = -100V
Emitter Cut-Off Current	I _{EBO}	-	<1	-10	nA	V _{EB} = -6V
Emitter Cut-Off Current	I _{CER}	-	<1	-20	nA	V _{CE} = -100V, R _{BE} ≤ 1kΩ
DC Current Transfer Static Ratio (Note 10)	h _{FE}	100 100 50 15	220 200 85 30	- 300 - -	-	I _C = -10mA, V _{CE} = -1V I _C = -1A, V _{CE} = -1V I _C = -3A, V _{CE} = -1V I _C = -5A, V _{CE} = -1V
Collector-Emitter Saturation Voltage (Note 10)	V _{CE(sat)}	- - - -	-20 -80 -140 -335	-30 -100 -175 -390	mV	I _C = -0.1A, I _B = -10mA I _C = -1A, I _B = -100mA I _C = -2A, I _B = -200mA I _C = -5A, I _B = -500mA
Base-Emitter Saturation Voltage (Note 10)	V _{BE(sat)}	-	-1.01	-1.1	V	I _C = -5A, I _B = -500mA
Base-Emitter Turn-On Voltage (Note 10)	V _{BE(on)}	-	-0.94	-1.05	V	I _C = -5A, V _{CE} = -1V
Transitional Frequency	f _T	-	125	-	MHz	I _C = -100mA, V _{CE} = -10V f = 50MHz
Output Capacitance	C _{OBO}	-	65	-	pF	V _{CB} = -10V, f = 1MHz,
Switching Times	t _{ON} t _{OFF}	-	110 460	-	nS	I _C = -2A, V _{CC} = -10V, I _{B1} = I _{B2} = -200mA

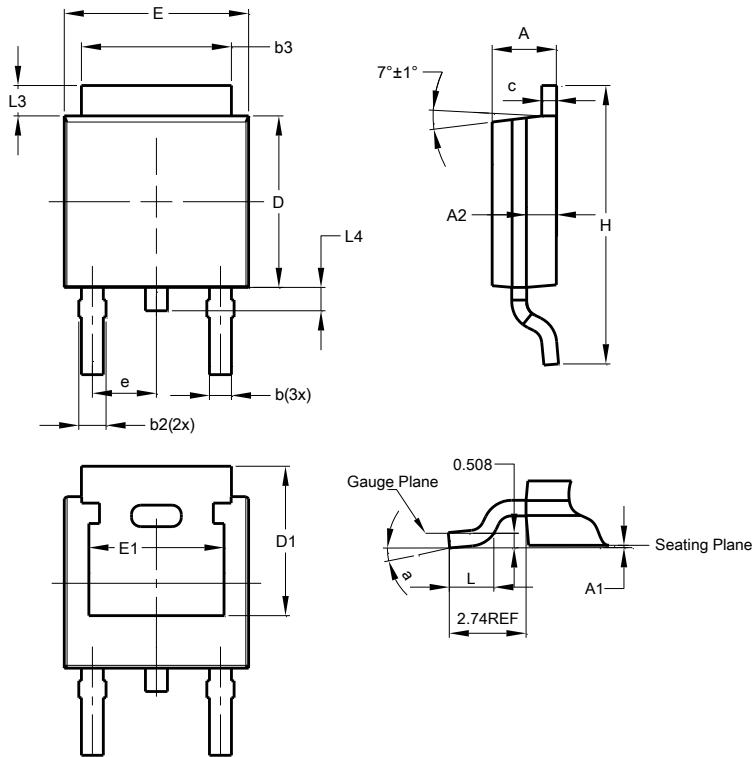
Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

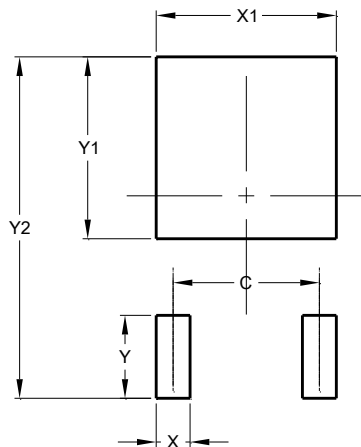
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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 AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> for the latest version.



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

For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.

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