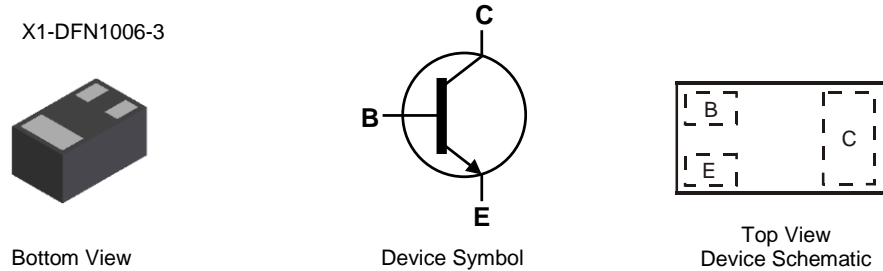


Features

- $BV_{CEO} > 15V$
- $I_C = 500mA$ High Collector Current
- $I_{CM} = 1A$ Peak Pulse Current
- $P_D = 1000mW$ Power Dissipation
- Low Collector-Emitter Saturation Voltage, $V_{CE(sat)}$
- $0.60mm^2$ Package Footprint, 13 Times Smaller than SOT23
- 0.5mm Height Package Minimizing Off-Board Profile
- Complementary PNP Type DIODES™ DSS3515M
- **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-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please refer to the related automotive grade (Q-suffix) part. A listing can be found at <https://www.diodes.com/products/automotive/automotive-products/>.**
- **This part is qualified to JEDEC standards (as references in AEC-Q) for High Reliability. <https://www.diodes.com/quality/product-definitions/>**

Mechanical Data

- Package: X1-DFN1006-3
- Package Material: Molded Plastic, "Green" Molding Compound. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish – NiPdAu, Solderable per MIL-STD-202, Method 208 (e4)
- Weight: 0.0009 grams (Approximate)

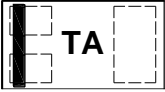
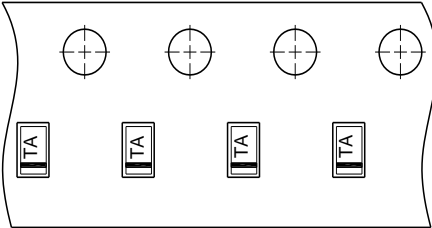
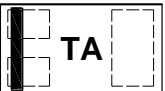
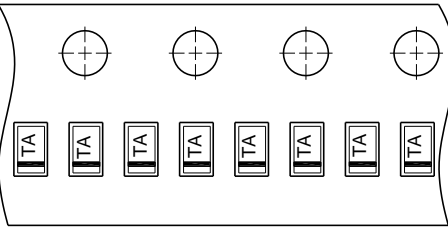


Ordering Information (Note 4)

| Part Number | Package | Marking | Reel Size (inches) | Tape Width (mm) | Packing | |
|-------------|--------------|---------|--------------------|-----------------|---------|---------|
| | | | | | Qty. | Carrier |
| DSS2515M-7 | X1-DFN1006-3 | TA | 7 | 8 | 3,000 | Reel |
| DSS2515M-7B | X1-DFN1006-3 | TA | 7 | 8 | 10,000 | Reel |

- 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/>.

Marking Information

| | |
|---------------------------|--|
| <p>DSS2515M-7</p> |  <p>TA = Product Type Marking Code</p> <p>Top View Bar Denotes Base and Emitter Side</p>  |
| <p>DSS2515M-7B</p> |  <p>TA = Product Type Marking Code</p> <p>Top View Bar Denotes Base and Emitter Side</p>  |

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

| Characteristic | Symbol | Value | Unit |
|--------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CBO} | 15 | V |
| Collector-Emitter Voltage | V _{CEO} | 15 | V |
| Emitter-Base Voltage | V _{EBO} | 6 | V |
| Collector Current - Continuous | I _C | 500 | mA |
| Peak Pulse Collector Current | I _{CM} | 1 | A |
| Peak Base Current | I _{BM} | 100 | mA |

Thermal Characteristics

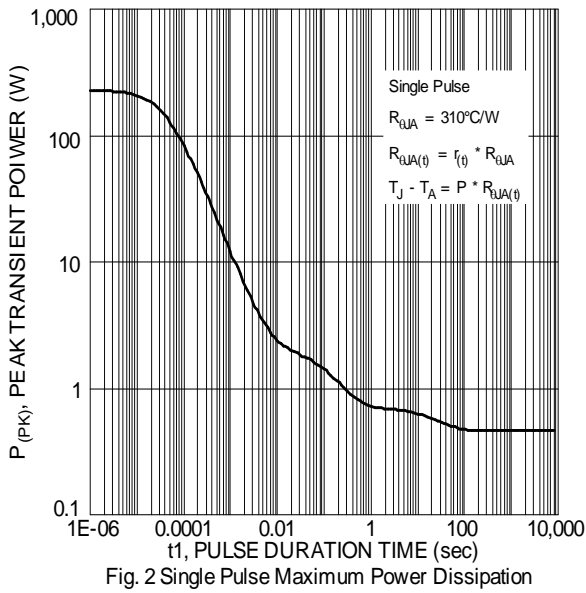
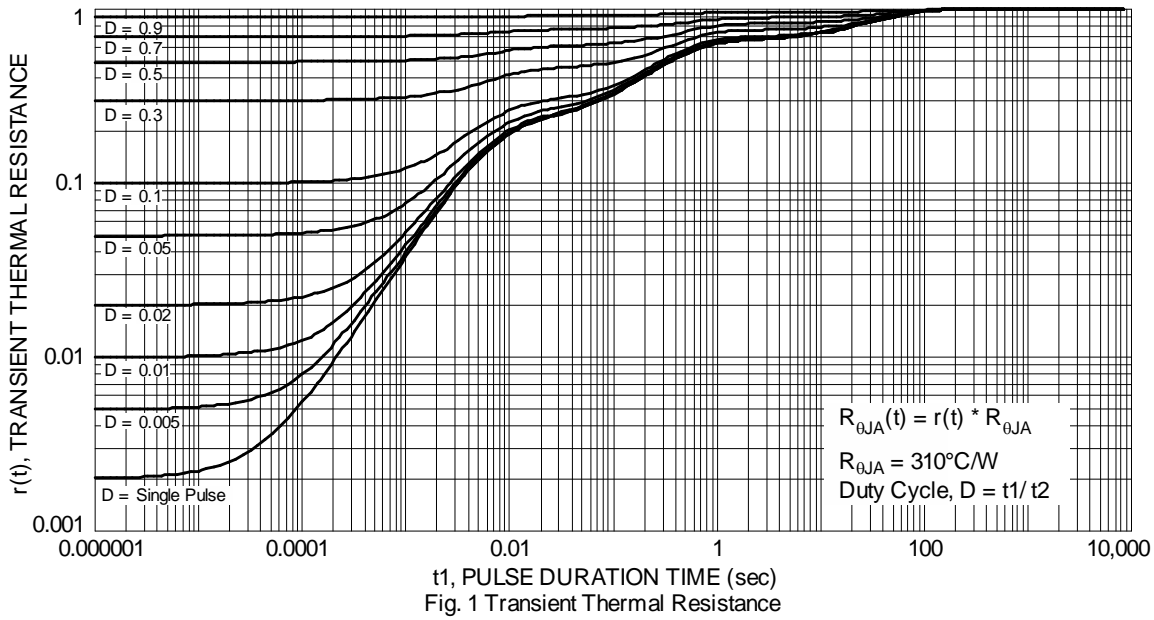
| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|-------|
| Power Dissipation | P _D | (Note 5) | 400 |
| | | (Note 6) | 1,000 |
| Thermal Resistance, Junction to Ambient | R _{θJA} | (Note 5) | 310 |
| | | (Note 6) | 120 |
| Thermal Resistance, Junction to Lead | R _{θJL} | 120 | °C/W |
| Operating and Storage and 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 | B |

- Notes:
5. For the device mounted on minimum recommended pad layout 2oz copper that is on a single-sided 1.6mm FR4 PCB; device is measured under still air conditions whilst operating in steady state condition.
 6. Same as Note 5, except the exposed collector pad is mounted on 25mm x 25mm 2oz copper.
 7. Thermal resistance from junction to solder-point (on the exposed collector pad).
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

Thermal Characteristics



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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|----------------------|------------------|-------------|------------------|----------|---|
| OFF CHARACTERISTICS | | | | | | |
| Collector-Base Breakdown Voltage | BV _{CB0} | 15 | — | — | V | I _C = 100μA, I _E = 0 |
| Collector-Emitter Breakdown Voltage (Note 9) | BV _{CEO} | 15 | — | — | V | I _C = 10mA, I _B = 0 |
| Emitter-Base Breakdown Voltage | BV _{EB0} | 6 | — | — | V | I _E = 100μA, I _C = 0 |
| Collector Cutoff Current | I _{CB0} | — | — | 100 50 | nA μA | V _{CB} = 15V, I _E = 0 V _{CB} = 15V, I _E = 0, T _A = +150°C |
| Emitter Cutoff Current | I _{EB0} | — | — | 100 | nA | V _{EB} = 5V, I _C = 0 |
| ON CHARACTERISTICS (Note 9) | | | | | | |
| DC Current Gain | h _{FE} | 200 150 90 | — — — | — — — | — | V _{CE} = 2V, I _C = 10mA V _{CE} = 2V, I _C = 100mA V _{CE} = 2V, I _C = 500mA |
| Collector-Emitter Saturation Voltage | V _{CE(sat)} | — — — | — — — | 25 150 250 | mV | I _C = 10mA, I _B = 0.5mA I _C = 200mA, I _B = 10mA I _C = 500mA, I _B = 50mA |
| Collector-Emitter Saturation Resistance | R _{CE(sat)} | — | — | 500 | mΩ | I _C = 500mA, I _B = 50mA |
| Base-Emitter Saturation Voltage | V _{BE(sat)} | — | — | 1.1 | V | I _C = 500mA, I _B = 50mA |
| Base-Emitter Turn On Voltage | V _{BE(on)} | — | — | 0.9 | V | V _{CE} = 2V, I _C = 100mA |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Output Capacitance | C _{obo} | — | — | 6 | pF | V _{CB} = 10V, f = 1.0MHz |
| Current Gain-Bandwidth Product | f _T | 250 | — | — | MHz | V _{CE} = 5V, I _C = 100mA, f = 100MHz |

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

Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)

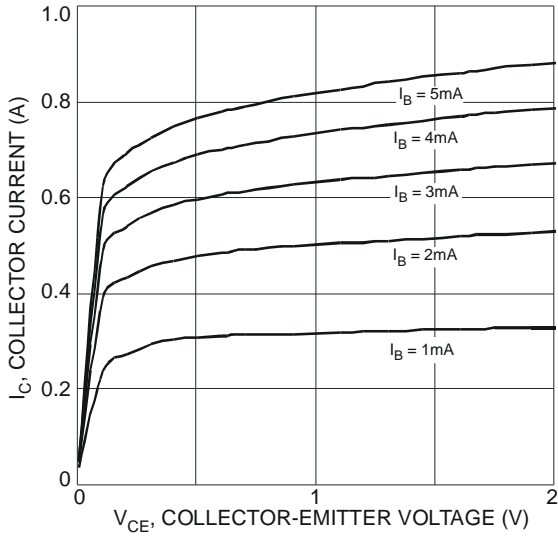


Fig. 3 Typical Collector Current vs. Collector-Emitter Voltage

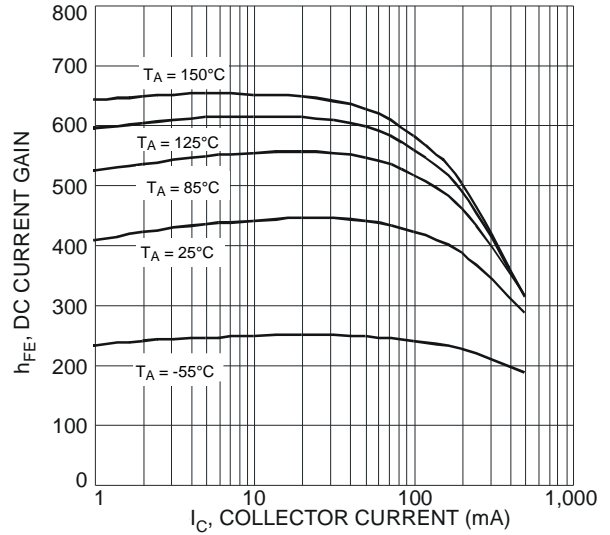


Fig. 4 Typical DC Current Gain vs. Collector Current

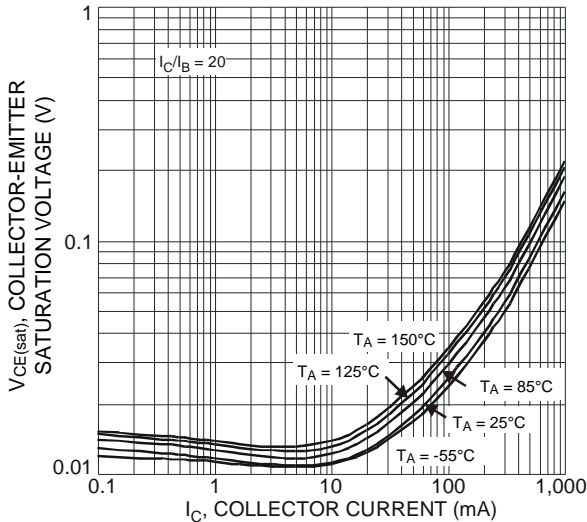


Fig. 5 Typical Collector-Emitter Saturation Voltage vs. Collector Current

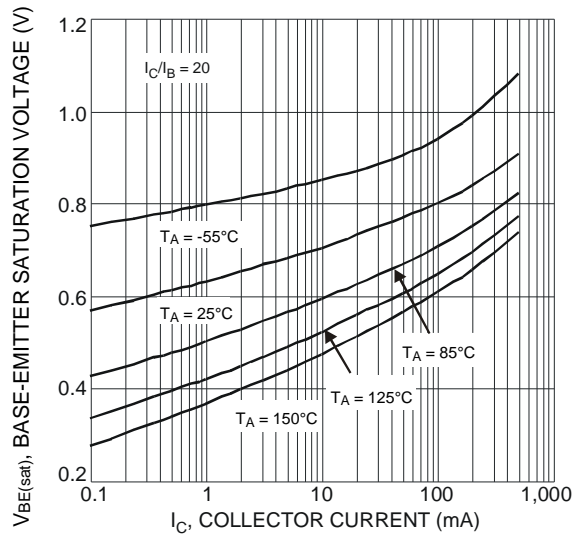


Fig. 6 Typical Base-Emitter Saturation Voltage vs. Collector Current

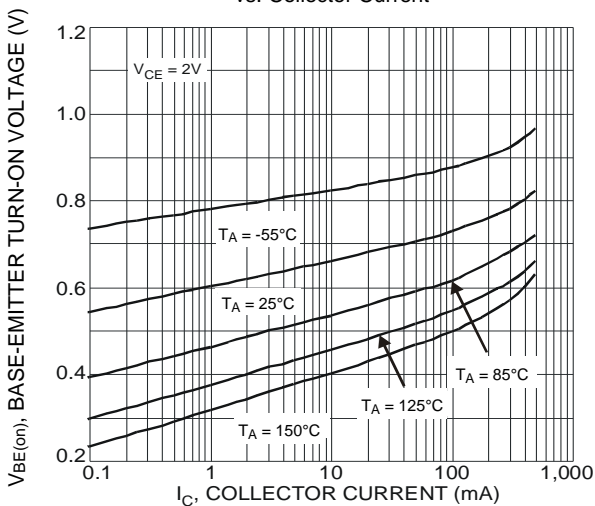


Fig. 7 Typical Base-Emitter Turn-On Voltage vs. Collector Current

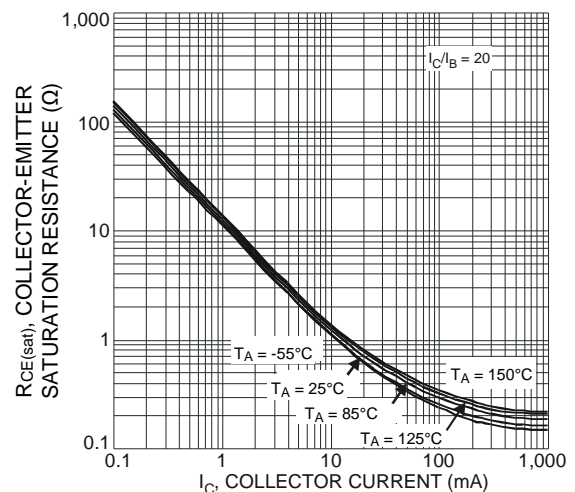
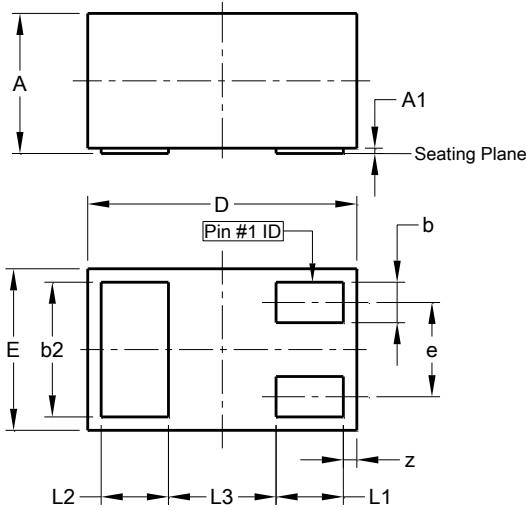


Fig. 8 Typical Collector-Emitter Saturation Resistance vs. Collector Current

Package Outline Dimensions

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

X1-DFN1006-3

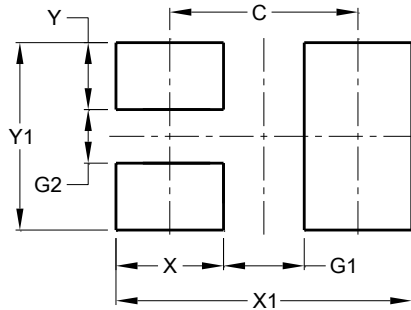


| X1-DFN1006-3 | | | |
|-----------------------------|------|-------|------|
| Dim | Min | Max | Typ |
| A | 0.47 | 0.53 | 0.50 |
| A1 | 0.00 | 0.05 | 0.03 |
| b | 0.10 | 0.20 | 0.15 |
| b2 | 0.45 | 0.55 | 0.50 |
| D | 0.95 | 1.075 | 1.00 |
| E | 0.55 | 0.675 | 0.60 |
| e | - | - | 0.35 |
| L1 | 0.20 | 0.30 | 0.25 |
| L2 | 0.20 | 0.30 | 0.25 |
| L3 | - | - | 0.40 |
| z | 0.02 | 0.08 | 0.05 |
| All Dimensions in mm | | | |

Suggested Pad Layout

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

X1-DFN1006-3



| Dimensions | Value (in mm) |
|------------|---------------|
| C | 0.70 |
| G1 | 0.30 |
| G2 | 0.20 |
| X | 0.40 |
| X1 | 1.10 |
| Y | 0.25 |
| Y1 | 0.70 |

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