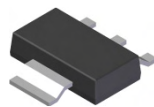


### Features

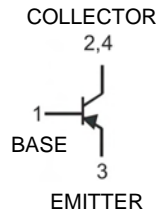
- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DZT851)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 2)**

### Mechanical Data

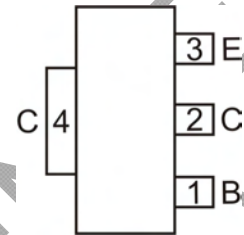
- Case: SOT-223
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020D
- Terminals: Finish - Matte Tin annealed over Copper Leadframe (Lead Free Plating). Solderable per MIL-STD-202, Method 208
- Marking Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.115 grams (approximate)



Top View



Device Schematic



Pin Out Configuration

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-100	V
Collector-Emitter Voltage	$V_{CEO}$	-60	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Continuous Collector Current	$I_C$	-5	A

### Thermal Characteristics

Characteristic	Symbol	Value	Unit
Power Dissipation	$P_D$	1 (Note 3) 3 (Note 4)	W
Operating and Storage Temperature Range	$T_J, T_{STG}$	-55 to +150	$^\circ\text{C}$

- 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](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** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

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

Notes: 5. Measured under pulsed conditions. Pulse width = 300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$

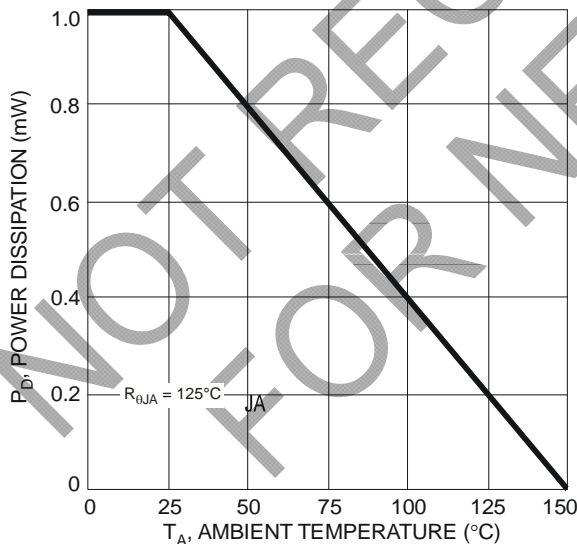


Fig. 1 Power Dissipation vs. Ambient Temperature

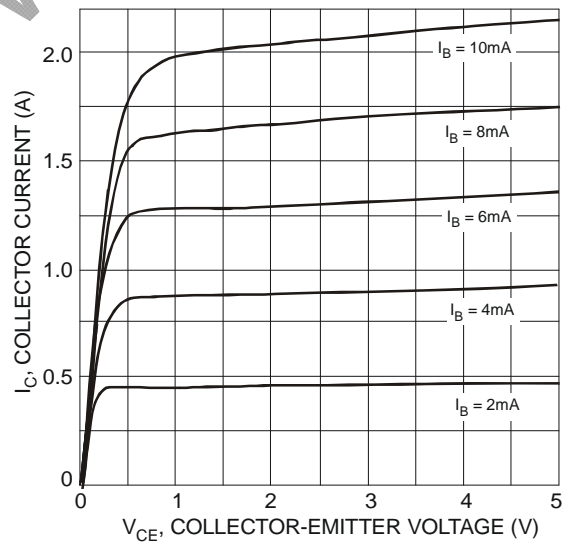


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

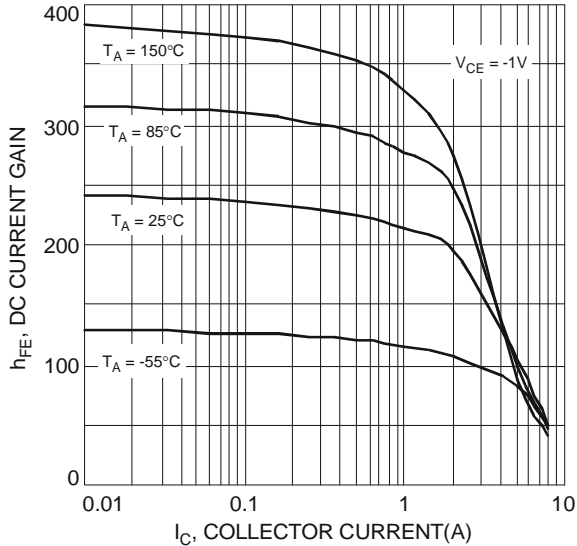


Fig. 3 Typical DC Current Gain vs. Collector Current

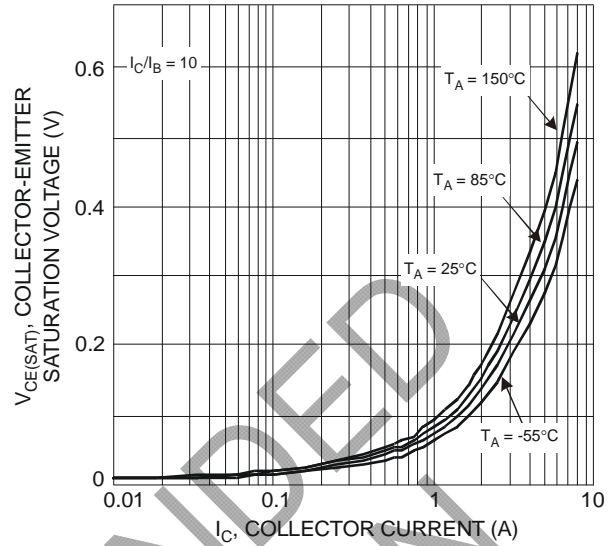


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

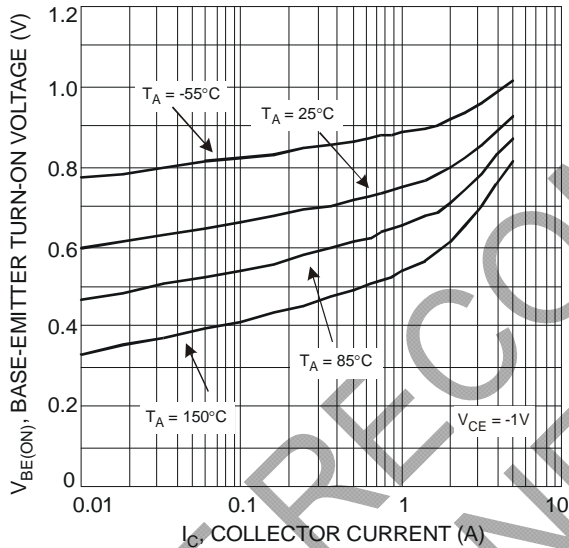


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

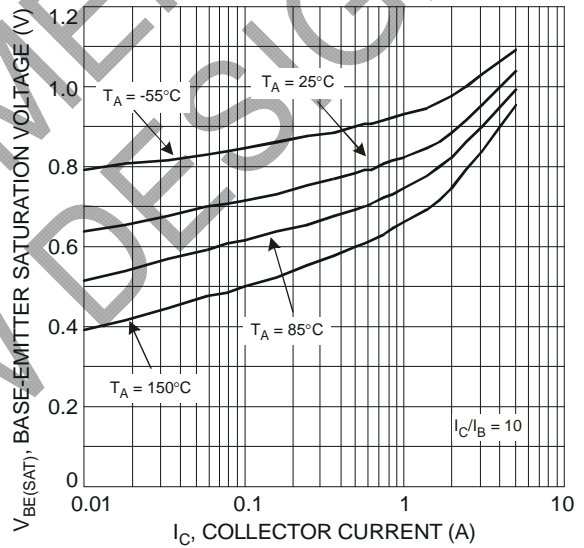


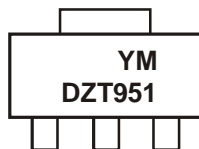
Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

**Ordering Information** (Note 6)

Part Number	Case	Packaging
DZT951-13	SOT-223	2500/Tape & Reel

Notes: 6. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**Marking Information**

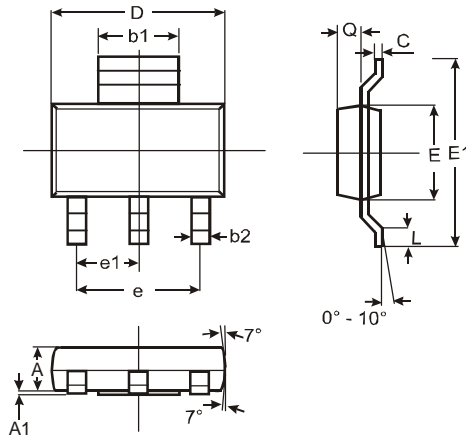


DZT951 = Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year (ex: T = 2006)  
 M = Month (ex: 9 = September)

Date Code Key

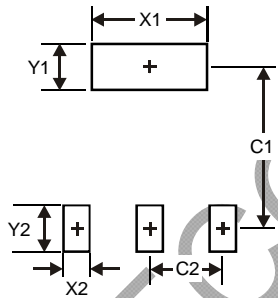
Year	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015		
Code	T	U	V	W	X	Y	Z	A	B	C		
Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

**Package Outline Dimensions**



SOT-223			
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

NOT RECOMMENDED FOR NEW DESIGN

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