

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

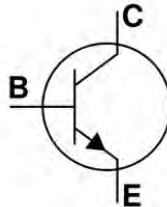
Mechanical Data

- 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)

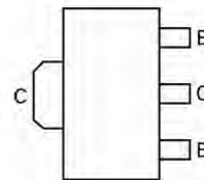
SOT-223



Top View



Device symbol

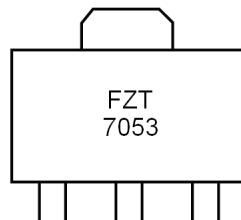


Pin Configuration

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
100V NPN Darlington transistor in SOT223
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}	1.8	A

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation at T _A = 25°C (Note 1)	P _D	1.0	W
Linear derating factor		8.0	mW /°C
Power Dissipation at T _A = 25°C (Note 2)	P _D	1.25	W
Linear derating factor		10	mW /°C
Power Dissipation at T _A = 25°C (Note 3)	P _D	6.25	W
Linear derating factor		50	mW /°C
Thermal Resistance, Junction to Ambient (Note 1)	R _{θJA}	125	°C/W
Thermal Resistance, Junction to Ambient (Note 2)	R _{θJA}	100	°C/W
Thermal Resistance, Junction to Lead (Note 3)	R _{θJL}	20	°C/W
Operating and Storage Temperature Range	T _J , T _{STG}	-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_A = 25°C unless otherwise specified

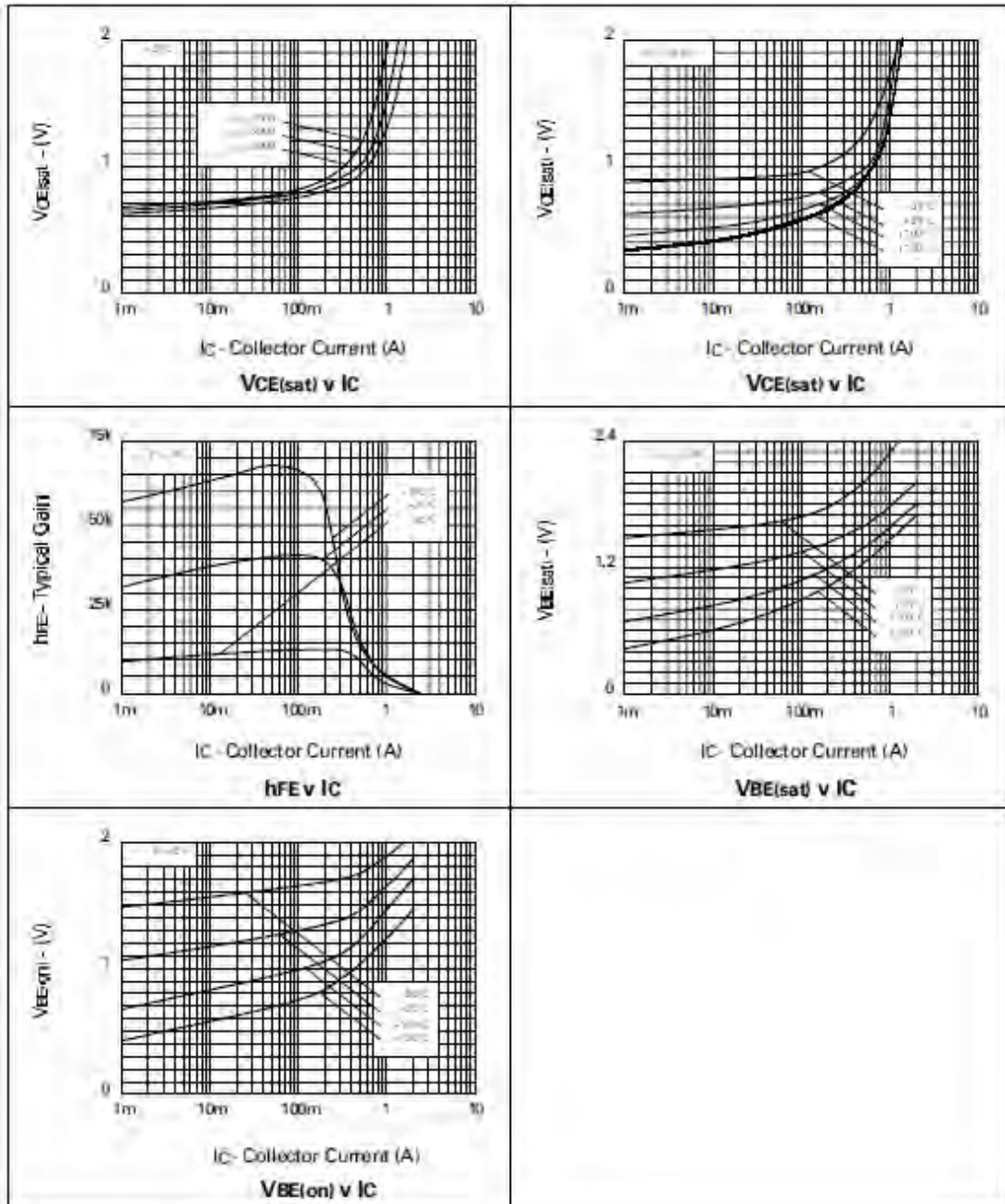
Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	V _{(BR)CBO}	100			V	I _C = 100μA
Collector-Emitter Breakdown Voltage (Note 4)	V _{(BR)CEO}	100			V	I _C = 100mA
Emitter-Base Breakdown Voltage	V _{(BR)EBO}	12			V	I _E = 100μA
Collector-Base Cutoff Current	I _{CBO}		<1	100 0.5	nA μA	V _{CB} = 80V V _{CB} = 80V, T _{amb} = 100°C
Collector-Emitter Cutoff Current	I _{CES}		<1	200 0.5	nA μA	V _{CB} = 80V V _{CB} = 80V, T _{amb} = 100°C
Emitter Cutoff Current	I _{EBO}		<1	100	nA	V _{EB} = 7V
DC Current Gain (Note 4)	h _{FE}	10000 1000				I _C = 100mA, V _{CE} = 5V I _C = 1A, V _{CE} = 5V
Collector-Emitter Saturation Voltage (Note 4)	V _{CE(SAT)}			1.5	V	I _C = 100mA, I _B = 0.1mA
Base-Emitter Turn-On Voltage (Note 4)	V _{BE(ON)}			2.0	mV	I _C = 100mA, V _{CE} = 5V
Output Capacitance (Note 4)	C _{obo}		6.0	8.0	pF	V _{CB} = 10V, f = 1MHz
Current Gain-Bandwidth Product (Note 4)	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:
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%

FZT7053

100V NPN Darlington transistor in SOT223

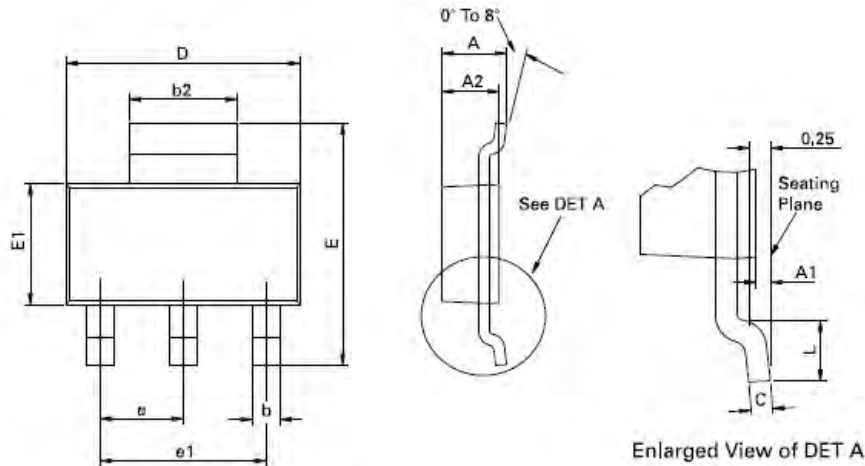
Typical Characteristics



FZT7053

100V NPN Darlington transistor in SOT223

Package Outline Dimensions

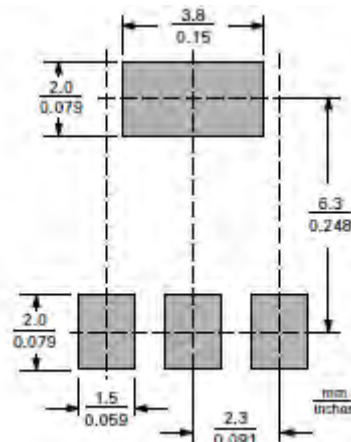


Conforms to JEDEC TO-261 AA Issue B

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**

DIODES INCORPORATED MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. Diodes Incorporated does not assume any liability arising out of the application or use of this document or any product described herein; neither does Diodes Incorporated convey any license under its patent or trademark rights, nor the rights of others. Any Customer or user of this document or products described herein in such applications shall assume all risks of such use and will agree to hold Diodes Incorporated and all the companies whose products are represented on Diodes Incorporated website, harmless against all damages.

Diodes Incorporated does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel. Should Customers purchase or use Diodes Incorporated products for any unintended or unauthorized application, Customers shall indemnify and hold Diodes Incorporated and its representatives harmless against all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim of personal injury or death associated with such unintended or unauthorized application.

Products described herein may be covered by one or more United States, international or foreign patents pending. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks.

LIFE SUPPORT

Diodes Incorporated products are specifically not authorized for use as critical components in life support devices or systems without the express written approval of the Chief Executive Officer of Diodes Incorporated. As used herein:

- A. Life support devices or systems are devices or systems which:
 - 1. are intended to implant into the body, or
 - 2. support or sustain life and whose failure to perform when properly used in accordance with instructions for use provided in the labeling can be reasonably expected to result in significant injury to the user.
- B. A critical component is any component in a life support device or system whose failure to perform can be reasonably expected to cause the failure of the life support device or to affect its safety or effectiveness.

Customers represent that they have all necessary expertise in the safety and regulatory ramifications of their life support devices or systems, and acknowledge and agree that they are solely responsible for all legal, regulatory and safety-related requirements concerning their products and any use of Diodes Incorporated products in such safety-critical, life support devices or systems, notwithstanding any devices- or systems-related information or support that may be provided by Diodes Incorporated. Further, Customers must fully indemnify Diodes Incorporated and its representatives against any damages arising out of the use of Diodes Incorporated products in such safety-critical, life support devices or systems.

Copyright © 2009, Diodes Incorporated

www.diodes.com