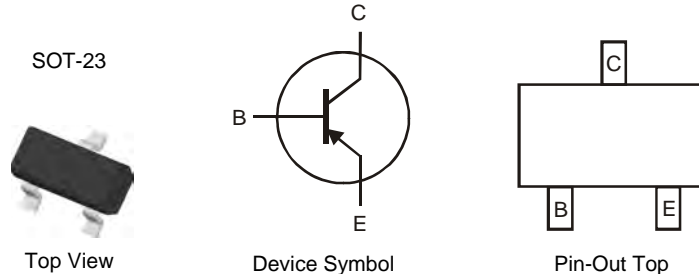


Features

- Epitaxial Planar Die Construction
- Ideal for Medium Power Amplification and Switching
- "Lead Free", RoHS Compliant (Note 1)
- Halogen and Antimony Free. "Green" Device (Note 2)
- Qualified to AEC-Q101 Standards for High Reliability

Mechanical Data

- Case: SOT-23
- Case Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish — Matte Tin annealed over Copper leadframe. Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (approximate)

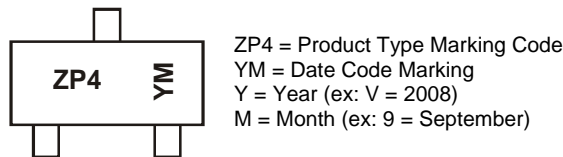


Ordering Information (Note 3)

| Product | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|------------|---------|--------------------|-----------------|-------------------|
| DSS5320T-7 | ZP4 | 7 | 8mm | 3,000 |

- Notes:
1. No purposefully added lead.
 2. Diodes Inc's "Green" Policy can be found on our website at <http://www.diodes.com>
 3. For packaging details, go to our website at <http://www.diodes.com>

Marking Information



Date Code Key

| Year | 2009 | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 |
|------|------|------|------|------|------|------|------|------|
| Code | W | X | Y | Z | A | B | C | D |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | O | N | D |

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

| Characteristic | Symbol | Value | Unit |
|--|-----------|-------|------|
| Collector-Base Voltage | V_{CB0} | -20 | V |
| Collector-Emitter Voltage | V_{CEO} | -20 | V |
| Emitter-Base Voltage | V_{EBO} | -5 | V |
| Peak Pulse Current | I_{CM} | -5 | A |
| Repetitive Peak Pulse Current (Note 4) | I_{CRP} | -3 | A |
| Continuous Collector Current | I_C | -2 | A |
| Base Current | I_B | -0.5 | A |

Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|-----------------|-------------|--------------------|
| Power Dissipation (Note 5) @ $T_A = 25^\circ\text{C}$ | P_D | 600 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 4) @ $T_A = 25^\circ\text{C}$ | $R_{\theta JA}$ | 209 | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range | T_J, T_{STG} | -55 to +150 | $^\circ\text{C}$ |

Notes: 4. Operated under pulsed conditions: pulse width $\leq 100\text{ms}$, duty cycle ≤ 0.25 .
 5. Device mounted on 15mm x 15mm x 1.6mm FR4 PCB with high coverage of single sided 1oz copper, in still air conditions.

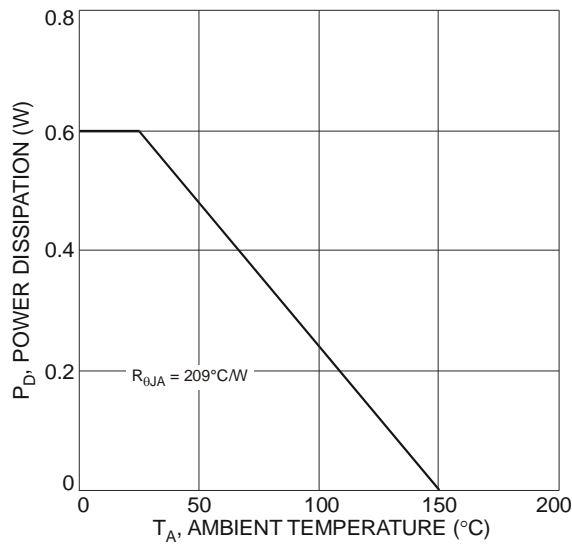


Fig. 1 Power Dissipation vs. Ambient Temperature

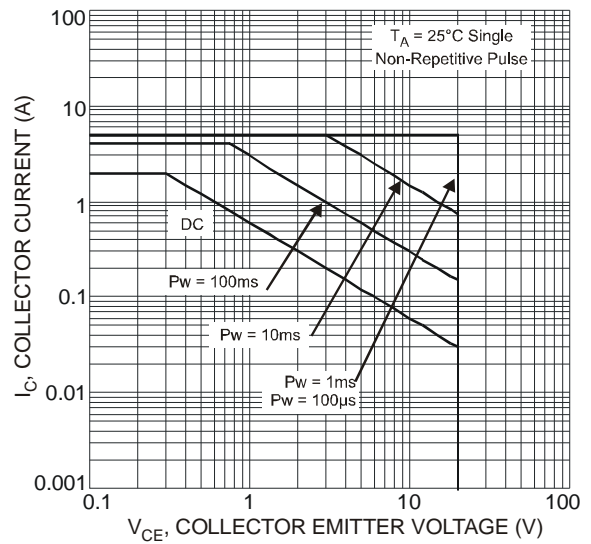


Fig. 2 Safe Operating Area

Electrical Characteristics @T_A = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|----------------------|-----|-----|------|------|--|
| Collector-Base Cutoff Current | I _{CBO} | — | — | -100 | nA | V _{CB} = -20V, I _E = 0 |
| | | — | — | -50 | μA | V _{CB} = -20V, I _E = 0, T _A = 150°C |
| Emitter-Base Cutoff Current | I _{EBO} | — | — | -100 | nA | V _{EB} = -5V, I _C = 0 |
| Collector-Base Breakdown Voltage | BV _{CB0} | -20 | — | — | V | I _C = -100μA |
| Collector-Emitter Breakdown Voltage (Note 6) | BV _{CEO} | -20 | — | — | V | I _C = -10mA |
| Emitter-Base Breakdown Voltage | BV _{EBO} | -5 | — | — | V | I _E = -100μA |
| DC Current Gain (Note 5) | h _{FE} | 220 | — | — | — | V _{CE} = -2V, I _C = -0.1A |
| | | 220 | — | — | — | V _{CE} = -2V, I _C = -0.5A |
| | | 200 | — | — | — | V _{CE} = -2V, I _C = -1A |
| | | 150 | — | — | — | V _{CE} = -2V, I _C = -2A |
| | | 100 | — | — | — | V _{CE} = -2V, I _C = -3A |
| Collector-Emitter Saturation Voltage (Note 6) | V _{CE(sat)} | — | — | -70 | — | I _C = -0.5A, I _B = -50mA |
| | | — | — | -130 | — | I _C = -1A, I _B = -50mA |
| | | — | — | -230 | mV | I _C = -2A, I _B = -100mA |
| | | — | — | -210 | — | I _C = -2A, I _B = -200mA |
| | | — | — | -300 | — | I _C = -3A, I _B = -300mA |
| Equivalent On-Resistance | R _{CE(sat)} | — | — | 105 | mΩ | I _E = -2A, I _B = -200mA |
| Base-Emitter Saturation Voltage | V _{BE(sat)} | — | — | -1.1 | V | I _C = -2A, I _B = -100mA |
| | | — | — | -1.2 | V | I _C = -3A, I _B = -300mA |
| Base-Emitter Turn-on Voltage | V _{BE(on)} | — | — | -1.2 | V | V _{CE} = -2V, I _C = -1A |
| Transition Frequency | f _T | 100 | 180 | — | MHz | V _{CE} = -5V, I _C = -100mA, f = 100MHz |
| Output Capacitance | C _{ob} | — | 25 | 50 | pF | V _{CB} = -10V, f = 1MHz |
| Turn-On Time | t _{on} | — | 67 | — | ns | V _{CC} = -10V, I _C = -1A, I _{B1} = -I _{B2} = -50mA |
| Delay Time | t _d | — | 23 | — | ns | |
| Rise Time | t _r | — | 44 | — | ns | |
| Turn-Off Time | t _{off} | — | 224 | — | ns | |
| Storage Time | t _s | — | 184 | — | ns | |
| Fall Time | t _f | — | 40 | — | ns | |

Notes: 6. Measured under pulsed conditions. Pulse width = 300μs. Duty cycle ≤2%.

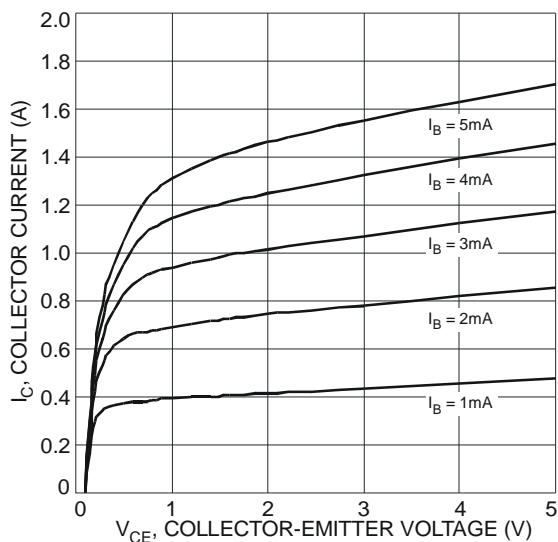


Fig. 3 Typical Collector Current vs. Collector-Emitter Voltage

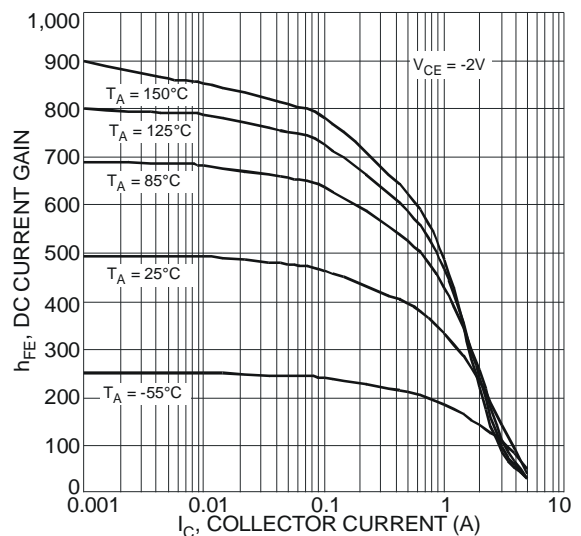


Fig. 4 Typical DC Current Gain vs. Collector Current

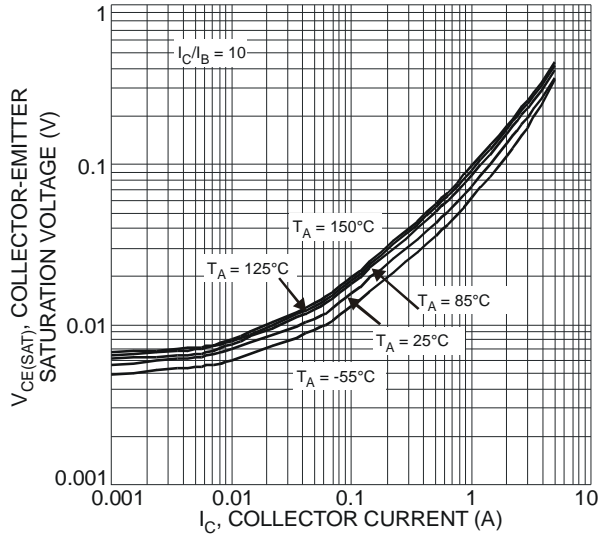


Fig. 5 Typical Collector-Emitter Saturation Voltage vs. Collector Current

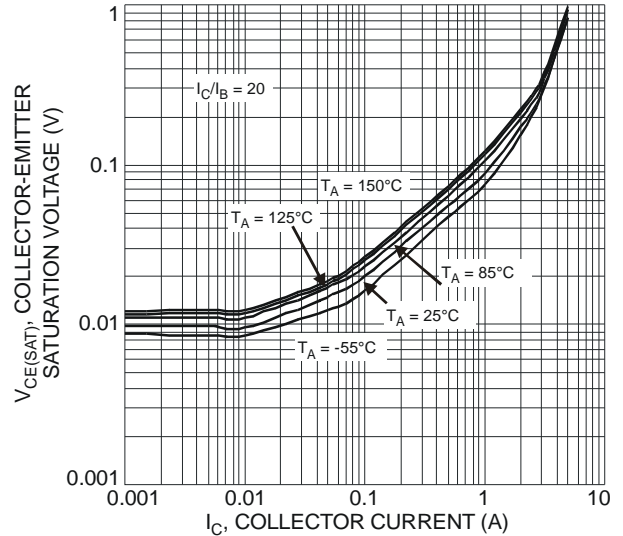


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

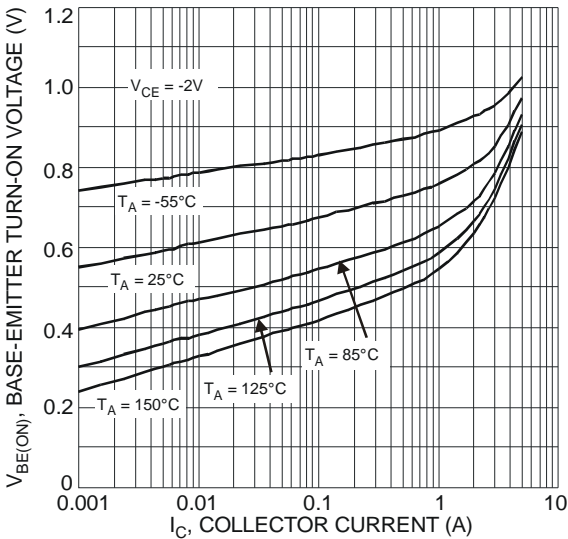


Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

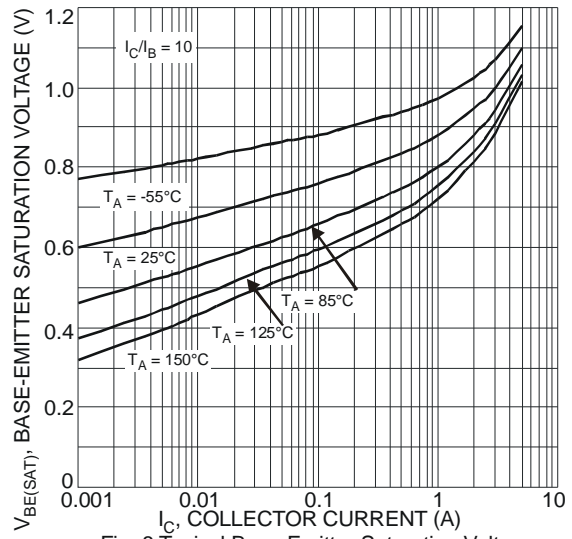
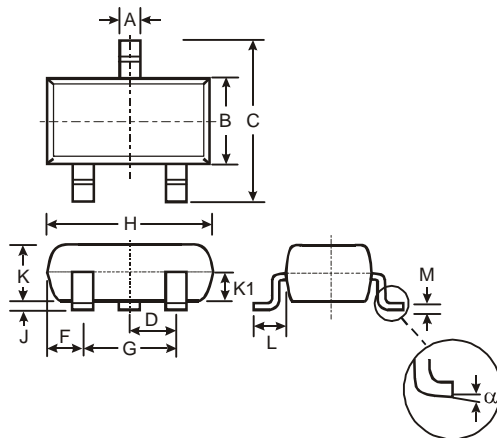


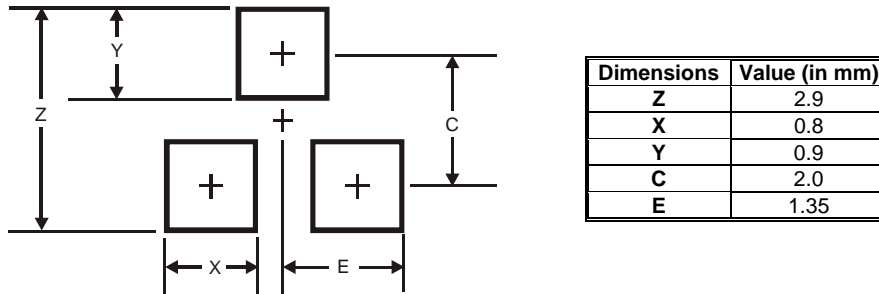
Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

Package Outline Dimensions



| SOT-23 | | | |
|----------------------|-------|------|-------|
| Dim | Min | Max | Typ |
| A | 0.37 | 0.51 | 0.40 |
| B | 1.20 | 1.40 | 1.30 |
| C | 2.30 | 2.50 | 2.40 |
| D | 0.89 | 1.03 | 0.915 |
| F | 0.45 | 0.60 | 0.535 |
| G | 1.78 | 2.05 | 1.83 |
| H | 2.80 | 3.00 | 2.90 |
| J | 0.013 | 0.10 | 0.05 |
| K | 0.903 | 1.10 | 1.00 |
| K1 | - | - | 0.400 |
| L | 0.45 | 0.61 | 0.55 |
| M | 0.085 | 0.18 | 0.11 |
| α | 0° | 8° | - |
| All Dimensions in mm | | | |

Suggested Pad Layout



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