

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)**
- **The DIODES™ FZT560Q is suitable for automotive applications requiring specific change control; this part is AEC-Q101 qualified, PPAP capable, and manufactured in IATF 16949 certified facilities.**

<https://www.diodes.com/quality/product-definitions/>

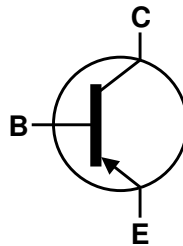
Mechanical Data

- Package: SOT223 (Type ZN)
- 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 (E3)
- Weight: 0.112 grams (Approximate)

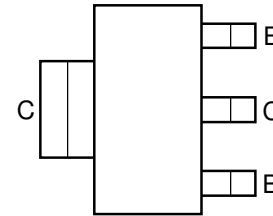
SOT223 (Type ZN)



Top View



Device Symbol



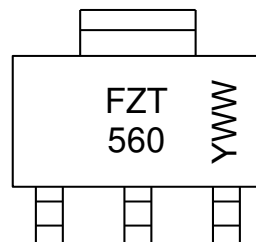
Top View
Pin-Out

Ordering Information (Note 4)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT560QTA	Automotive	FZT560	7	12	1,000
FZT560QTC	Automotive	FZT560	13	12	4,000

- 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: 2 = 2022)
 WW or $\bar{W}W$ = 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}	-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 (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

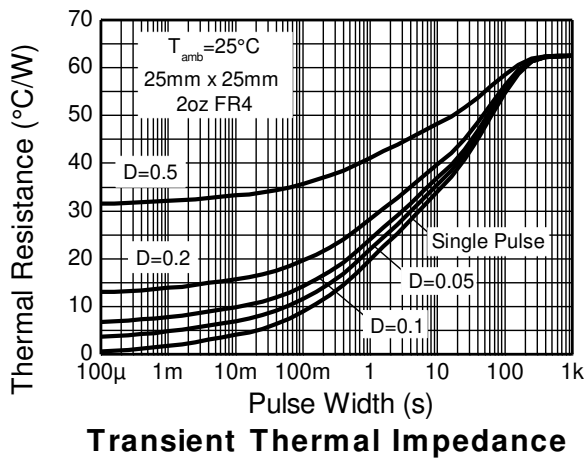
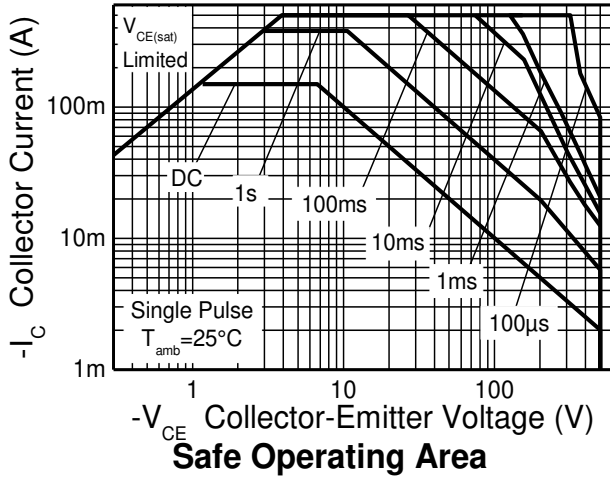
Characteristic	Symbol	Value	Unit
Power Dissipation	P_D	2	W
		3	W
Thermal Resistance, Junction to Ambient	$R_{\theta JA}$	62.5	$^\circ\text{C/W}$
		41.7	$^\circ\text{C/W}$
Thermal Resistance, Junction to Leads	$R_{\theta JL}$	14.8	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

ESD Ratings (Note 8)

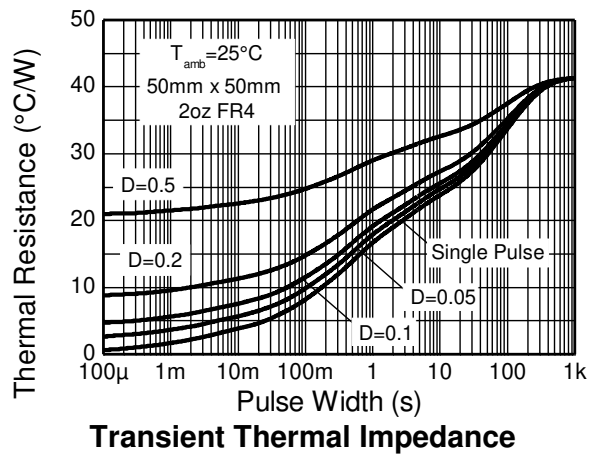
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- 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.

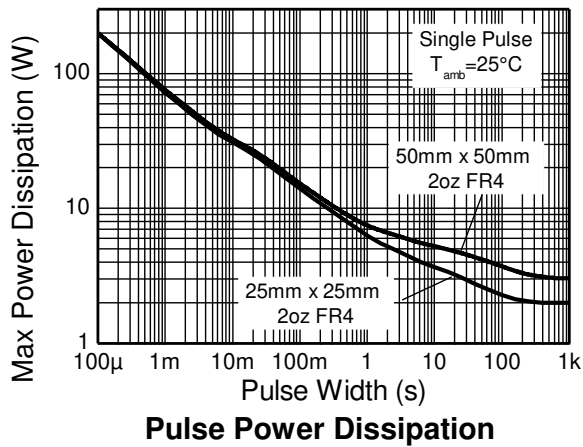
Thermal Characteristics and Derating Information



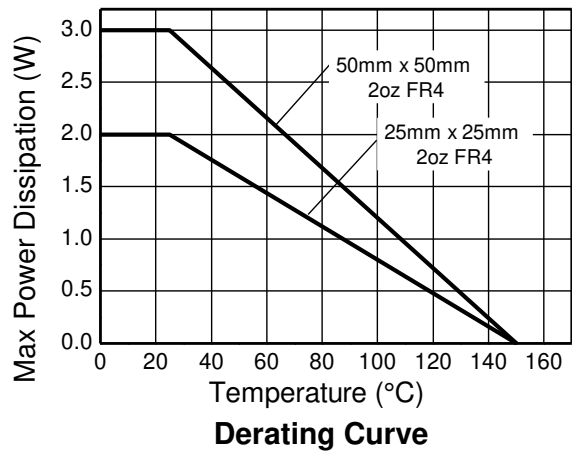
Transient Thermal Impedance



Transient Thermal Impedance



Pulse Power Dissipation



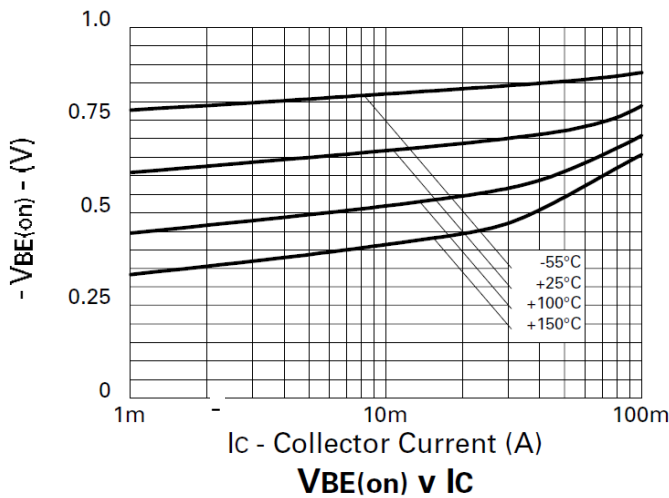
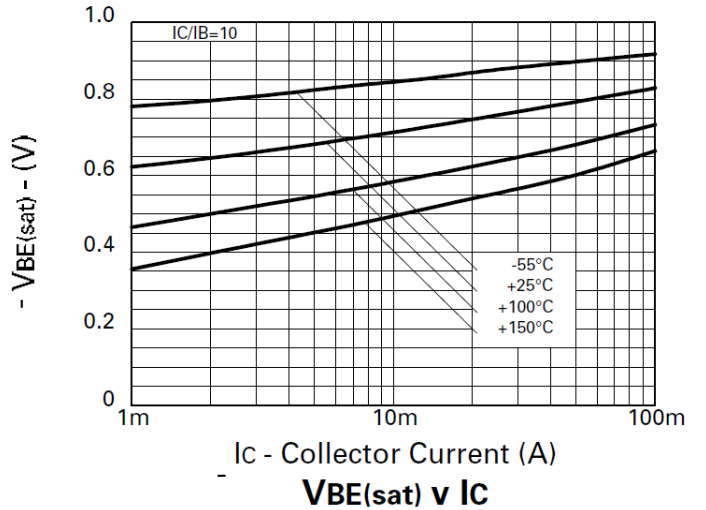
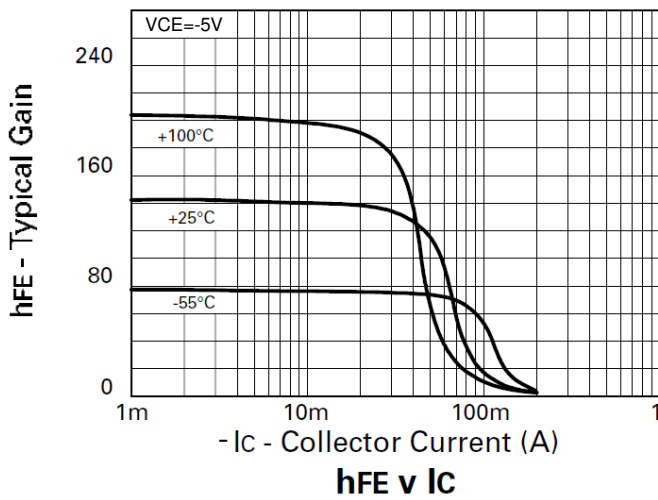
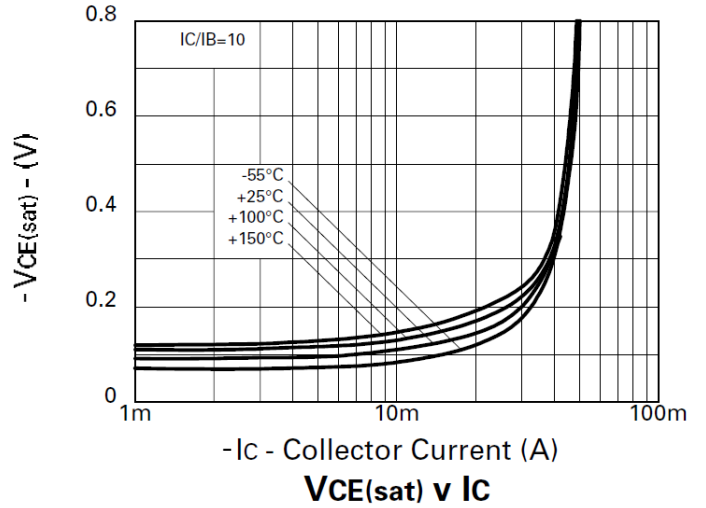
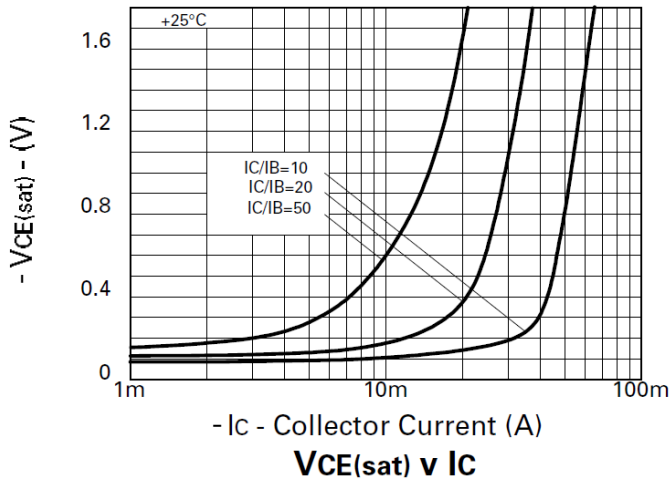
Derating Curve

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

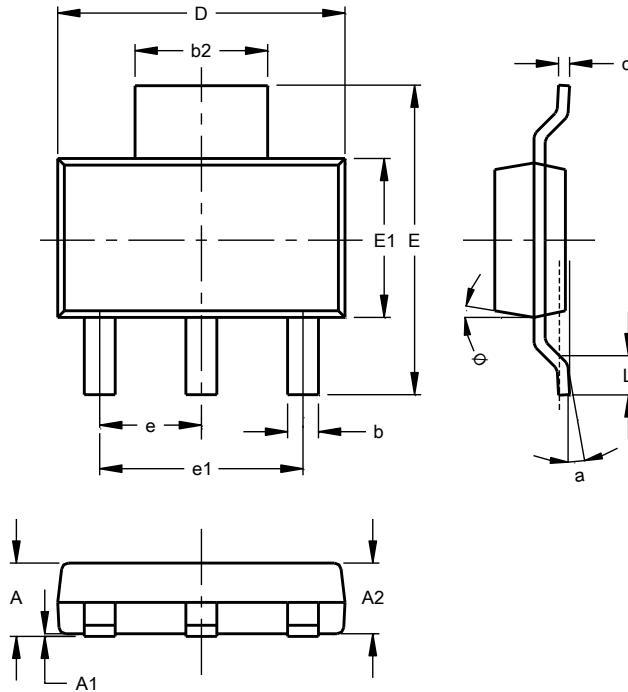
Note: 9. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%.

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



Package Outline Dimensions

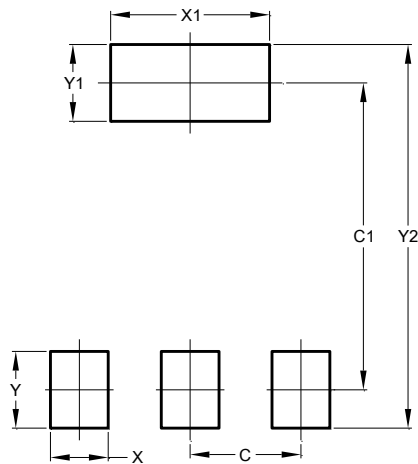
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



SOT223 (Type ZN)			
Dim	Min	Max	Typ
A	--	1.70	--
A1	0.02	0.10	--
A2	1.50	1.68	1.60
b	0.60	0.80	--
b2	2.90	3.10	--
c	0.24	0.32	--
D	6.30	6.70	--
E	6.70	7.30	--
E1	3.30	3.70	--
e	2.30 NOM		
e1	4.60 NOM		
L	0.90	--	--
a	--	--	10°
θ	--	15°	--
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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