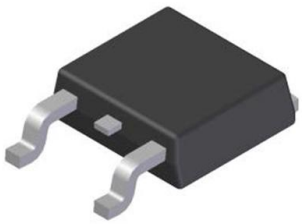
ZXT953KTC Datasheet



DiGi Electronics Part Number	ZXT953KTC-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	ZXT953KTC
Description	TRANS PNP 100V 5A TO252-3
Detailed Description	Bipolar (BJT) Transistor PNP 100 V 5 A 125MHz 4.2 W Surface Mount TO-252-3

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
ZXT953KTC	Diodes Incorporated
Series:	Product Status:
-	Active
Transistor Type:	Current - Collector (Ic) (Max):
PNP	5 A
Voltage - Collector Emitter Breakdown (Max):	Vce Saturation (Max) @ Ib, Ic:
100 V	390mV @ 500mA, 5A
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
20nA (ICBO)	100 @ 1A, 1V
Power - Max:	Frequency - Transition:
4.2 W	125MHz
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
TO-252-3, DPAK (2 Leads + Tab), SC-63	TO-252-3
Base Product Number:	
ZXT953	

Environmental & Export classification

RoHS Status:	Moisture Sensitivity Level (MSL):
ROHS3 Compliant	1 (Unlimited)
REACH Status:	ECCN:
REACH Unaffected	EAR99
HTSUS:	
8541.29.0075	

A Product Line of
Diodes Incorporated

ZXT953K

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} = 67mΩ 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**

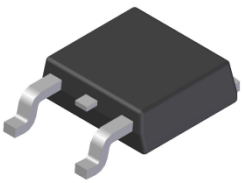
Mechanical Data

- 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)

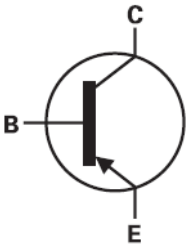
Application

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

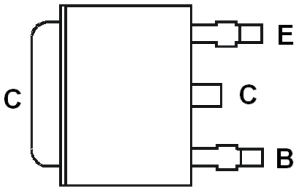
TO252



Top View



Device Schematic



Pin Out Configuration
Top view

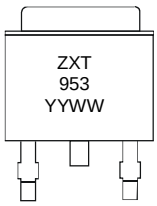
Ordering Information (Note 4)

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



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.)

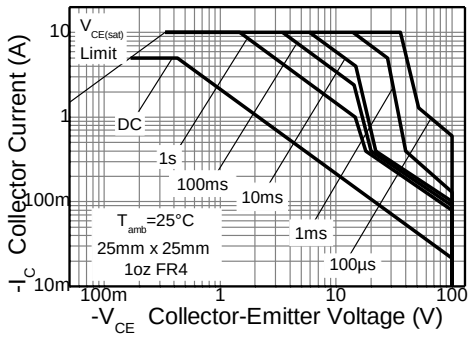
Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P_D	2.1	W
	(Note 6)		3.2	
	(Note 7)		4.2	
Thermal Resistance, Junction to Ambient Air	(Note 5)	$R_{\theta JA}$	59	°C/W
	(Note 6)		39	
	(Note 7)		30	
Thermal Resistance, Junction to Leads	(Note 8)	$R_{\theta JL}$	1.8	°C/W
Operating and Storage Temperature Range		T_J,T_{STG}	-55 to +150	°C

ESD Ratings (Note 9)

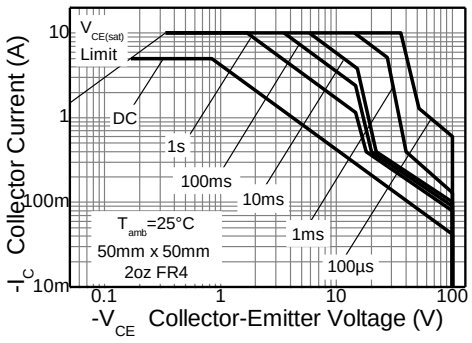
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:
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.

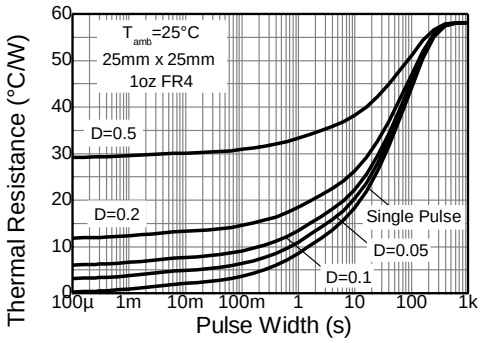
Thermal Characteristics and Derating Information



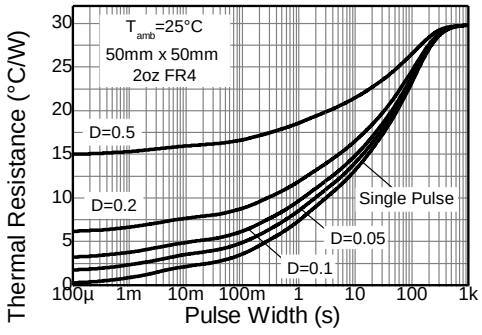
Safe Operating Area



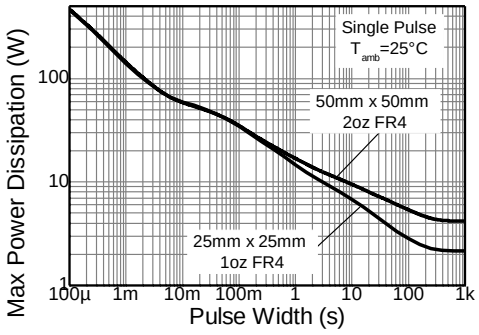
Safe Operating Area



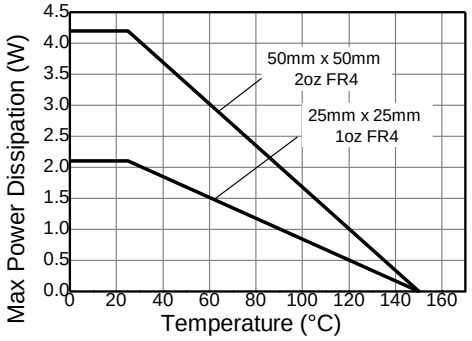
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



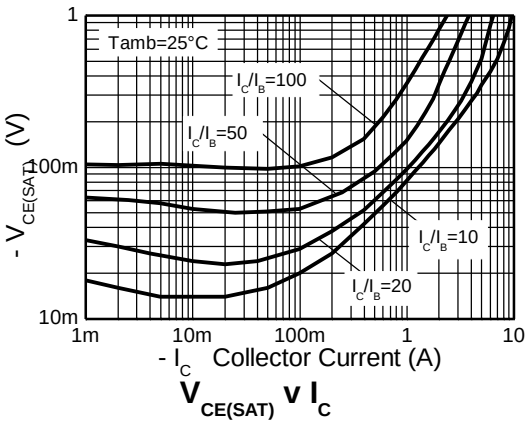
Derating Curve

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

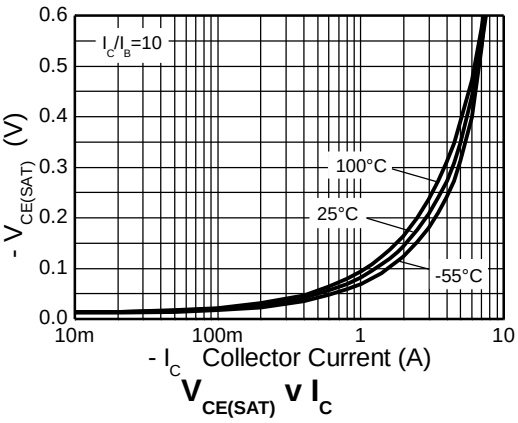
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-140	-170	-	V	I_C = -100µA
Collector-Base Breakdown Voltage	BV_{CER}	-140	-170	-	V	I_C = -1µA, R_{BE} ≤1kΩ
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	-100	-125	-	V	I_C = -10mA
Emitter-Base Breakdown 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%.

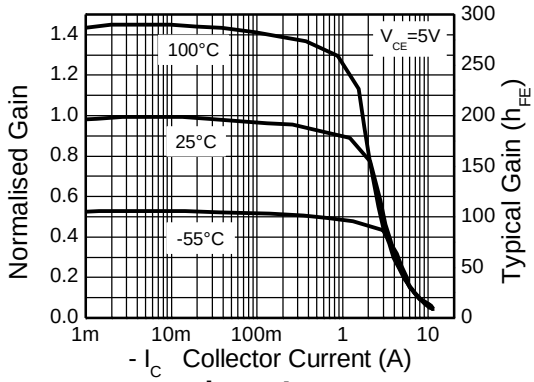
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



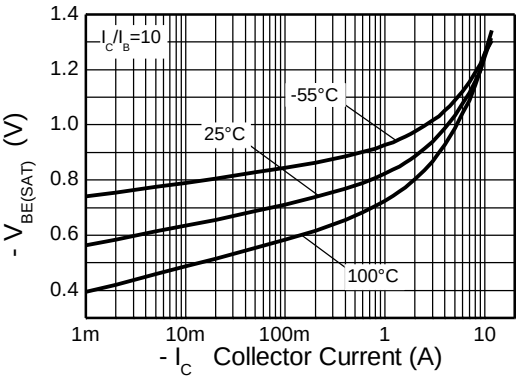
$V_{CE(SAT)}$ v I_C



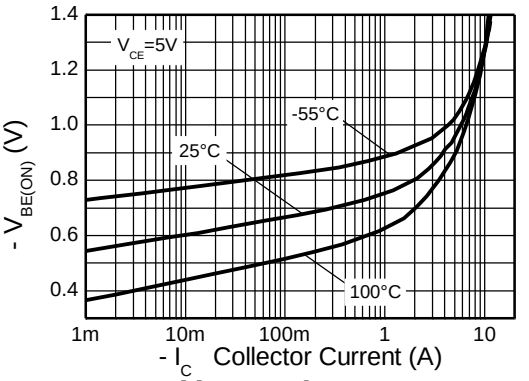
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

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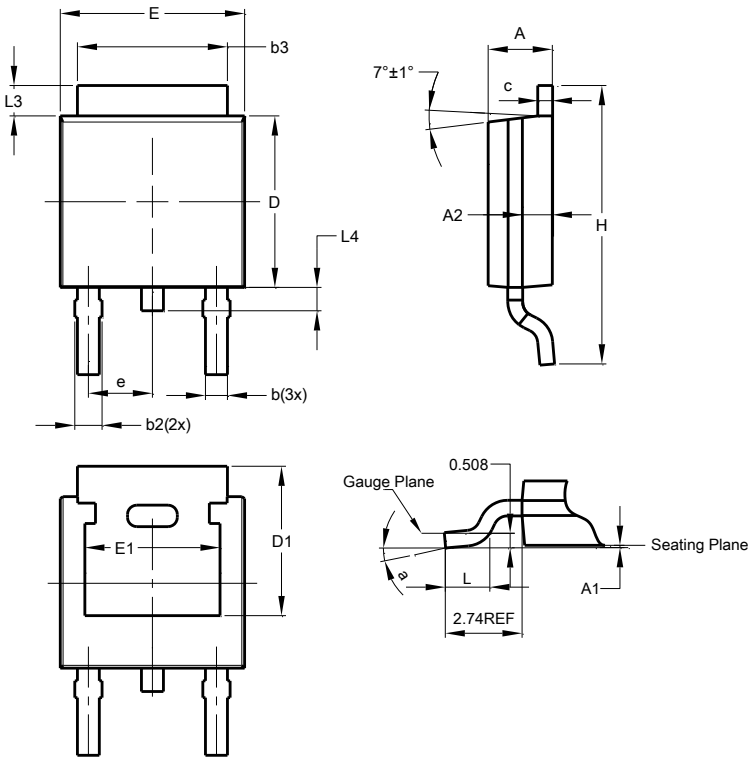
ZXT953K

Package Outline Dimensions

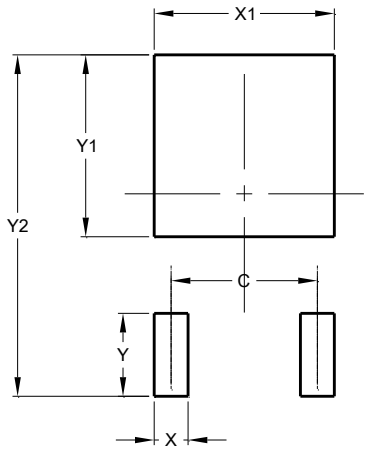
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



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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ZXT953K

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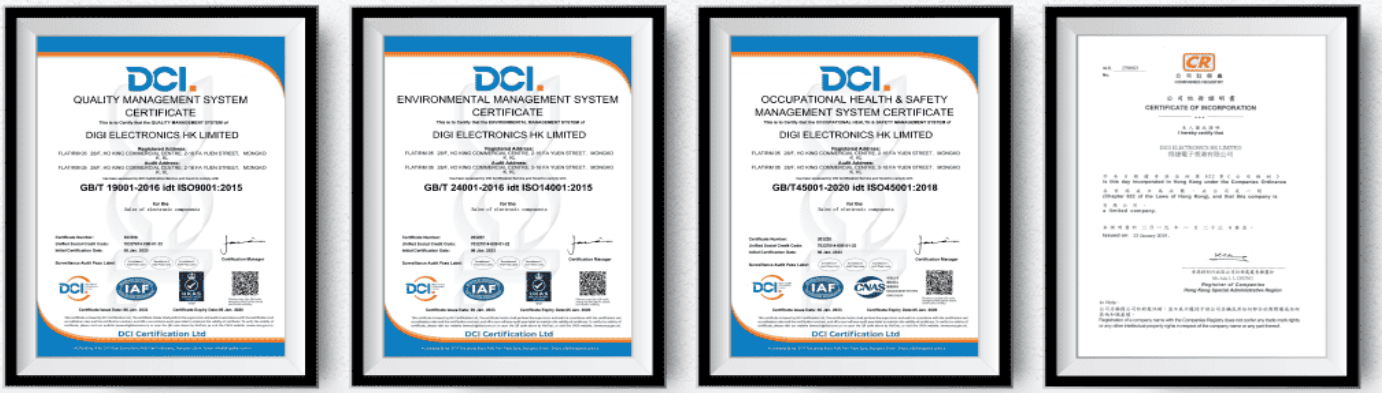

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