

**75V NPN SILICON PLANAR HIGH VOLTAGE TRANSISTOR IN SOT-223**
**Features and Benefits**

- $BV_{CEO} > 75V$
- 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**

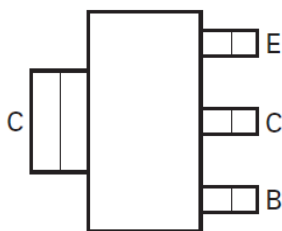
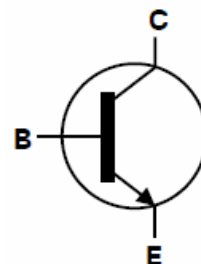
**Mechanical Data**

- 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)

SOT223



Top View

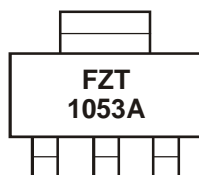

 Top View  
Pin Out


Equivalent Circuit

**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<sub>A</sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	150	V
Collector-Emitter Voltage	V <sub>CEO</sub>	75	V
Emitter-Base Voltage	V <sub>EBO</sub>	7.5	V
Continuous Collector Current	I <sub>C</sub>	4.5	A
Base Current	I <sub>B</sub>	500	mA
Peak Pulse Current (Note 2)	I <sub>CM</sub>	10	A

## Thermal Characteristics @T<sub>A</sub> = 25°C unless otherwise specified

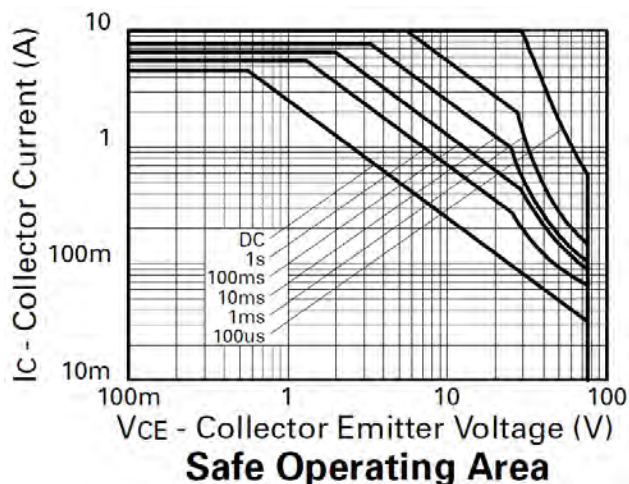
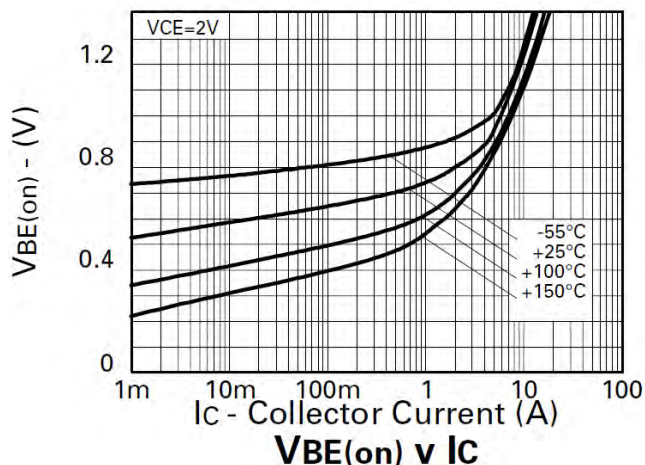
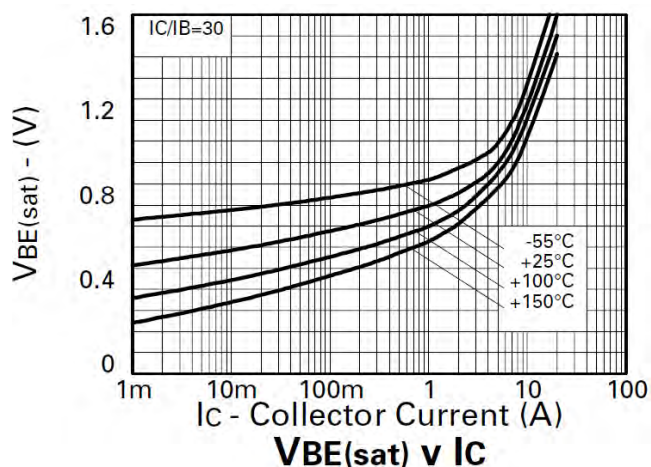
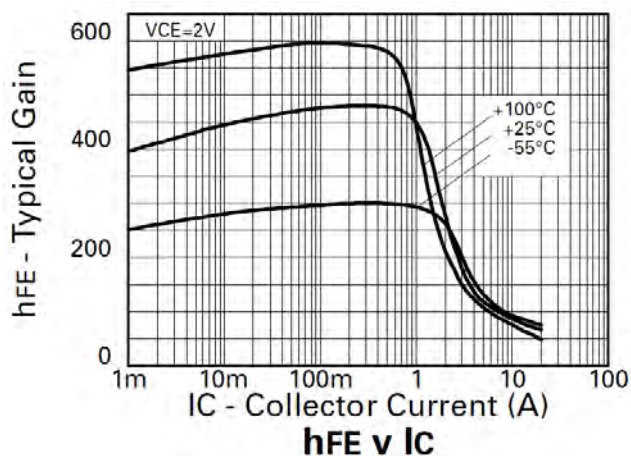
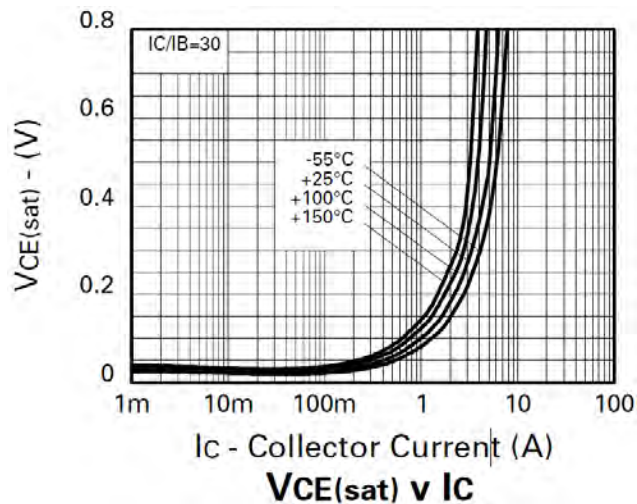
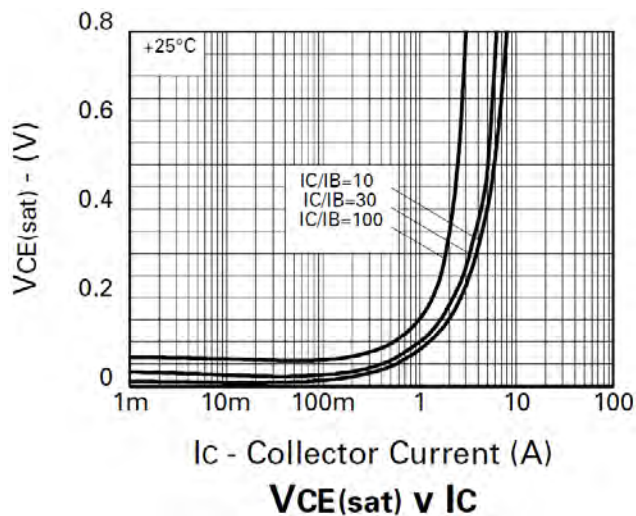
Characteristic	Symbol	Value	Unit
Collector Power Dissipation (Note 2)	P <sub>D</sub>	2.5	W
Thermal Resistance, Junction to Ambient (Note 2)	R <sub>θJA</sub>	50	°C/W
Thermal Resistance, Junction to Leads (Note 3)	R <sub>θJL</sub>	10.88	°C/W
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C

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

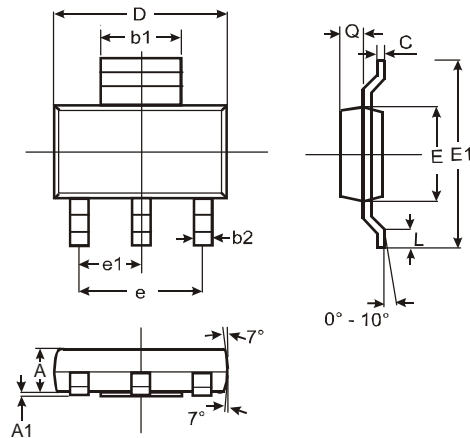
Characteristic	Symbol	Min	Typ.	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	BV <sub>CBO</sub>	150	250	-	V	I <sub>C</sub> = 100μA
Collector-Emitter Breakdown Voltage	BV <sub>CES</sub>	150	250	-	V	I <sub>C</sub> = 100μA
Collector-Emitter Breakdown Voltage (Note 4)	BV <sub>CEO</sub>	75	100	-	V	I <sub>C</sub> = 10mA
Collector-Emitter Breakdown Voltage	BV <sub>CEV</sub>	150	250	-	V	I <sub>C</sub> = 100μA, V <sub>EB</sub> = 1V
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	7.5	8.8	-	V	I <sub>E</sub> = 100μA
Collector Cutoff Current	I <sub>CBO</sub>	-	0.9	10	nA	V <sub>CB</sub> = 120V
Collector Cutoff Current	I <sub>CES</sub>	-	1.5	10	nA	V <sub>CES</sub> = 120V
Emitter Cutoff Current	I <sub>EBO</sub>	-	0.3	10	nA	V <sub>EB</sub> = 4V
DC current transfer Static ratio (Note 4)	h <sub>FE</sub>	270	440	-	-	I <sub>C</sub> = 10mA, V <sub>CE</sub> = 2V
		300	450	1200		I <sub>C</sub> = 0.5A, V <sub>CE</sub> = 2V
		300	450	-		I <sub>C</sub> = 1A, V <sub>CE</sub> = 2V
		40	60	-		I <sub>C</sub> = 4.5A, V <sub>CE</sub> = 2V
		-	20	-		I <sub>C</sub> = 10A, V <sub>CE</sub> = 2V
Collector-Emitter Saturation Voltage (Note 4)	V <sub>CE(sat)</sub>	-	21	30	mV	I <sub>C</sub> = 0.2A, I <sub>B</sub> = 20mA
		-	55	75		I <sub>C</sub> = 0.5A, I <sub>B</sub> = 20mA
		-	150	200		I <sub>C</sub> = 1A, I <sub>B</sub> = 10mA
		-	160	210		I <sub>C</sub> = 2A, I <sub>B</sub> = 100mA
		-	350	440		I <sub>C</sub> = 4.5A, I <sub>B</sub> = 200mA
Base-Emitter Saturation Voltage (Note 4)	V <sub>BE(sat)</sub>	-	900	1000	mV	I <sub>C</sub> = 3A, I <sub>B</sub> = 100mA
Base-Emitter Turn-on Voltage (Note 4)	V <sub>BE(on)</sub>	-	825	950	mV	I <sub>C</sub> = 3A, V <sub>CE</sub> = 2V
Transitional Frequency (Note 4)	f <sub>T</sub>	-	140	-	MHz	I <sub>C</sub> = 50mA, V <sub>CE</sub> = 10V, f = 100MHz
Output capacitance	C <sub>obo</sub>	-	21	30	pF	V <sub>CB</sub> = 10V, f = 1MHz,
Switching Time	t <sub>on</sub>	-	162	-	ns	V <sub>CC</sub> = 50V, I <sub>C</sub> = 2A,
	t <sub>off</sub>	-	900	-	ns	I <sub>B1</sub> = I <sub>B2</sub> = ±20mA

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

## Electrical Characteristics

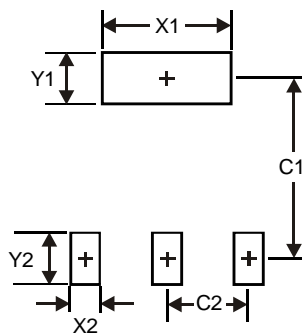


## Package Outline Dimensions



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

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