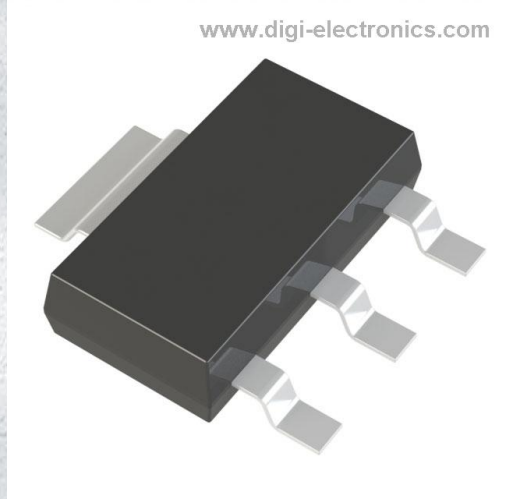
ZX5T953GTA Datasheet



https://www.DiGi-Electronics.com

DiGi Electronics Part Number	ZX5T953GTA-DG
Manufacturer	Diodes Incorporated
Manufacturer Product Number	ZX5T953GTA
Description	TRANS PNP 100V 5A SOT223-3
Detailed Description	Bipolar (BJT) Transistor PNP 100 V 5 A 125MHz 3 W Surface Mount SOT-223-3

Tel: +00 852-30501935

RFQ Email: Info@DiGi-Electronics.com

Purchase and inquiry

Manufacturer Product Number:	Manufacturer:
ZX5T953GTA	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	340mV @ 400mA, 4A
Current - Collector Cutoff (Max):	DC Current Gain (hFE) (Min) @ Ic, Vce:
20nA (ICBO)	100 @ 1A, 1V
Power - Max:	Frequency - Transition:
3 W	125MHz
Operating Temperature:	Mounting Type:
-55°C ~ 150°C (TJ)	Surface Mount
Package / Case:	Supplier Device Package:
TO-261-4, TO-261AA	SOT-223-3
Base Product Number:	
ZX5T953	

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

ZX5T953G

100V PNP MEDIUM POWER TRANSISTOR IN SOT223

Features

- BV_{CEO} > -100V
- I_C = -5A High Continuous Collector Current
- I_{CM} = -10A Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)}$ < -90mV @ -1A
- R_{SAT} = 60mΩ for a Low equivalent On-Resistance
- h_{FE} Specified up to -10A for a High Gain Hold-Up
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

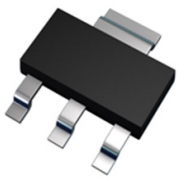
Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic. "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 e3
- Weight: 0.112 grams (Approximate)

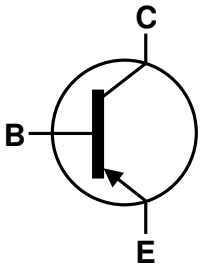
Applications

- Motor Driving
- Line Switching
- High Side Switches
- Subscriber Line Interface Cards (SLIC)

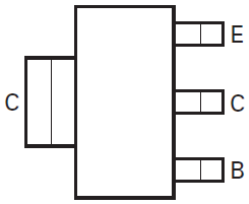
SOT223



Top View



Device Symbol



Top View
Pin-Out

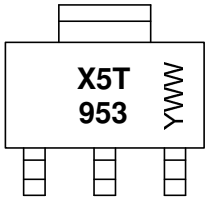
Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
ZX5T953GTA	AEC-Q101	X5T953	7	12	1,000
ZX5T953GQTA	Automotive	X5T953	7	12	1,000

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. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified.
5. For packaging details, go to our website at http:// www.diodes.com/products/packages.html.

Marking Information

SOT223



X5T953 = Product Type Marking Code
YWW = Date Code Marking
Y or $\overline{Y}$ = Last Digit of Year (ex: 5= 2015)
WW or $\overline{W}W$ = Week Code (01~53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-140	V
Collector-Emitter Voltage	V_{CEO}	-100	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-5	A
Peak Pulse Current	I_{CM}	-10	A

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

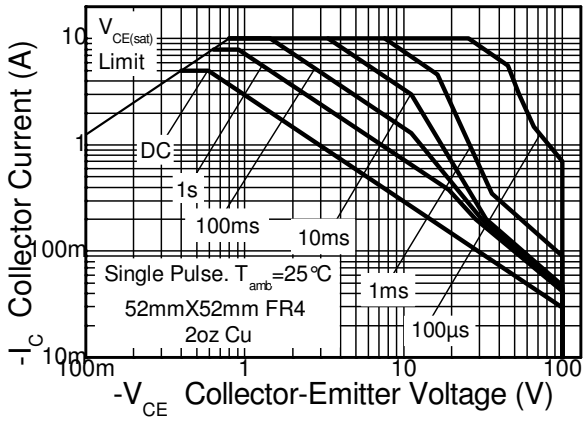
Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 6)	P_D	3.0 24	W mW / °C
	(Note 7)		1.6 12.8	
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{\theta JA}$	42	°C/W
	(Note 7)	$R_{\theta JA}$	78	
Thermal Resistance Junction to Lead	(Note 8)	$R_{\theta JL}$	10.4	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 9)

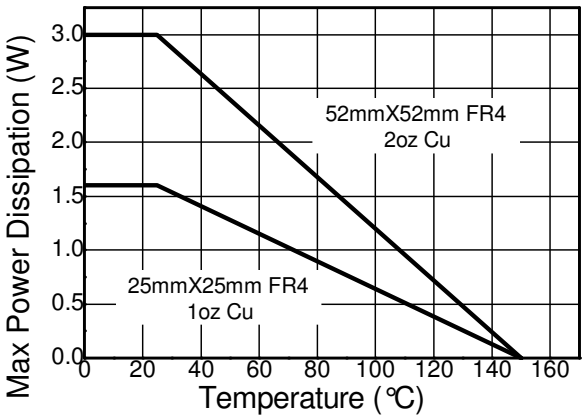
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:
6. For a device mounted with the collector lead on 52mm x 52mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
7. Same as Note 5, except the device is mounted on 25mm x 25mm 1oz 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.

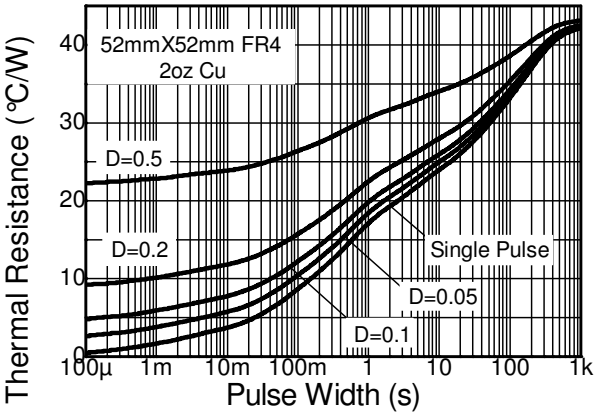
Thermal Characteristics and Derating Information



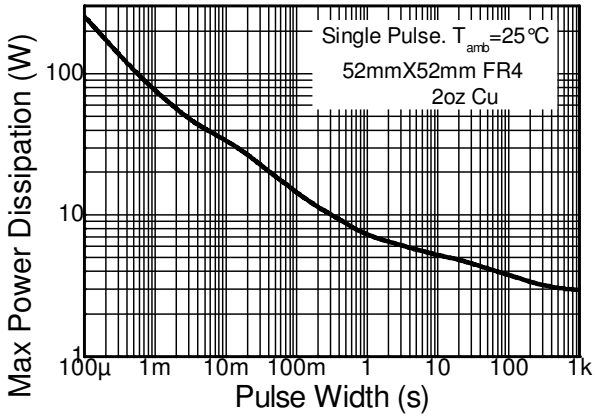
Safe Operating Area



Derating Curve



Transient Thermal Impedance



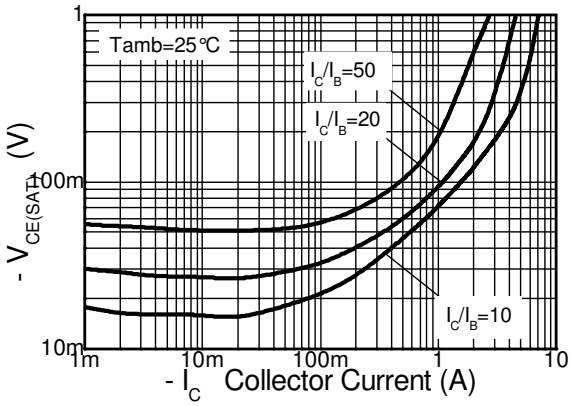
Pulse Power Dissipation

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

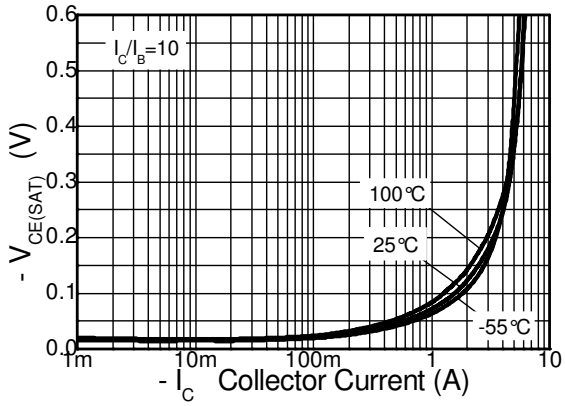
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-140	-160	-	V	I_C = -100µA
Collector-Emitter Breakdown Voltage	BV_{CER}	-140	-160	-	V	I_C = -1µA, RB ≤ 1kΩ
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	-100	-115	-	V	I_C = -1mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.1	-	V	I_E = -100µA
Collector-Base Cut-Off Current	I_{CBO}	-	<1 -	-20 -0.5	nA µA	V_{CB} = -100V V_{CB} = -100V, T_A = +100°C
Collector-Emitter Cut-Off Current	I_{CER} R ≤ 1kΩ	-	<1 -	-20 -0.5	nA µA	V_{CB} = -100V V_{CB} = -100V, T_A = +100°C
Emitter Cut-Off Current	I_{EBO}	-	<1	-10	nA	V_{EB} = -6V
Static Forward Current Transfer Ratio (Note 10)	h_{FE}	100	250	-	-	I_C = -10mA, V_{CE} = -1V
		100	200	300		I_C = -1A, V_{CE} = -1V
		25	50	-		I_C = -3A, V_{CE} = -1V
		15	30	-		I_C = -4A, V_{CE} = -1V
		-	5	-		I_C = -10A, V_{CE} = -1V
Collector-Emitter Saturation Voltage (Note 10)	$V_{CE(sat)}$	-	-20	-30	mV	I_C = -100mA, I_B = -10mA
		-	-70	-90		I_C = -1A, I_B = -100mA
		-	-120	-150		I_C = -2A, I_B = -200mA
		-	-240	-340		I_C = -4A, I_B = -400mA
Base-Emitter Saturation Voltage (Note 10)	$V_{BE(sat)}$	-	-985	-1100	mV	I_C = -4A, I_B = -400mV
Base-Emitter Turn-On Voltage (Note 10)	$V_{BE(on)}$	-	-920	-1050	mV	I_C = -4A, V_{CE} = -2V
Output Capacitance (Note 10)	C_{obo}	-	42	-	pF	V_{CB} = -10V. f = 1MHz
Transition Frequency	f_T	-	125	-	MHz	V_{CE} = -10V, I_C = -100mA f = 50MHz
Switching Time	t_{on}	-	42	-	ns	V_{CC} = -10V, I_C = -1A I_{B1} = I_{B2} = -100mA
	t_{off}	-	540	-		

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

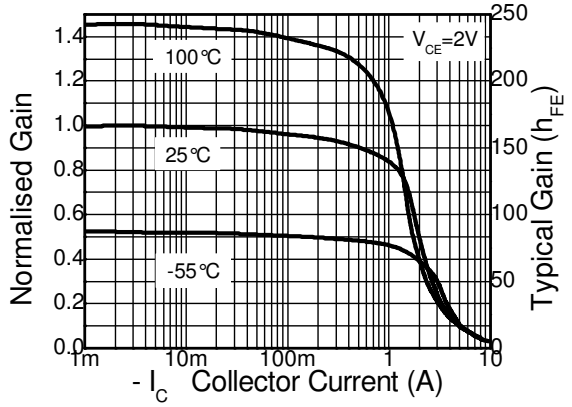
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



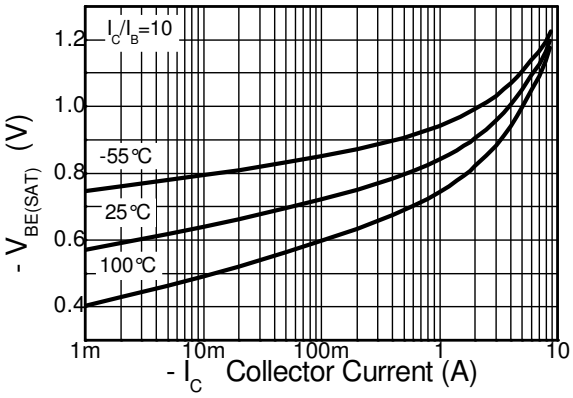
$V_{CE(SAT)}$ v I_C



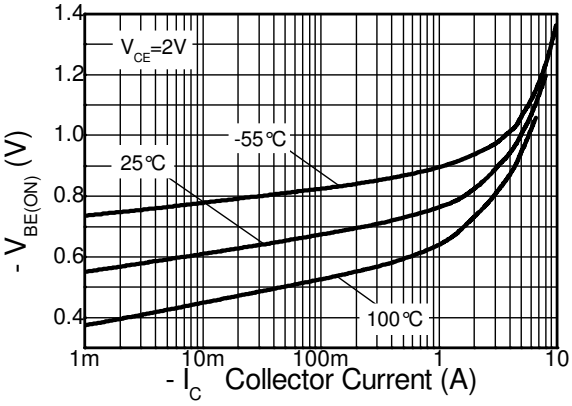
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

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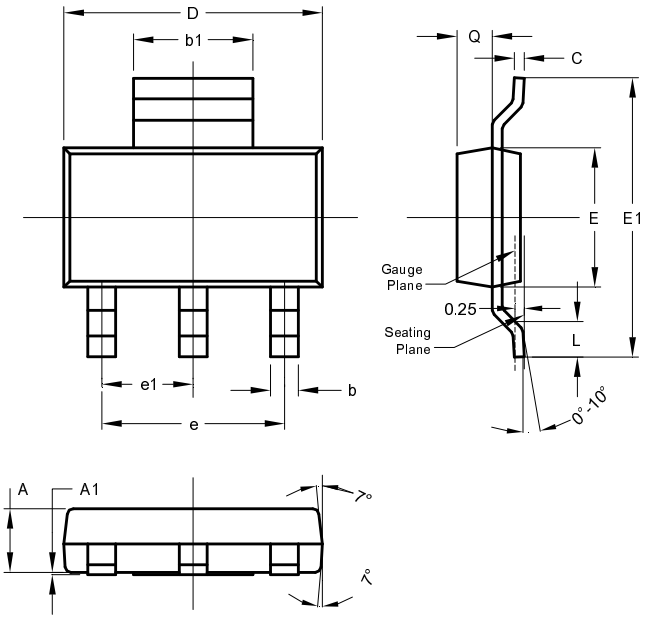
Package Outline Dimensions

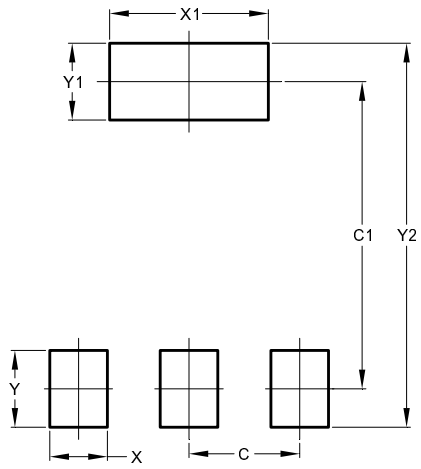
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT223			
Dim	**Min**	**Max**	**Typ**
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b	0.60	0.80	0.70
b1	2.90	3.10	3.00
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	-	-	4.60
e1	-	-	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89
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	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

Note: 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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ZX5T953G

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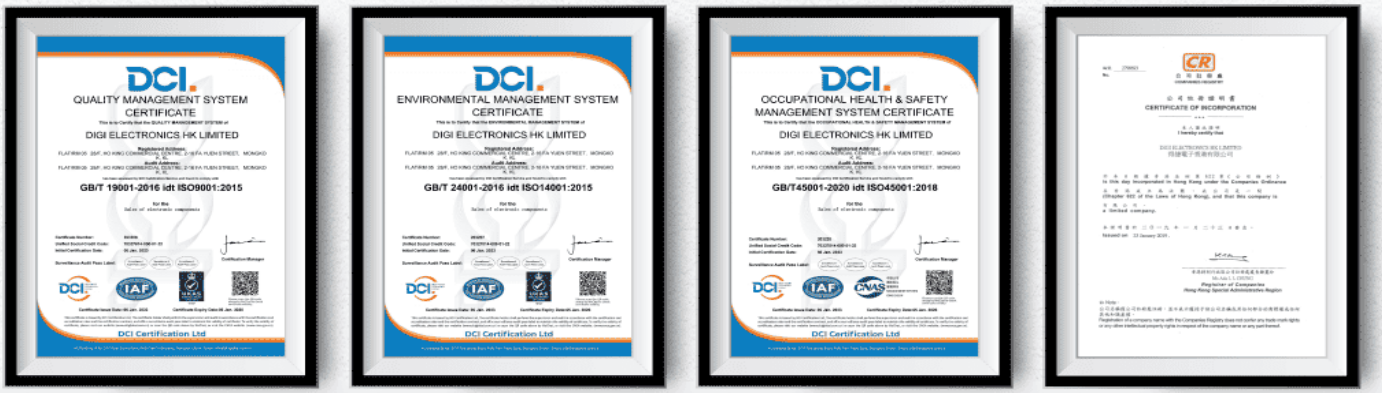

Tel: +00 852-30501935

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