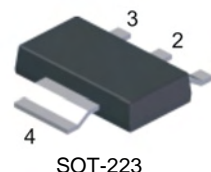


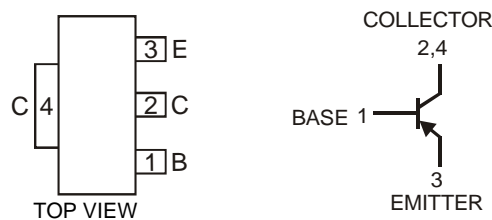
## Features

- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DZT651)
- 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 4
- Ordering Information: See Page 4
- Weight: 0.115 grams



Schematic and Pin Configuration

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

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	$V_{CBO}$	-80	V
Collector-Emitter Voltage	$V_{CEO}$	-60	V
Emitter-Base Voltage	$V_{EBO}$	-5	V
Continuous Collector Current	$I_C$	-3	A
Peak Pulse Collector Current	$I_{CM}$	-6	A

## Thermal Characteristics

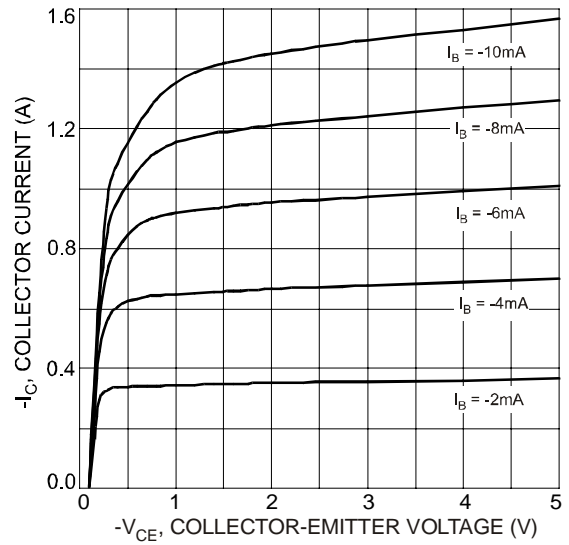
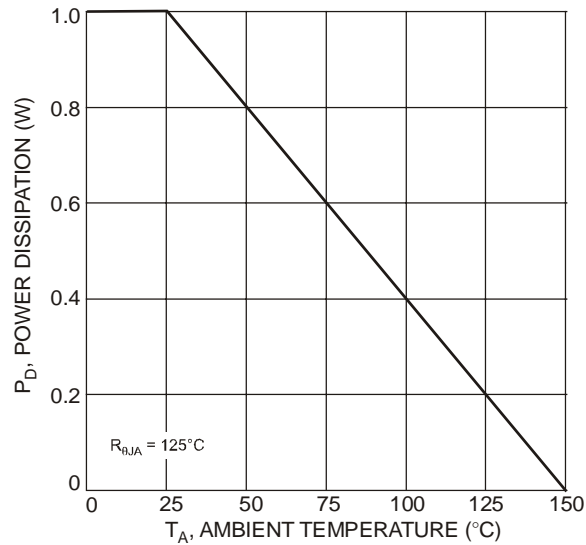
Characteristic	Symbol	Value	Unit
Power Dissipation @ $T_A = 25^\circ\text{C}$	$P_D$	1 (Note 3) 2 (Note 4)	W
Thermal Resistance, Junction to Ambient Air (Note 3) @ $T_A = 25^\circ\text{C}$	$R_{\theta JA}$	125	$^\circ\text{C/W}$
Operating and Storage Temperature Range	$T_j, T_{STG}$	-55 to +150	$^\circ\text{C}$

- 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 last page or in Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>, or on page 4 of this data sheet.
  4. Device mounted on Polyimide PCB with 1.8cm<sup>2</sup> copper area.

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Condition
OFF CHARACTERISTICS (Note 5)						
Collector-Base Breakdown Voltage	V <sub>(BR)CBO</sub>	-80	—	—	V	I <sub>C</sub> = -100μA, I <sub>E</sub> = 0
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	-60	—	—	V	I <sub>C</sub> = -10mA, I <sub>B</sub> = 0
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	-5	—	—	V	I <sub>E</sub> = -100μA, I <sub>C</sub> = 0
Collector Cutoff Current	I <sub>CBO</sub>	—	—	-0.1 -10	μA μA	V <sub>CB</sub> = -60V, I <sub>E</sub> = 0 V <sub>CB</sub> = -60V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C
Emitter Cutoff Current	I <sub>EBO</sub>	—	—	-0.1	μA	V <sub>EB</sub> = -4V, I <sub>C</sub> = 0
ON CHARACTERISTICS (Note 5)						
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	— —	-0.08 -0.2	-0.3 -0.6	V V	I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA I <sub>C</sub> = -3A, I <sub>B</sub> = -300mA
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	—	-0.9	-1.25	V	I <sub>C</sub> = -1A, I <sub>B</sub> = -100mA
Base-Emitter Turn-On Voltage	V <sub>BE(ON)</sub>	—	-0.8	-1	V	V <sub>CE</sub> = -2V, I <sub>C</sub> = -1A
DC Current Gain	h <sub>FE</sub>	70 100 80 40	200 180 160 140	— 300 — —	—	V <sub>CE</sub> = -2V, I <sub>C</sub> = -50mA V <sub>CE</sub> = -2V, I <sub>C</sub> = -500mA V <sub>CE</sub> = -2V, I <sub>C</sub> = -1A V <sub>CE</sub> = -2V, I <sub>C</sub> = -2A
AC CHARACTERISTICS						
Transition Frequency	f <sub>T</sub>	100	145	—	MHz	V <sub>CE</sub> = -5V, I <sub>C</sub> = -100mA, f = 100MHz
Output Capacitance	C <sub>obo</sub>	—	—	30	pF	V <sub>CB</sub> = -10V, f = 1MHz
Switching Times	t <sub>on</sub> t <sub>off</sub>	— —	45 200	— —	ns ns	V <sub>CC</sub> = -10V, I <sub>C</sub> = -500mA, I <sub>B1</sub> = I <sub>B2</sub> = -50mA

Notes: 5. Pulse Test: Pulse width ≤300μs. Duty cycle ≤2.0%.



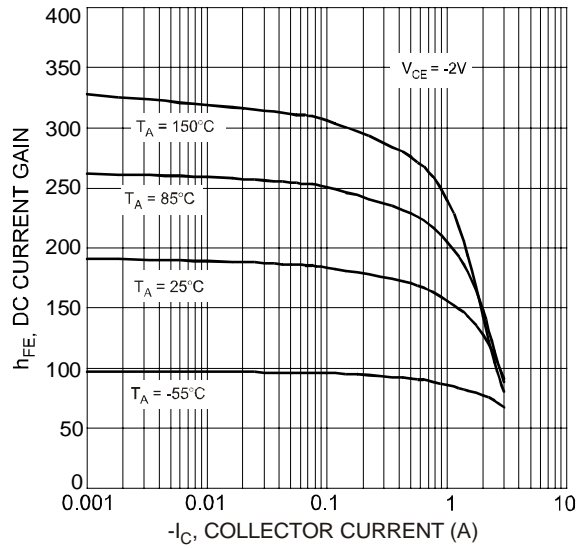


Fig. 3 Typical DC Current Gain vs. Collector Current

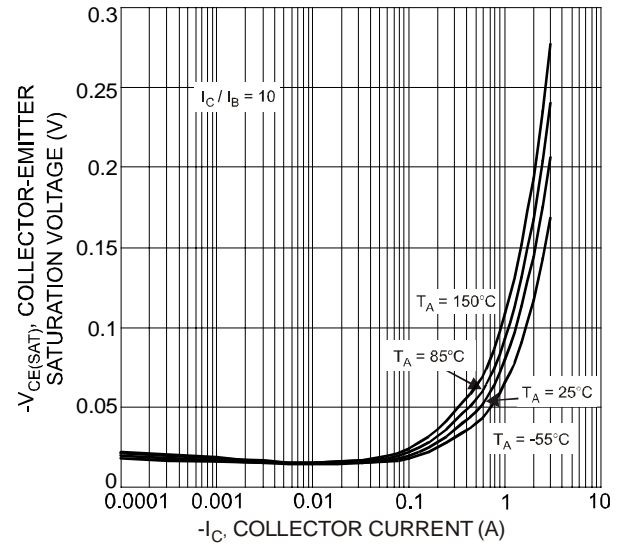


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

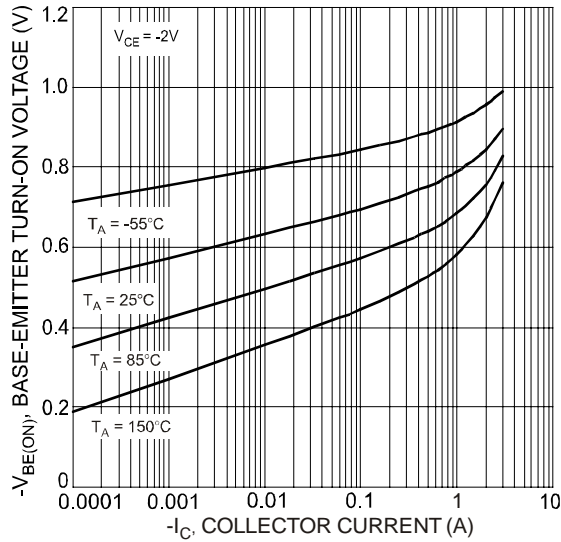


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

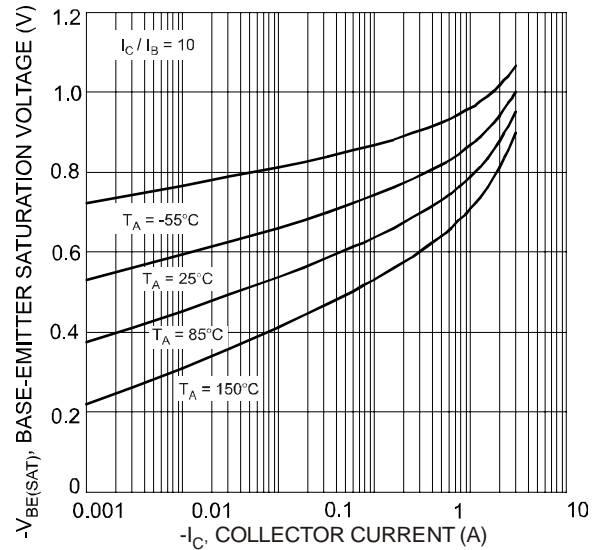


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

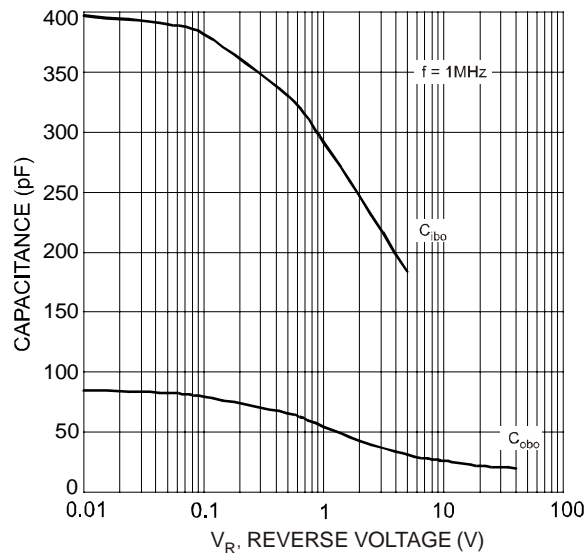


Fig. 7 Typical Capacitance Characteristics

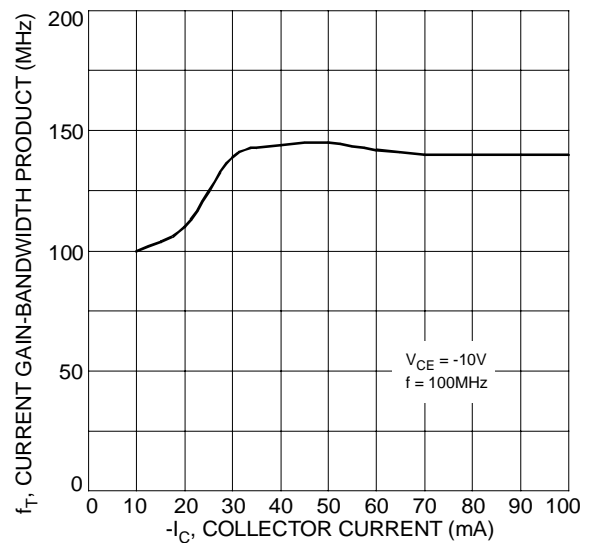


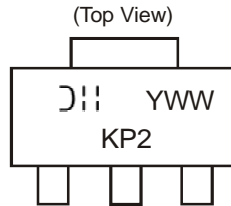
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Ordering Information (Note 6)

Device	Packaging	Shipping
DZT751-13	SOT-223	2500/Tape & Reel

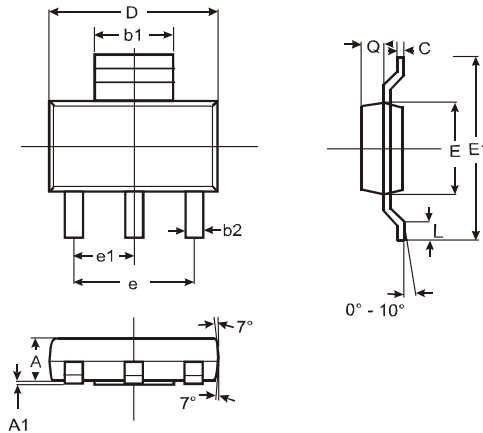
Notes: 6. For packaging details, please go to our website at <http://www.diodes.com/ap02007.pdf>.

## Marking Information



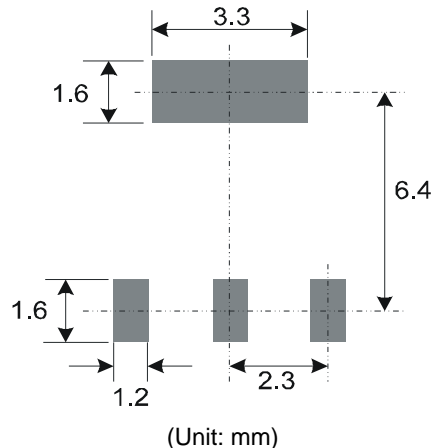
KP2 = Product Type Marking Code  
 YWW = Date Code Marking  
 Y = Last digit of year ex: 7 = 2007  
 WW = Week code 01 - 52

## 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



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