



**FZT849** 

#### 30V NPN MEDIUM POWER HIGH CURRENT TRANSISTOR IN SOT223

#### **Features**

- BV<sub>CEO</sub> > 30V
- I<sub>C</sub> = 7A High Continuous Collector Current
- I<sub>CM</sub> = 20A Peak Pulse Current
- P<sub>D</sub> = 3W Power Dissipation
- Very Low Saturation Voltages
- Complimentary PNP Type FZT949
- Lead-Free Finish; RoHS Compliant (Notes 1 & 2)
- Halogen and Antimony Free. "Green" Device (Note 3)
- Qualified to AEC-Q101 Standards for High Reliability

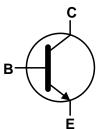
### **Mechanical Data**

- 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 (3)
- Weight: 0.112 grams (Approximate)

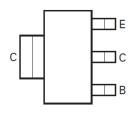
SOT223







**Equivalent Circuit** 



Top View Pin-Out

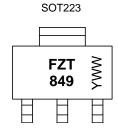
## **Ordering Information** (Note 4)

Product	Compliance	Marking	Reel size (inches)	Tape width (mm)	Quantity per reel
FZT849TA	AEC-Q101	FZT849	7	12mm	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/quality/lead\_free.html 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/products/packages.html.

### **Marking Information**



FZT 849 = Product Type Marking Code YWW = Date Code Marking Y or Y = Last Digit of Year (ex: 5= 2015) WW or WW = Week Code (01~53)



### Absolute Maximum Ratings (@TA = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	80	V
Collector-Emitter Voltage	V <sub>CEO</sub>	30	V
Emitter-Base Voltage	V <sub>EBO</sub>	7	V
Continuous Collector Current	lc	7	Α
Peak Pulse Current	I <sub>CM</sub>	20	Α

## Thermal Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Value	Unit		
Power Dissipation	(Note 5)		3.0 24	W	
Linear Derating Factor	(Note 6)	PD	1.6 12.8	mW/°C	
Thermal Resistance, Junction to Ambient	(Note 5)	$R_{ heta JA}$	42		
Thermal Resistance, Junction to Ambient	(Note 6)	$R_{ heta JA}$	78	°C/W	
Thermal Resistance Junction to Lead	(Note 7)	$R_{ heta JL}$	8.8		
Operating and Storage Temperature Range	T <sub>J</sub> , T <sub>STG</sub>	-55 to +150	°C		

# ESD Ratings (Note 8)

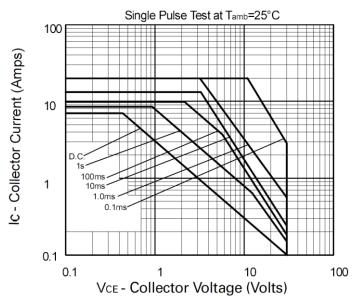
Characteristic	Symbol	Value	Unit	JEDEC Class
Electrostatic Discharge - Human Body Model	ESD HBM	4,000	V	3A
Electrostatic Discharge - Machine Model	ESD MM	400	V	С

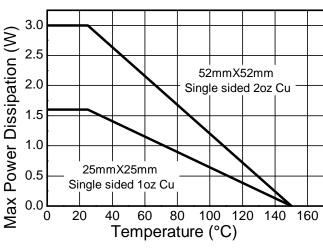
Notes:

- 5. For a device mounted with the collector lead on 52mm x 52mm 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady-state.
- 6. Same as Note 6, except the device is mounted on 25mm x 25mm 1oz copper.
- 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.



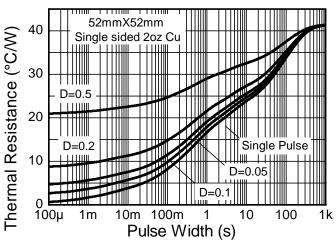
## **Thermal Characteristics and Derating Information**

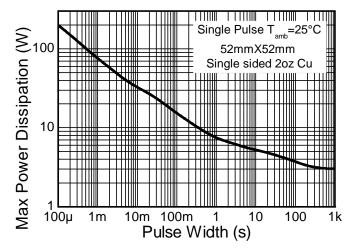




# **Safe Operating Area**

**Derating Curve** 





**Transient Thermal Impedance** 

**Pulse Power Dissipation** 



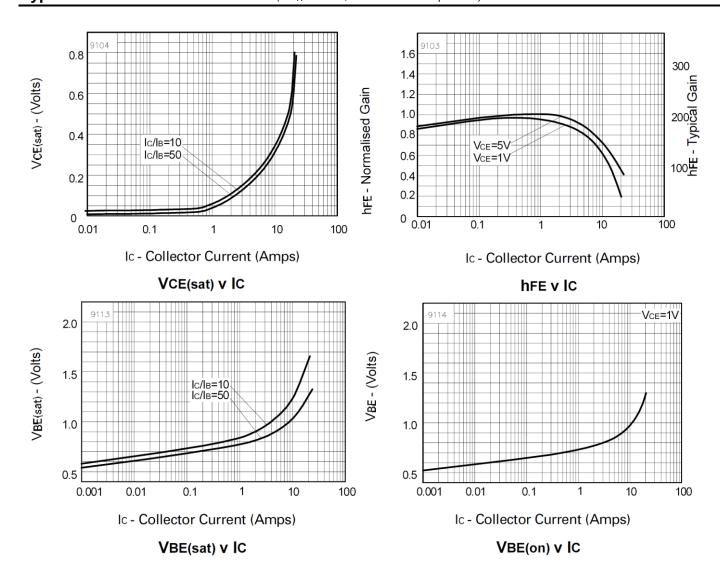
# Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition
Collector-Base Breakdown Voltage	$BV_{CBO}$	80	120	_	V	$I_C = 100\mu A$
Collector-Emitter Breakdown Voltage (Note 9)	BV <sub>CEO</sub>	30	40	_	V	$I_C = 10mA$
Emitter-Base Breakdown Voltage	BV <sub>EBO</sub>	7	_	_	V	$I_E = 100\mu A$
Collector-Base Cut-Off Current	I <sub>CBO</sub>	_	_	50	nA	V <sub>CB</sub> = 70V
Collector Cut-Off Current	I <sub>CES</sub>	_		50	nA	V <sub>CES</sub> = 45V
Emitter Cut-Off Current	I <sub>EBO</sub>	_		10	nA	$V_{EB} = 6V$
Collector-Emitter Saturation Voltage (Note 9)	VCE(sat)	_	35 67 188	50 110 215 350	mV	$I_C = 500\text{mA}, I_B = 20\text{mA}$ $I_C = 1\text{A}, I_B = 20\text{mA}$ $I_C = 2\text{A}, I_B = 20\text{mA}$ $I_C = 6.5\text{A}, I_B = 300\text{mA}$
Base-Emitter Saturation Voltage (Note 9)	$V_{BE(sat)}$	_		1.2	V	$I_C = 6.5A$ , $I_B = 300mA$
Base-Emitter Turn-On Voltage (Note 9)	V <sub>BE(on)</sub>	_	_	1.13	V	$I_C = 6.5A, V_{CE} = 1V$
DC Current Gain (Note 9)	h <sub>FE</sub>	100 100 100 30	200 200 150 65	300	_	$I_{C} = 10$ mA, $V_{CE} = 1$ V $I_{C} = 1$ A, $V_{CE} = 1$ V $I_{C} = 7$ A, $V_{CE} = 1$ V $I_{C} = 2$ 0A, $V_{CE} = 2$ V
Transitional Frequency	f <sub>T</sub>	100	_	_	MHz	I <sub>C</sub> = 100mA, V <sub>CE</sub> = 10V f=50MHz
Output Capacitance	C <sub>obo</sub>	_	75	_	pF	V <sub>CB</sub> = 10V, f=1MHz
Switching Times	t <sub>on</sub> t <sub>off</sub>	_	45 630	_	ns ns	I <sub>C</sub> = 1A, I <sub>B1</sub> = 100mA I <sub>B2</sub> = 100mA, V <sub>CC</sub> = 10V

Note: 9. Measured under pulsed conditions. Pulse width  $\leqslant$  300µs. Duty cycle  $\leqslant$  2%.



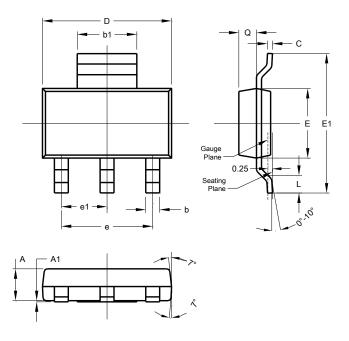
# Typical Electrical Characteristics (@T<sub>A</sub> = +25°C, unless otherwise specified.)





### **Package Outline Dimensions**

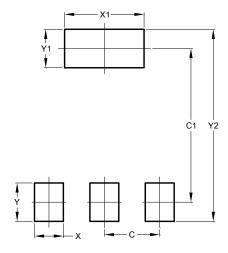
Please see AP02002 at http://www.diodes.com/datasheets/ap02002.pdf for the latest version.



SOT223						
Dim	Min	Max	Тур			
Α	1.55	1.65	1.60			
A1	0.010	0.15	0.05			
b	0.60	0.80	0.70			
b1	2.90	3.10	3.00			
С	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			
е	-	-	4.60			
e1	-	-	2.30			
L	0.85	1.05	0.95			
Q	0.84	0.94	0.89			
All [	All Dimensions in mm					

## **Suggested Pad Layout**

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



Dimensions	Value (in mm)
С	2.30
C1	6.40
Х	1.20
X1	3.30
Y	1.60
Y1	1.60
Y2	8.00

June 2015



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