

Features

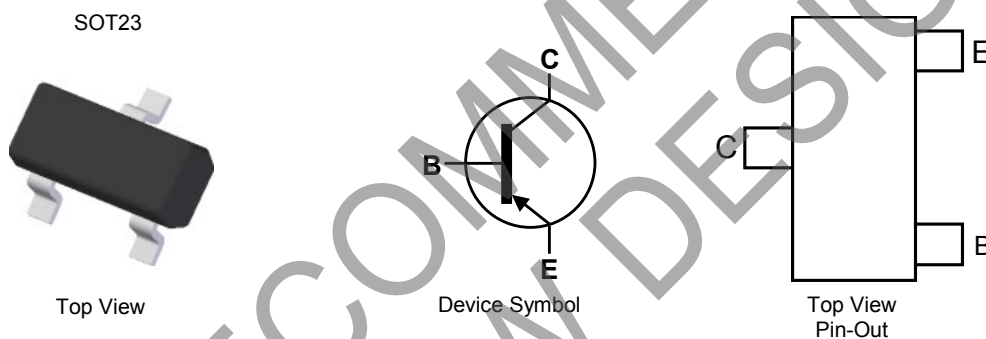
- $BV_{CEO} > -40V$
- $I_C = -2A$ High Continuous Collector Current
- $I_{CM} = -3A$ Peak Pulse Current
- Low Saturation Voltage -225mV Max @ $I_C = -1A$
- $R_{CE(SAT)} = 90m\Omega$ at -0.5A for a Low Equivalent On-Resistance
- 730mW Power Dissipation
- Complimentary NPN Type: DSS4240T
- **Totally Lead-Free & Fully RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](mailto:contact@diodes.com) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

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 (E3)
- Weight 0.008 grams (Approximate)

Application

- Gate Driving MOSFETs and IGBTs
- Load Switch
- DC-DC Converters
- Battery Charging

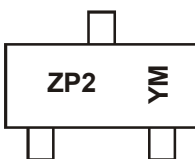


Ordering Information (Note 4)

| Part Number | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|-------------|---------------------------------|---------|--------------------|-----------------|-------------------|
| DSS5240T-7 | NRND (Use ZXTP5240F-7) (Note 5) | ZP2 | 7 | 8 | 3000 |
| DSS5240T-13 | NRND (Use ZXTP5240F-7) (Note 5) | ZP2 | 13 | 8 | 10,000 |

- 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 <https://www.diodes.com/quality/lead-free/> 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. For packaging details, go to our website at <https://www.diodes.com/design/support/packaging/diodes-packaging/>.
 5. NRND – Not recommended for new design.

Marking Information



ZP2 = Product Type Marking Code
 YM = Date Code Marking
 Y = Year (ex: C = 2015)
 M = Month (ex: 9 = September)

Date Code Key

| Year | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 | 2021 | 2022 | 2023 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | A | B | C | D | E | F | G | H | I | J | K |

| 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 |

Absolute Maximum Ratings (@T_A = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CBO} | -40 | V |
| Collector-Emitter Voltage | V _{CEO} | -40 | V |
| Emitter-Base Voltage | V _{EBO} | -5 | V |
| Peak Pulse Collector Current | I _{CM} | -3 | A |
| Continuous Collector Current | I _C | -2 | A |
| Base Current | I _B | -300 | mA |

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

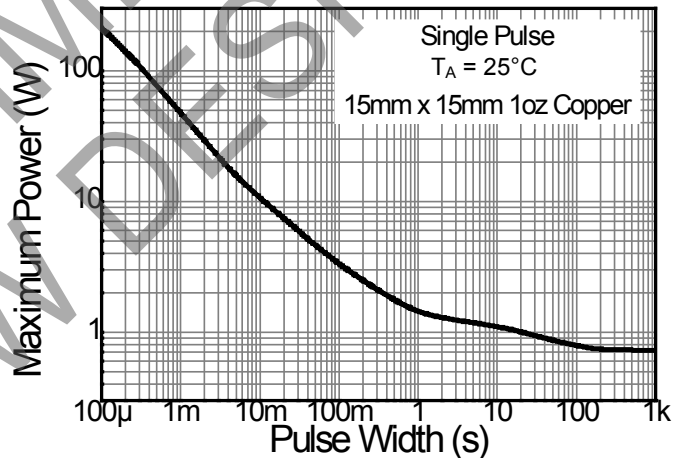
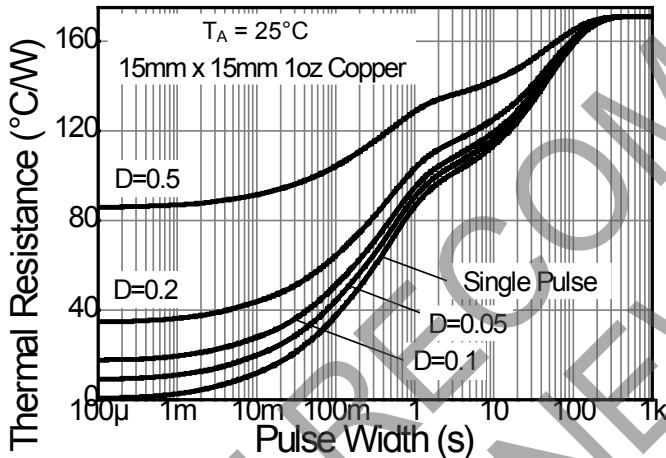
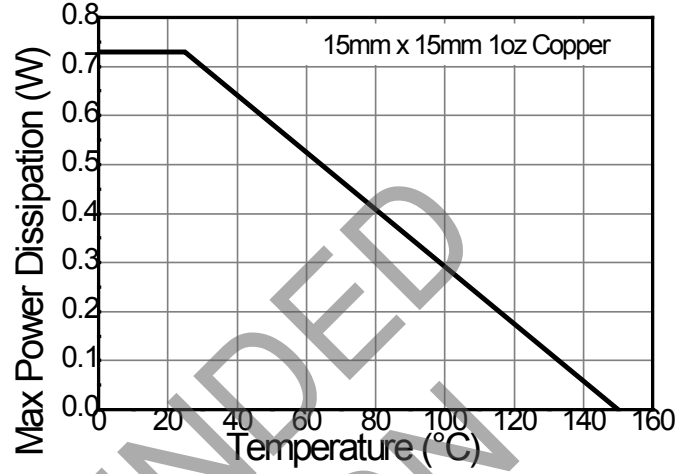
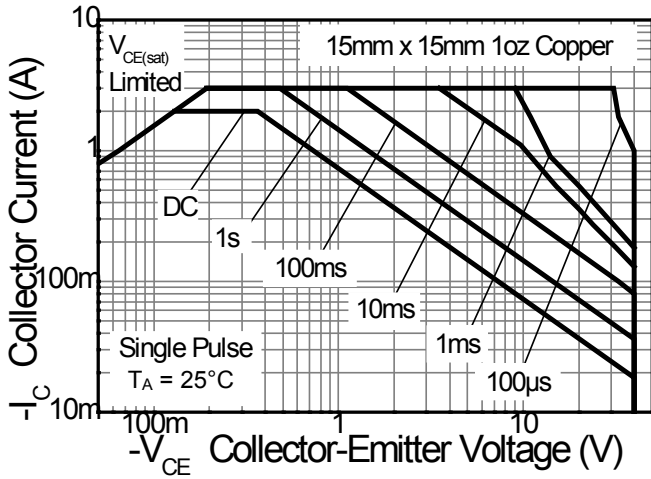
| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 6) | P _D | 730 | mW |
| Power Dissipation (Note 7) | P _D | 600 | mW |
| Thermal Resistance, Junction to Ambient Air (Note 6) | R _{θJA} | 171 | °C/W |
| Thermal Resistance, Junction to Ambient Air (Note 7) | R _{θJA} | 209 | °C/W |
| Thermal Resistance, Junction to Lead (Note 8) | R _{θJL} | 75 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

ESD Ratings (Note 9)

| Characteristic | Symbol | Value | Unit | JEDEC Class |
|--|---------|-------|------|-------------|
| Electrostatic Discharge—Human Body Model | ESD HBM | 4000 | V | 3A |
| Electrostatic Discharge—Machine Model | ESD MM | 400 | V | C |

- Notes:
6. For a device mounted with the collector lead on 15mm × 15mm 1oz copper that is on a single-sided 1.6mm FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 7. Same as Note 6, except the device is mounted on minimum recommended pad layout.
 8. Thermal resistance from junction to solder-point (at the end of the collector lead).
 9. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics and Derating Information



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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Conditions |
|---|----------------------|-----|-----|-------|------|---|
| OFF CHARACTERISTICS | | | | | | |
| Collector-Base Breakdown Voltage | BV _{CB0} | -40 | — | — | V | I _C = -100μA |
| Collector-Emitter Breakdown Voltage (Note 10) | BV _{CEO} | -40 | — | — | V | I _C = -10mA |
| Emitter-Base Breakdown Voltage | BV _{EBO} | -5 | — | — | V | I _E = -100μA |
| Collector-Base Cutoff Current | I _{CB0} | — | — | -100 | nA | V _{CB} = -30V, I _E = 0 |
| | | — | — | -50 | μA | V _{CB} = -30V, I _E = 0, T _A = +150°C |
| Emitter-Base Cutoff Current | I _{EBO} | — | — | -100 | nA | V _{EB} = -4V, I _C = 0 |
| ON CHARACTERISTICS (Note 10) | | | | | | |
| DC Current Gain | h _{FE} | 300 | — | — | — | V _{CE} = -2V, I _C = -0.1A |
| | | 260 | — | — | — | V _{CE} = -2V, I _C = -0.5A |
| | | 210 | — | — | — | V _{CE} = -2V, I _C = -1A |
| | | 100 | — | — | — | V _{CE} = -2V, I _C = -2A |
| Collector-Emitter Saturation Voltage | V _{CE(SAT)} | — | — | -100 | mV | I _C = -100mA, I _B = -1mA |
| | | — | -45 | -110 | mV | I _C = -500mA, I _B = -50mA |
| | | — | — | -225 | mV | I _C = -750mA, I _B = -15mA |
| | | — | — | -225 | mV | I _C = -1A, I _B = -50mA |
| | | — | — | -350 | mV | I _C = -2A, I _B = -200mA |
| Equivalent On-Resistance | R _{CE(SAT)} | — | 90 | 220 | mΩ | I _C = -500mA, I _B = -50mA |
| Base-Emitter Saturation Voltage | V _{BE(SAT)} | — | — | -1.1 | V | I _C = -2A, I _B = -200mA |
| Base-Emitter Turn-on Voltage | V _{BE(ON)} | — | — | -0.75 | V | V _{CE} = -2V, I _C = -100mA |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Transition Frequency | f _T | 100 | — | — | MHz | V _{CE} = -10V, I _C = -100mA, f = 100MHz |
| Output Capacitance | C _{obo} | — | — | 28 | pF | V _{CB} = -10V, f = 1MHz |

Note: 10. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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

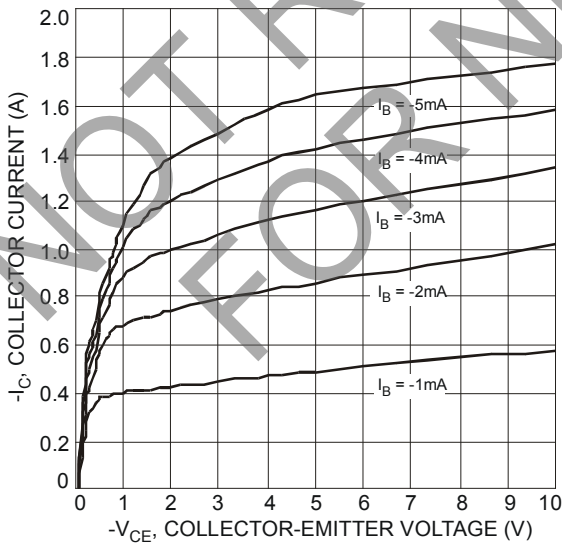


Figure 1 Typical Collector Current vs. Collector-Emitter Voltage

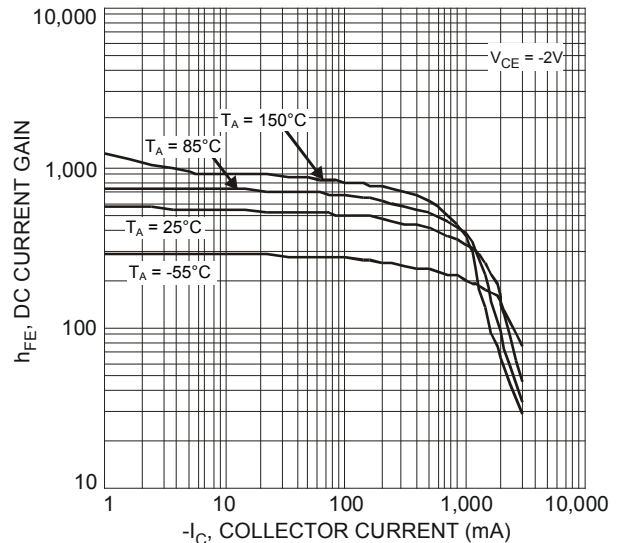


Figure 2 Typical DC Current Gain vs. Collector Current

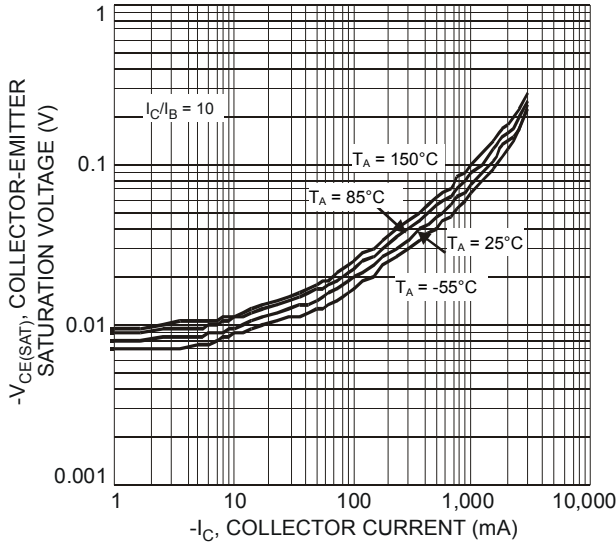


Figure 3 Typical Collector-Emitter Saturation Voltage vs. Collector Current

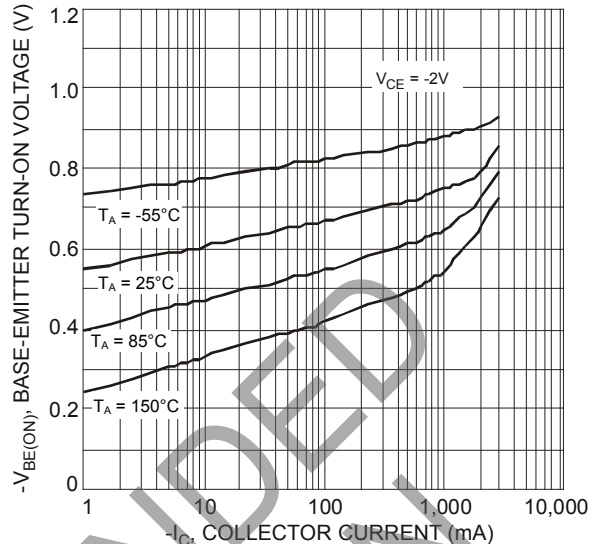


Figure 4 Typical Base-Emitter Turn-On Voltage vs. Collector Current

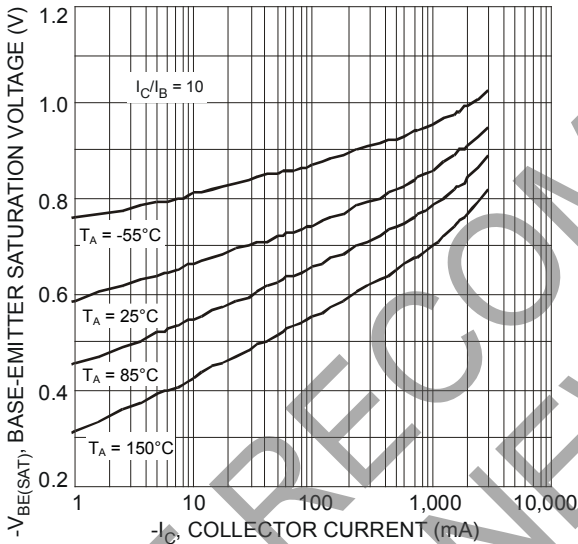


Figure 5 Typical Base-Emitter Saturation Voltage vs. Collector Current

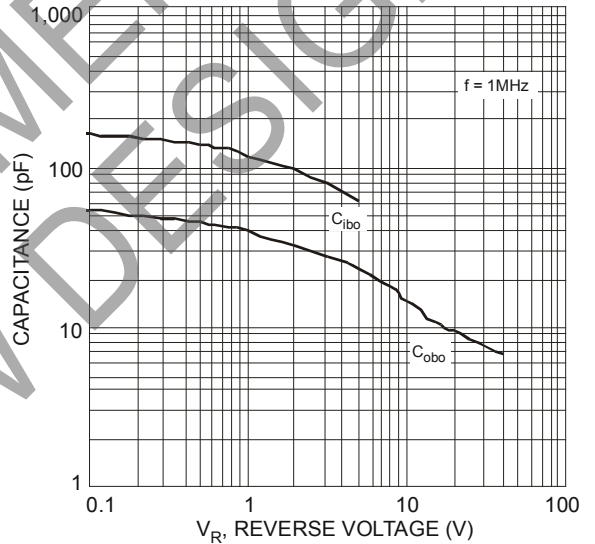


Figure 6 Typical Capacitance Characteristics

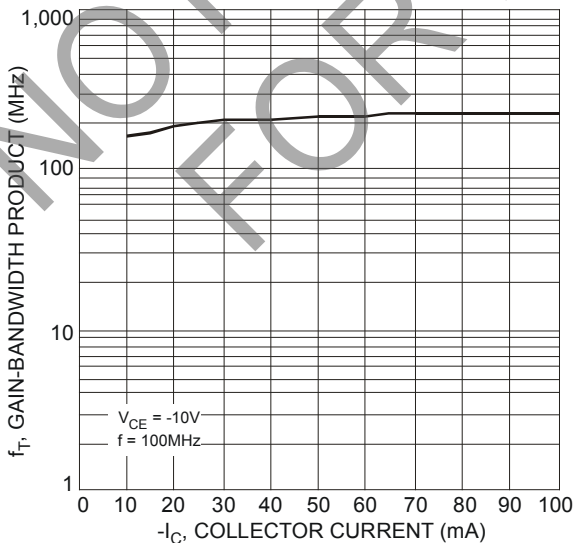
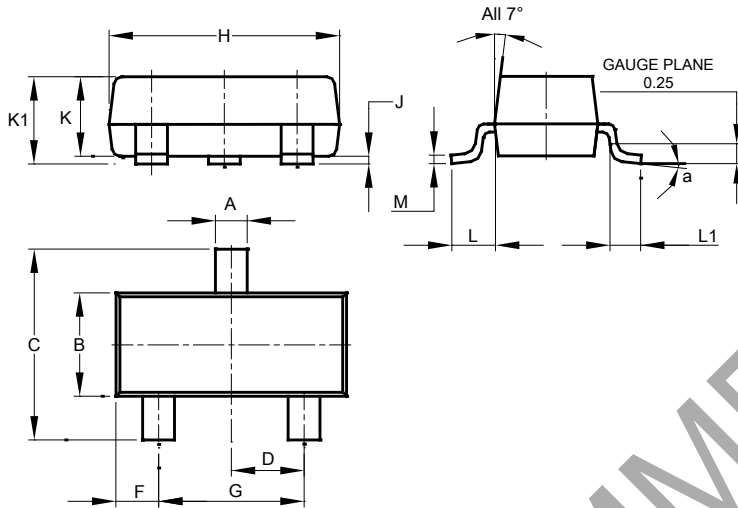


Figure 7 Typical Gain-Bandwidth Product vs. Collector Current

Package Outline Dimensions

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

SOT23

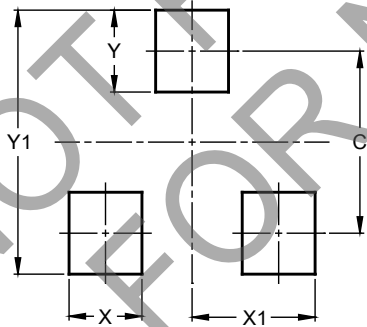


| SOT23 | | | |
|----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.37 | 0.51 | 0.40 |
| B | 1.20 | 1.40 | 1.30 |
| C | 2.30 | 2.50 | 2.40 |
| D | 0.89 | 1.03 | 0.915 |
| F | 0.45 | 0.60 | 0.535 |
| G | 1.78 | 2.05 | 1.83 |
| H | 2.80 | 3.00 | 2.90 |
| J | 0.013 | 0.10 | 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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