

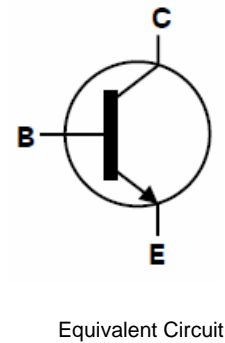
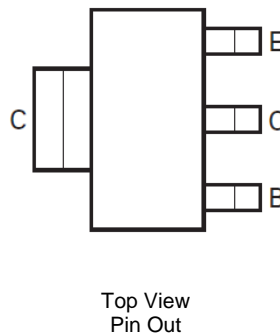
75V NPN SILICON PLANAR HIGH VOLTAGE TRANSISTOR IN SOT-223

Features and Benefits

- $BV_{CE0} > 75V$
- Maximum continuous current $I_C = 4.5A$
- 10A pulse current
- High gain holds up $h_{FE} > 300 @ I_C = 1A$
- Very low equivalent on-resistance; $R_{CE(sat)} = 78m\Omega$ at 4.5A
- **“Green” component, Lead Free Finish / RoHS compliant (Note 1)**
- **Qualified to AEC-Q101 Standards for High Reliability**

Mechanical Data

- Case: SOT223
- Case Material: Molded Plastic, “Green” Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish
- Weight: 0.112 grams (approximate)

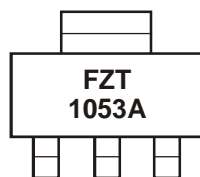


Ordering Information (Note 1)

Part Number	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT1053ATA	FZT1053A	7	12	1,000

Notes: 1. Diodes, Inc. defines “Green” products as those which are RoHS compliant and contain no halogens or antimony compounds. All applicable RoHS exemptions applied. Further information about Diodes Inc.’s “Green” Policy can be found on our website at <http://www.diodes.com>

Marking Information



FZT1053A = Product Type Marking Code

Maximum Ratings @ $T_A = 25^\circ\text{C}$ unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V_{CBO}	150	V
Collector-Emitter Voltage	V_{CEO}	75	V
Emitter-Base Voltage	V_{EBO}	7.5	V
Continuous Collector Current	I_C	4.5	A
Base Current	I_B	500	mA
Peak Pulse Current (Note 2)	I_{CM}	10	A

Thermal Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

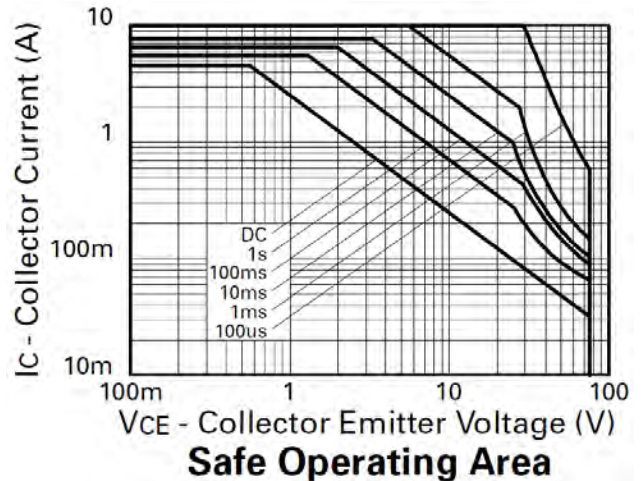
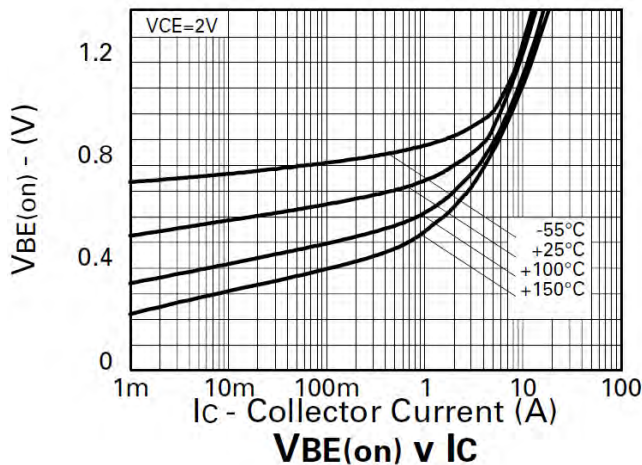
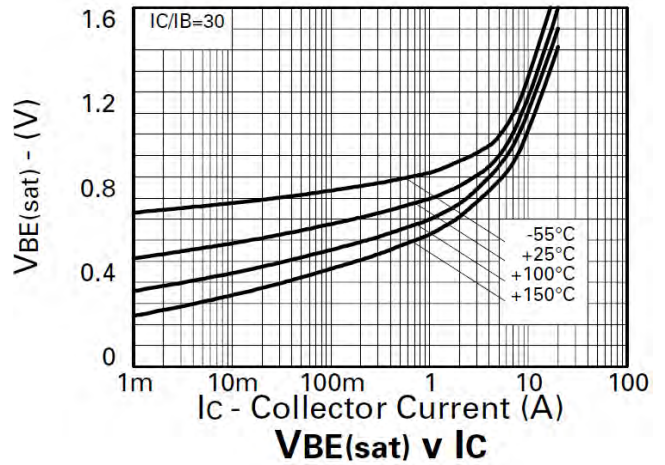
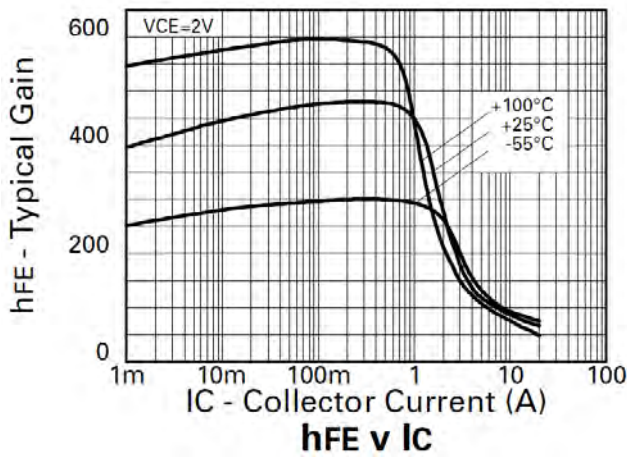
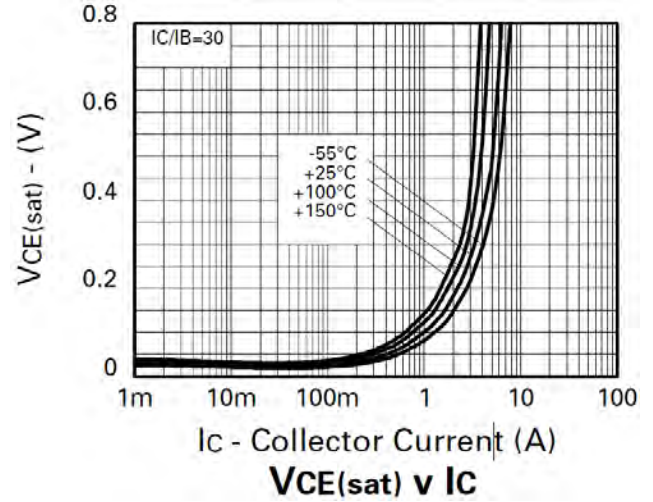
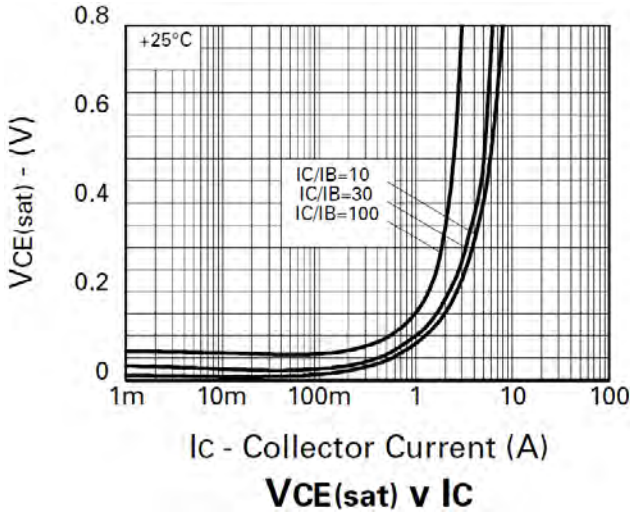
Characteristic	Symbol	Value	Unit
Collector Power Dissipation (Note 2)	P_D	2.5	W
Thermal Resistance, Junction to Ambient (Note 2)	$R_{\theta JA}$	50	$^\circ\text{C/W}$
Thermal Resistance, Junction to Leads (Note 3)	$R_{\theta JL}$	10.88	$^\circ\text{C/W}$
Operating and Storage Temperature Range	T_J, T_{STG}	-55 to +150	$^\circ\text{C}$

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

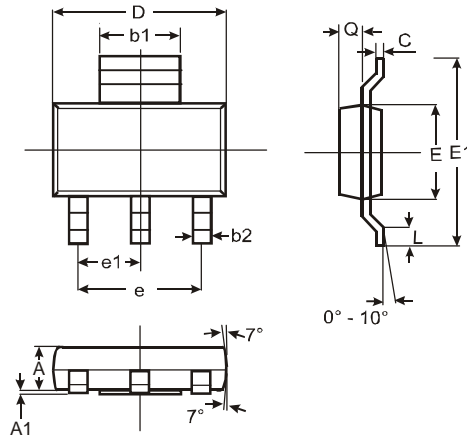
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV_{CBO}	150	250	-	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	BV_{CES}	150	250	-	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage (Note 4)	BV_{CEO}	75	100	-	V	$I_C = 10\text{mA}$
Collector-Emitter Breakdown Voltage	BV_{CEV}	150	250	-	V	$I_C = 100\mu\text{A}, V_{EB} = 1\text{V}$
Emitter-Base Breakdown Voltage	BV_{EBO}	7.5	8.8	-	V	$I_E = 100\mu\text{A}$
Collector Cutoff Current	I_{CBO}	-	0.9	10	nA	$V_{CB} = 120\text{V}$
Collector Cutoff Current	I_{CES}	-	1.5	10	nA	$V_{CES} = 120\text{V}$
Emitter Cutoff Current	I_{EBO}	-	0.3	10	nA	$V_{EB} = 4\text{V}$
DC current transfer Static ratio (Note 4)	h_{FE}	270	440	-	-	$I_C = 10\text{mA}, V_{CE} = 2\text{V}$
		300	450	1200		$I_C = 0.5\text{A}, V_{CE} = 2\text{V}$
		300	450	-		$I_C = 1\text{A}, V_{CE} = 2\text{V}$
		40	60	-		$I_C = 4.5\text{A}, V_{CE} = 2\text{V}$
		-	20	-		$I_C = 10\text{A}, V_{CE} = 2\text{V}$
Collector-Emitter Saturation Voltage (Note 4)	$V_{CE(sat)}$	-	21	30	mV	$I_C = 0.2\text{A}, I_B = 20\text{mA}$
		-	55	75		$I_C = 0.5\text{A}, I_B = 20\text{mA}$
		-	150	200		$I_C = 1\text{A}, I_B = 10\text{mA}$
		-	160	210		$I_C = 2\text{A}, I_B = 100\text{mA}$
		-	350	440		$I_C = 4.5\text{A}, I_B = 200\text{mA}$
Base-Emitter Saturation Voltage (Note 4)	$V_{BE(sat)}$	-	900	1000	mV	$I_C = 3\text{A}, I_B = 100\text{mA}$
Base-Emitter Turn-on Voltage (Note 4)	$V_{BE(on)}$	-	825	950	mV	$I_C = 3\text{A}, V_{CE} = 2\text{V}$
Transitional Frequency (Note 4)	f_T	-	140	-	MHz	$I_C = 50\text{mA}, V_{CE} = 10\text{V}, f = 100\text{MHz}$
Output capacitance	C_{obo}	-	21	30	pF	$V_{CB} = 10\text{V}, f = 1\text{MHz}$,
Switching Time	t_{on}	-	162	-	ns	$V_{CC} = 50\text{V}, I_C = 2\text{A},$
	t_{off}	-	900	-	ns	$I_{B1} = I_{B2} = \pm 20\text{mA}$

- Notes:
- For the device mounted on 50mm x 50mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.
 - Thermal resistance from junction to solder-point (at the end of the drain lead)
 - Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

Electrical Characteristics

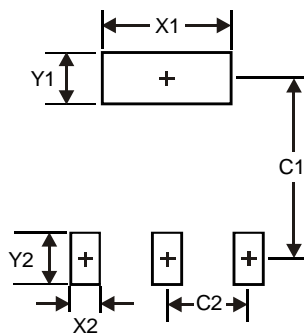


Package Outline Dimensions



SOT223			
Dim	Min	Max	Typ
A	1.55	1.65	1.60
A1	0.010	0.15	0.05
b1	2.90	3.10	3.00
b2	0.60	0.80	0.70
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



Dimensions	Value (in mm)
X1	3.3
X2	1.2
Y1	1.6
Y2	1.6
C1	6.4
C2	2.3

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 © 2011, Diodes Incorporated

www.diodes.com