

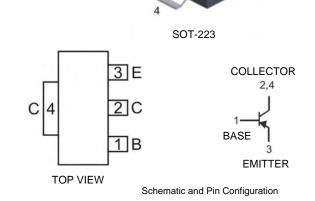


# PNP SURFACE MOUNT TRANSISTOR

3

#### Features

- **Epitaxial Planar Die Construction** .
- Complementary NPN Type Available (DZT851)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Lead Free By Design/RoHS Compliant (Note 1)
- "Green" Device (Note 2)
- **Mechanical Data**
- Case: SOT-223 •
- Case Material: Molded Plastic, "Green" Molding Compound. • UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminals: Finish Matte Tin annealed over Copper Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.115 grams (approximate)



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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CBO</sub>	-100	V
Collector-Emitter Voltage	V <sub>CEO</sub>	-60	V
Emitter-Base Voltage	V <sub>EBO</sub>	-6	V
Continuous Collector Current	Ι <sub>c</sub>	-5	A
Power Dissipation	P <sub>tot</sub>	1(Note 3) 3(Note 4)	W
Operating and Storage Temperature Range	Tj, T <sub>STG</sub>	-55 to +150	°C

1. No purposefully added lead. Notes:

Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead\_free/index.php. Device mounted on FR-4 PCB, pad layout as shown on page 4. 2.

- 3.
- 4. The power which can be dissipated, assuming the device is mounted in a typical manner on a PCB with copper equal to 4 square inch minimum.



.

Characteristic	Symbol	Min	Тур	Max	Unit	Test Condition	
OFF CHARACTERISTICS			•				
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	-100	_	_	V	$I_{\rm C} = -100 \mu {\rm A}, \ I_{\rm E} = 0$	
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	-60	_		V	$I_{\rm C} = -10 {\rm mA}^*, I_{\rm B} = 0$	
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-6	_		V	$I_{E} = -100 \mu A, I_{C} = 0$	
Collector Cutoff Current	I <sub>CBO</sub>	_	_	-50 -1	nA μA	$V_{CB} = -80V, I_E = 0$ $V_{CB} = -80V, I_E = 0, T_A = 100^{\circ}$	
Emitter Cutoff Current	I <sub>EBO</sub>	_	—	-10	nA	$V_{EB} = -6V, I_{C} = 0$	
ON CHARACTERISTICS						-	
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$		-20 -85 -155 -370	-50 -140 -210 -460	mV	$\begin{split} I_{C} &= -100 \text{mA}, \ I_{B} &= -10 \text{mA}^{*} \\ I_{C} &= -1\text{A}, \ I_{B} &= -100 \text{mA}^{*} \\ I_{C} &= -2\text{A}, \ I_{B} &= -200 \text{mA}^{*} \\ I_{C} &= -5\text{A}, \ I_{B} &= -500 \text{mA}^{*} \end{split}$	
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	_	-1080	-1240	mV	$I_{\rm C} = -5A, I_{\rm B} = -500 \text{mA}^*$	
Base-Emitter Turn-On Voltage	V <sub>BE(ON)</sub>	_	-935	-1070	mV	$I_{CE} = -5A, V_{CE} = -1V^*$	
DC Current Gain	h <sub>FE</sub>	100 100 75 10	200 200 90 25	 300 	_	$ \begin{array}{l} I_{C}=-10mA, \ V_{CE}=-1V^{*} \\ I_{C}=-2A, \ V_{CE}=-1V^{*} \\ I_{C}=-5A, \ V_{CE}=-1V^{*} \\ I_{C}=-10A, \ V_{CE}=-1V^{*} \end{array} $	
SMALL SIGNAL CHARACTERISTICS			•				
Current Gain-Bandwidth Product	f⊤		120	_	MHz	$I_{C} = -100 \text{mA}, V_{CE} = -10 \text{V}, f = 50 \text{MHz}$	
Output Capacitance	C <sub>obo</sub>	_	74	_	pF	$V_{CB} = -10V, f = 1MHz$	
SWITCHING CHARACTERISTICS							
Switching Times	t <sub>on</sub> t <sub>off</sub>		82 350		ns	$I_{C} = -2A, I_{B1} = -200mA$ $I_{B2} = +200mA, V_{CC} = -10V$	

# Typical Characteristics @T<sub>amb</sub> = 25°C unless otherwise specified

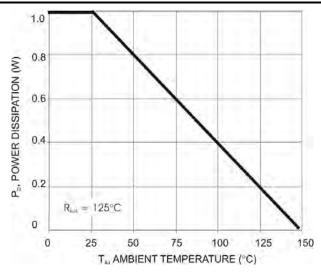


Fig. 1 Power Dissipation VS. Ambient Temperature (Note 3)

3. Device mounted on FR-4 PCB, pad layout as shown on page 4.

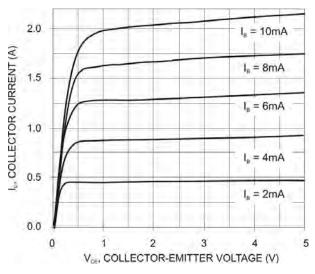
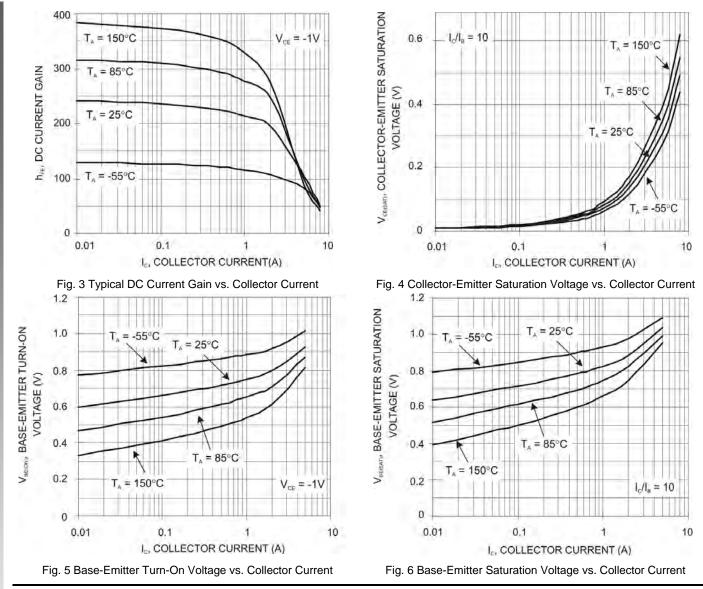


Fig. 2 Collector Current vs. Collector Emitter Voltage

Notes:



NEW PRODUCT

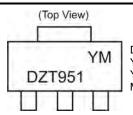


#### Ordering Information (Note 5)

Device	Packaging	Shipping
DZT951-13	SOT-223	2500/Tape & Reel

Notes: 5. Packaging Details as shown on page 4, or go to our website at http://www.diodes.com/ap2007.pdf.

## **Marking Information**

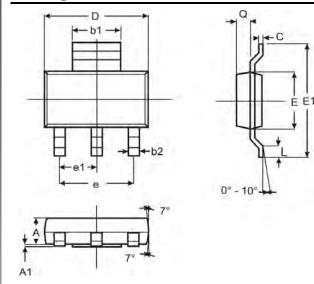


 $\begin{array}{l} \mathsf{DZT951} = \mathsf{Product Type Marking Code} \\ \mathsf{YM} = \mathsf{Date Code Marking} \\ \mathsf{Y} = \mathsf{Year ex: T} = 2006 \\ \mathsf{M} = \mathsf{Month ex: 9} = \mathsf{September} \end{array}$ 

Date Code Key												
Year	200	6	2007		2008	20	09	2010		2011	:	2012
Code	Т		U		V	V	V	Х		Y		Z
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	0	Ν	D

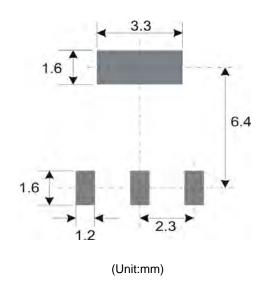


### **Package Outline Dimensions**



SOT-223							
Dim	Min	Max	Тур				
Α	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				
С	0.20	0.30	0.25				
D	6.45	6.55	6.50				
Е	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: (Based on IPC-SM-782)



#### IMPORTANT NOTICE

Diodes Incorporated and its subsidiaries reserve the right to make modifications, enhancements, improvements, corrections or other changes without further notice to any product herein. Diodes Incorporated does not assume any liability arising out of the application or use of any product described herein; neither does it convey any license under its patent rights, nor the rights of others. The user of products 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 our website, harmless against all damages.

#### LIFE SUPPORT

Diodes Incorporated products are not authorized for use as critical components in life support devices or systems without the expressed written approval of the President of Diodes Incorporated.