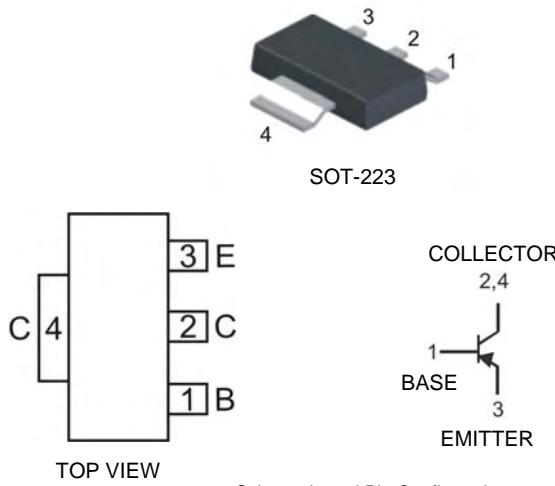


## Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DZT853)
- 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 & Type Code Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.115 grams (approximate)



Schematic and Pin Configuration

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-140	V
Collector-Emitter Voltage	$V_{CEO}$	-100	V
Emitter-Base Voltage	$V_{EBO}$	-6	V
Continuous Collector Current	$I_C$	-5	A
Power Dissipation	$P_{tot}$	1(Note 3) 3(Note 4)	W
Operating and Storage Temperature Range	$T_j, T_{STG}$	-55 to +150	°C

Notes:

- No purposefully added lead.
- 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).
- Device mounted on FR-4 PCB, pad layout as shown on page 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	$V_{(\text{BR})\text{CBO}}$	-140	—	—	V	$I_C = -100\mu\text{A}, I_E = 0$
Collector-Emitter Breakdown Voltage	$V_{(\text{BR})\text{CEO}}$	-100	—	—	V	$I_C = -10\text{mA}^*, I_B = 0$
Emitter-Base Breakdown Voltage	$V_{(\text{BR})\text{EBO}}$	-6	—	—	V	$I_E = -100\mu\text{A}, I_C = 0$
Collector Cutoff Current	$I_{\text{CBO}}$	—	—	-50 -1	nA $\mu\text{A}$	$V_{\text{CB}} = -100\text{V}, I_E = 0$ $V_{\text{CB}} = -100\text{V}, I_E = 0, T_A = 100^\circ\text{C}$
Emitter Cutoff Current	$I_{\text{EBO}}$	—	—	-10	nA	$V_{\text{EB}} = -6\text{V}, I_C = 0$
<b>ON CHARACTERISTICS</b>						
Collector-Emitter Saturation Voltage	$V_{\text{CE}(\text{SAT})}$	— — — — —	-20 -90 -160 -220 -300	-50 -115 -220 -420	mV	$I_C = -100\text{mA}, I_B = -10\text{mA}^*$ $I_C = -1\text{A}, I_B = -100\text{mA}^*$ $I_C = -2\text{A}, I_B = -200\text{mA}^*$ $I_C = -4\text{A}, I_B = -400\text{mA}^*$
Base-Emitter Saturation Voltage	$V_{\text{BE}(\text{SAT})}$	—	-1010	-1170	mV	$I_C = -4\text{A}, I_B = -400\text{mA}^*$
Base-Emitter Turn-On Voltage	$V_{\text{BE}(\text{ON})}$	—	-925	-1160	mV	$I_{\text{CE}} = -4\text{A}, V_{\text{CE}} = -1\text{V}^*$
DC Current Gain	$h_{\text{FE}}$	100 100 50 30 —	— 300 — — 15	—	—	$I_C = -10\text{mA}, V_{\text{CE}} = -1\text{V}^*$ $I_C = -1\text{A}, V_{\text{CE}} = -1\text{V}^*$ $I_C = -3\text{A}, V_{\text{CE}} = -1\text{V}^*$ $I_C = -4\text{A}, V_{\text{CE}} = -1\text{V}^*$ $I_C = -10\text{A}, V_{\text{CE}} = -1\text{V}^*$
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Current Gain-Bandwidth Product	$f_T$	—	125	—	MHz	$I_C = -100\text{mA}, V_{\text{CE}} = -10\text{V}, f = 50\text{MHz}$
Output Capacitance	$C_{\text{obo}}$	—	65	—	pF	$V_{\text{CB}} = -10\text{V}, f = 1\text{MHz}$
<b>SWITCHING CHARACTERISTICS</b>						
Switching Times	$t_{\text{on}}$ $t_{\text{off}}$	—	110 460	—	ns	$I_C = -2\text{A}, I_{B1} = -200\text{mA}$ $I_{B2} = 200\text{mA}, V_{\text{CC}} = -10\text{V}$

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

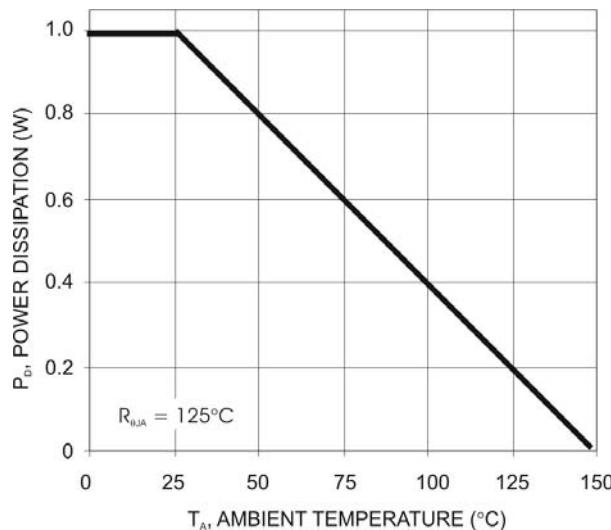
**Typical Characteristics** @ $T_{\text{amb}} = 25^\circ\text{C}$  unless otherwise specified


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

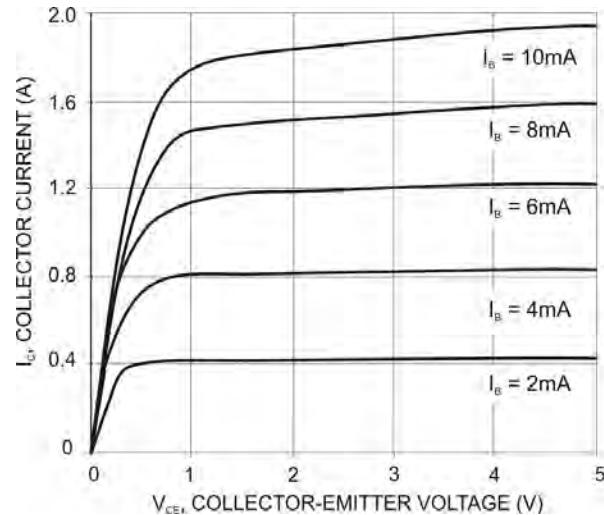


Fig. 2 Collector Current vs. Collector Emitter Voltage

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

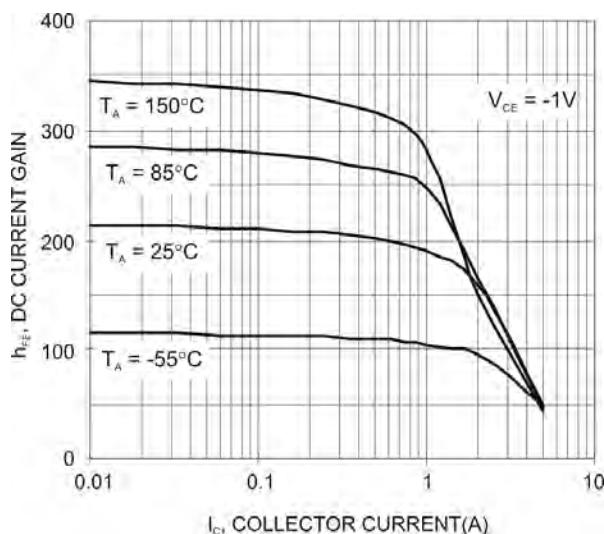


Fig. 3 Typical DC Current Gain vs. Collector Current

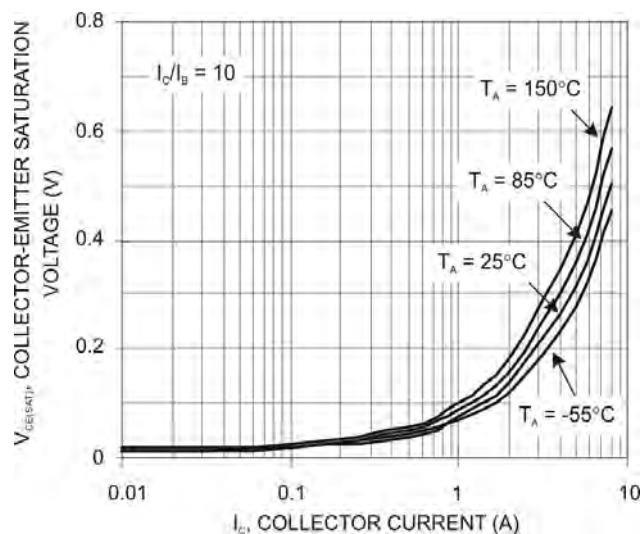


Fig. 4 Collector-Emitter Saturation Voltage vs. Collector Current

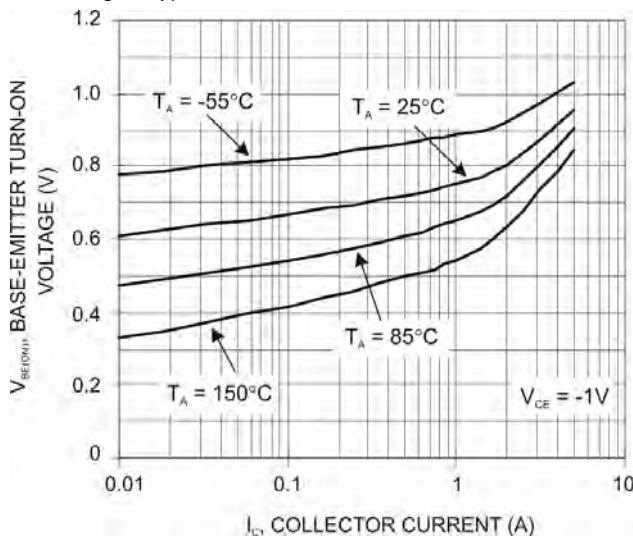


Fig. 5 Base-Emitter Turn-On Voltage vs. Collector Current

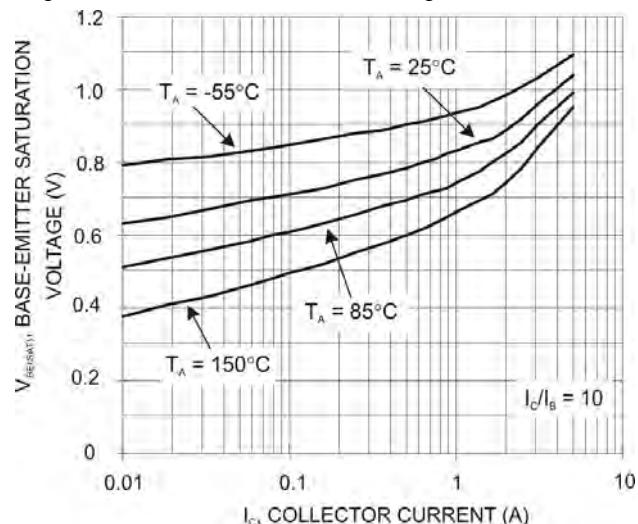


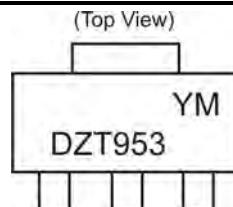
Fig. 6 Base-Emitter Saturation Voltage vs. Collector Current

## Ordering Information (Note 5)

Device	Valid Marking Codes	Packaging	Shipping
DZT953-13	DZT953	SOT-223	2500/Tape & Reel
DZT953-13	PT06	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

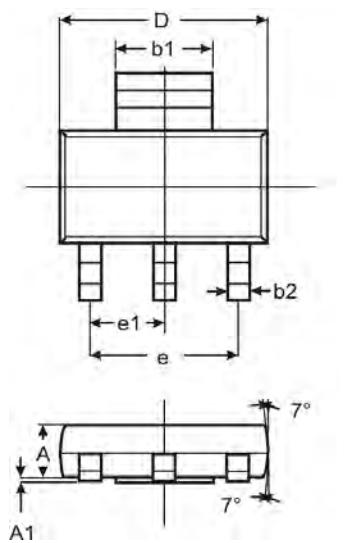


DZT953 or PT06= Product Type Marking Code  
 YM = Date Code Marking  
 Y = Year ex: T = 2006  
 M = Month ex: 9 = September

### Date Code Key

Year	2006	2007	2008	2009	2010	2011	2012					
Code	T	U	V	W	X	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	O	N	D

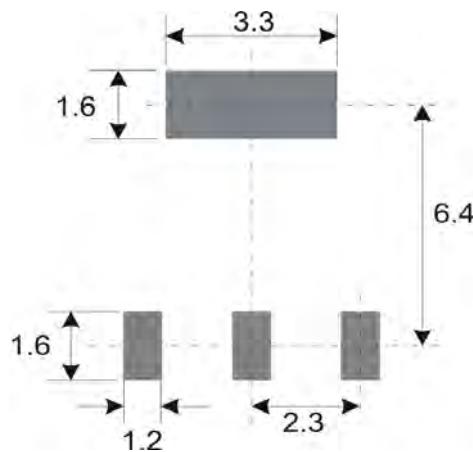
## Package Outline Dimensions



SOT-223			
Dim	Min	Max	Typ
<b>A</b>	1.55	1.65	1.60
<b>A1</b>	0.010	0.15	0.05
<b>b1</b>	2.90	3.10	3.00
<b>b2</b>	0.60	0.80	0.70
<b>C</b>	0.20	0.30	0.25
<b>D</b>	6.45	6.55	6.50
<b>E</b>	3.45	3.55	3.50
<b>E1</b>	6.90	7.10	7.00
<b>e</b>	—	—	4.60
<b>e1</b>	—	—	2.30
<b>L</b>	0.85	1.05	0.95
<b>Q</b>	0.84	0.94	0.89

All Dimensions in mm

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



(Unit:mm)

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