ANTREX Electronics

Electronic Components Sourcing Information

Product Reference Information

Part Number:	ZX5T951GQTC
Manufacturer:	Diodes Incorporated
Package:	TO-261-4, TO-261AA
Availability:	Please confirm with sales

Product Page:

https://antrexco.com/product/details/diodes-incorporated/zx5t951gqtc.html

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Contact Information

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Quality & Trust

New & Original Components

Supplier verification and packaging condition review

CoC / RoHS / REACH documents available on request

Secure sourcing support for OEM / EMS projects

Note:

This PDF includes an ANTREX product reference cover page.

The original manufacturer datasheet follows from the next page.

60V PNP MEDIUM POWER LOW SATURATION TRANSISTOR IN SOT223

Description

This bipolar junction transistor (BJT) is designed to meet the stringent requirements of automotive applications.

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)

Features

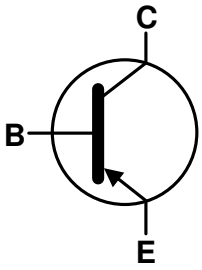
- BV_{CEO} > -60V
- I_C = -5.5A High Continuous Collector Current
- I_{CM} = -15A Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)}$ < -70mV @ -1A
- R_{SAT} = 39mΩ for a Low Equivalent On-Resistance
- h_{FE} Specified Up to -10A for a High Gain Hold Up
- Complementary NPN Type: ZX5T851GQ
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen- and Antimony-Free. "Green" Device (Note 3)**
- **The ZX5T951GQ is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF16949 certified facilities.**
  https://www.diodes.com/quality/product-definitions/

Applications

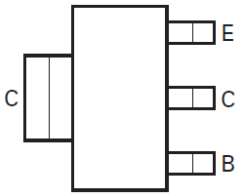
- DC-DC Converters
- MOSFET & IGBT Gate Drivers
- Charging Circuits
- Power Switches
- Motor Control

SOT223

Top View



Device Symbol



Top View
Pin-Out

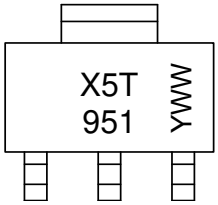
Ordering Information (Note 4)

Product	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
ZX5T951GQTC	X5T951	13	12	4000

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ 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

SOT223



X5T 951 = Product Type Marking Code
YWW = Date Code Marking
Y or $\overline{Y}$ = Last Digit of Year (ex: 0= 2020)
WW or $\overline{WW}$ = Week Code (01~53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-100	V
Collector-Emitter Voltage	V_{CEO}	-60	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-5.5	A
Peak Pulse Current	I_{CM}	-15	A

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

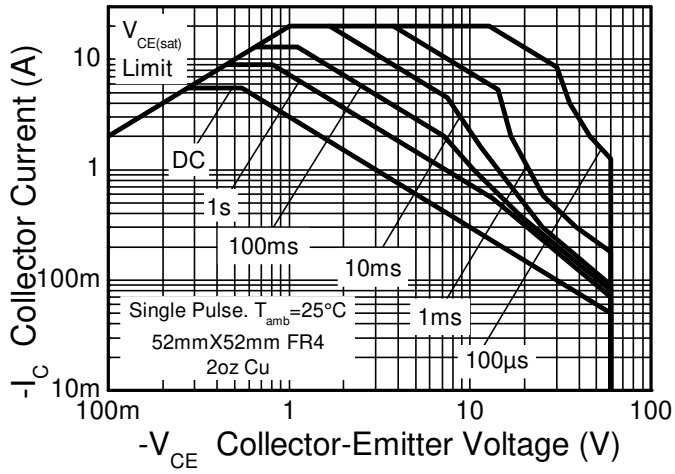
Characteristic		Symbol	Value	Unit
Power Dissipation Linear Derating Factor	(Note 5)	P_D	3.0 24	W mW /°C
	(Note 6)		1.6 12.8	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{\theta JA}$	42	°C/W
	(Note 6)	$R_{\theta JA}$	78	
Thermal Resistance Junction to Lead	(Note 7)	$R_{\theta JL}$	10.48	
Operating and Storage Temperature Range		T_J, T_{STG}	-55 to +150	°C

ESD Ratings (Note 8)

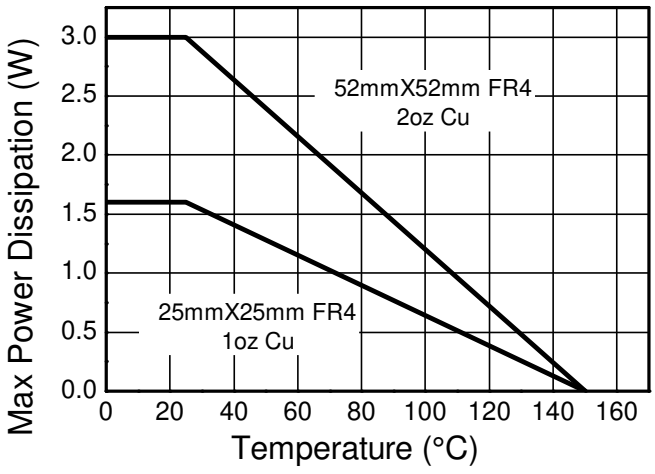
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

Notes:
5. For a device surface mounted on 52mm x 52mm x 1.6mm FR4 PCB with high coverage of single sided 2oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
6. Same as Note 5 except the device is surface mounted on 25mm x 25mm with 1oz copper.
7. Thermal resistance from junction to solder-point (at the end of the collector lead).
8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

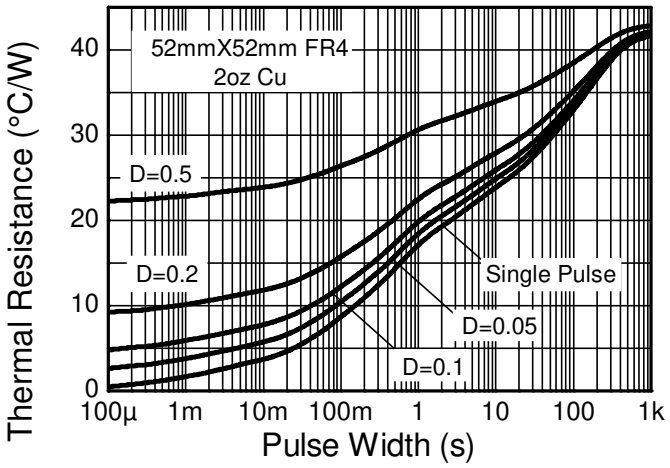
Thermal Characteristics and Derating Information



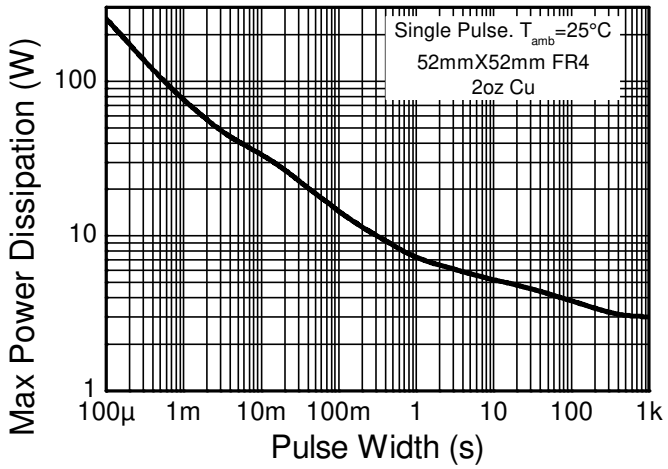
Safe Operating Area



Derating Curve



Transient Thermal Impedance



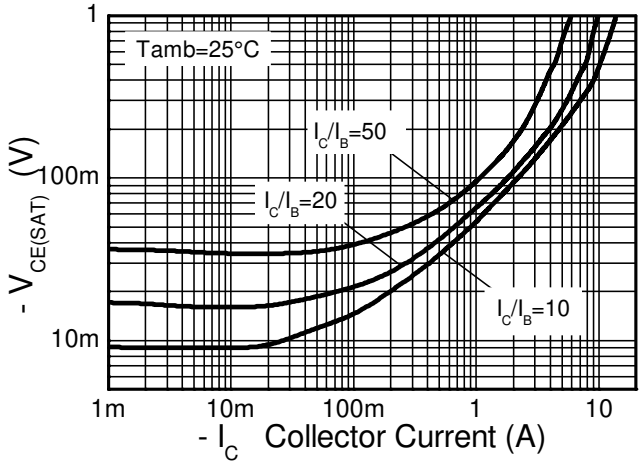
Pulse Power Dissipation

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

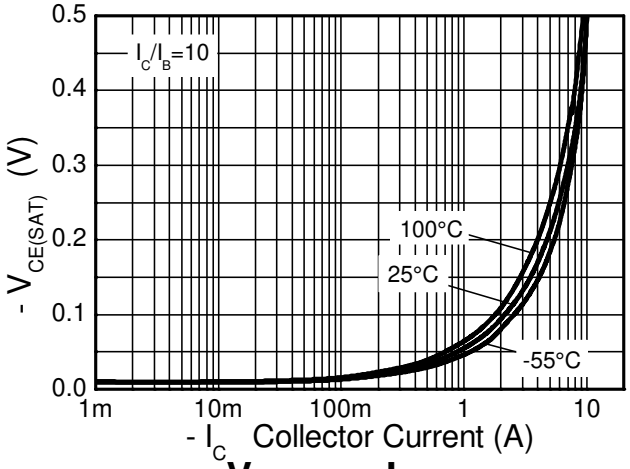
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-100	-120	—	V	I_C = -100µA
Collector-Emitter Breakdown Voltage	BV_{CER}	-100	-120	—	V	I_C = -1µA, RB ≤ 1kΩ
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	-60	-80	—	V	I_C = -10mA
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.1	—	V	I_E = -100µA
Collector-Base Cutoff Current	I_{CBO}	—	<-1 —	-20 -0.5	nA µA	V_{CB} = -80V V_{CB} = -80V, T_A = +100°C
Collector-Emitter Cutoff Current	I_{CER} R ≤ 1kΩ	—	<-1 —	-20 -0.5	nA µA	V_{CB} = -80V V_{CB} = -80V, T_A = +100°C
Emitter Cutoff Current	I_{EBO}	—	<-1	-10	nA	V_{EB} = -6V
Static Forward Current Transfer Ratio (Note 9)	h_{FE}	100	250	—	—	I_C = -10mA, V_{CE} = -1V
		100	200	300		I_C = -2A, V_{CE} = -1V
		45	90	—		I_C = -5A, V_{CE} = -1V
		10	25	—		I_C = -10A, V_{CE} = -1V
Collector-Emitter Saturation Voltage (Note 9)	$V_{CE(sat)}$	—	-15	-25	mV	I_C = -100mA, I_B = -10mA
		—	-55	-70		I_C = -1A, I_B = -100mA
		—	-90	-120		I_C = -2A, I_B = -200mA
		—	-195	-250		I_C = -5A, I_B = -500mA
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	—	-1030	-1150	mV	I_C = -5A, I_B = -500mV
Base-Emitter Turn-On Voltage (Note 9)	$V_{BE(on)}$	—	-920	-1020	mV	I_C = -5A, V_{CE} = -1V
Output Capacitance (Note 9)	C_{obo}	—	48	—	pF	V_{CB} = -10V, f = 1MHz
Transition Frequency	f_T	—	120	—	MHz	V_{CE} = -10V, I_C = -100mA f = 50MHz
Switching Time	t_{on}	—	39	—	ns	V_{CC} = -10V, I_C = -1A
	t_{off}	—	370	—		I_{B1} = -I_{B2} = -100mA

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300µs. Duty cycle ≤ 2%.

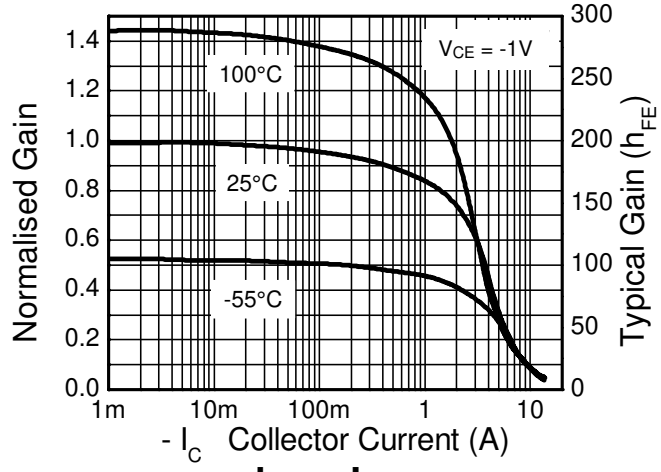
Typical Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)



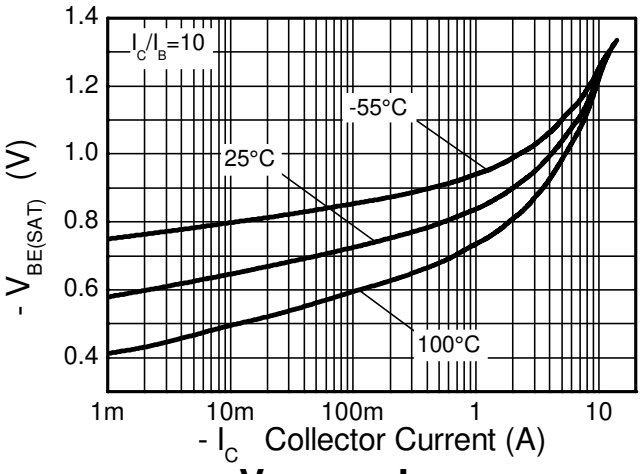
$V_{CE(SAT)}$ v I_C



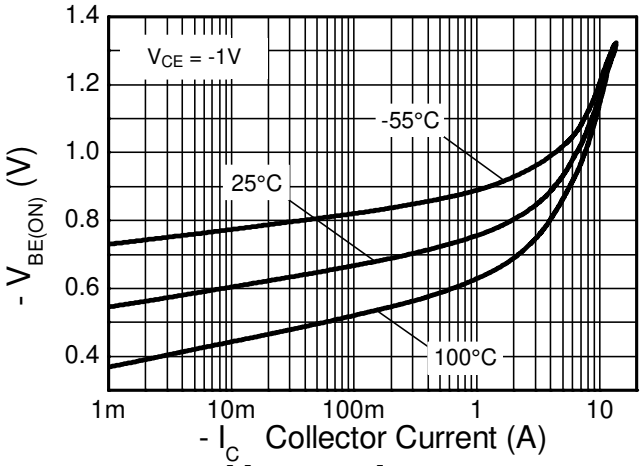
$V_{CE(SAT)}$ v I_C



h_{FE} v I_C



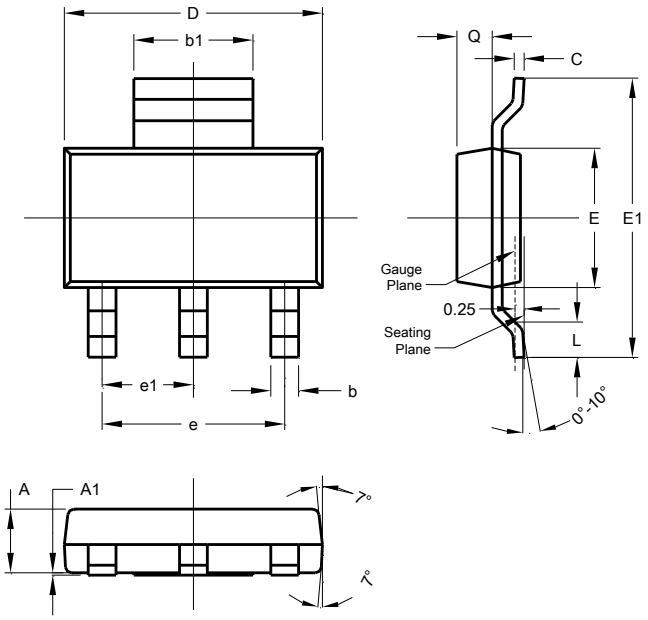
$V_{BE(SAT)}$ v I_C



$V_{BE(ON)}$ v I_C

Package Outline Dimensions

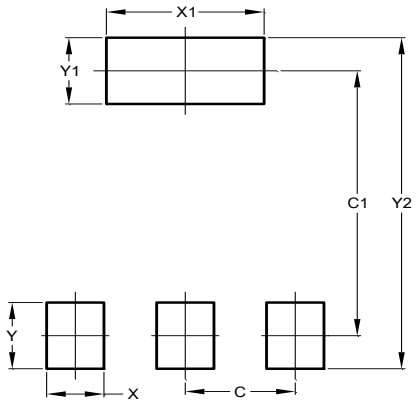
Please see http://www.diodes.com/package-outlines.html for the latest version.



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 http://www.diodes.com/package-outlines.html 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

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