



FZT956

200V PNP SILICON PLANAR MEDIUM POWER TRANSISTOR IN SOT223

Features

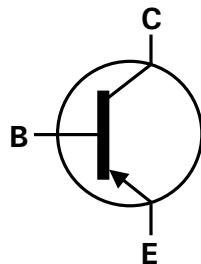
- $BV_{CEO} > -200V$
- $I_C = -2A$ high Continuous Collector Current
- $I_C = -5A$ Peak Pulse Current
- Low Saturation Voltage $V_{CE(sat)} < -165mV$ @ $-1A$
- h_{FE} specified up to $-5A$ for a high gain hold up
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability
- PPAP capable (Note 4)

Mechanical Data

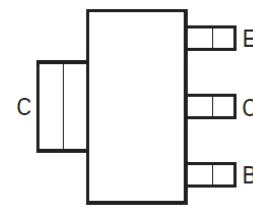
- Case: SOT223
- Case material: molded plastic. "Green" molding compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 (E3)
- Weight: 0.112 grams (approximate)



Top View



Device Symbol


Top View
Pin-Out

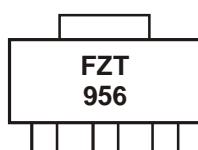
Ordering Information (Notes 4 & 5)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT956TA	AEC-Q101	FZT956	7	12	1,000
FZT956QTA	Automotive	FZT956	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> 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>.

Marking Information



FZT956 = Product Type Marking Code

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	-220	V
Collector-Emitter Voltage	V_{CEO}	-200	V
Emitter-Base Voltage	V_{EBO}	-7	V
Continuous Collector Current	I_C	-2	A
Peak Pulse Current	I_{CM}	-5	A

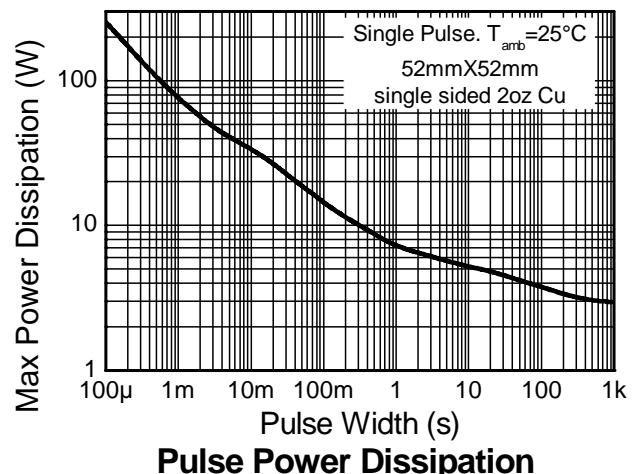
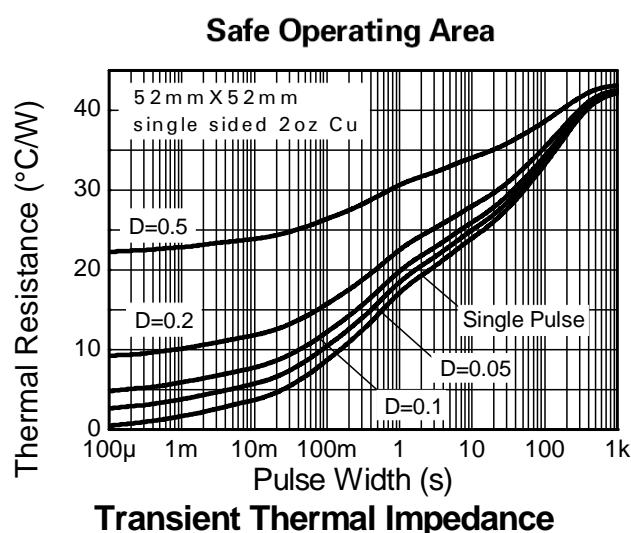
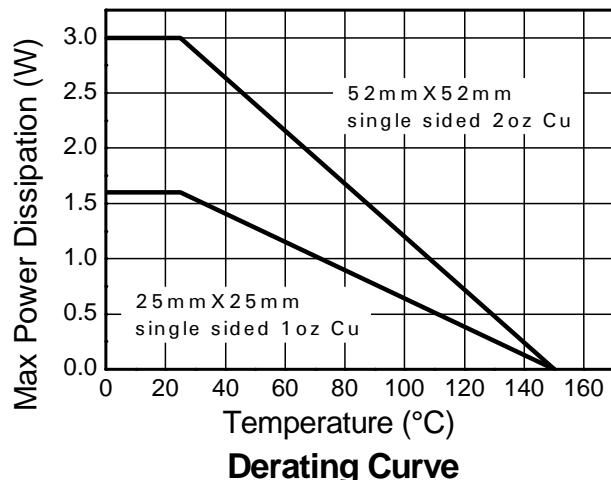
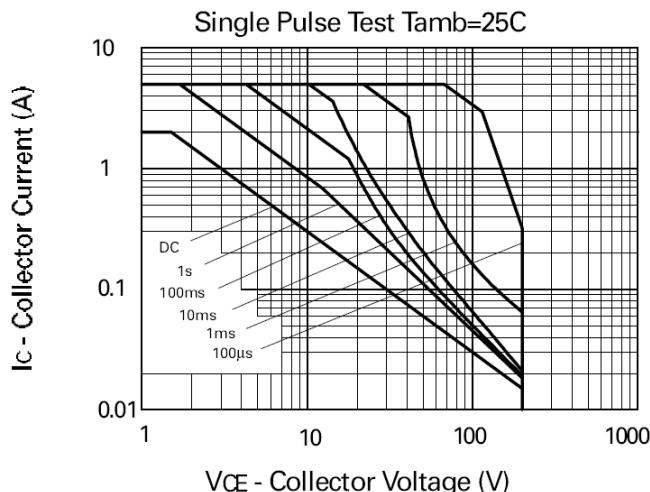
Thermal Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

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	°C/W
Operating and Storage Temperature Range	T_J, T_{STG}	78	
		8.84	
		-55 to +150	°C

Notes:

- 6. 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.
- 7. Same as note (6), except the device is surface mounted on 25mm x 25mm with 1oz copper.
- 8. Thermal resistance from junction to solder-point (at the end of the collector lead).

Thermal Characteristics and Derating Information

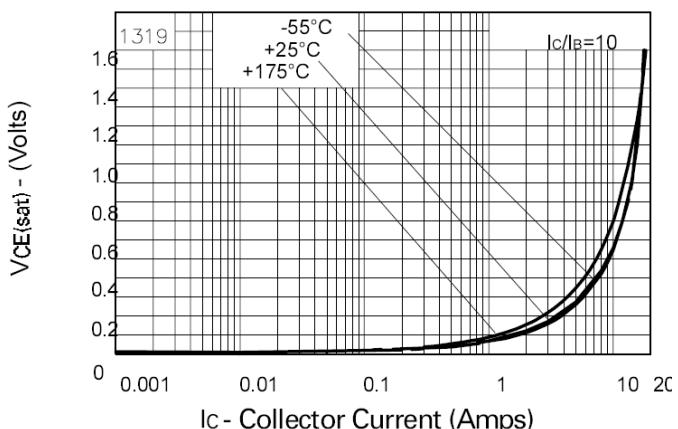
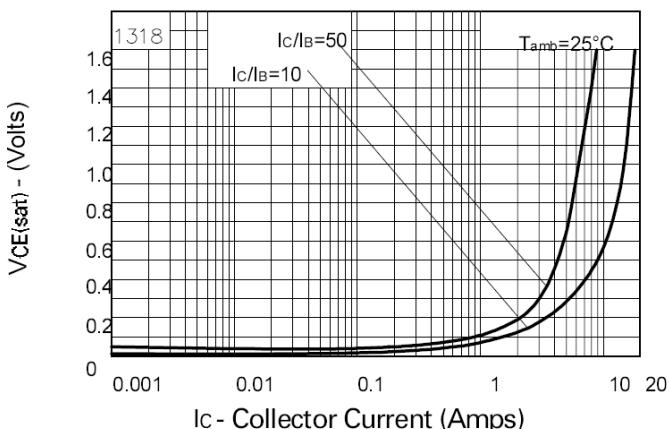


Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

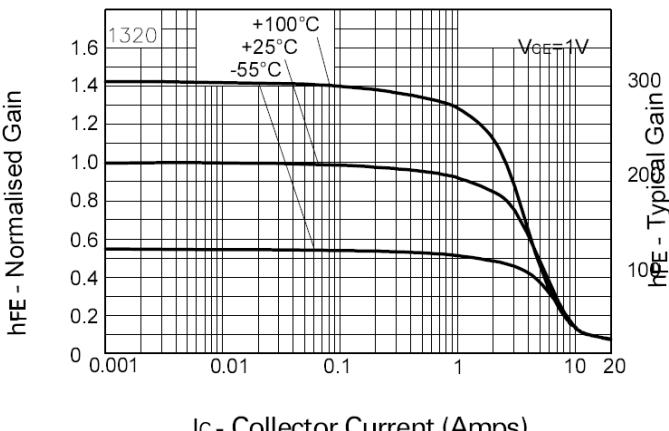
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	-220	-300	-	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CER}	-220	-300	-	V	$I_C = -1\mu\text{A}, R_B \leq 1\text{k}\Omega$
Collector-Emitter Breakdown Voltage (Note 9)	BV_{CEO}	-200	-240	-	V	$I_C = -1\text{mA}$
Emitter-Base Breakdown Voltage	BV_{EBO}	-7	-8.3	-	V	$I_E = -100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	-	-	-50 -1	nA μA	$V_{\text{CB}} = -200\text{V}$ $V_{\text{CB}} = -200\text{V}, T_A = +100^\circ\text{C}$
Collector Cutoff Current	I_{CER} $R \leq 1\text{k}\Omega$	-	-	-50 -1	nA μA	$V_{\text{CB}} = -200\text{V}$ $V_{\text{CB}} = -200\text{V}, T_A = +100^\circ\text{C}$
Emitter Cutoff Current	I_{EBO}	-	-	-10	nA	$V_{\text{EB}} = -6\text{V}$
DC current transfer Static ratio (Note 9)	h_{FE}	100	200	-	-	$I_C = -10\text{mA}, V_{\text{CE}} = -5\text{V}$
		100	200	300		$I_C = -1\text{A}, V_{\text{CE}} = -5\text{V}$
		50	150	-		$I_C = -2\text{A}, V_{\text{CE}} = -5\text{V}$
		-	10	-		$I_C = -5\text{A}, V_{\text{CE}} = -5\text{V}$
Collector-Emitter Saturation Voltage (Note 9)	$V_{\text{CE}(\text{sat})}$	-	-30	-50	mV	$I_C = -100\text{mA}, I_B = -10\text{mA}$
		-	-120	-165		$I_C = -1\text{A}, I_B = -100\text{mA}$
		-	-168	-275		$I_C = -2\text{A}, I_B = -400\text{mA}$
Base-Emitter Saturation Voltage (Note 9)	$V_{\text{BE}(\text{sat})}$	-	-970	-1110	mV	$I_C = -2\text{A}, I_B = -400\text{mA}$
Base-Emitter Turn-on Voltage (Note 9)	$V_{\text{BE}(\text{on})}$	-	-810	-950	mV	$I_C = -2\text{A}, V_{\text{CE}} = -5\text{V}$
Transitional Frequency (Note 9)	f_T	-	110	-	MHz	$I_C = -100\text{mA}, V_{\text{CE}} = -10\text{V}, f = 50\text{MHz}$
Output capacitance	C_{obo}	-	32	-	pF	$V_{\text{CB}} = -20\text{V}, f = 1\text{MHz}$
Switching Time	t_{ON}	-	67	-	ns	$V_{\text{CC}} = -50\text{V}, I_C = -1\text{A}, I_{B1} = -I_{B2} = -100\text{mA}$
	t_{OFF}	-	1140	-		

Notes: 9. Measured under pulsed conditions. Pulse width $\leq 300\mu\text{s}$. Duty cycle $\leq 2\%$.

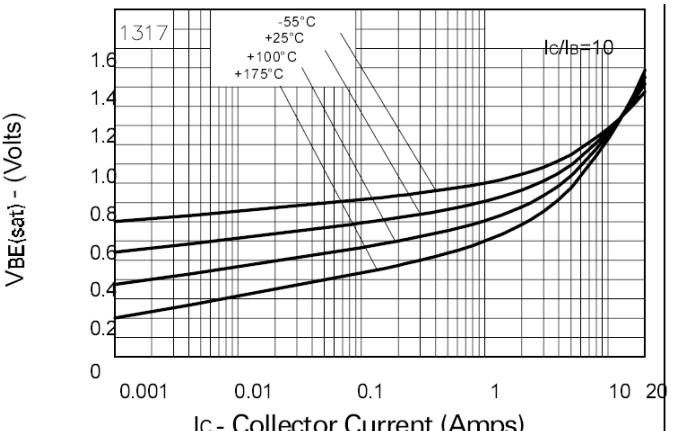
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



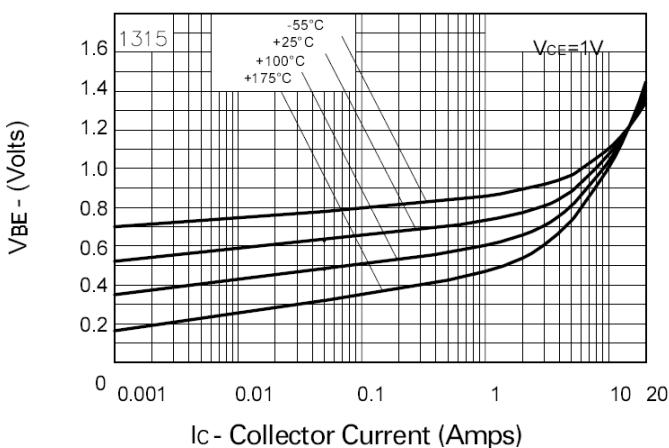
$V_{CE(sat)}$ v I_C



$V_{CE(sat)}$ v I_C



h_{FE} v I_C

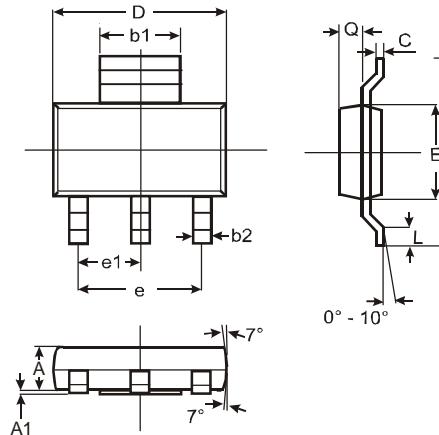


$V_{BE(sat)}$ v I_C

$V_{BE(on)}$ v I_C

Package Outline Dimensions

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

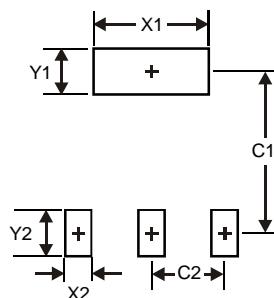


SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b1	2.90	3.10	3.00
b2	0.60	0.80	0.70
C	0.20	0.30	0.25
D	6.45	6.55	6.50
E	3.45	3.55	3.50
E1	6.90	7.10	7.00
e	—	—	4.60
e1	—	—	2.30
L	0.85	1.05	0.95
Q	0.84	0.94	0.89

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)
X1	3.3
X2	1.2
Y1	1.6
Y2	1.6
C1	6.4
C2	2.3

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