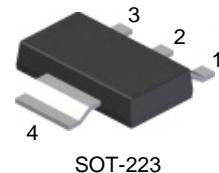


## Features

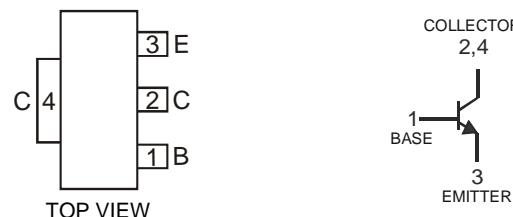
- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DZT591C)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- Lead Free By Design/RoHS Compliant (Note 1)**
- "Green" Device (Note 2)**



SOT-223

## 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

$\text{@ } T_A = 25^\circ\text{C}$  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
Collector Continuous Current (Note 3)	$I_C$	1	A
Peak Collector Current	$I_{CM}$	2	A
Base Current	$I_B$	200	mA
Power Dissipation (Note 3)	$P_d$	1	W
Operating and Storage Temperature Range	$T_j, T_{STG}$	-55 to +150	°C

## Electrical Characteristics

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

Characteristic	Symbol	Min	Typ	Max	Unit	Test Conditions
<b>OFF CHARACTERISTICS (Note 4)</b>						
Collector-Base Cutoff Current	$I_{CBO}$	—	—	100	nA	$V_{CB} = 60\text{V}$
Emitter-Base Cutoff Current	$I_{EBO}$	—	—	100	nA	$V_{EB} = 4\text{V}$
Collector-Emitter Cutoff Current	$I_{CES}$	—	—	100	nA	$V_{CES} = 60\text{V}$
Collector-Base Breakdown Voltage	$V_{(BR)CBO}$	80	—	—	V	$I_C = 100\mu\text{A}$
Collector-Emitter Breakdown Voltage	$V_{(BR)CEO}$	60	—	—	V	$I_C = 10\text{mA}$
Emitter-Base Breakdown Voltage	$V_{(BR)EBO}$	5	—	—	V	$I_E = 100\mu\text{A}$
<b>ON CHARACTERISTICS (Note 4)</b>						
Collector-Emitter Saturation Voltage	$V_{CE(\text{SAT})}$	—	—	0.25	V	$I_C = 500\text{mA}, I_B = 50\text{mA}$
—	—	—	—	0.5	V	$I_C = 1\text{A}, I_B = 100\text{mA}$
DC Current Gain	$h_{FE}$	100	—	—	V <sub>CE</sub> = 5V, $I_C = 1\text{mA}$	
		100	—	300	V <sub>CE</sub> = 5V, $I_C = 500\text{mA}$	
		80	—	—	V <sub>CE</sub> = 5V, $I_C = 1\text{A}$	
		30	—	—	V <sub>CE</sub> = 5V, $I_C = 2\text{A}$	
Base-Emitter Saturation Voltage	$V_{BE(\text{SAT})}$	—	—	1.1	V	$I_C = 1\text{A}, I_B = 100\text{mA}$
Base-Emitter Turn-On Voltage	$V_{BE(\text{on})}$	—	—	1	V	$I_C = 1\text{A}, V_{CE} = 5\text{V}$
<b>SMALL SIGNAL CHARACTERISTICS</b>						
Current Gain-Bandwidth Product	$f_T$	150	—	—	MHz	$V_{CE} = 10\text{V}, I_C = 50\text{mA}, f = 100\text{MHz}$
Output Capacitance	$C_{obo}$	—	—	10	pF	$V_{CB} = 10\text{V}, I_E = 0\text{A}, f = 1\text{MHz}$

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

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

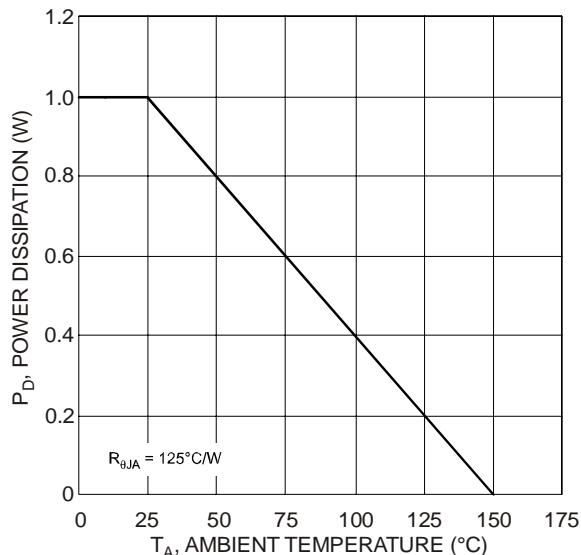


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

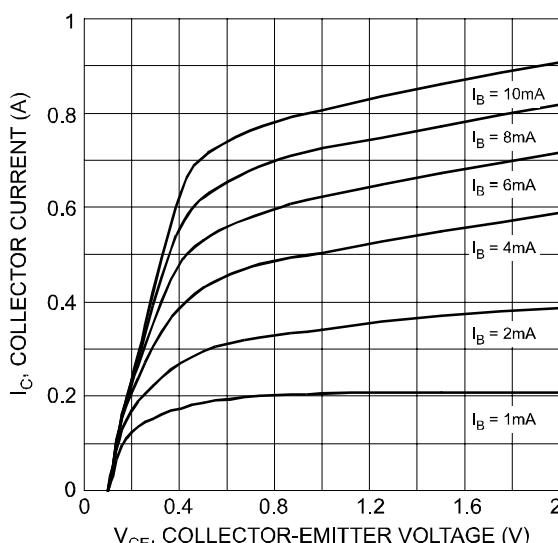


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

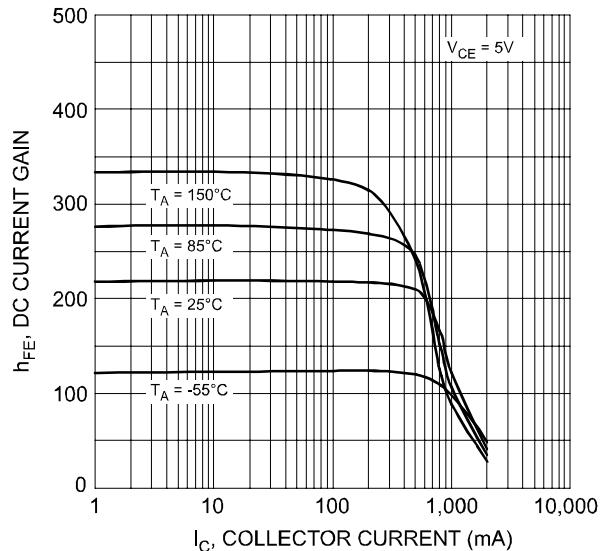


Fig. 3 Typical DC Current Gain vs. Collector Current

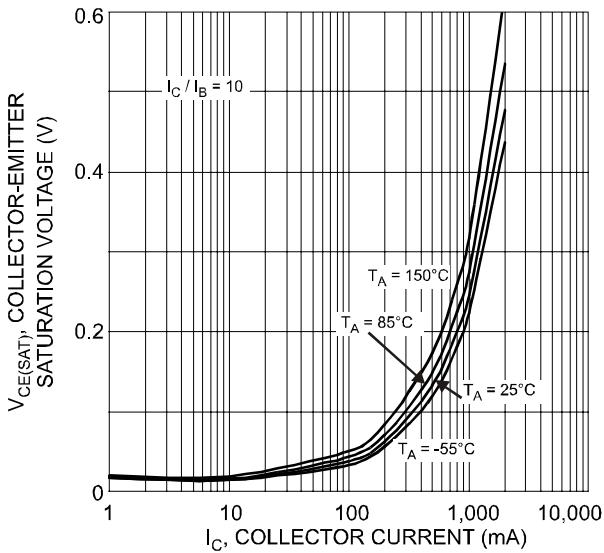


Fig. 4. Typical Collector-Emitter Saturation Voltage vs. Collector Current

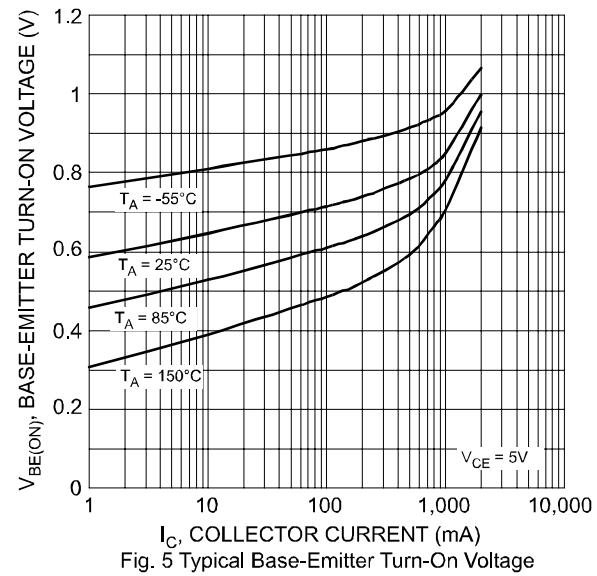


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

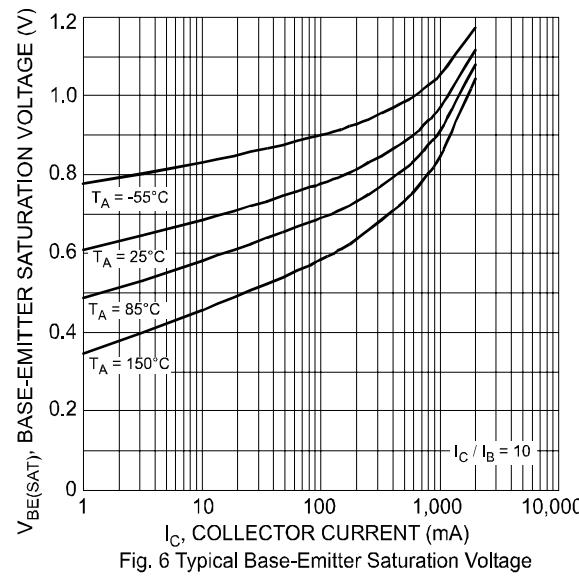


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

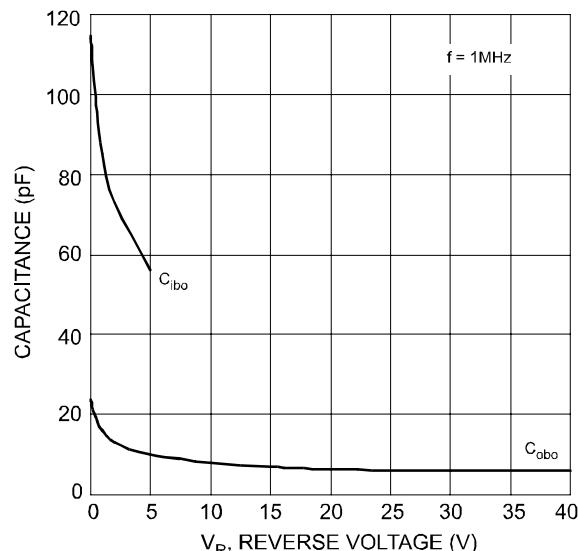


Fig. 7 Typical Capacitance Characteristics

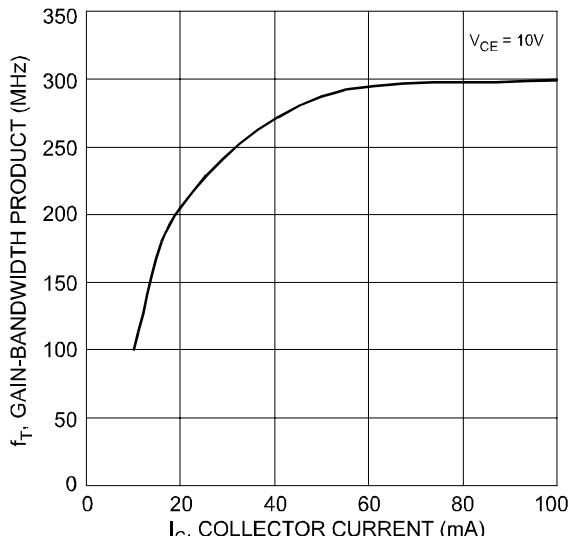


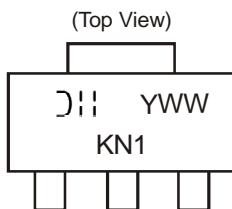
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

## Ordering Information (Note 5)

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

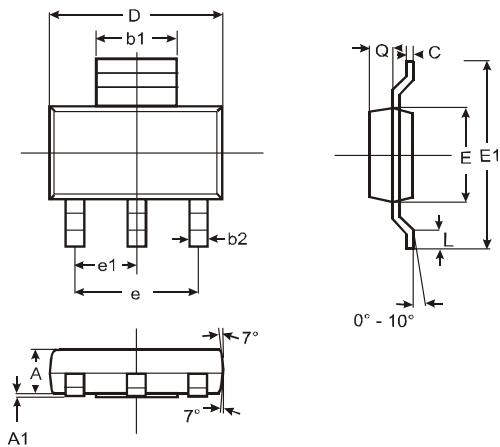
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



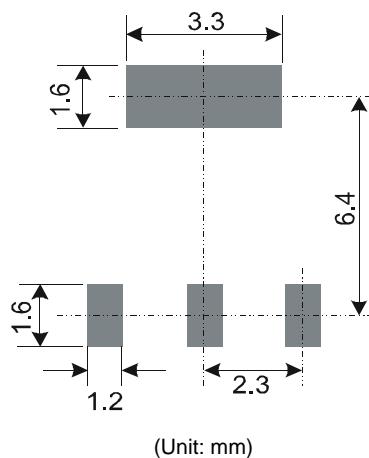
DII = Manufacturer's code marking  
 KN1 = Product type marking code  
 YWW = Date code marking  
 Y = Last digit of year ex: 7 = 2007  
 WW = Week code 01 - 52

## Package Outline Dimensions



SOT-223			
Dim	Min	Max	Typ
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: (Based on IPC-SM-782)****IMPORTANT NOTICE**

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