

Features

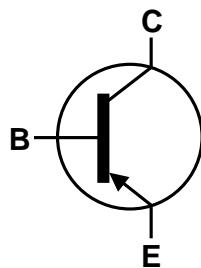
- $BV_{CEO} > -30V$
- $I_C = -5.5A$ High Continuous Collector Current
- $I_C = -20A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(SAT)} < -140mV @ -1A$
- h_{FE} Specified up to $-20A$ for a High Gain Hold-Up
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

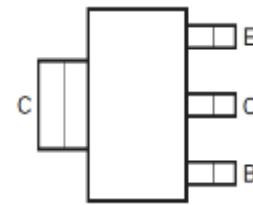
- Case: SOT223
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads; Solderable per MIL-STD-202, Method 208
- Weight: 0.112 grams (Approximate)



Top View



Device Symbol



Top View
Pin-Out

Ordering Information (Notes 4 & 5)

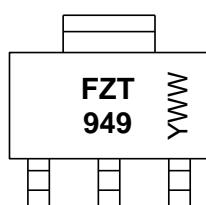
Product	Compliance	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
FZT949TA	AEC-Q101	FZT949	7	12	1,000
FZT949QTA	Automotive	FZT949	7	12	1,000

Notes:

1. EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) compliant. All applicable RoHS exemptions applied.
2. See <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. 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information

SOT223



FZT 949 = Product Type Marking Code
 YWW = Date Code Marking
 Y or \bar{Y} = Last Digit of Year (ex: 7 = 2017)
 WW or \bar{WW} = Week Code (01~53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-50	V
Collector-Emitter Voltage	V_{CEO}	-30	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-5.5	A
Peak Pulse Current	I_{CM}	-20	A

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

Characteristic	Symbol	Value	Unit
Power Dissipation Linear Derating Factor	P_D	3.0	W mW/°C
		24	
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	1.6	°C/W
		12.8	
Thermal Resistance Junction to Lead	$R_{\theta JL}$	42	
Operating and Storage Temperature Range	T_J, T_{STG}	78	
		8.8	
		-55 to +150	°C

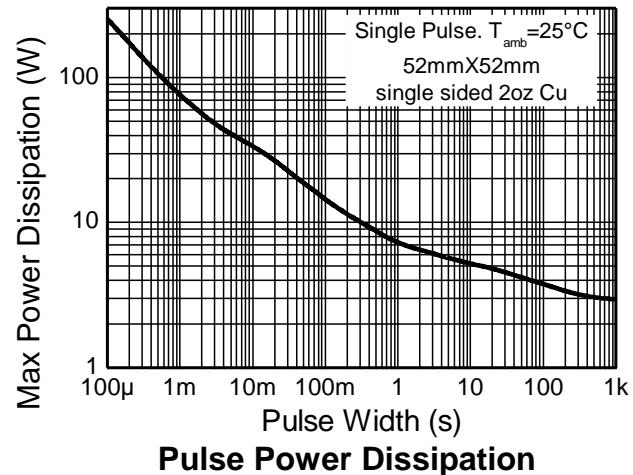
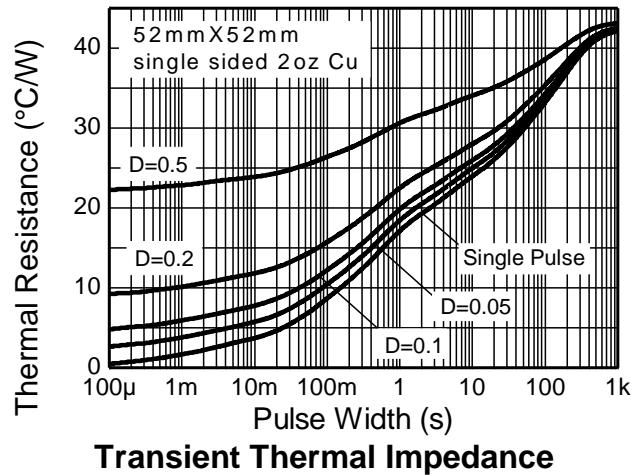
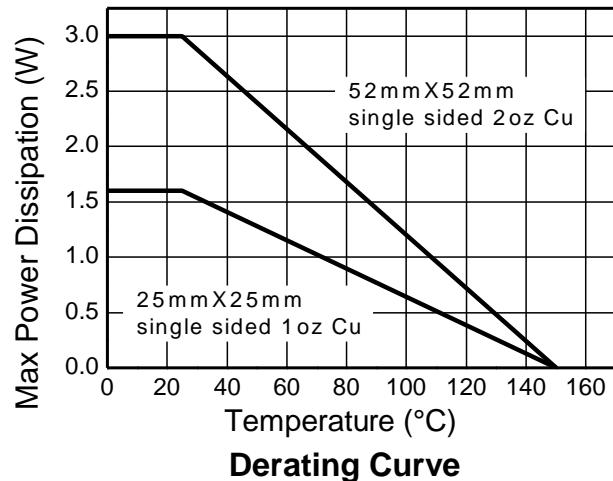
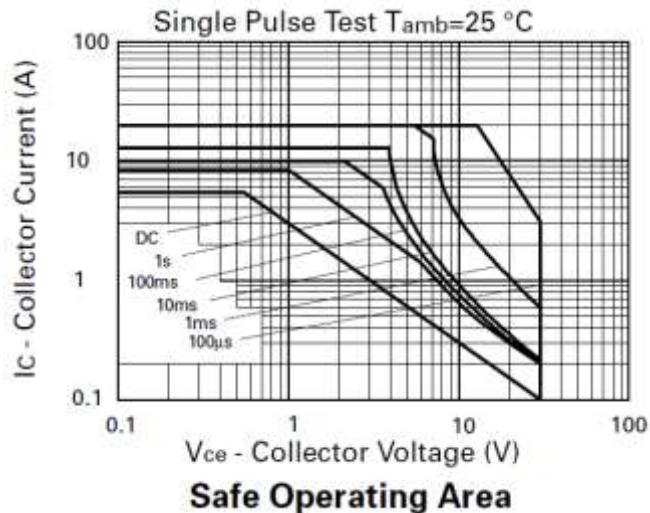
ESD Ratings (Note 9)

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 6, except 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

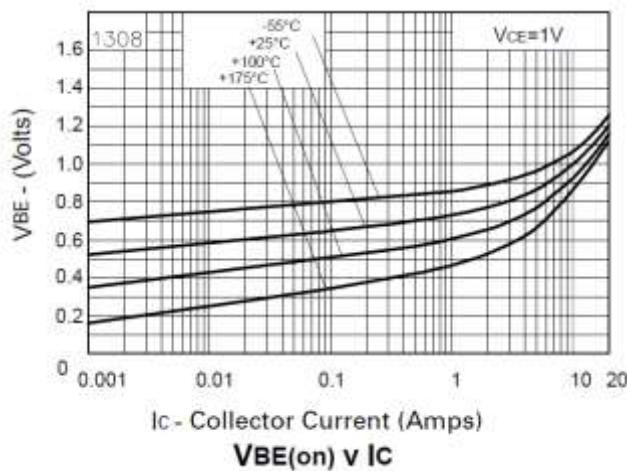
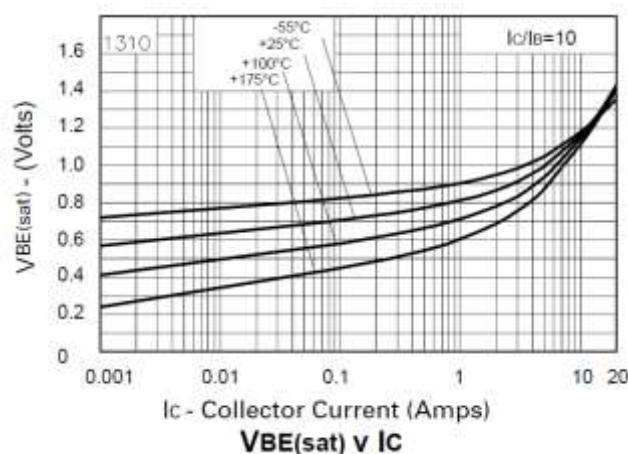
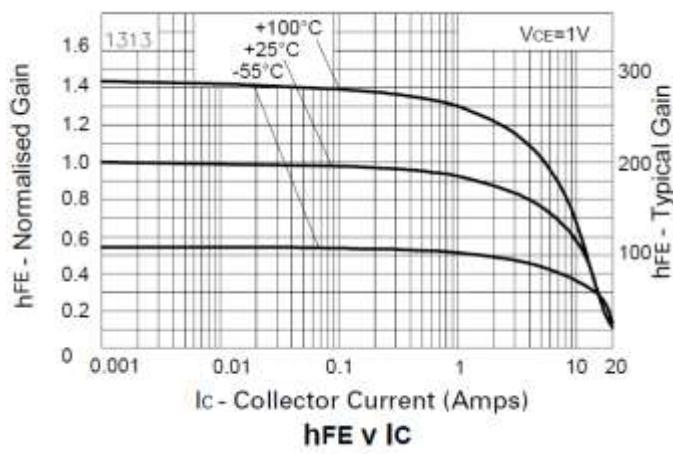
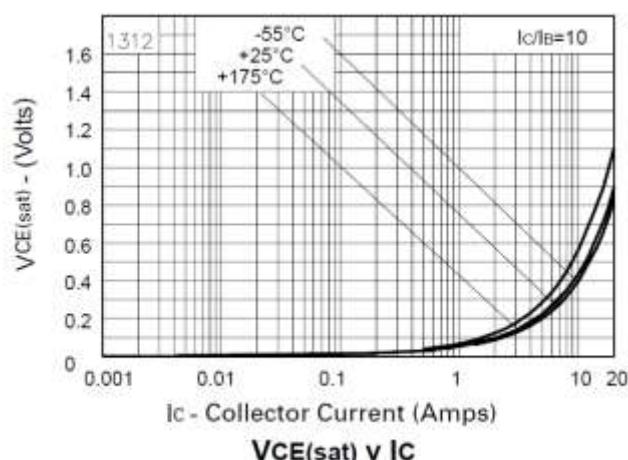
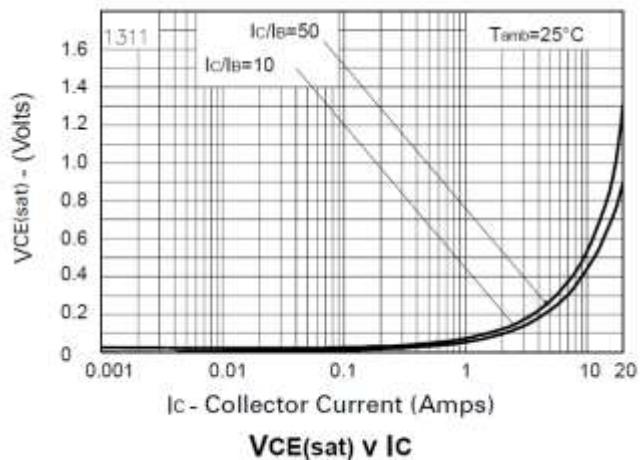


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-50	-80	—	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CER}	-50	-80	—	V	$I_C = -1\mu\text{A}$, $R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage (Note 10)	BV_{CEO}	-30	-45	—	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8	—	V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	I_{CBO}	—	—	-50 -1	nA μA	$V_{\text{CB}} = -40\text{V}$ $V_{\text{CB}} = -40\text{V}$, $T_A = +100^\circ\text{C}$
Collector Cut-Off Current	I_{CER}	—	—	-50 -1	nA μA	$V_{\text{CE}} = -40\text{V}$, $R \leq 1\text{k}\Omega$ $V_{\text{CE}} = -40\text{V}$, $T_A = +100^\circ\text{C}$
Emitter Cut-Off Current	I_{EBO}	—	—	-10	nA	$V_{\text{EB}} = -6\text{V}$
DC Current Transfer Static Ratio (Note 10)	h_{FE}	100	200	—	—	$I_C = -10\text{mA}$, $V_{\text{CE}} = -1\text{V}$
		100	200	300		$I_C = -1\text{A}$, $V_{\text{CE}} = -1\text{V}$
		75	140	—		$I_C = -5\text{A}$, $V_{\text{CE}} = -1\text{V}$
		—	35	—		$I_C = -20\text{A}$, $V_{\text{CE}} = -2\text{V}$
Collector-Emitter Saturation Voltage (Note 10)	$V_{\text{CE}(\text{SAT})}$	—	-50	-75	mV	$I_C = -500\text{mA}$, $I_B = -20\text{mA}$
		—	-85	-140		$I_C = -1\text{A}$, $I_B = -20\text{mA}$
		—	-190	-270		$I_C = -2\text{A}$, $I_B = -200\text{mA}$
		—	-350	-440		$I_C = -5.5\text{A}$, $I_B = -500\text{mA}$
Base-Emitter Saturation Voltage (Note 10)	$V_{\text{BE}(\text{SAT})}$	—	-1,100	-1,250	mV	$I_C = -5.5\text{A}$, $I_B = -500\text{mA}$
Base-Emitter Turn-On Voltage (Note 10)	$V_{\text{BE}(\text{ON})}$	—	-900	-1,060	mV	$I_C = -5.5\text{A}$, $V_{\text{CE}} = -1\text{V}$
Transitional Frequency (Note 10)	f_T	—	100	—	MHz	$I_C = -100\text{mA}$, $V_{\text{CE}} = -10\text{V}$, $f = 50\text{MHz}$
Output Capacitance	C_{OBO}	—	122	—	pF	$V_{\text{CB}} = -10\text{V}$, $f = 1\text{MHz}$
Switching Time	t_{ON}	—	120	—	ns	$V_{\text{CC}} = -10\text{V}$, $I_C = -4\text{A}$,
	t_{OFF}	—	130	—		$I_{B1} = -I_{B2} = -400\text{mA}$

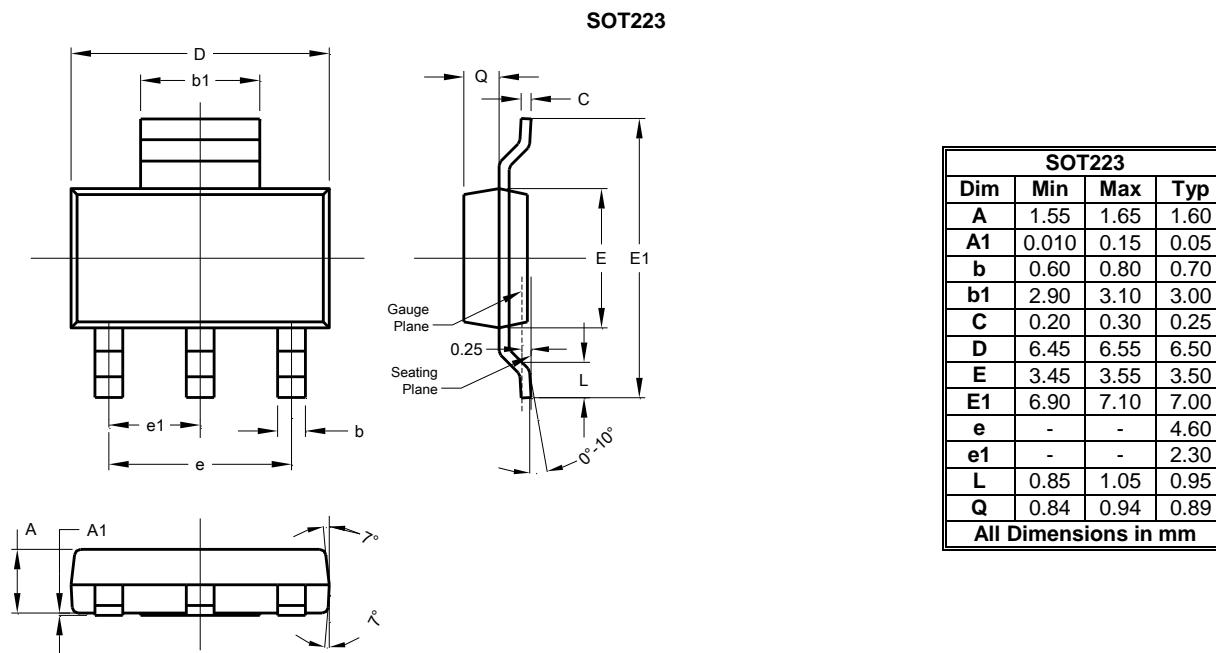
Note: 10. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

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



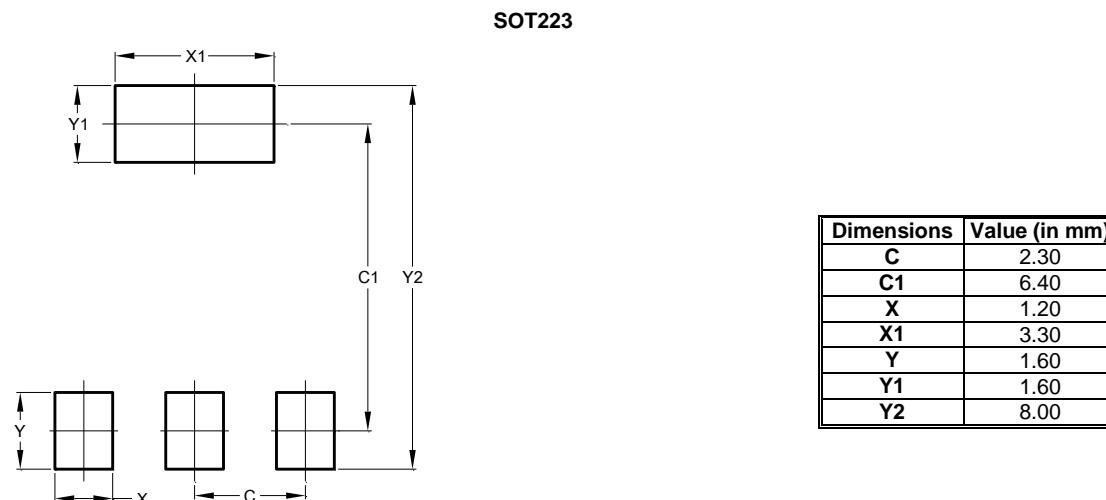
Package Outline Dimensions

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



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