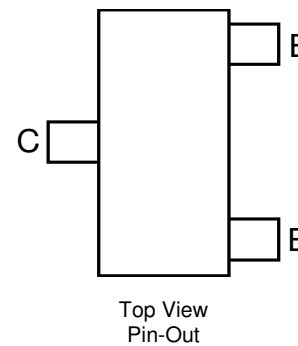
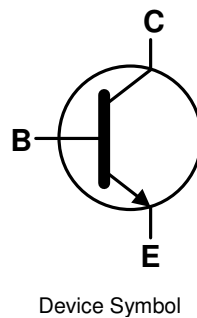


Features

- $BV_{CEO} > 60V$
- $I_C = 1A$ High Continuous Collector Current
- $I_{CM} = 2A$ Peak Pulse Current
- $R_{CE(sat)} = 280m\Omega$ for a Low Equivalent On-Resistance
- Low Saturation Voltage $V_{CE(sat)} < 280mV @ 1A$
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **Qualified to AEC-Q101 Standards for High Reliability**
- **PPAP Capable (Note 4)**

Mechanical Data

- Case: SOT23
- 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 Plated leads, Solderable per MIL-STD-202, Method 208 ③
- Weight: 0.008 grams (Approximate)

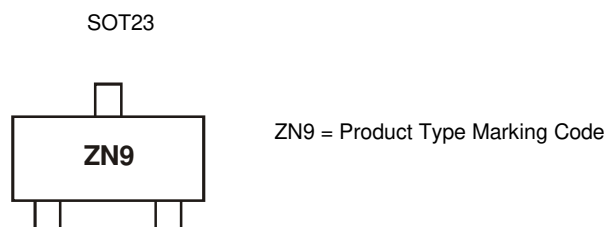


Ordering Information (Notes 4 & 5)

| Product | Compliance | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|-------------|------------|---------|--------------------|-----------------|-------------------|
| DSS4160T-7 | AEC-Q101 | ZN9 | 7 | 8 | 3,000 |
| DSS4160TQ-7 | Automotive | ZN9 | 7 | 8 | 3,000 |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
 2. See http://www.diodes.com/quality/lead_free.html for more information about Diodes Incorporated's definitions of Halogen and Antimony free, "Green" and Lead-Free.
 3. Halogen and Antimony free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
 4. Automotive products are AEC-Q101 qualified and are PPAP capable. Automotive, AEC-Q101 and standard products are electrically and thermally the same, except where specified. For more information, please refer to http://www.diodes.com/quality/product_compliance_definitions/.
 5. For packaging details, go to our website at <http://www.diodes.com/products/packages.html>.

Marking Information



Absolute Maximum Ratings (@T_A = +25°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 |
| Continuous Collector Current | I _C | 1 | A |
| Peak Pulse Collector Current | I _{CM} | 2 | A |
| Base Current | I _B | 300 | mA |
| Peak Base Current | I _{BM} | 1 | A |

Thermal Characteristics (@T_A = +25°C, unless otherwise specified.)

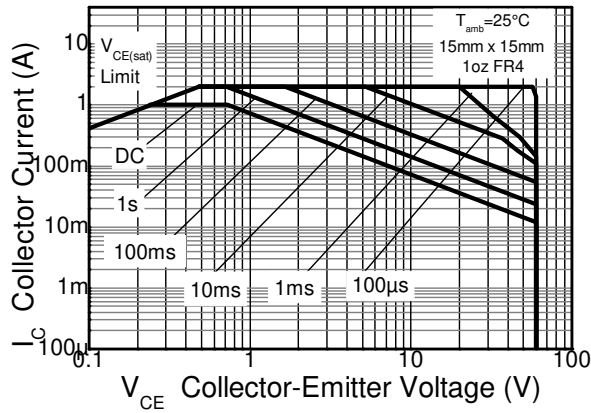
| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 6) | P _D | 725 | mW |
| Thermal Resistance, Junction to Ambient (Note 6) | R _{θJA} | 172 | °C/W |
| Thermal Resistance, Junction to Leads (Note 7) | R _{θJL} | 79 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

ESD Ratings (Note 8)

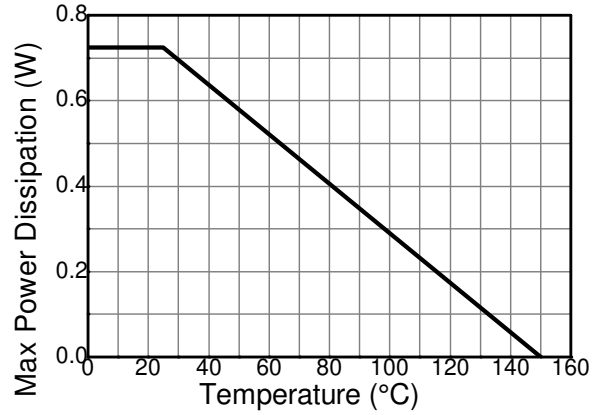
| Characteristic | Symbol | Value | Unit | JEDEC Class |
|--|---------|-------|------|-------------|
| Electrostatic Discharge - Human Body Model | ESD HBM | 4,000 | V | 3A |
| Electrostatic Discharge - Machine Model | ESD MM | 400 | V | C |

- Notes:
6. For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 7. Thermal resistance from junction to solder-point (at the end of collector lead).
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

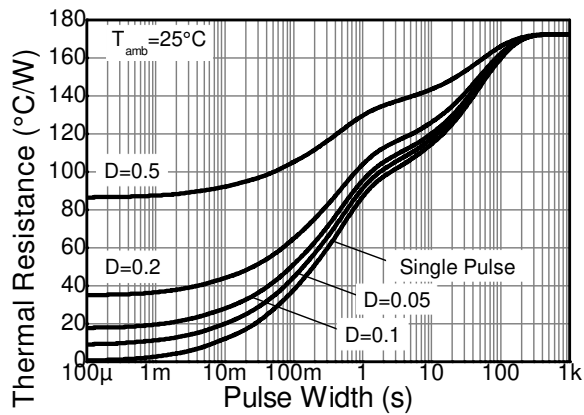
Thermal Characteristics and Derating Information



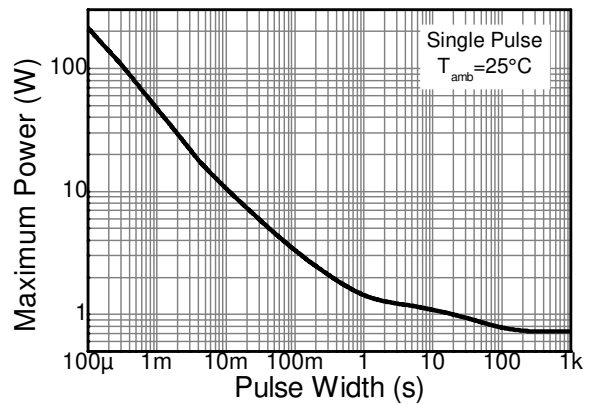
Safe operating Area



Derating Curve



Transient Thermal Impedance



Pulse Power Dissipation

Electrical Characteristics (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|----------------------|-----|-----|-----|------|--|
| Collector-Base Breakdown Voltage | BV _{CBO} | 80 | — | — | V | I _C = 100μA |
| Collector-Emitter Breakdown Voltage (Note 9) | BV _{CEO} | 60 | — | — | V | I _C = 10mA |
| Emitter-Base Breakdown Voltage | BV _{EBO} | 5 | — | — | V | I _E = 100μA |
| Collector-Base Cutoff Current | I _{CBO} | — | — | 100 | nA | V _{CB} = 60V, I _E = 0 |
| | | — | — | 50 | μA | V _{CB} = 60V, I _E = 0, T _A = +150°C |
| Collector Cutoff Current | I _{CES} | — | — | 100 | nA | V _{EB} = 60V, I _{BE} = 0 |
| Emitter-Base Cutoff Current | I _{EBO} | — | — | 100 | nA | V _{EB} = 5V, I _C = 0 |
| DC Current Gain (Note 9) | h _{FE} | 250 | — | — | — | V _{CE} = 5V, I _C = 1mA |
| | | 200 | — | — | | V _{CE} = 5V, I _C = 500mA |
| | | 100 | — | — | | V _{CE} = 5V, I _C = 1A |
| Collector-Emitter Saturation Voltage (Note 9) | V _{CE(sat)} | — | — | 115 | mV | I _C = 100mA, I _B = 1mA |
| | | — | — | 150 | | I _C = 500mA, I _B = 50mA |
| | | — | — | 280 | | I _C = 1A, I _B = 100mA |
| Equivalent On-Resistance | R _{CE(sat)} | — | — | 280 | mΩ | I _E = 1A, I _B = 100mA |
| Base-Emitter Saturation Voltage | V _{BE(sat)} | — | — | 1.1 | V | I _C = 1A, I _B = 50mA |
| Base-Emitter Turn-on Voltage | V _{BE(on)} | — | — | 0.9 | V | V _{CE} = 5V, I _C = 1A |
| Transition Frequency | f _T | 150 | — | — | MHz | V _{CE} = 10V, I _C = 50mA, f = 100MHz |
| Output Capacitance | C _{obo} | — | — | 10 | pF | V _{CB} = 10V, f = 1MHz |
| Turn-On Time | t _{on} | — | 63 | — | ns | V _{CC} = 10V, I _C = 0.5A, I _{B1} = -I _{B2} = 25mA |
| Delay Time | t _d | — | 33 | — | ns | |
| Rise Time | t _r | — | 30 | — | ns | |
| Turn-Off Time | t _{off} | — | 420 | — | ns | |
| Storage Time | t _s | — | 380 | — | ns | |
| Fall Time | t _f | — | 40 | — | ns | |

Note: 9. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

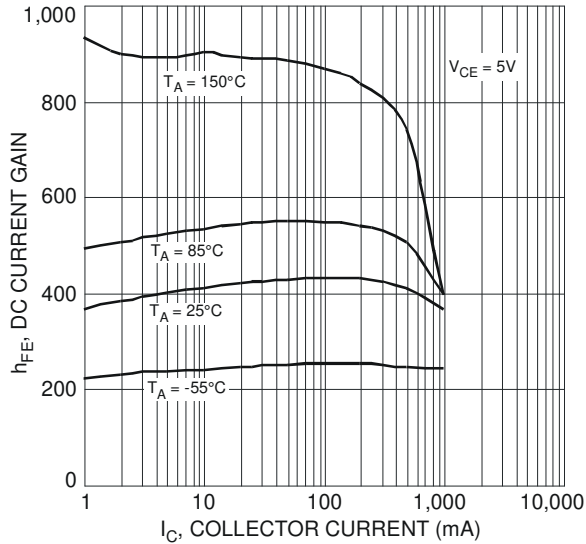


Fig. 5 Typical DC Current Gain vs. Collector Current

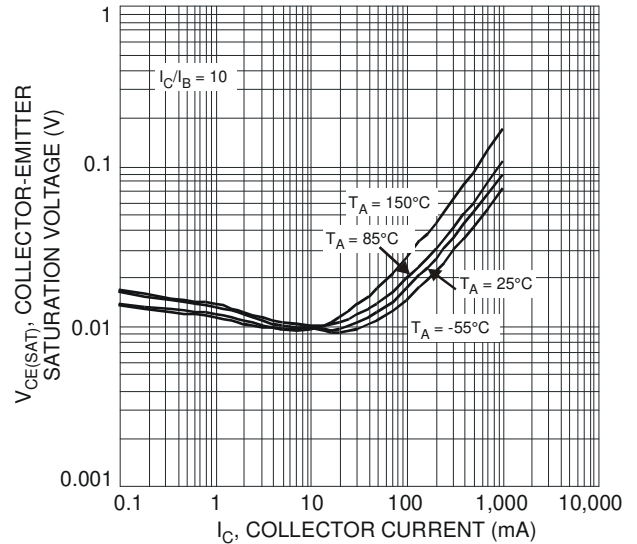


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

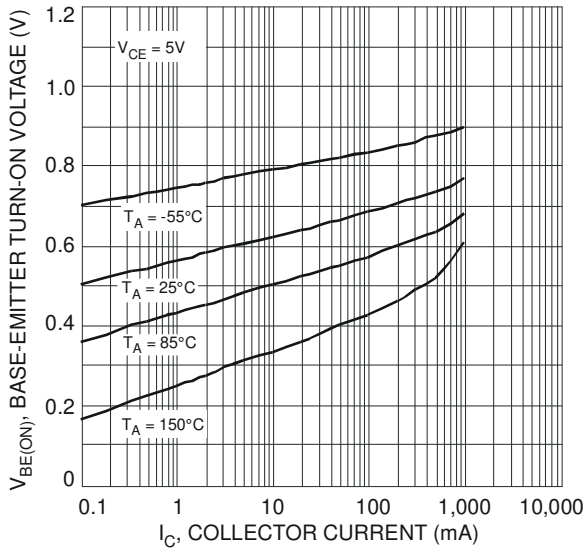


Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

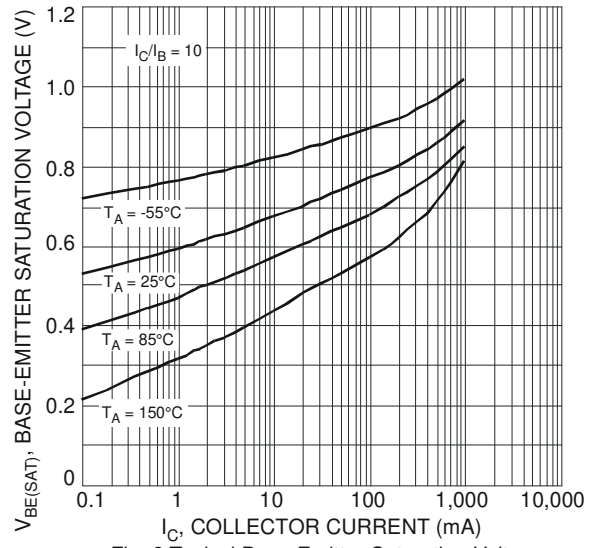


Fig. 8 Typical Base-Emitter Saturation Voltage vs. Collector Current

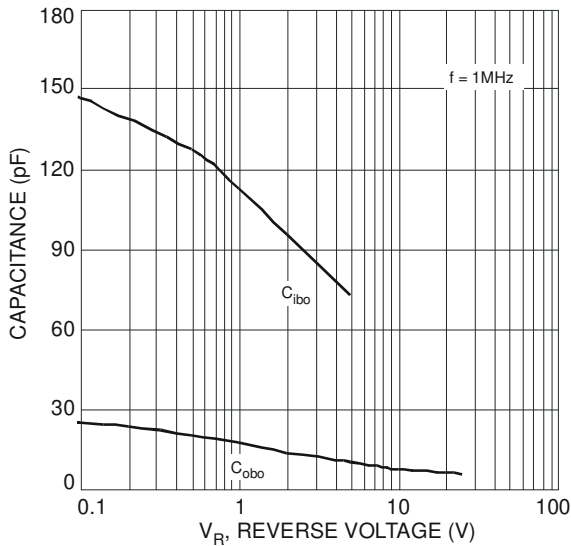
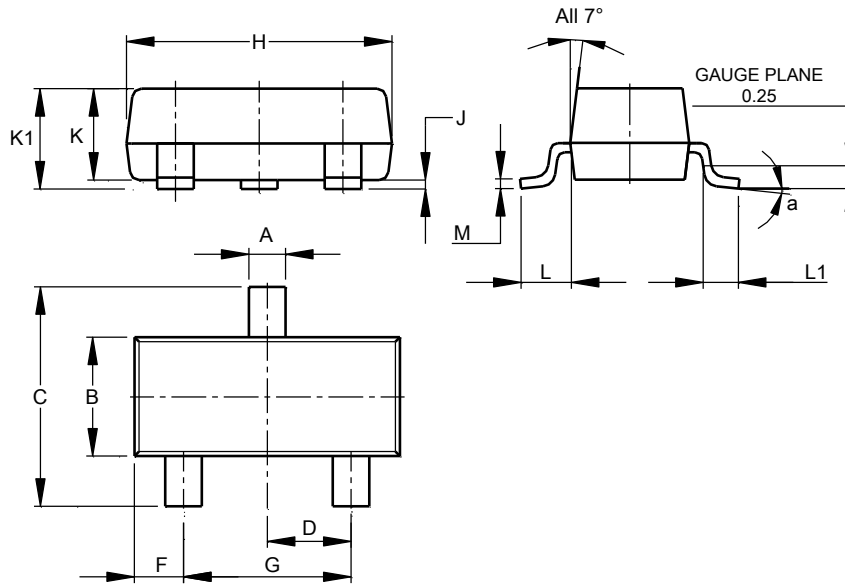


Fig. 9 Typical Capacitance Characteristics

Package Outline Dimensions

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23

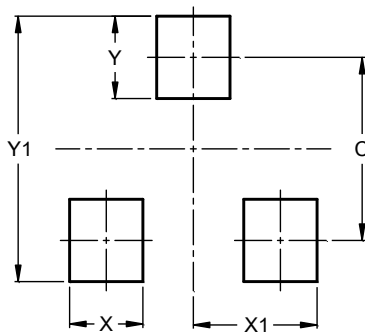


| SOT23 | | | |
|----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.37 | 0.51 | 0.40 |
| B | 1.20 | 1.40 | 1.30 |
| C | 2.30 | 2.50 | 2.40 |
| D | 0.89 | 1.03 | 0.915 |
| F | 0.45 | 0.60 | 0.535 |
| G | 1.78 | 2.05 | 1.83 |
| H | 2.80 | 3.00 | 2.90 |
| J | 0.013 | 0.10 | 0.05 |
| K | 0.890 | 1.00 | 0.975 |
| K1 | 0.903 | 1.10 | 1.025 |
| L | 0.45 | 0.61 | 0.55 |
| L1 | 0.25 | 0.55 | 0.40 |
| M | 0.085 | 0.150 | 0.110 |
| a | 0° | 8° | -- |
| All Dimensions in mm | | | |

Suggested Pad Layout

Please see <http://www.diodes.com/package-outlines.html> for the latest version.

SOT23



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 2.0 |
| X | 0.8 |
| X1 | 1.35 |
| Y | 0.9 |
| Y1 | 2.9 |

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