

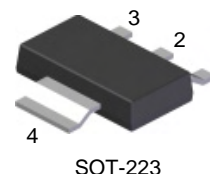


**THE DATASHEET OF  
DZT491-13**



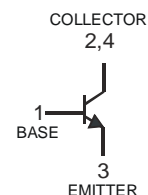
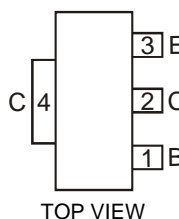
### Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DZT591C)
- 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 @<sub>T<sub>A</sub></sub> = 25°C unless otherwise specified

Characteristic	Symbol	Value	Unit
Collector-Base Voltage	V <sub>CB0</sub>	80	V
Collector-Emitter Voltage	V <sub>CEO</sub>	60	V
Emitter-Base Voltage	V <sub>EBO</sub>	5	V
Collector Continuous Current (Note 3)	I <sub>C</sub>	1	A
Peak Collector Current	I <sub>CM</sub>	2	A
Base Current	I <sub>B</sub>	200	mA
Power Dissipation (Note 3)	P <sub>d</sub>	1	W
Operating and Storage Temperature Range	T <sub>j</sub> , T <sub>STG</sub>	-55 to +150	°C

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
<b>OFF CHARACTERISTICS (Note 4)</b>						
Collector-Base Cutoff Current	I <sub>CB0</sub>	—	—	100	nA	V <sub>CB</sub> = 60V
Emitter-Base Cutoff Current	I <sub>EBO</sub>	—	—	100	nA	V <sub>EB</sub> = 4V
Collector-Emitter Cutoff Current	I <sub>CES</sub>	—	—	100	nA	V <sub>CES</sub> = 60V
Collector-Base Breakdown Voltage	V <sub>(BR)CB0</sub>	80	—	—	V	I <sub>C</sub> = 100μA
Collector-Emitter Breakdown Voltage	V <sub>(BR)CEO</sub>	60	—	—	V	I <sub>C</sub> = 10mA
Emitter-Base Breakdown Voltage	V <sub>(BR)EBO</sub>	5	—	—	V	I <sub>E</sub> = 100μA
<b>ON CHARACTERISTICS (Note 4)</b>						
Collector-Emitter Saturation Voltage	V <sub>CE(SAT)</sub>	—	—	0.25	V	I <sub>C</sub> = 500mA, I <sub>B</sub> = 50mA
		—	—	0.5	V	I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA
DC Current Gain	h <sub>FE</sub>	100	—	—	—	V <sub>CE</sub> = 5V, I <sub>C</sub> = 1mA
		100	—	300	—	V <sub>CE</sub> = 5V, I <sub>C</sub> = 500mA
		80	—	—	—	V <sub>CE</sub> = 5V, I <sub>C</sub> = 1A
		30	—	—	—	V <sub>CE</sub> = 5V, I <sub>C</sub> = 2A
Base-Emitter Saturation Voltage	V <sub>BE(SAT)</sub>	—	—	1.1	V	I <sub>C</sub> = 1A, I <sub>B</sub> = 100mA
Base-Emitter Turn-On Voltage	V <sub>BE(on)</sub>	—	—	1	V	I <sub>C</sub> = 1A, V <sub>CE</sub> = 5V
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Current Gain-Bandwidth Product	f <sub>T</sub>	150	—	—	MHz	V <sub>CE</sub> = 10V, I <sub>C</sub> = 50mA, f = 100MHz
Output Capacitance	C <sub>obo</sub>	—	—	10	pF	V <sub>CB</sub> = 10V, I <sub>E</sub> = 0A, f = 1MHz

- 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 or on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  4. Measured under pulsed conditions. Pulse width = 300ms duty cycle ≤ 2%

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

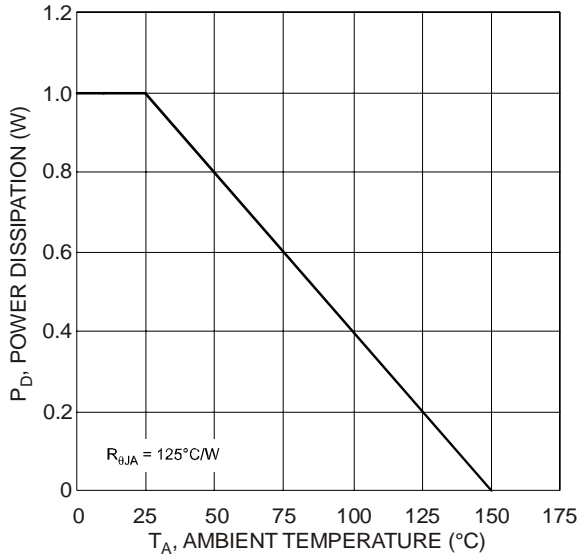


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

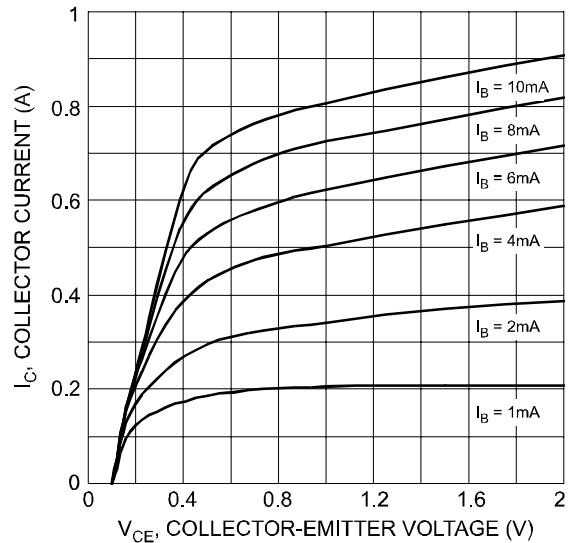


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

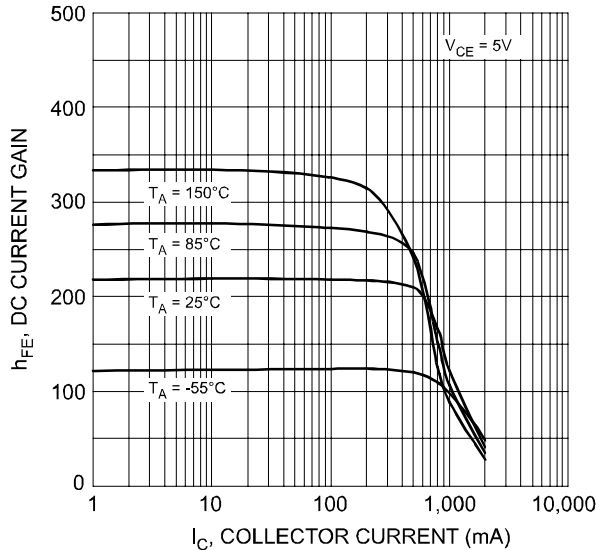


Fig. 3 Typical DC Current Gain vs. Collector Current

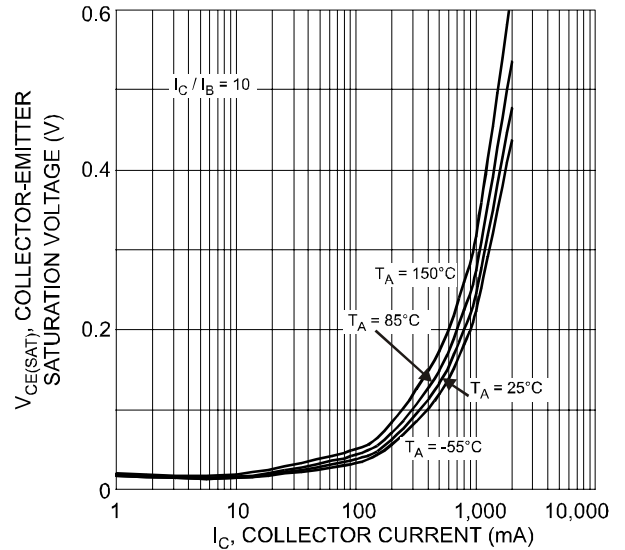


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

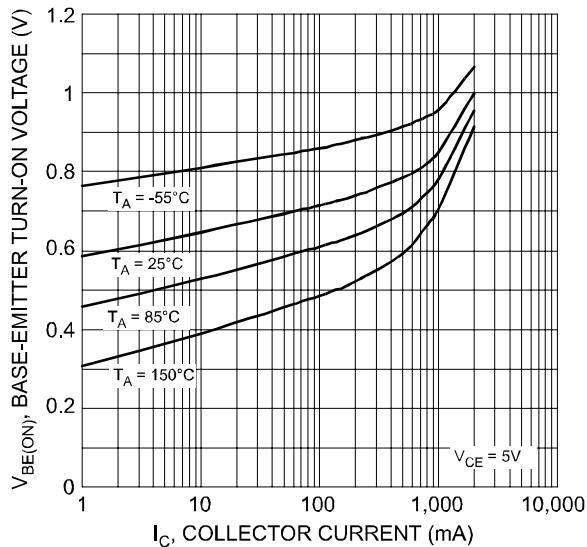


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

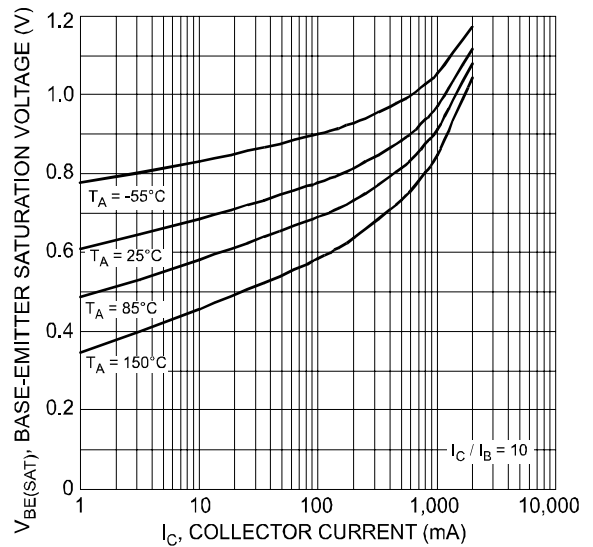


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

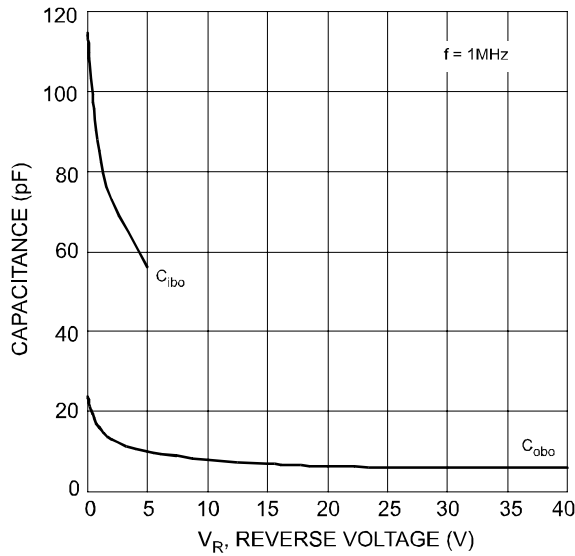


Fig. 7 Typical Capacitance Characteristics

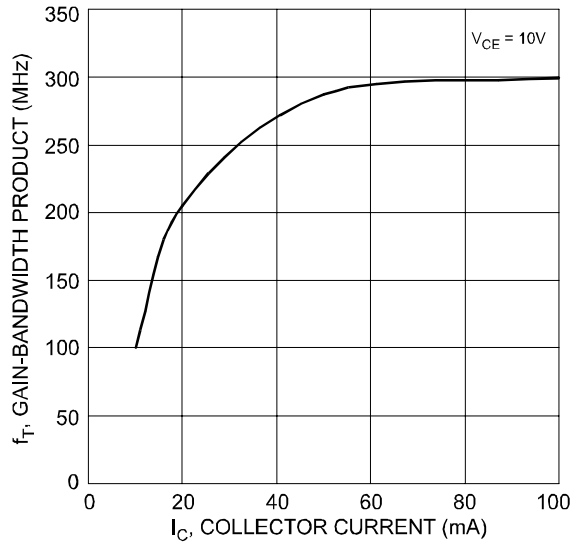


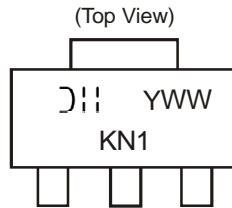
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Ordering Information (Note 5)

Device	Packaging	Shipping
DZT491-13	SOT-223	2500/Tape & Reel

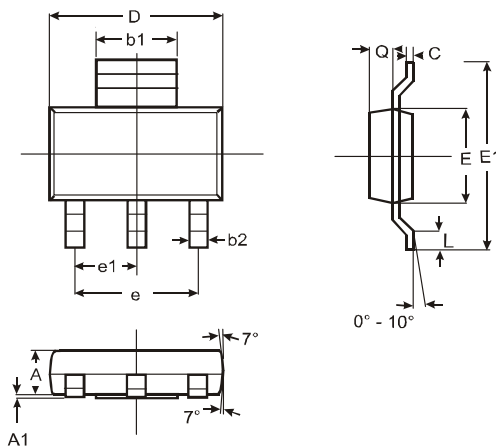
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



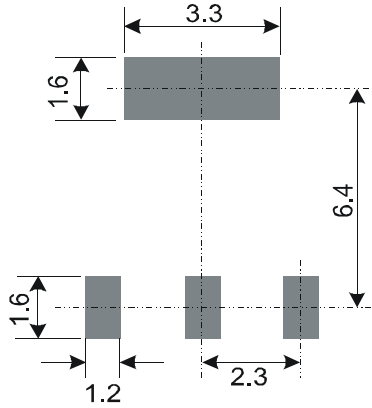
**DII** = Manufacturer's code marking  
**KN1** = Product type marking code  
**YWW** = Date code marking  
**Y** = Last digit of year ex: 7 = 2007  
**WW** = Week code 01 - 52

## Package Outline Dimensions



SOT-223			
Dim	Min	Max	Typ
<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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