

100V PNP LOW SATURATION MEDIUM POWER TRANSISTOR

Features

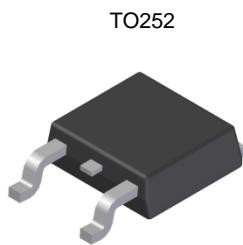
- $BV_{CEO} > -100V$
- $I_C = -5A$ Continuous Collector Current
- $I_{CM} = -10A$ Peak Collector Current
- $R_{SAT} = 67m\Omega$ Typical for Low Equivalent On Resistance
- Low Saturation Voltage
- High Gain Hold-Up (100 min @ 1A)
- **Lead-Free Finish; RoHS Compliant (Note 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

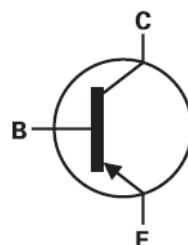
- Case: TO252 (DPAK)
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin; Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.34 grams (Approximate)

Application

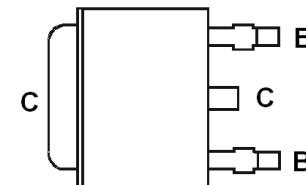
- DC-DC Converters
- Power Switches
- Motor Control
- Automotive Circuits
- Inverter Circuits



Top View



Device Schematic


Pin Out Configuration
Top view

Ordering Information (Note 4)

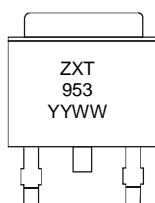
Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZXT953KTC	AEC-Q101	ZXT953	13	16	2,500

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

TO252



ZXT
953
YYWW

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

Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	2.1	W
		3.2	
		4.2	
Thermal Resistance, Junction to Ambient Air	$\text{R}_{\theta JA}$	59	°C/W
		39	
		30	
Thermal Resistance, Junction to Leads	$\text{R}_{\theta JL}$	1.8	°C/W
Operating and Storage Temperature Range	$\text{T}_J, \text{T}_{\text{STG}}$	-55 to +150	°C

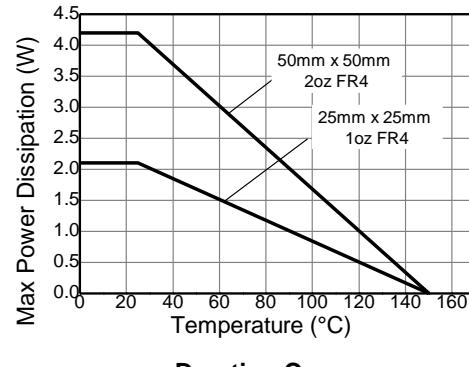
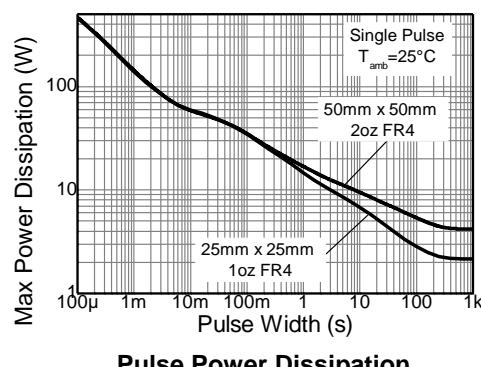
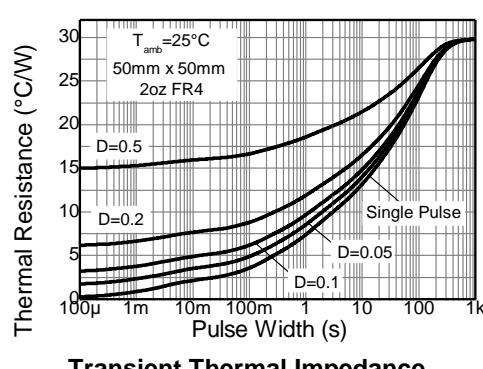
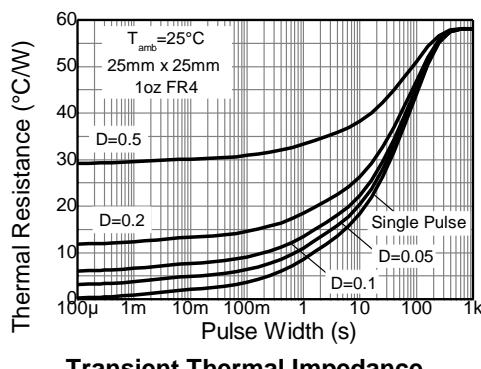
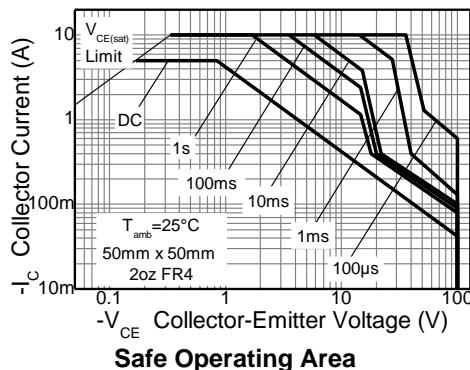
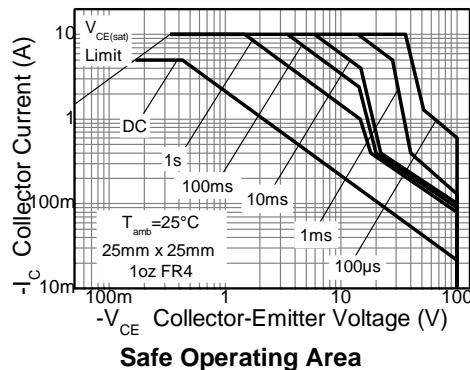
ESD Ratings (Note 9)

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:

5. 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.
6. Same as Note 5, except the device is mounted on 50mm x 50mm with 1oz copper.
7. Same as Note 5, except the device is mounted on 50mm x 50mm with 2oz copper.
8. Thermal resistance from junction to solder-point (at the end of the collector lead).
9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information

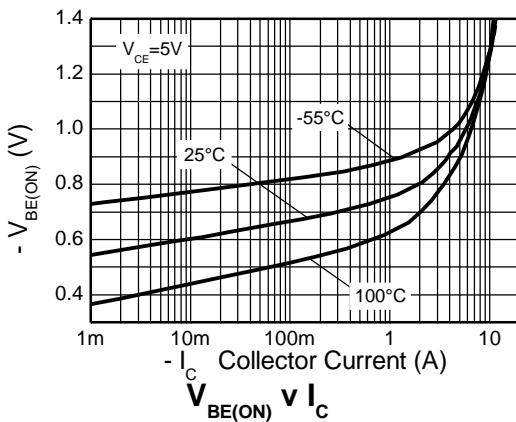
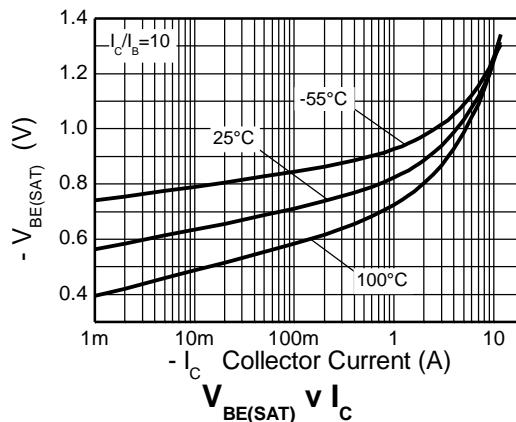
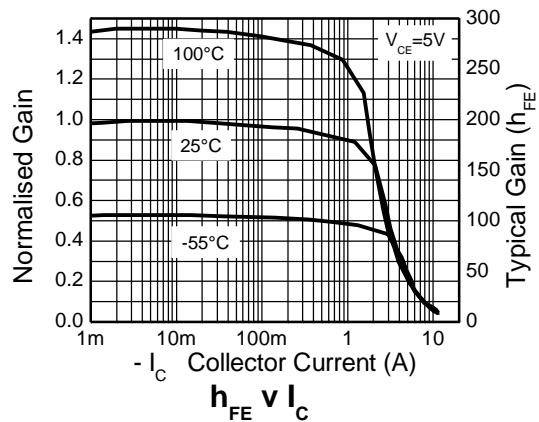
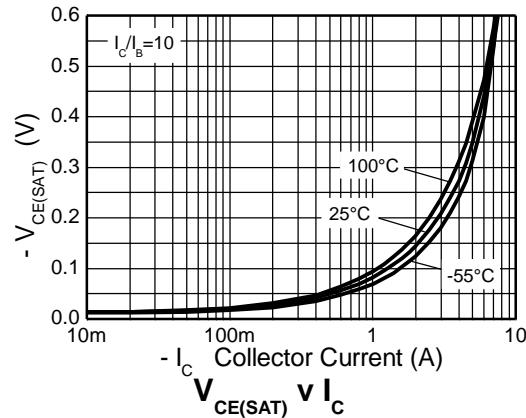
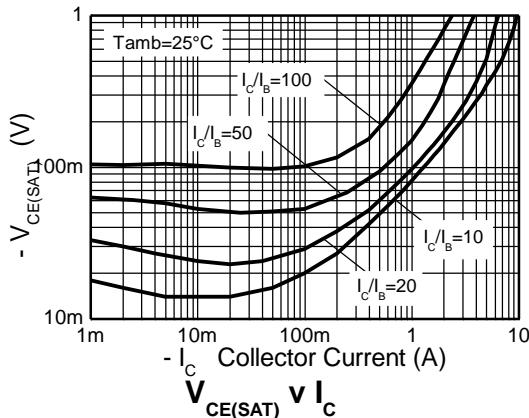


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-140	-170	-	V	$I_C = -100\mu\text{A}$
Collector-Base Breakdown Voltage	BV_{CER}	-140	-170	-	V	$I_C = -1\mu\text{A}, R_{\text{BE}} \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	-100	-125	-	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.1	-	V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}	-	<1	-20	nA	$V_{\text{CB}} = -100\text{V}$
Emitter Cut-Off Current	I_{EBO}	-	<1	-10	nA	$V_{\text{EB}} = -6\text{V}$
Emitter Cut-Off Current	I_{CER}	-	<1	-20	nA	$V_{\text{CE}} = -100\text{V}, R_{\text{BE}} \leq 1\text{k}\Omega$
DC Current Transfer Static Ratio (Note 10)	h_{FE}	100	220	-		$I_C = -10\text{mA}, V_{\text{CE}} = -1\text{V}$
		100	200	300	-	$I_C = -1\text{A}, V_{\text{CE}} = -1\text{V}$
		50	85	-		$I_C = -3\text{A}, V_{\text{CE}} = -1\text{V}$
		15	30	-		$I_C = -5\text{A}, V_{\text{CE}} = -1\text{V}$
Collector-Emitter Saturation Voltage (Note 10)	$V_{\text{CE}(\text{sat})}$	-	-20	-30		$I_C = -0.1\text{A}, I_B = -10\text{mA}$
		-	-80	-100		$I_C = -1\text{A}, I_B = -100\text{mA}$
		-	-140	-175		$I_C = -2\text{A}, I_B = -200\text{mA}$
		-	-335	-390		$I_C = -5\text{A}, I_B = -500\text{mA}$
Base-Emitter Saturation Voltage (Note 10)	$V_{\text{BE}(\text{sat})}$	-	-1.01	-1.1	V	$I_C = -5\text{A}, I_B = -500\text{mA}$
Base-Emitter Turn-On Voltage (Note 10)	$V_{\text{BE}(\text{on})}$	-	-0.94	-1.05	V	$I_C = -5\text{A}, V_{\text{CE}} = -1\text{V}$
Transitional Frequency	f_T	-	125	-	MHz	$I_C = -100\text{mA}, V_{\text{CE}} = -10\text{V}$ $f = 50\text{MHz}$
Output Capacitance	C_{OBO}	-	65	-	pF	$V_{\text{CB}} = -10\text{V}, f = 1\text{MHz},$
Switching Times	t_{ON}	-	110	-	nS	$I_C = -2\text{A}, V_{\text{CC}} = -10\text{V},$
	t_{OFF}	-	460	-		$I_{B1} = I_{B2} = -200\text{mA}$

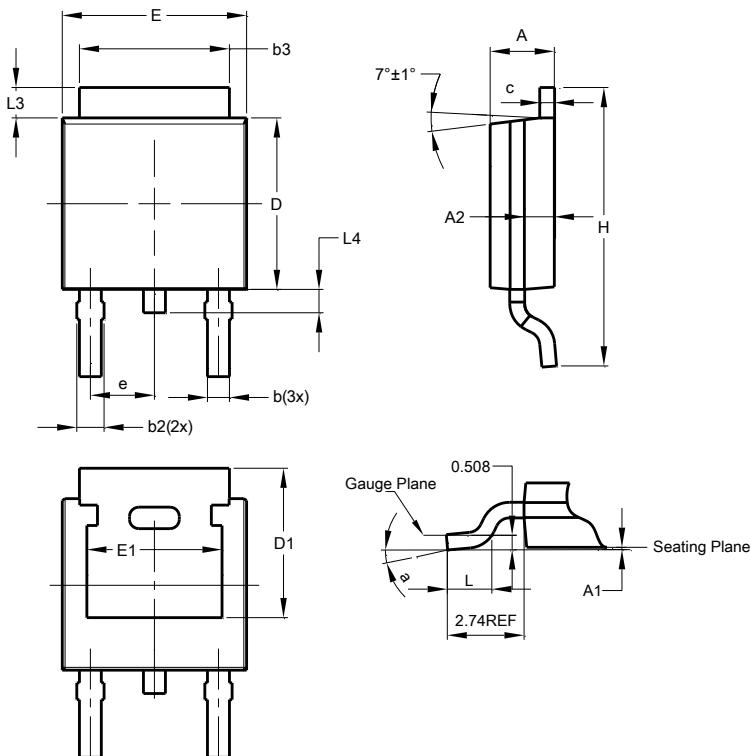
Note: 10. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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.

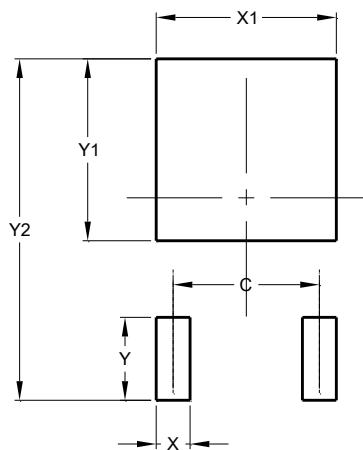


TO252 (DPAK)			
Dim	Min	Max	Typ
A	2.19	2.39	2.29
A1	0.00	0.13	0.08
A2	0.97	1.17	1.07
b	0.64	0.88	0.783
b2	0.76	1.14	0.95
b3	5.21	5.46	5.33
c	0.45	0.58	0.531
D	6.00	6.20	6.10
D1	5.21	-	-
e	-	-	2.286
E	6.45	6.70	6.58
E1	4.32	-	-
H	9.40	10.41	9.91
L	1.40	1.78	1.59
L3	0.88	1.27	1.08
L4	0.64	1.02	0.83
a	0°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