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With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

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**FZT7053**
**100V NPN DARLINGTON TRANSISTOR IN SOT223**
**Features**

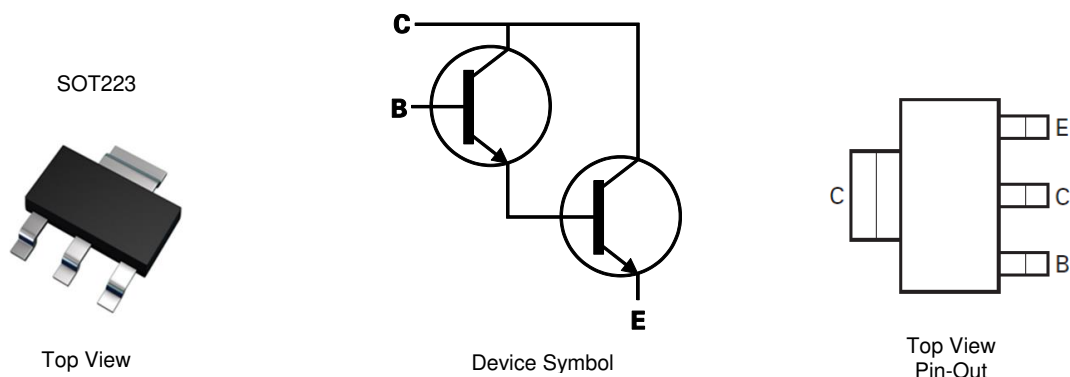
- $BV_{CEO} > 100V$
- $BV_{CBO} > 100V$
- $I_C = 1.5A$  High Continuous Current
- $h_{FE} > 10k$  for very High Gain @100mA
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**

**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 @3
- Weight: 0.112 grams (Approximate)

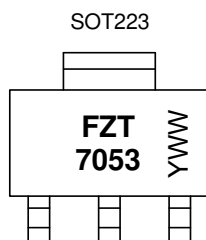
**Applications**

- Lamp
- Relay
- Solenoid Driving


**Ordering Information** (Note 4)

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT7053TA	FZT7053	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**


FZT 7053 = Product Type Marking Code  
 YWW = Date Code Marking  
 Y or  $\bar{Y}$  = Last Digit of Year (ex: 5= 2015)  
 WW or  $\bar{WW}$  = Week Code (01~53)

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

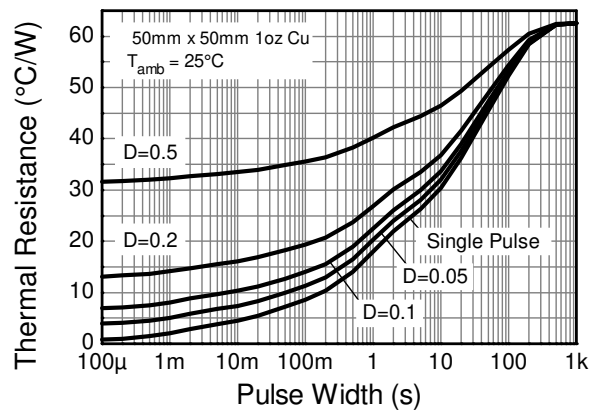
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	100	V
Collector-Emitter Voltage	V <sub>CEO</sub>	100	V
Emitter-Base Voltage	V <sub>EBO</sub>	12	V
Continuous Collector Current	I <sub>C</sub>	1.5	A
Peak Pulse Current	I <sub>CM</sub>	2	A

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

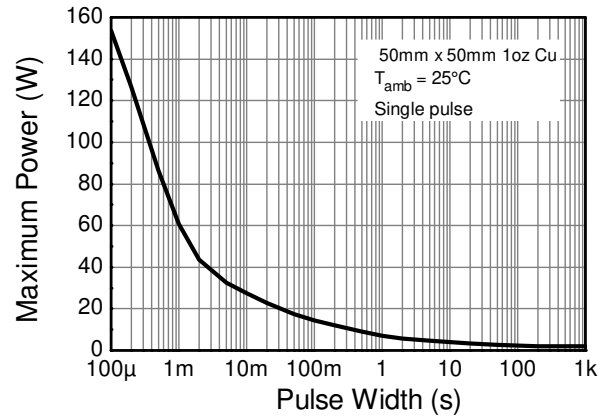
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P <sub>D</sub>	1	W
Power Dissipation (Note 6)	P <sub>D</sub>	1.25	W
Power Dissipation (Note 7)	P <sub>D</sub>	2	W
Thermal Resistance, Junction to Ambient (Note 5)	R <sub>θJA</sub>	125	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	R <sub>θJA</sub>	100	°C/W
Thermal Resistance, Junction to Ambient (Note 7)	R <sub>θJA</sub>	62	°C/W
Thermal Resistance, Junction to Lead (Note 8)	R <sub>θJL</sub>	19.4	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
- For a device surface mounted on 15mm x 14mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions; the device is measured when operating in a steady-state condition.
  - Same as Note 5, except the device is surface mounted on 25mm x 25mm with 1oz copper.
  - Same as Note 5, except the device is surface mounted on 50mm x 50mm with 1oz copper.
  - Thermal resistance from junction to solder-point (at the end of the collector lead).

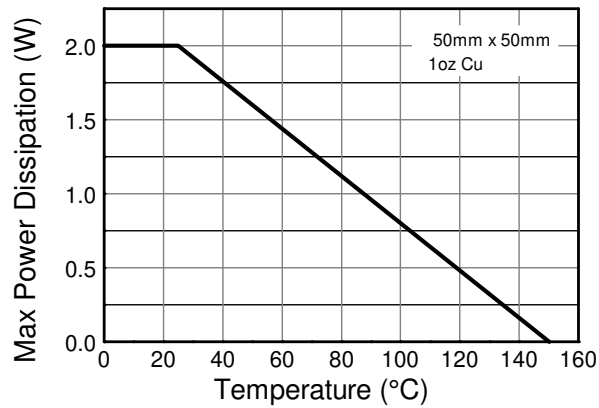
## Thermal Characteristics and Derating Information



**Transient Thermal Impedance**



**Pulse Power Dissipation**



**Derating Curve**

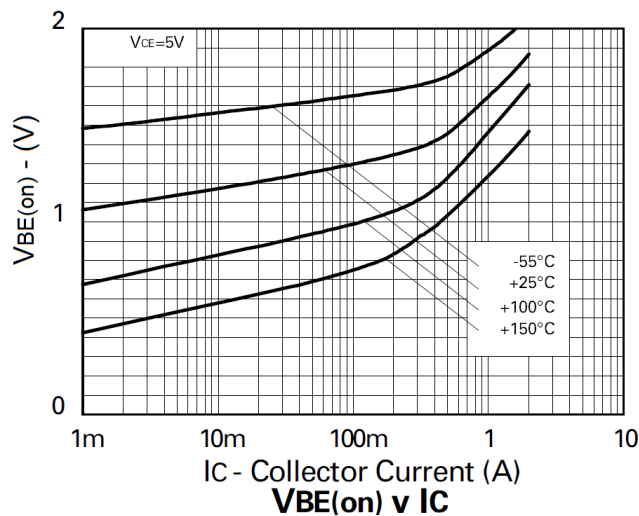
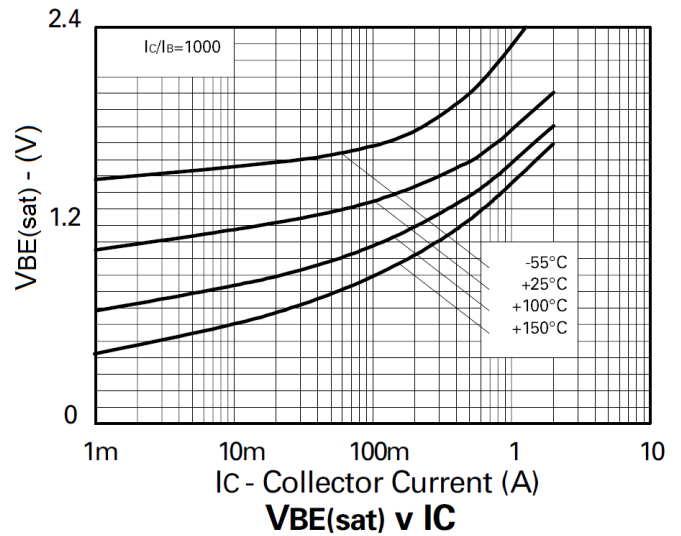
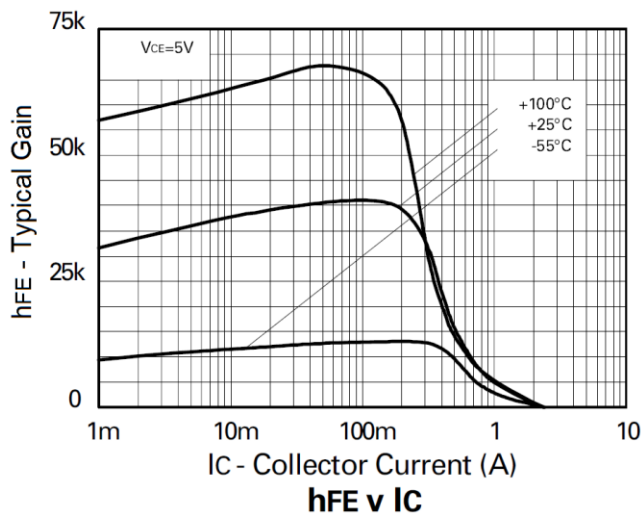
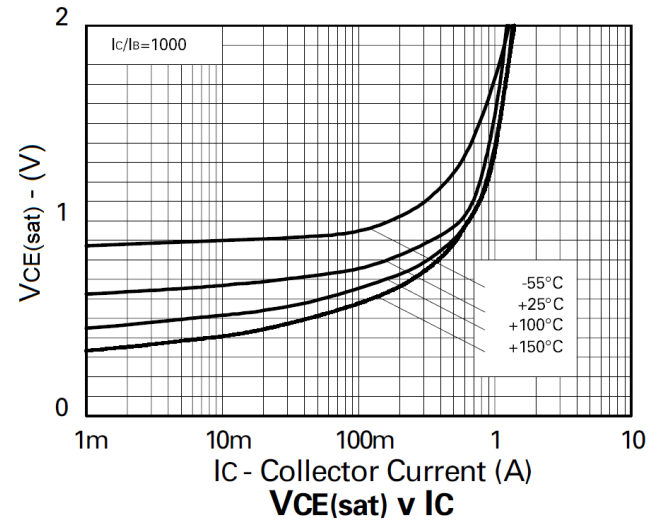
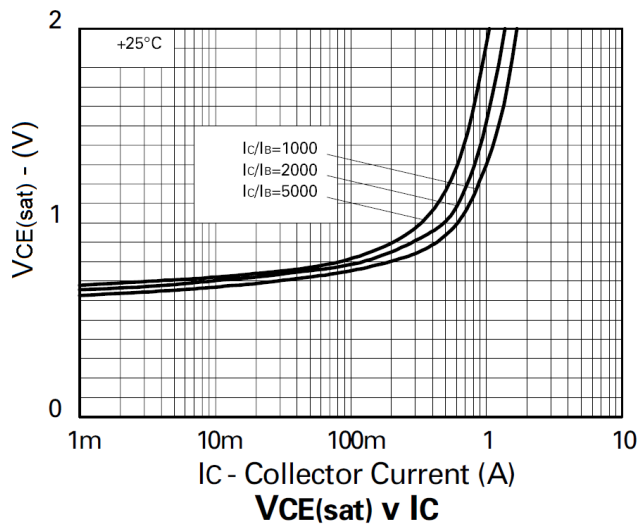


## Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	100	300	-	V	I <sub>C</sub> = 100μA
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	100	130	-	V	I <sub>C</sub> = 1mA
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	12	14	-	V	I <sub>E</sub> = 100μA
Collector-Base Cut-Off Current	I <sub>CBO</sub>	-	<10	100	nA	V <sub>CB</sub> = 80V
Collector-Emitter Cut-Off Current	I <sub>CES</sub>	-	<10	200	nA	V <sub>CE</sub> = 80V
Emitter Cut-Off Current	I <sub>EBO</sub>	-	<10	100	nA	V <sub>EB</sub> = 7V
DC Current Gain (Note 9)	h <sub>FE</sub>	10,000 1,000	-	-	-	I <sub>C</sub> = 100mA, V <sub>CE</sub> = 5V I <sub>C</sub> = 1A, V <sub>CE</sub> = 5V
Collector-Emitter Saturation Voltage (Note 9)	V <sub>CE(sat)</sub>	-	-	1.5	V	I <sub>C</sub> = 100mA, I <sub>B</sub> = 0.1mA
Base-Emitter Turn-On Voltage (Note 9)	V <sub>BE(on)</sub>	-	-	2.0	V	I <sub>C</sub> = 100mA, V <sub>CE</sub> = 5V
Output Capacitance (Note 9)	C <sub>obo</sub>	-	6.0	8.0	pF	V <sub>CB</sub> = 10V, f = 1MHz
Current Gain-Bandwidth Product (Note 9)	f <sub>T</sub>	200	-	-	MHz	V <sub>CE</sub> = 5V, I <sub>C</sub> = 100mA
Turn-On Time	t <sub>on</sub>	-	0.7	-	μs	V <sub>CC</sub> = 10V, I <sub>C</sub> = 100μA
Turn-Off Time	t <sub>off</sub>	-	2.5	-	μs	I <sub>B1</sub> = -I <sub>B2</sub> = 0.1mA

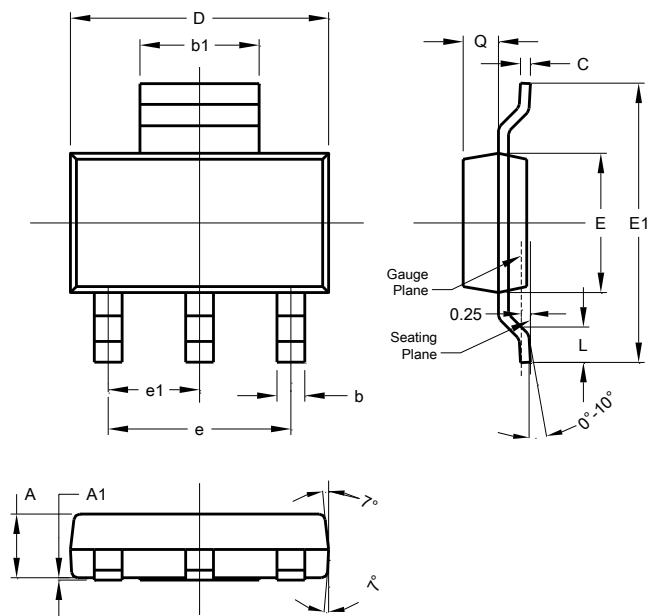
Note: 9. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%.

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



## Package Outline Dimensions

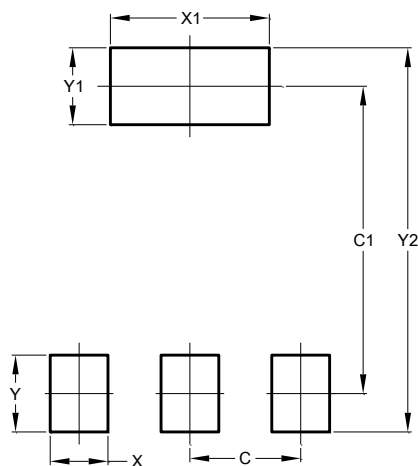
Please see AP02002 at <http://www.diodes.com/datasheets/ap02002.pdf> for the latest version.



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
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)
C	2.30
C1	6.40
X	1.20
X1	3.30
Y	1.60
Y1	1.60
C2	8.00

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