

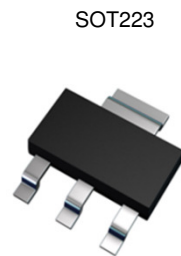
**400V PNP HIGH VOLTAGE TRANSISTOR IN SOT223**

**Features**

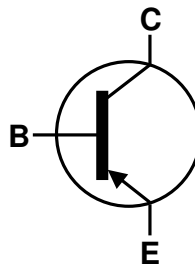
- $BV_{CEO} > -400V$
- $I_C = -500mA$  High Continuous Current
- $I_{CM} = 1A$  Peak Pulse Current
- Low Saturation Voltage  $V_{CE(SAT)} < 250mV @ 50mA$
- $h_{FE} > 40$  Specified up to 200mA for High Current Gain Hold Up
- Complementary NPN Type: FZT658
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**Mechanical Data**

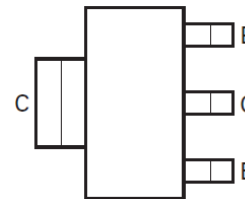
- Case: SOT223
- Case Material: Molded Plastic, "Green" Molding Compound; UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads;
- Solderable per MIL-STD-202, Method 208 <sup>Ⓔ</sup>
- Weight: 0.112 grams (Approximate)



Top View



Device Symbol



Top View  
Pin-Out

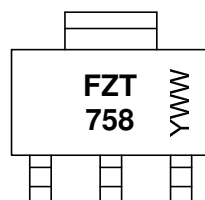
**Ordering Information** (Note 4)

Product	Marking	Reel Size (inches)	Tape Width (mm)	Quantity per Reel
FZT758TA	FZT758	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/quality/lead\\_free.html](http://www.diodes.com/quality/lead_free.html) 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



FZT 758 = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or  $\bar{Y}$  = Last Digit of Year (ex: 5= 2015)  
 WW or  $\bar{W}W$  = Week Code (01~53)

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	-400	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-400	V
Emitter-Base Voltage	V <sub>EBO</sub>	-7	V
Continuous Collector Current	I <sub>C</sub>	-0.5	A
Peak Pulse Current	I <sub>CM</sub>	-1	A

**Thermal Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

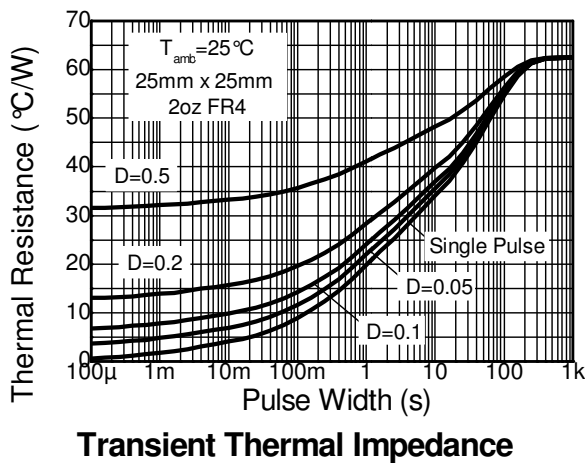
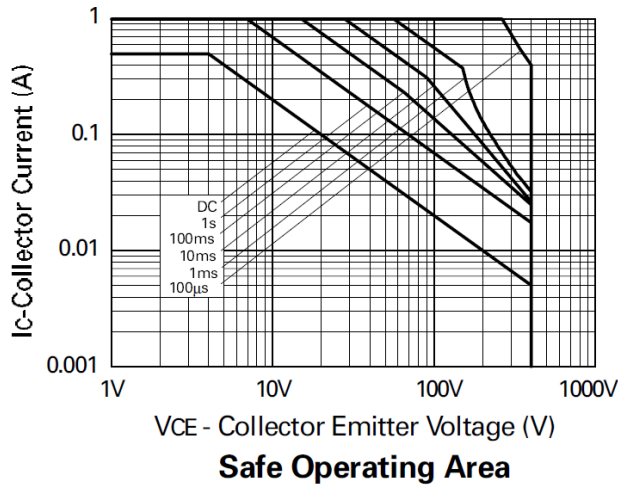
Characteristic	Symbol	Value	Unit
Power Dissipation	P <sub>D</sub>	(Note 5)	3.0
		(Note 6)	2.0
		(Note 7)	1.6
		(Note 8)	1.2
Thermal Resistance, Junction to Ambient	R <sub>θJA</sub>	(Note 5)	41.7
		(Note 6)	62.5
		(Note 7)	78.1
		(Note 8)	104
Thermal Resistance Junction to Lead	R <sub>θJL</sub>	12.9	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

**ESD Ratings** (Note 10)

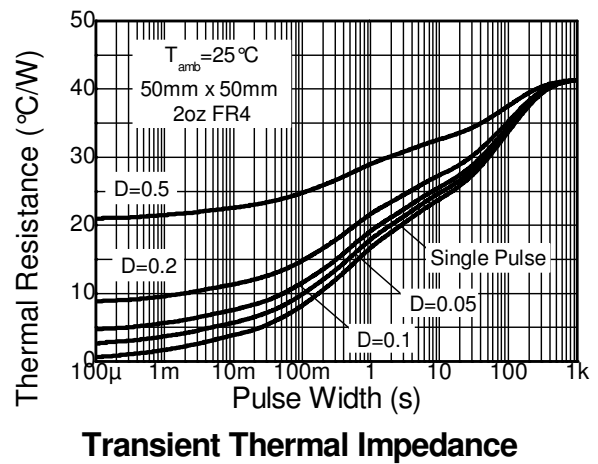
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	C

- Notes:
5. For a device mounted with the collector lead on 50mm x 50mm 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.
  6. Same as Note 5, except the device is mounted on 25mm x 25mm 2oz copper.
  7. Same as Note 5, except the device is mounted on 25mm x 25mm 1oz copper.
  8. Same as Note 5, except the device is mounted on minimum recommended pad layout.
  9. Thermal resistance from junction to solder-point (at the end of the collector lead).
  10. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

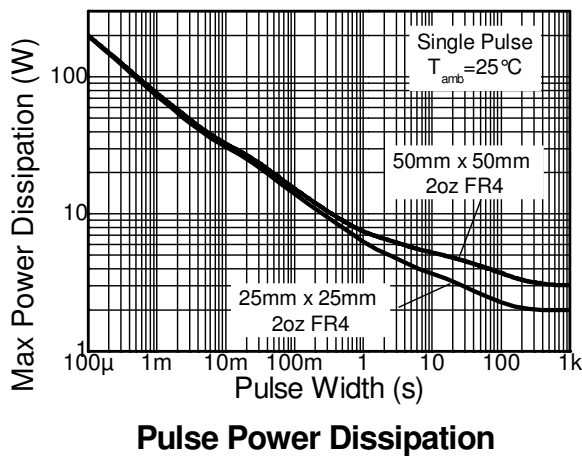
**Thermal Characteristics and Derating Information**



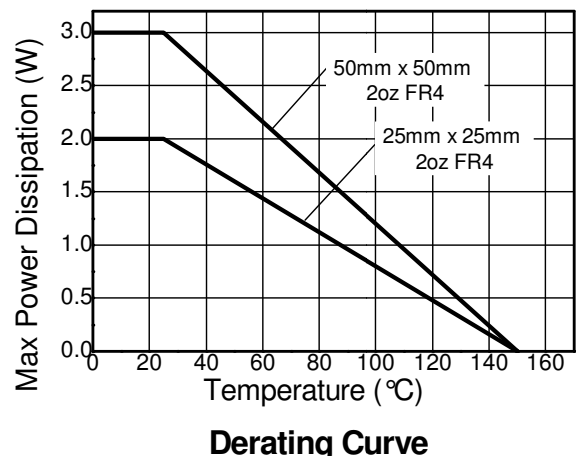
**Transient Thermal Impedance**



**Transient Thermal Impedance**



**Pulse Power Dissipation**



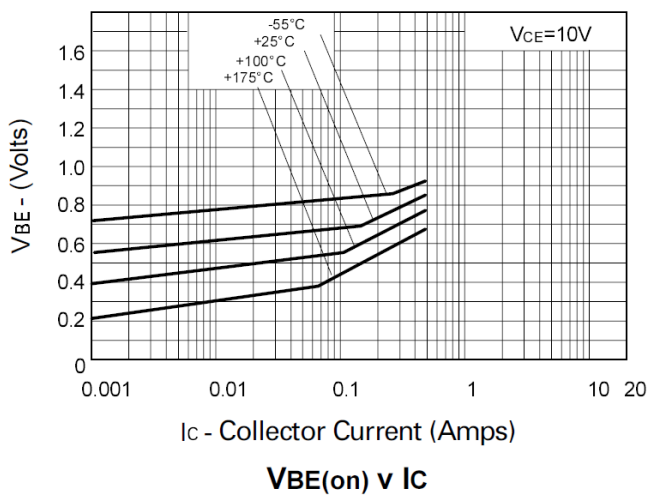
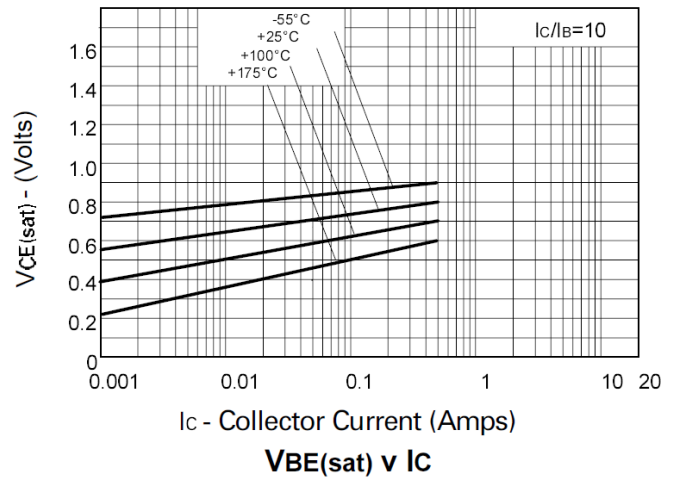
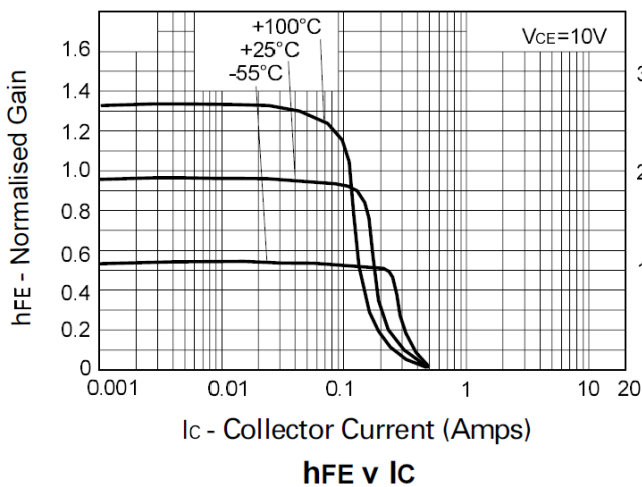
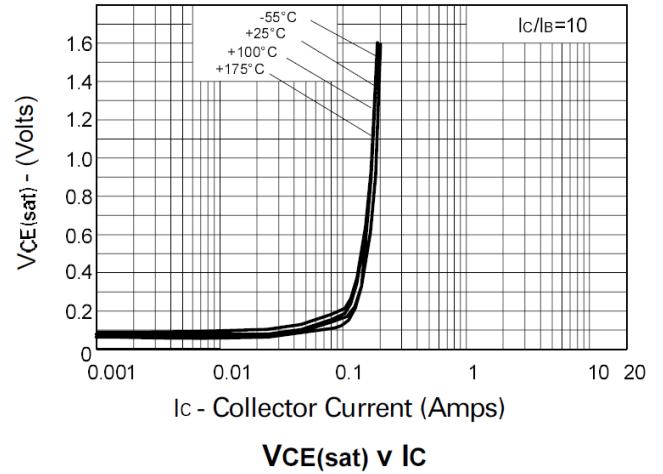
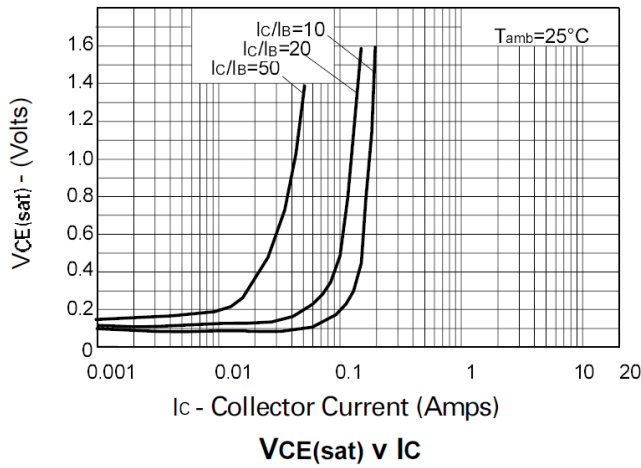
**Derating Curve**

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	-400	–	–	V	$I_C = -100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 11)	$BV_{CEO}$	-400	–	–	V	$I_C = -10\text{mA}$
Emitter-Base Breakdown Voltage	$BV_{EBO}$	-7	–	–	V	$I_E = -100\mu\text{A}$
Collector Cut-Off Current	$I_{CBO}$	–	–	-100	nA	$V_{CB} = -320\text{V}$
Collector Cut-Off Current	$I_{CES}$	–	–	-100	nA	$V_{CE} = -320\text{V}$
Emitter Cut-Off Current	$I_{EBO}$	–	–	-100	nA	$V_{EB} = -4\text{V}$
Collector-Emitter Saturation Voltage (Note 11)	$V_{CE(sat)}$	–	–	-0.30	V	$I_C = -20\text{mA}, I_B = -1\text{mA}$
				-0.25		$I_C = -50\text{mA}, I_B = -5\text{mA}$
				-0.50		$I_C = -100\text{mA}, I_B = -10\text{mA}$
Base-Emitter Saturation Voltage (Note 11)	$V_{BE(sat)}$	–	–	-0.9	V	$I_C = -100\text{mA}, I_B = -10\text{mA}$
Base-Emitter Turn-On Voltage (Note 11)	$V_{BE(on)}$	–	–	-1.0	V	$I_C = -100\text{mA}, V_{CE} = -5\text{V}$
DC Current Gain (Note 11)	$h_{FE}$	50	–	–	–	$I_C = -1\text{mA}, V_{CE} = -5\text{V}$
						$I_C = -100\text{mA}, V_{CE} = -5\text{V}$
						$I_C = -200\text{mA}, V_{CE} = -10\text{V}$
Current Gain-Bandwidth Product (Note 11)	$f_T$	50	–	–	MHz	$V_{CE} = -20\text{V}, I_C = -20\text{mA}, f = 20\text{MHz}$
Output Capacitance (Note 11)	$C_{obo}$	–	–	20	pF	$V_{CB} = -20\text{V}, f = 1\text{MHz}$
Switching Times	$t_{on}$	–	140	–	ns	$I_C = -100\text{mA}, V_{CC} = -100\text{V}$ $I_{B1} = 10\text{mA}, I_{B2} = -20\text{mA}$
	$t_{off}$	–	2,000	–		

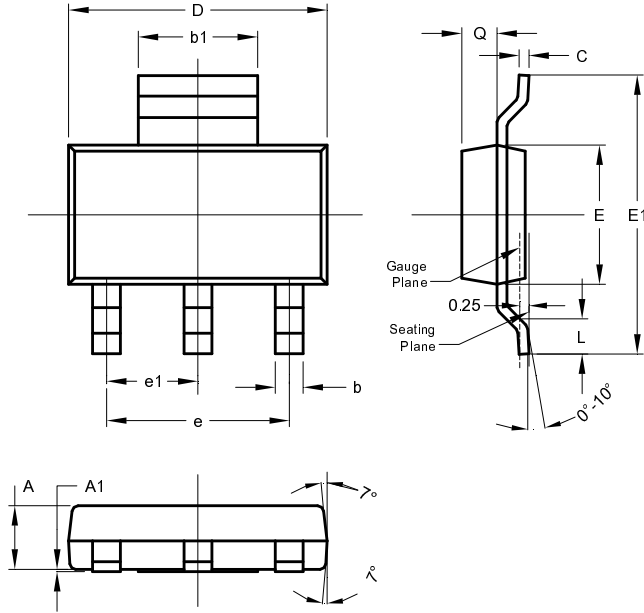
Note: 11. Measured under pulsed conditions. Pulse width  $\leq 300\mu\text{s}$ . Duty cycle  $\leq 2\%$ .

**Typical Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)



## Package Outline Dimensions

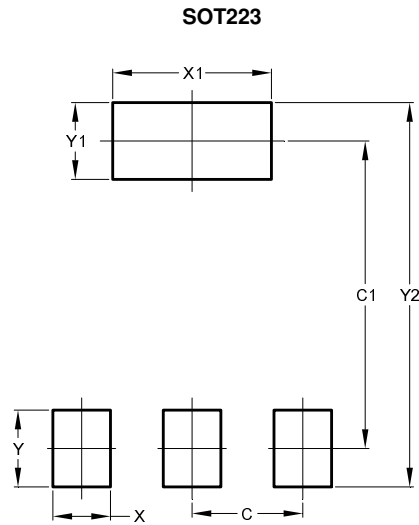
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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
<b>All Dimensions in mm</b>			

## Suggested Pad Layout

Please see AP02001 at <http://www.diodes.com/datasheets/ap02001.pdf> 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

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device terminals and PCB tracking.

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