

**FZT7053**

**100V NPN Darlington transistor in SOT223**

**Features**

- $BV_{CEO} > 100V$
- $BV_{CBO} > 100V$
- Continuous current  $I_{C(cont)} = 1.5A$
- Ultra High Grain

**Applications**

- Lamp
- Relay
- Solenoid driving

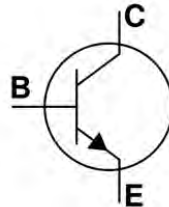
**Mechanical Data**

- Case: SOT-223
- UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Matte Tin Finish
- Weight: 0.112 grams (approximate)

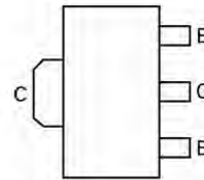
SOT-223



Top View



Device symbol

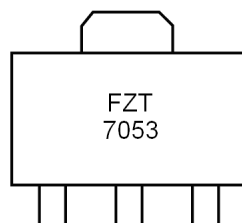


Pin Configuration

**Ordering Information**

Product	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT7053TA	FZT7053	7	12	1000

**Marking Information**



FZT7053 = Product type Marking Code

**FZT7053**

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**Maximum Ratings** @T<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</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>	1.8	A

**Thermal Characteristics**

Characteristic	Symbol	Value	Unit
Power Dissipation at T <sub>A</sub> = 25°C (Note 1)	P <sub>D</sub>	1.0	W
Linear derating factor		8.0	mW/°C
Power Dissipation at T <sub>A</sub> = 25°C (Note 2)	P <sub>D</sub>	1.25	W
Linear derating factor		10	mW/°C
Power Dissipation at T <sub>A</sub> = 25°C (Note 3)	P <sub>D</sub>	6.25	W
Linear derating factor		50	mW/°C
Thermal Resistance, Junction to Ambient (Note 1)	R <sub>θJA</sub>	125	°C/W
Thermal Resistance, Junction to Ambient (Note 2)	R <sub>θJA</sub>	100	°C/W
Thermal Resistance, Junction to Lead (Note 3)	R <sub>θJL</sub>	20	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

- Notes:
1. For a device surface mounted on 15mm X 15mm X 1.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions
  2. Mounted on 25mm X 25mm X 1.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions.
  3. Junction to lead (collector Tab). Typical.

**Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

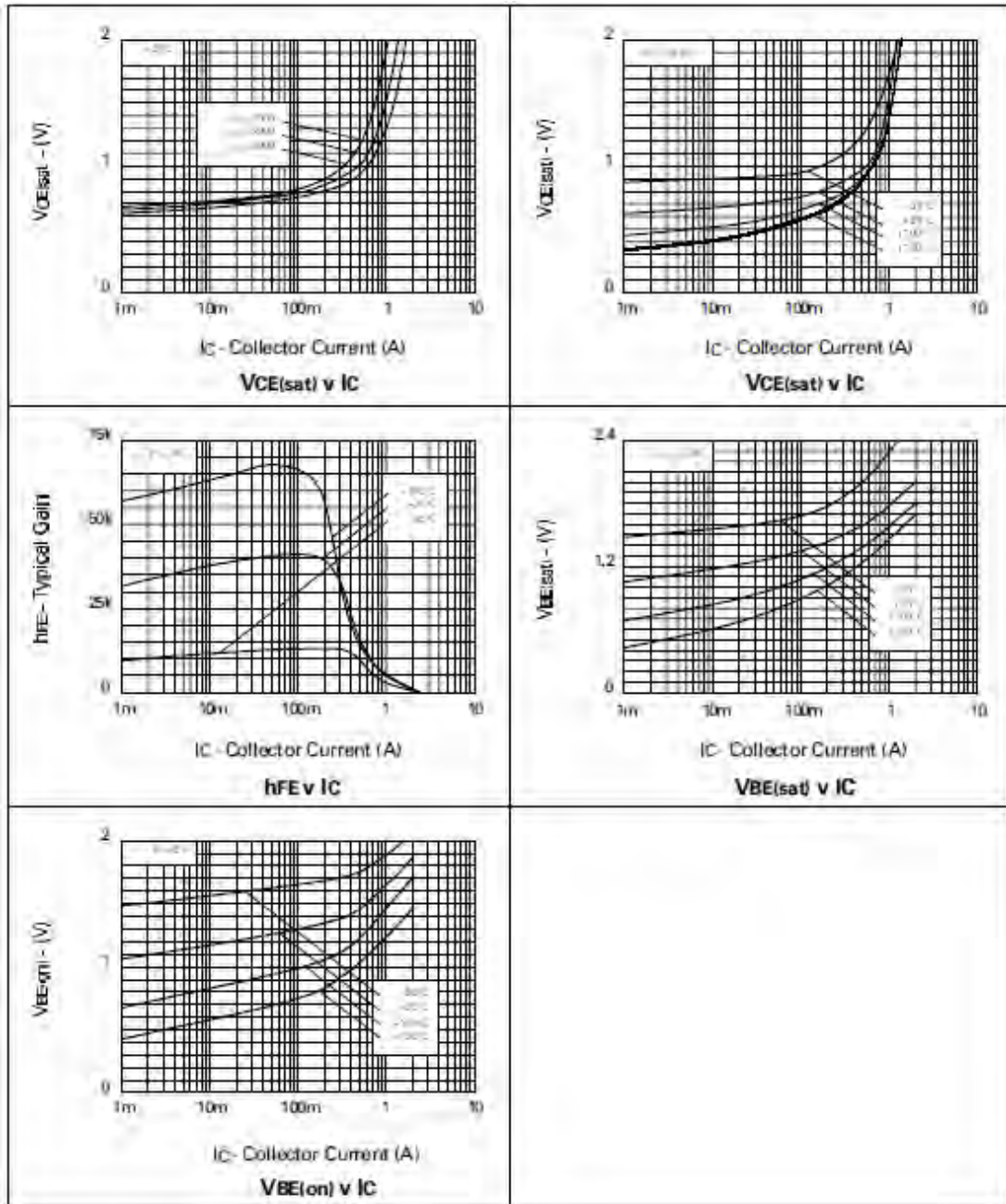
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	V <sub>(BR)CB0</sub>	100			V	I <sub>C</sub> = 100μA
Collector-Emitter Breakdown Voltage (Note 4)	V <sub>(BR)CEO</sub>	100			V	I <sub>C</sub> = 100mA
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	12			V	I <sub>E</sub> = 100μA
Collector-Base Cutoff Current	I <sub>CB0</sub>		<1	100 0.5	nA μA	V <sub>CB</sub> = 80V V <sub>CB</sub> = 80V, T <sub>amb</sub> = 100°C
Collector-Emitter Cutoff Current	I <sub>CES</sub>		<1	200 0.5	nA μA	V <sub>CB</sub> = 80V V <sub>CB</sub> = 80V, T <sub>amb</sub> = 100°C
Emitter Cutoff Current	I <sub>EBO</sub>		<1	100	nA	V <sub>EB</sub> = 7V
DC Current Gain (Note 4)	h <sub>FE</sub>	10000 1000				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 4)	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 4)	V <sub>BE(ON)</sub>			2.0	mV	I <sub>C</sub> = 100mA, V <sub>CE</sub> = 5V
Output Capacitance (Note 4)	C <sub>obo</sub>		6.0	8.0	pF	V <sub>CB</sub> = 10V, f = 1MHz
Current Gain-Bandwidth Product (Note 4)	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

- Notes:
1. For a device surface mounted on 15mm X 15mm X 1.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions
  2. Mounted on 25mm X 25mm X 1.6mm FR4 PCB with high coverage of single sided 1 oz copper, in still air conditions.
  3. Junction to lead (collector Tab). Typical.
  4. Measured under pulsed conditions. Pulse width = 300 μs. Duty cycle ≤ 2%

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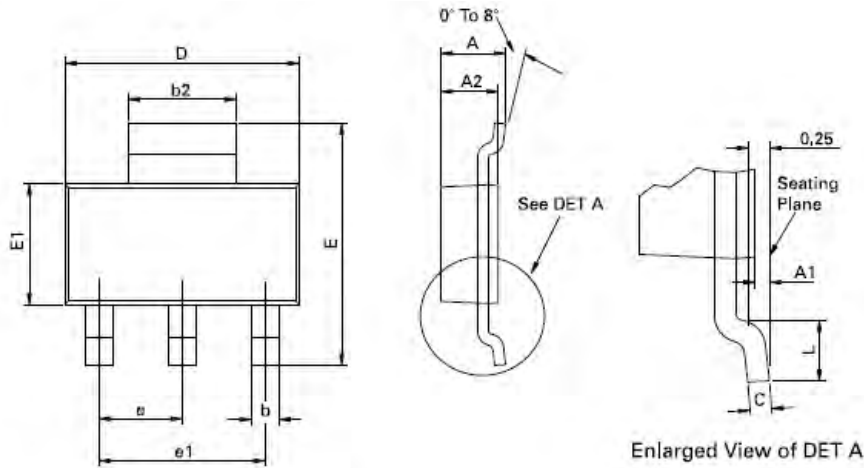
**Typical Characteristics**



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**Package Outline Dimensions**

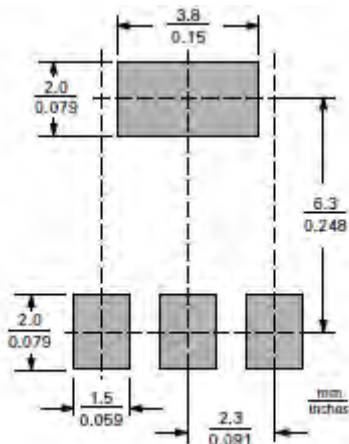


Conforms to JEDEC TO-261 AA Issue B

Dim.	Millimeters		Inches		Dim.	Millimeters		Inches	
	Min.	Max.	Min.	Max.		Min.	Max.	Min.	Max.
A	-	1.80	-	0.071	D	6.30	6.70	0.248	0.264
A1	0.02	0.10	0.0008	0.004	e	2.30 BSC		0.0905 BSC	
A2	1.55	1.65	0.0610	0.0649	e1	4.60 BSC		0.181 BSC	
b	0.66	0.84	0.026	0.033	E	6.70	7.30	0.264	0.287
b2	2.90	3.10	0.114	0.122	E1	3.30	3.70	0.130	0.146
C	0.23	0.33	0.009	0.013	L	0.90	-	0.035	-

Note: Controlling dimensions are in millimeters. Approximate dimensions are provided in inches

**Suggested Pad Layout**



**FZT7053****100V NPN Darlington transistor in SOT223****IMPORTANT NOTICE**

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