

Features

- $BV_{CEO} > -500V$
- $I_C = -150mA$ High Continuous Current
- $I_{CM} = -500mA$ Peak Pulse Current
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **An automotive-compliant part is available under separate datasheet ([FZT560Q](#))**

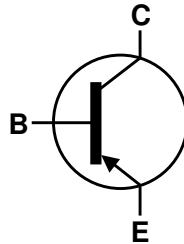
Mechanical Data

- Package: SOT223
- Package 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 **Ⓔ3**
- Weight: 0.112 grams (Approximate)

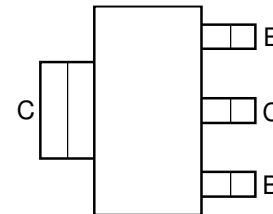
SOT223 (Type DN)



Top View



Device Symbol



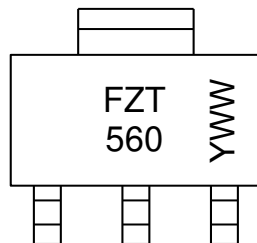
Top View
Pin-Out

Ordering Information (Note 4)

Part Number	Package	Marking	Reel Size (inches)	Tape Width (mm)	Packing	
					Qty.	Carrier
FZT560TA	SOT223 (Type DN)	FZT560	7	12	1,000	Reel
FZT560TC	SOT223 (Type DN)	FZT560	13	12	4,000	Reel

- 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 <https://www.diodes.com/design/support/packaging/diodes-packaging/>.

Marking Information



FZT 560 = Product Type Marking Code
 YWW = Date Code Marking
 Y or \bar{Y} = Last Digit of Year (ex: 3 = 2023)
 WW or $\bar{W}W$ = Week Code (01 to 53)

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	-500	V
Collector-Emitter Voltage	V _{CEO}	-500	V
Emitter-Base Voltage	V _{EBO}	-7	V
Continuous Collector Current	I _C	-150	mA
Peak Pulse Current	I _{CM}	-500	mA

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

Characteristic		Symbol	Value	Unit
Power Dissipation	(Note 5)	P _D	2	W
	(Note 6)		3	W
Thermal Resistance, Junction to Ambient	(Note 5)	R _{θJA}	62.5	°C/W
	(Note 6)		41.7	°C/W
Thermal Resistance, Junction to Leads	(Note 7)	R _{θJL}	14.8	°C/W
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	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted with the collector lead on 25mm x 25mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady-state.
 6. Same as Note 5, except the device is mounted on 50mm x 50mm 2oz 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

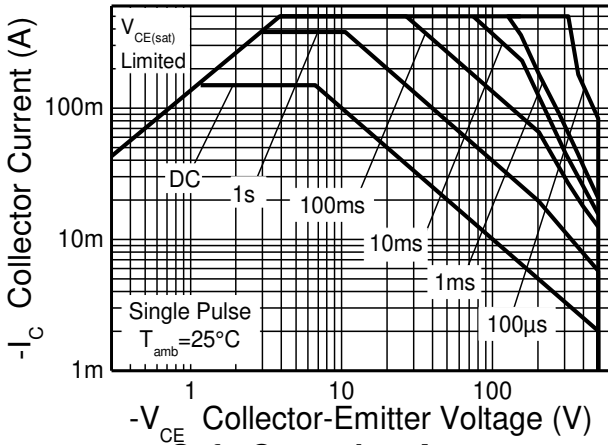


Figure 1. Safe Operating Area

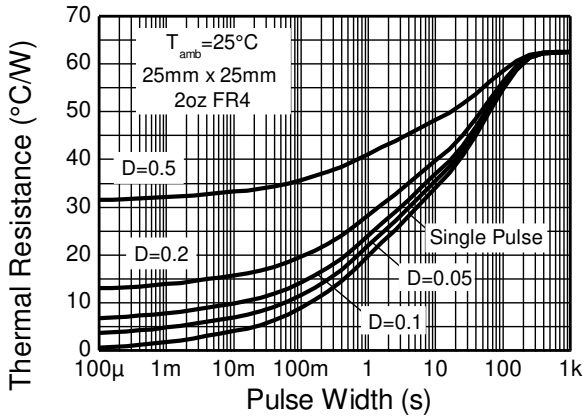


Figure 2. Transient Thermal Impedance

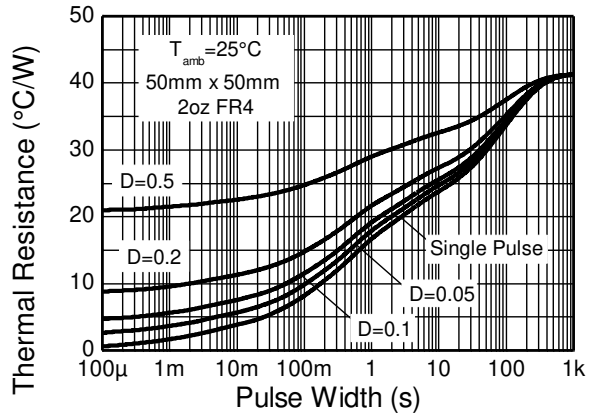


Figure 3. Transient Thermal Impedance

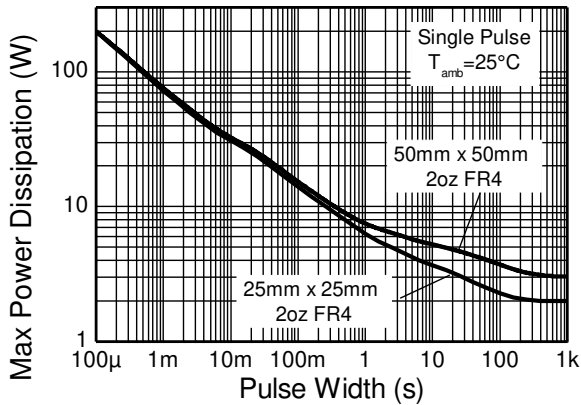


Figure 4. Pulse Power Dissipation

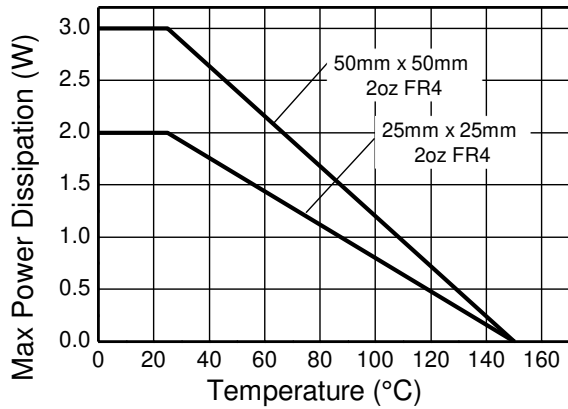


Figure 5. Derating Curve

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV _{CBO}	-500	—	—	V	I _C = -100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV _{CEO}	-500	—	—	V	I _C = -1mA
Emitter-Base Breakdown Voltage	BV _{EBO}	-7	—	—	V	I _E = -100μA
Collector Cut-Off Current	I _{CBO}	—	—	-100	nA	V _{CB} = -500V
Collector Cut-Off Current	I _{CES}	—	—	-100	nA	V _{CE} = -500V
Emitter Cut-Off Current	I _{EBO}	—	—	-100	nA	V _{EB} = -5.6V
Collector-Emitter Saturation Voltage (Note 9)	V _{CE(sat)}	—	—	-200	mV	I _C = -20mA, I _B = -2mA
		—	—	-500		I _C = -50mA, I _B = -10mA
Base-Emitter Saturation Voltage (Note 9)	V _{BE(sat)}	—	—	-900	mV	I _C = -50mA, I _B = -10mA
Base-Emitter Turn-On Voltage (Note 9)	V _{BE(on)}	—	—	-900	mV	I _C = -50mA, V _{CE} = -10V
DC Current Gain (Note 9)	h _{FE}	100	—	300	—	I _C = -1mA, V _{CE} = -10V
		80	—	300		I _C = -50mA, V _{CE} = -10V
		—	15	—		I _C = -100mA, V _{CE} = -10V
Current Gain-Bandwidth Product	f _T	60	—	—	MHz	V _{CE} = -20V, I _C = -10mA f = 50MHz
Turn-On Time	t _{on}	—	110	—	ns	V _{CC} = -100V, I _C = -50mA
Turn-Off Time	t _{off}	—	1.5	—	μs	I _{B1} = -5mA, I _{B2} = 10mA
Output Capacitance	C _{obo}	—	—	8	pF	V _{CB} = -20V, f = 1MHz

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

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

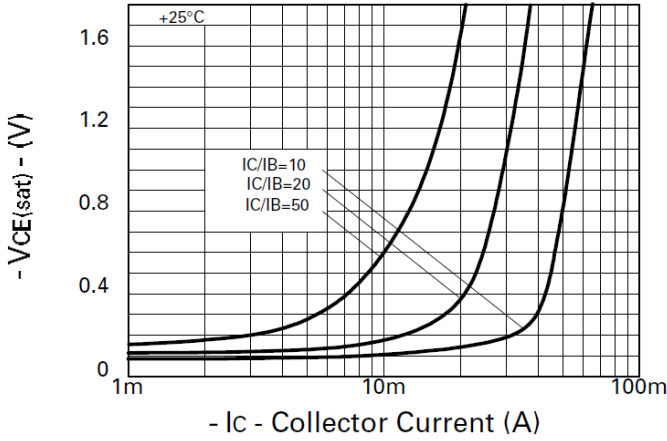


Figure 6. $V_{CE(sat)}$ v I_c

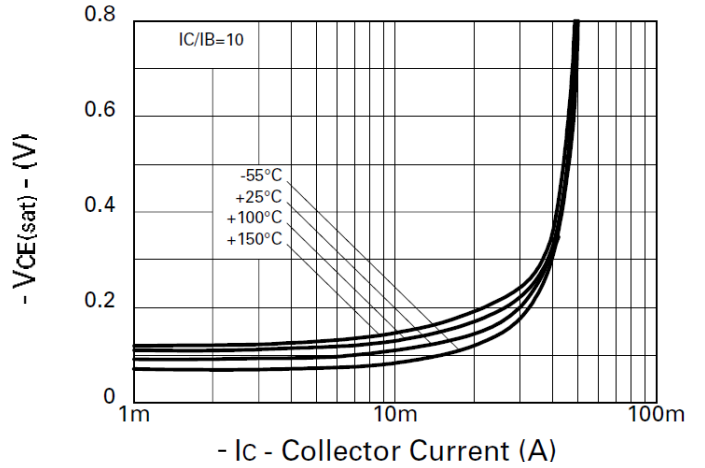


Figure 7. $V_{CE(sat)}$ v I_c

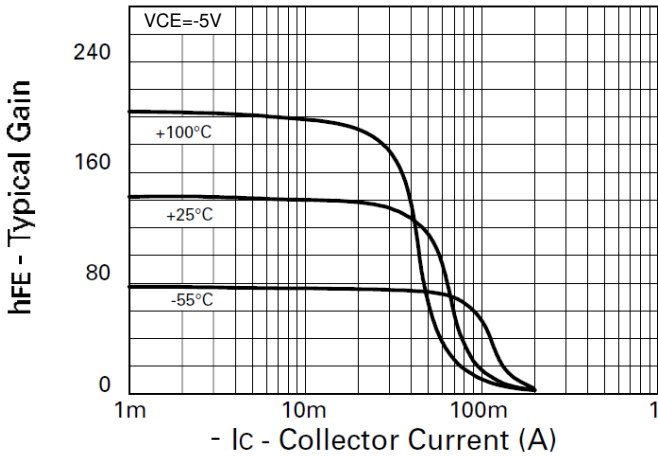


Figure 8. h_{FE} v I_c

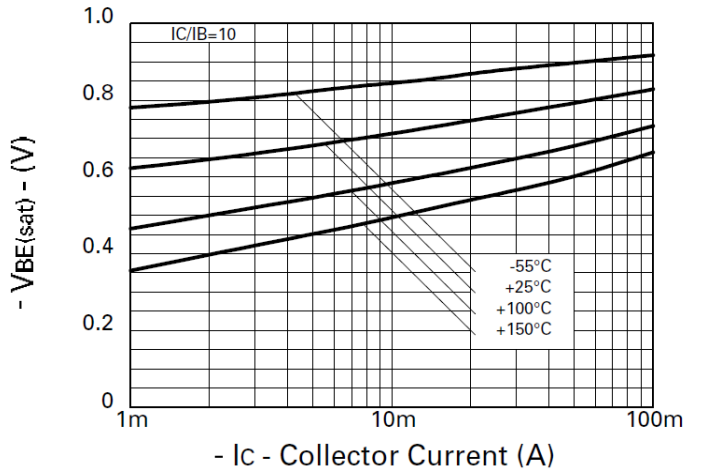


Figure 9. $V_{BE(sat)}$ v I_c

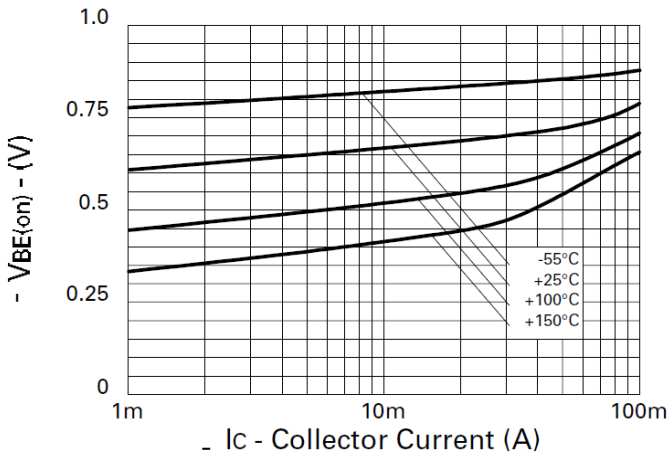
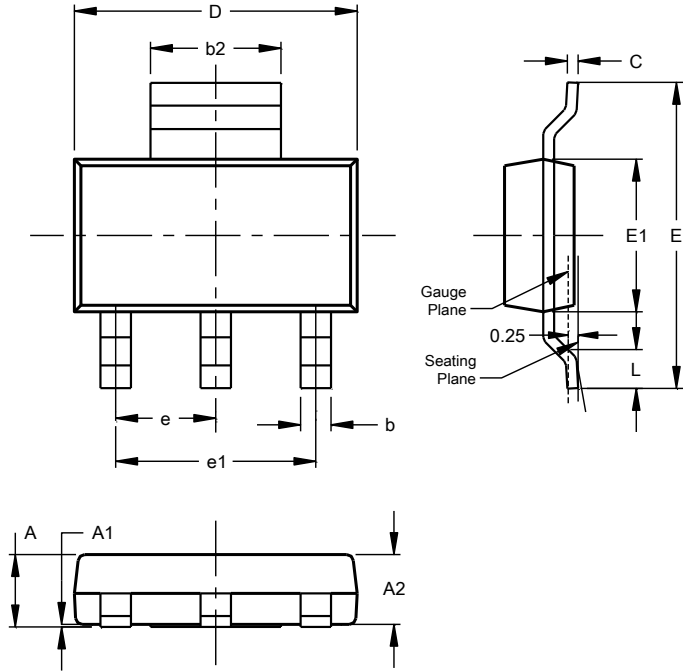


Figure 10. $V_{BE(on)}$ v I_c

Package Outline Dimensions

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

SOT223 (Type DN)

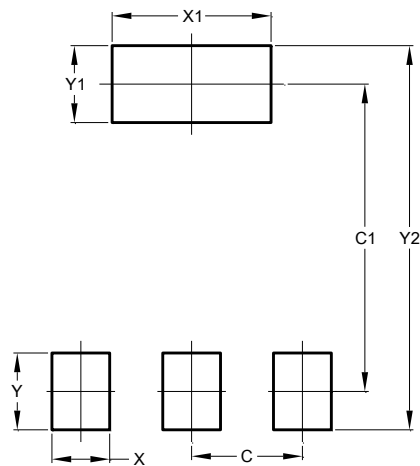


SOT223 (Type DN)			
Dim	Min	Max	Typ
A	--	1.70	--
A1	0.01	0.15	--
A2	1.50	1.68	1.60
b	0.60	0.80	0.70
b2	2.90	3.10	--
c	0.20	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	--	--	2.30
e1	--	--	4.60
L	0.85	--	--
All Dimensions in mm			

Suggested Pad Layout

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

SOT223 (Type DN)



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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