





#### PNP SURFACE MOUNT TRANSISTOR

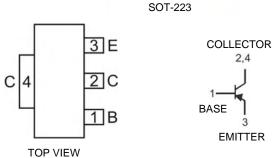
#### **Features**

- 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)





Schematic and Pin Configuration

#### **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	$V_{EBO}$	-6	V
Continuous Collector Current	I <sub>C</sub>	-5	A
Power Dissipation	P <sub>tot</sub>	1(Note 3) 3(Note 4)	W
Operating and Storage Temperature Range	$T_j$ , $T_{STG}$	-55 to +150	°C

Notes:

- 1. No purposefully added lead.
- 2. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead\_free/index.php.
- 3. Device mounted on FR-4 PCB, pad layout as shown on page 4.
- 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.

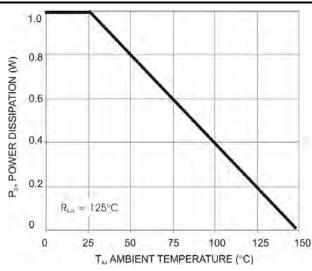


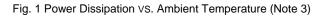
### **Electrical Characteristics** @T<sub>A</sub> = 25°C unless otherwise specified

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

Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%

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





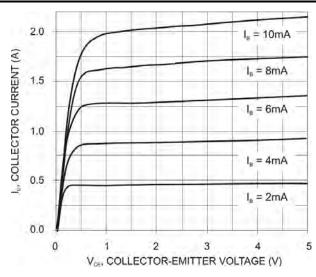


Fig. 2 Collector Current vs. Collector Emitter Voltage

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



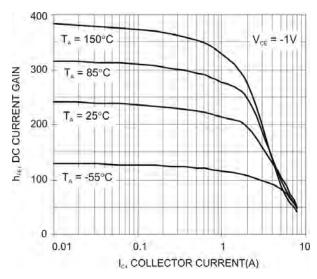


Fig. 3 Typical DC Current Gain vs. Collector Current

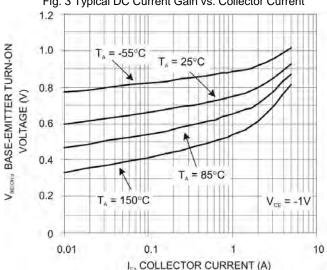


Fig. 5 Base-Emitter Turn-On Voltage vs. Collector Current

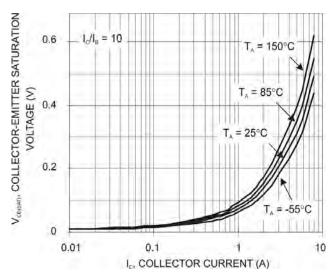


Fig. 4 Collector-Emitter Saturation Voltage vs. Collector Current

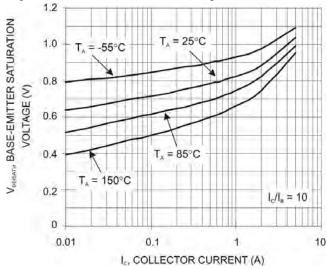


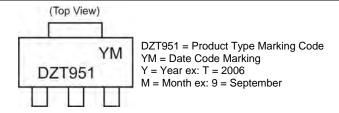
Fig. 6 Base-Emitter Saturation Voltage vs. Collector Current

#### **Ordering Information** (Note 5)

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

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

# **Marking Information**

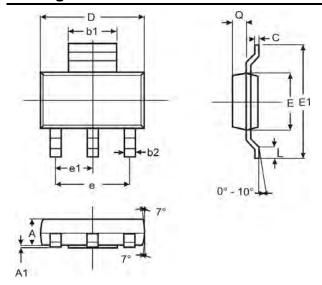


Date Code Key

Year	200	6	2007		2008	20	09	2010		2011	:	2012
Code	Т		U		V	V	V	Χ		Υ		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	N	D

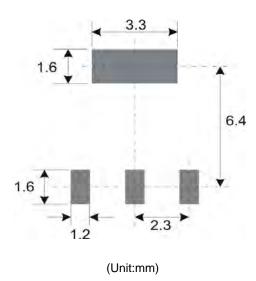


## **Package Outline Dimensions**



SOT-223							
Dim	Min	Max	Тур				
Α	1.55	1.65	1.60				
<b>A</b> 1	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 Dimensions in mm							

# Suggested Pad Layout: (Based on IPC-SM-782)



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