

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

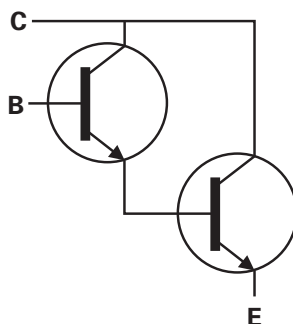
- Case: SOT223
- Case material: molded plastic. "Green" molding compound.
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads, Solderable per MIL-STD-202, Method 208 **Ⓔ**
- Weight: 0.112 grams (approximate)

Applications

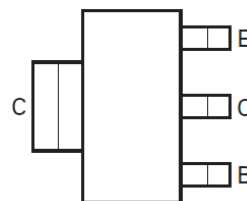
- Lamp
- Relay
- Solenoid driving



Top View



Device Symbol

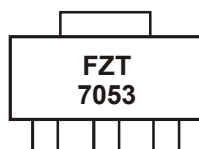

 Top View
 Pin-Out

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> 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>.

Marking Information



FZT7053 = Product Type Marking Code

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

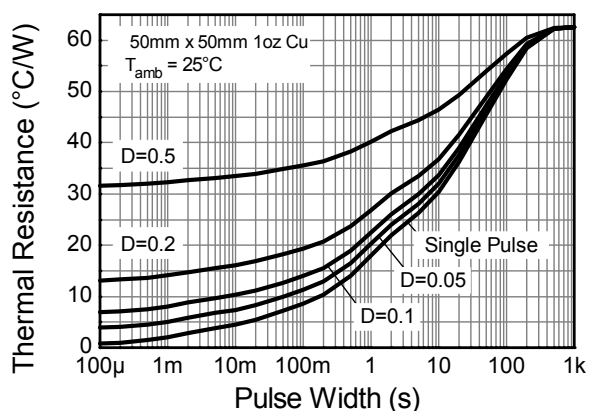
Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V _{CBO}	100	V
Collector-Emitter Voltage	V _{CEO}	100	V
Emitter-Base Voltage	V _{EBO}	12	V
Continuous Collector Current	I _C	1.5	A
Peak Pulse Current	I _{CM}	2	A

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

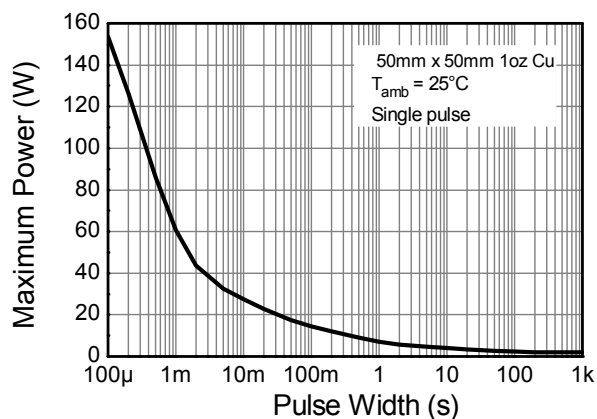
Characteristic	Symbol	Value	Unit
Power Dissipation (Note 5)	P _D	1	W
Power Dissipation (Note 6)	P _D	1.25	W
Power Dissipation (Note 7)	P _D	2	W
Thermal Resistance, Junction to Ambient (Note 5)	R _{θJA}	125	°C/W
Thermal Resistance, Junction to Ambient (Note 6)	R _{θJA}	100	°C/W
Thermal Resistance, Junction to Ambient (Note 7)	R _{θJA}	62	°C/W
Thermal Resistance, Junction to Lead (Note 8)	R _{θJL}	19.4	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-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).

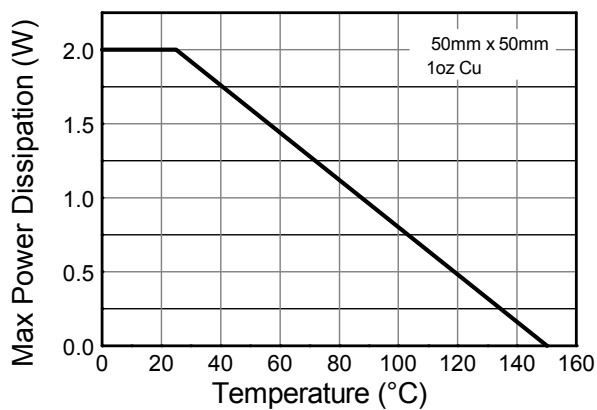
Thermal Characteristics and Derating Information



Transient Thermal Impedance



Pulse Power Dissipation



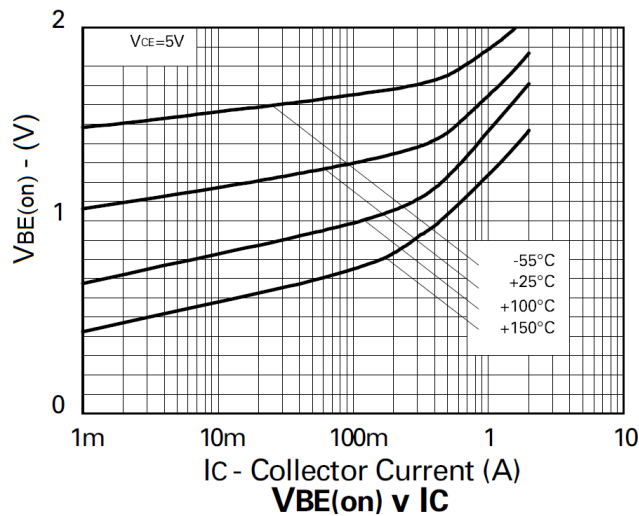
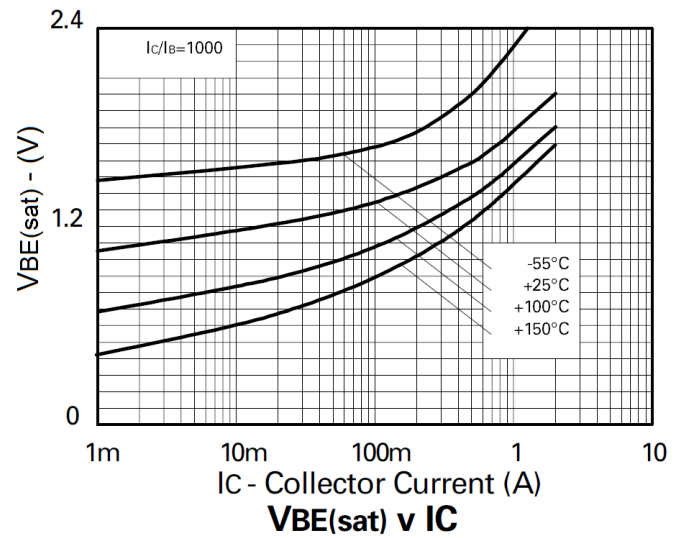
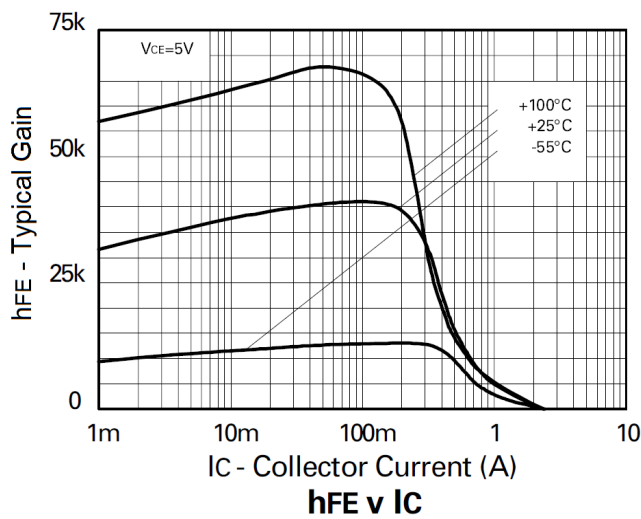
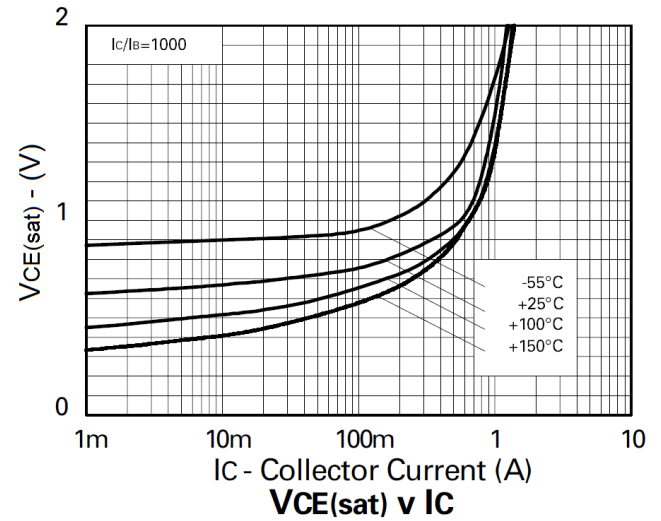
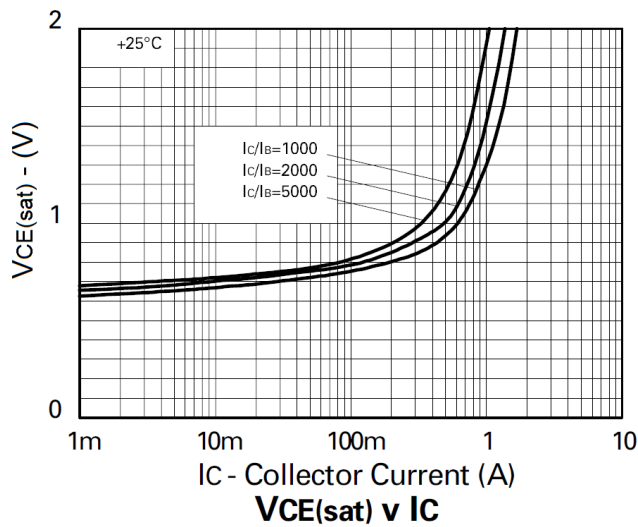
Derating Curve

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

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

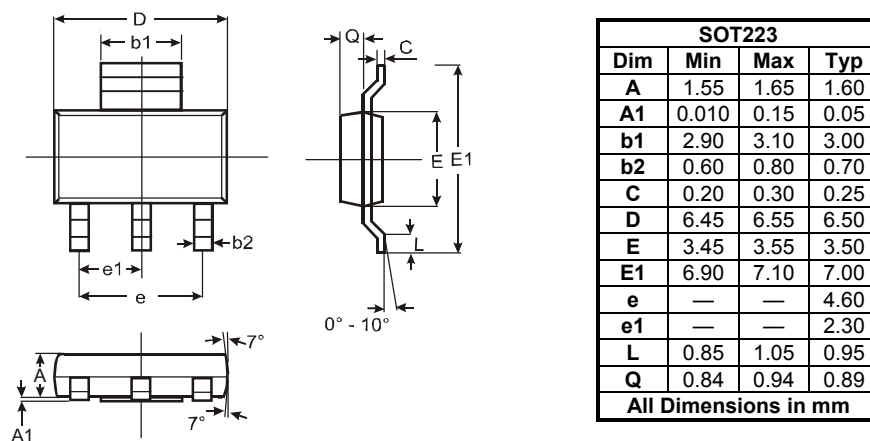
Notes: 9. Measured under pulsed conditions. Pulse width ≤ 300 μs. Duty cycle ≤ 2%.

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



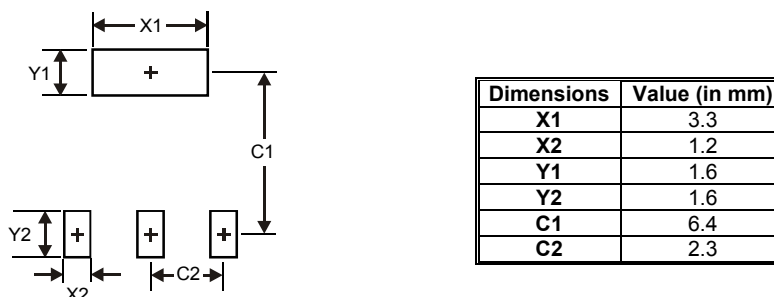
Package Outline Dimensions

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



Suggested Pad Layout

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



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