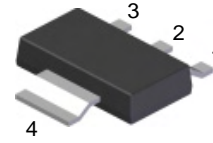


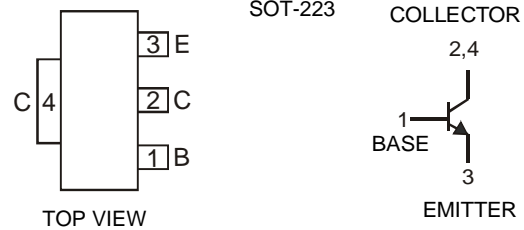
**Features**

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DZTA92)
- 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<sub>A</sub> = 25°C unless otherwise specified

| Characteristic               | Symbol           | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage       | V <sub>CB0</sub> | 300   | V    |
| Collector-Emitter Voltage    | V <sub>CEO</sub> | 300   | V    |
| Emitter-Base Voltage         | V <sub>EBO</sub> | 6     | V    |
| Continuous Collector Current | I <sub>C</sub>   | 500   | mA   |

**Thermal Characteristics**

| Characteristic  | Symbol                            | Value       | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation at @T <sub>A</sub> = 25°C (Note 3)                    | P <sub>d</sub>                    | 1           | W    |
| Thermal Resistance, Junction to Ambient @T <sub>A</sub> = 25°C (Note 3) | R <sub>θJA</sub>                  | 125         | °C/W |
| Operating and Storage Temperature Range                                 | T <sub>j</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

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

| Characteristic                       | Symbol               | Min | Typ | Max | Unit | Test Conditions  |
|--------------------------------------|----------------------|-----|-----|-----|------|--|
| <b>OFF CHARACTERISTICS (Note 4)</b>  |                      |     |     |     |      |  |
| Collector-Base Breakdown Voltage     | V <sub>(BR)CBO</sub> | 300 | —   | —   | V    | I <sub>C</sub> = 100μA, I <sub>E</sub> = 0               |
| Collector-Emitter Breakdown Voltage  | V <sub>(BR)CEO</sub> | 300 | —   | —   | V    | I <sub>C</sub> = 1mA, I <sub>B</sub> = 0                 |
| Emitter-Base Breakdown Voltage       | V <sub>(BR)EBO</sub> | 6   | —   | —   | V    | I <sub>E</sub> = 100μA, I <sub>C</sub> = 0               |
| Collector Cut-Off Current            | I <sub>CBO</sub>     | —   | —   | 0.1 | μA   | V <sub>CB</sub> = 200V, I <sub>E</sub> = 0               |
| Emitter Cut-Off Current              | I <sub>EBO</sub>     | —   | —   | 0.1 | μA   | V <sub>EB</sub> = 6V, I <sub>C</sub> = 0                 |
| <b>ON CHARACTERISTICS (Note 4)</b>   |                      |     |     |     |      |  |
| Collector-Emitter Saturation Voltage | V <sub>CE(SAT)</sub> | —   | —   | 0.5 | V    | I <sub>C</sub> = 20mA, I <sub>B</sub> = 2mA              |
| Base-Emitter Saturation Voltage      | V <sub>BE(SAT)</sub> | —   | —   | 0.9 | V    | I <sub>C</sub> = 20mA, I <sub>B</sub> = 2mA              |
| DC Current Gain                      | h <sub>FE</sub>      | 25  | —   | —   | —    | I <sub>C</sub> = 1mA, V <sub>CE</sub> = 10V              |
|                                      |                      | 40  | —   | —   |      | I <sub>C</sub> = 10mA, V <sub>CE</sub> = 10V             |
|                                      |                      | 40  | —   | —   |      | I <sub>C</sub> = 30mA, V <sub>CE</sub> = 10V             |
| <b>SMALL SIGNAL CHARACTERISTICS</b>  |                      |     |     |     |      |  |
| Transition Frequency                 | f <sub>T</sub>       | 50  | —   | —   | MHz  | I <sub>C</sub> = 10mA, V <sub>CE</sub> = 20V, f = 100MHz |
| Output Capacitance                   | C <sub>obo</sub>     | —   | —   | 3   | pF   | V <sub>CB</sub> = 20V, 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, 1" x 0.85" x 0.052"; pad layout as shown on page 4 or in 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 Test: Pulse width = 300μs, Duty Cycle ≤ 2%

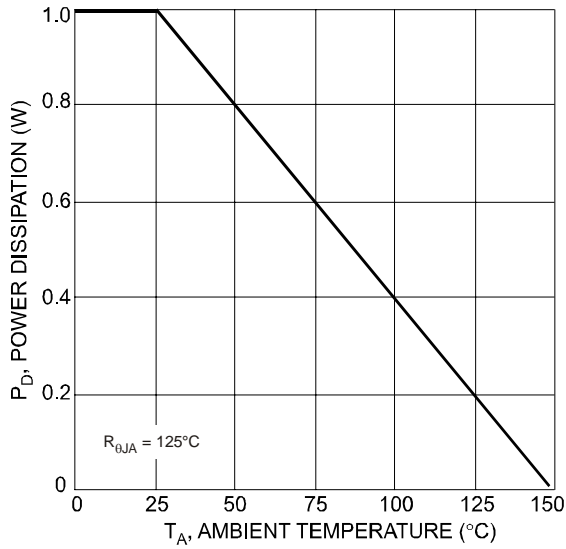


Fig. 1 Power Dissipation vs. Ambient Temperature (Note 3)

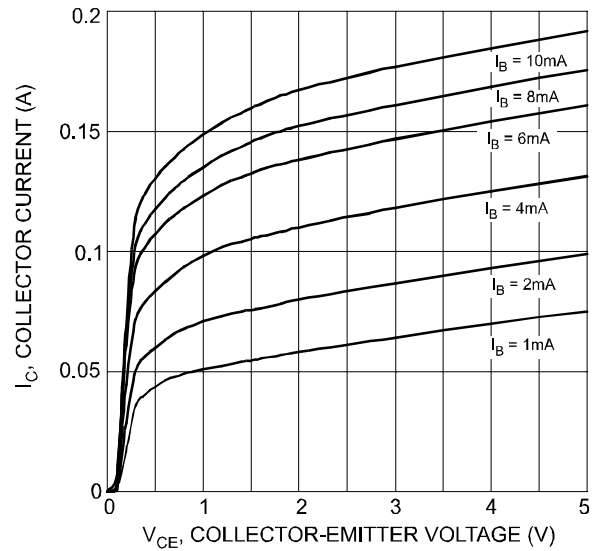


Fig. 2 Collector Current vs. Collector-Emitter Voltage

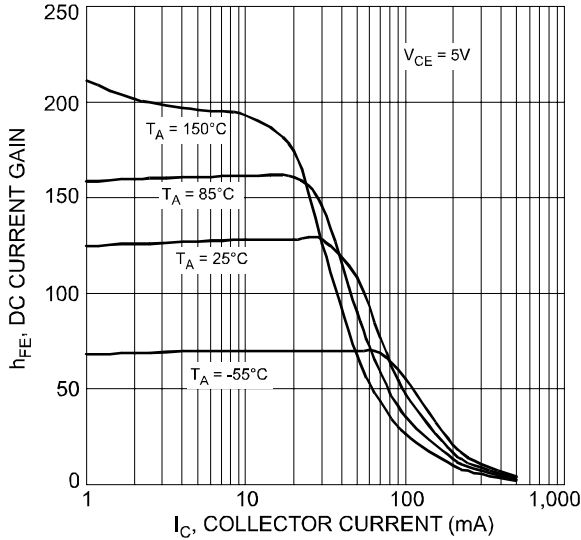


Fig. 3 Typical DC Current Gain vs. Collector Current

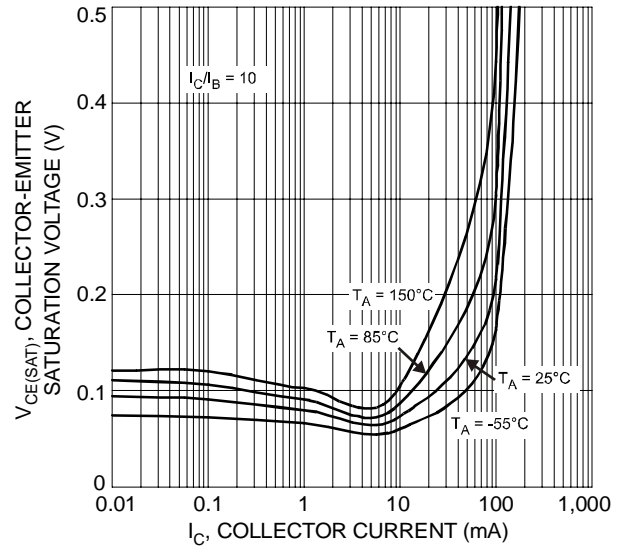


Fig. 4 Collector-Emitter Saturation Voltage vs. Collector Current

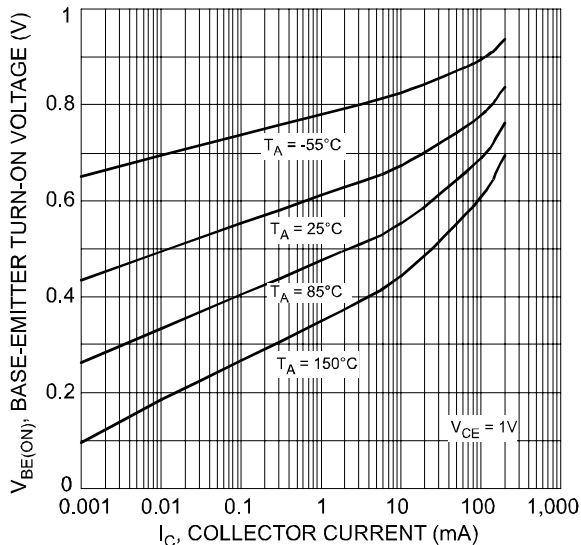


Fig. 5 Base-Emitter Turn-On Voltage vs. Collector Current

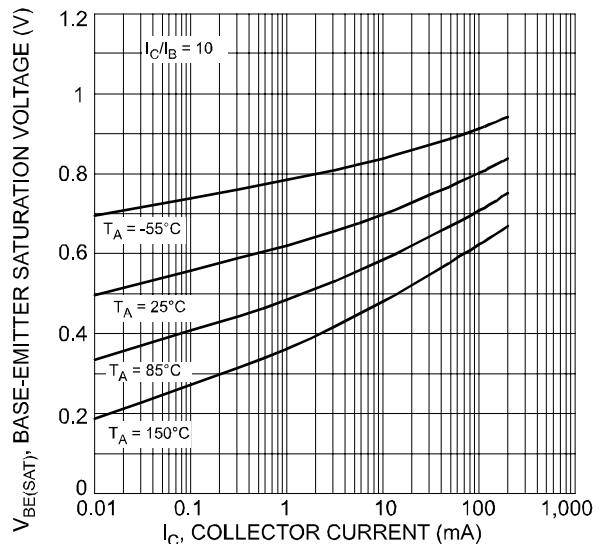


Fig. 6 Base-Emitter Saturation Voltage vs. Collector Current

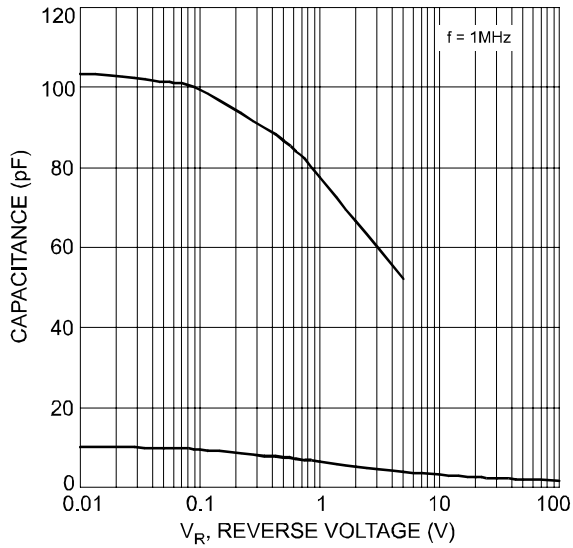


Fig. 7 Typical Capacitance Characteristics

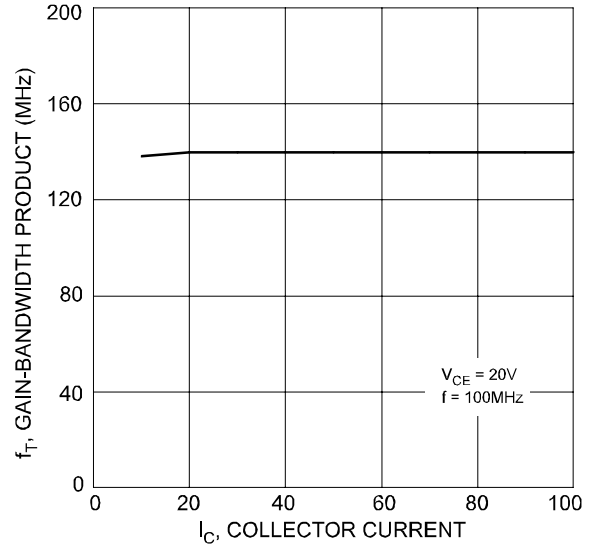


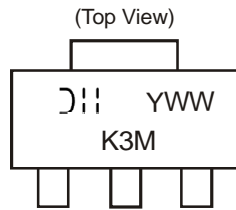
Fig. 8 Gain-Bandwidth Product vs. Collector Current

## Ordering Information (Note 5)

| Device    | Packaging | Shipping         |
|-----------|-----------|------------------|
| DZTA42-13 | SOT-223   | 2500/Tape & Reel |

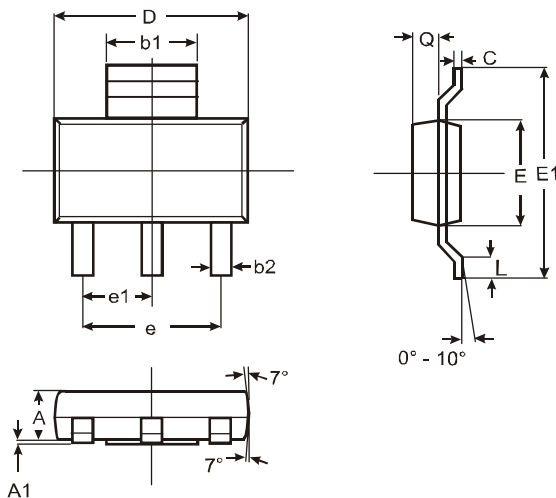
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

## Marking Information



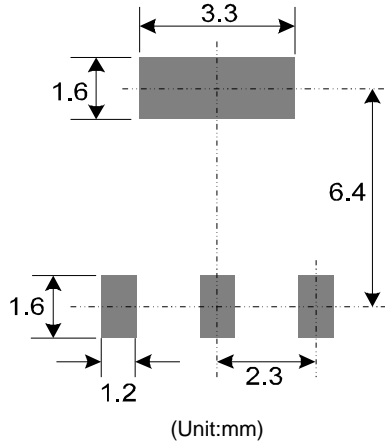
K3M = Product Type Marking Code  
 YWW = Date Code Marking  
 Y = Last digit of year ex: 7 = 2007  
 WW = Week code 01 - 52

## 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                    | 0.55  | 0.75 | 0.65 |
| Q                    | 0.84  | 0.94 | 0.89 |
| All Dimensions in mm |       |      |      |

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



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