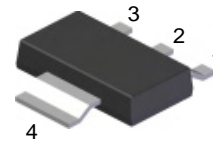


Features

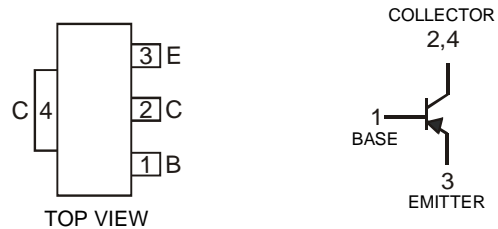
- Epitaxial Planar Die Construction
- Complementary NPN Type Available (DZT5551)
- Ideally Suited for Automated Assembly Processes
- Ideal for Medium Power Switching or Amplification Applications
- **Lead Free By Design/RoHS Compliant (Note 1)**
- **"Green" Device (Note 3)**



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
- Terminal Connections: See Diagram
- Marking & Type Code Information: See Page 3
- Ordering Information: See Page 3
- Weight: 0.112 grams (approximate)



Schematic and Pin Configuration

Maximum Ratings @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Value | Unit |
|---------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CBO} | -160 | V |
| Collector-Emitter Voltage | V _{CEO} | -150 | V |
| Emitter-Base Voltage | V _{EBO} | -5.0 | V |
| Collector Current | I _C | -600 | mA |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation @T _A = 25°C (Note 3) | P _D | 1 | W |
| Thermal Resistance, Junction to Ambient @T _A = 25°C (Note 3) | R _{θJA} | 125 | °C/W |
| Operating and Storage Temperature Range | T _j , T _{STG} | -55 to +150 | °C |

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Max | Unit | Test Condition |
|--------------------------------------|----------------------|----------------|---------------|----------|--|
| OFF CHARACTERISTICS (Note 4) | | | | | |
| Collector-Base Breakdown Voltage | V _{(BR)CBO} | -160 | — | V | I _C = -100μA, I _E = 0 |
| Collector-Emitter Breakdown Voltage | V _{(BR)CEO} | -150 | — | V | I _C = -1.0mA, I _B = 0 |
| Emitter-Base Breakdown Voltage | V _{(BR)EBO} | -5.0 | — | V | I _E = -10μA, I _C = 0 |
| Collector Cutoff Current | I _{CBO} | — | -50 | nA μA | V _{CB} = -120V, I _E = 0 V _{CB} = -120V, I _E = 0, T _A = 150°C |
| Emitter Cutoff Current | I _{EBO} | — | -50 | nA | V _{EB} = -3.0V, I _C = 0 |
| ON CHARACTERISTICS (Note 4) | | | | | |
| DC Current Gain | h _{FE} | 50 60 50 | — 240 — | — | I _C = -1.0mA, V _{CE} = -5.0V I _C = -10mA, V _{CE} = -5.0V I _C = -50mA, V _{CE} = -5.0V |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | — | -0.2 -0.5 | V | I _C = -10mA, I _B = -1.0mA I _C = -50mA, I _B = -5.0mA |
| Base-Emitter Saturation Voltage | V _{BE(SAT)} | — | -1.0 | V | I _C = -10mA, I _B = -1.0mA I _C = -50mA, I _B = -5.0mA |
| SMALL SIGNAL CHARACTERISTICS | | | | | |
| Output Capacitance | C _{obo} | — | 6.0 | pF | V _{CB} = -10V, f = 1.0MHz, I _E = 0 |
| Small Signal Current Gain | h _{fe} | 40 | 200 | — | V _{CE} = -10V, I _C = -1.0mA, f = 1.0kHz |
| Current Gain-Bandwidth Product | f _T | 100 | 300 | MHz | V _{CE} = -10V, I _C = -10mA, f = 100MHz |
| Noise Figure | NF | — | 8.0 | dB | V _{CE} = -5.0V, I _C = -200μA, R _S = 10Ω, f = 1.0kHz |

- 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.
 3. Device mounted on FR-4 PCB, 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 width = 300ms. Duty cycle ≤ 2%.

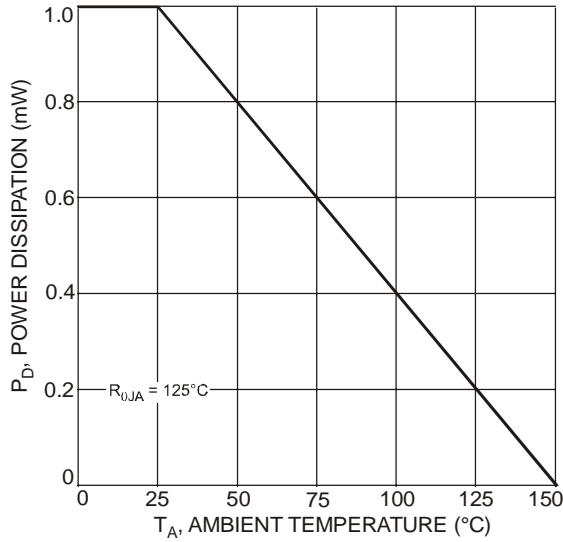


Fig. 1 Max Power Dissipation vs. Ambient Temperature

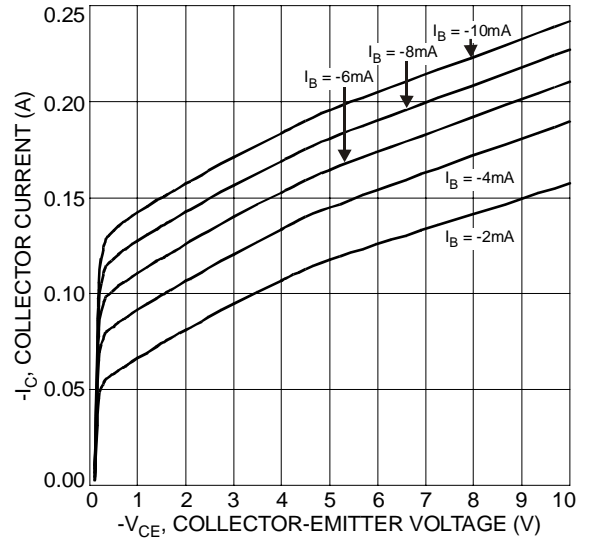


Fig. 2 Typical Collector Current vs. Collector-Emitter Voltage

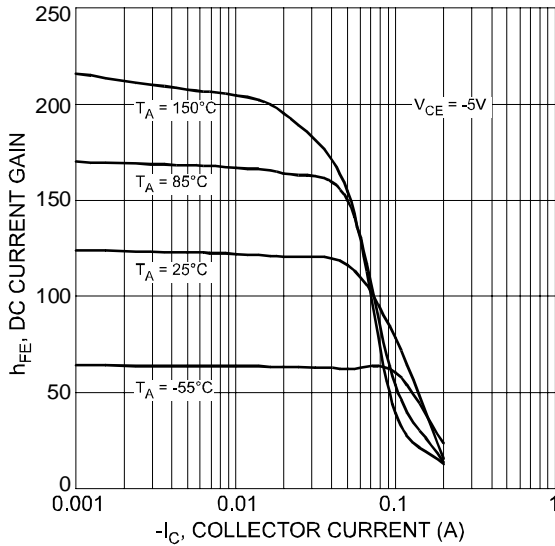


Fig. 3 Typical DC Current Gain vs. Collector Current

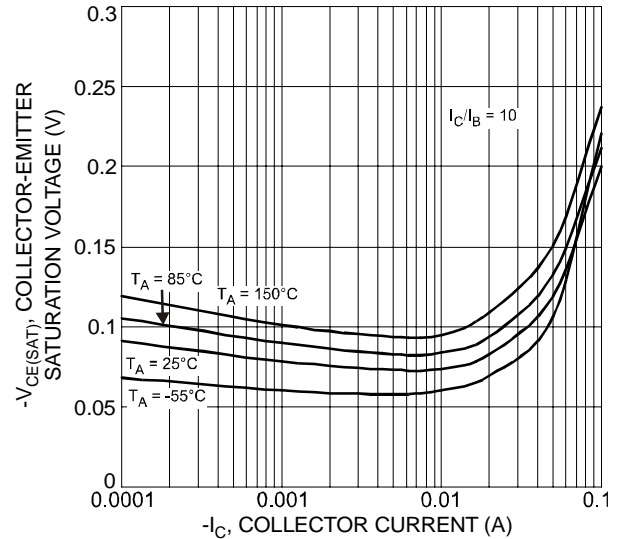


Fig. 4 Typical Collector-Emitter Saturation Voltage vs. Collector Current

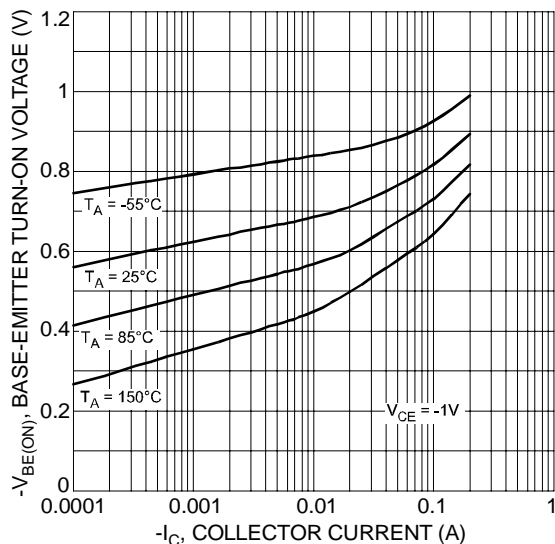


Fig. 5 Typical Base-Emitter Turn-On Voltage vs. Collector Current

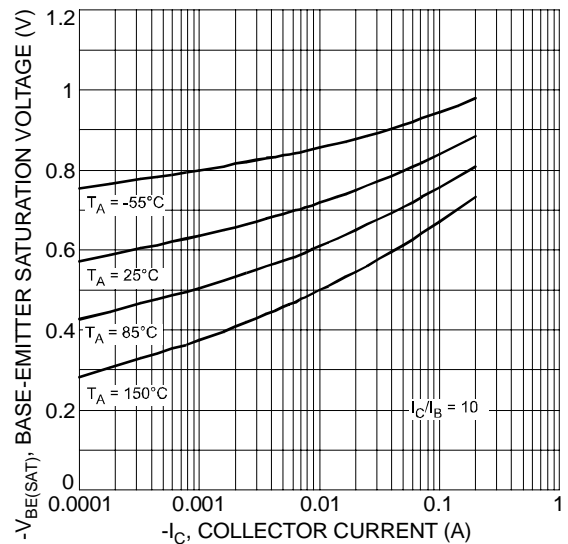


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

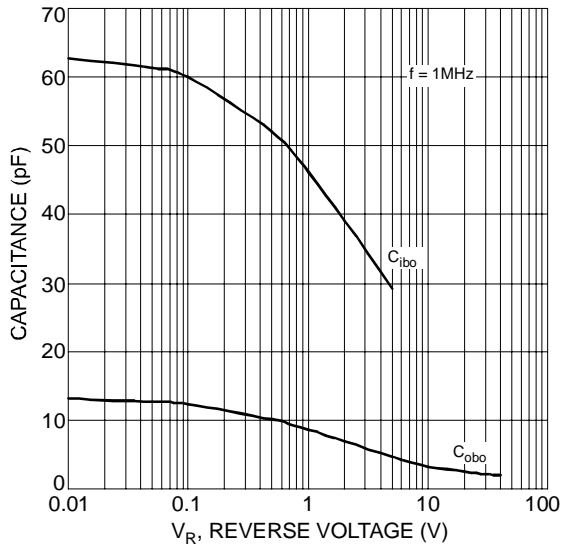


Fig. 7 Typical Capacitance Characteristics

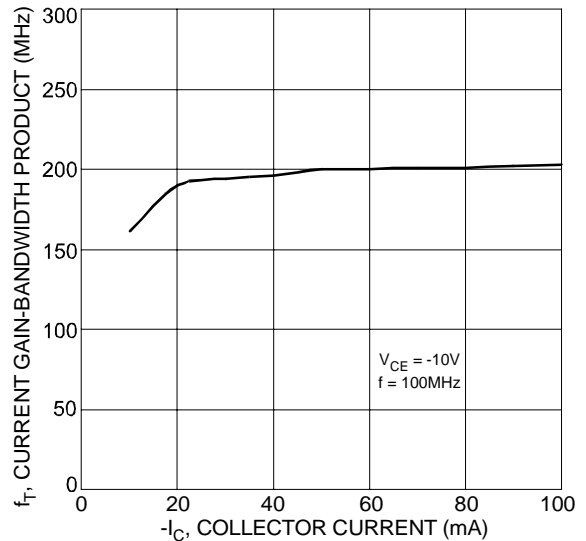


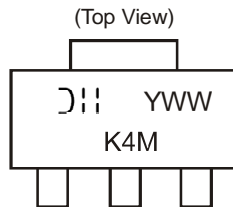
Fig. 8 Typical Gain-Bandwidth Product vs. Collector Current

Ordering Information (Note 5)

| Device | Packaging | Shipping |
|------------|-----------|------------------|
| DZT5401-13 | SOT-223 | 2500/Tape & Reel |

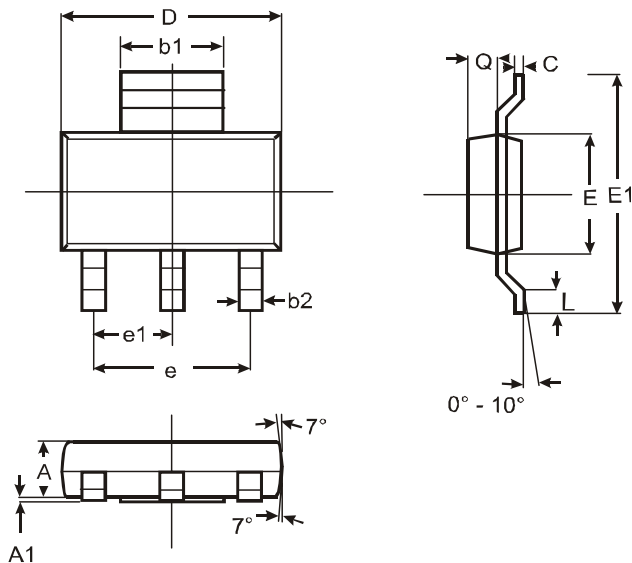
Notes: 5. For packaging details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

Marking Information



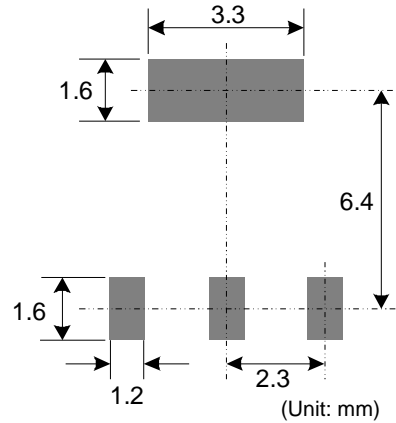
K4M = Product type marking code
 3:11 = Manufacturer's code marking
 YWW = Date code marking
 Y = Last digit of year ex: 7 = 2007
 WW = Week code 01 - 52

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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