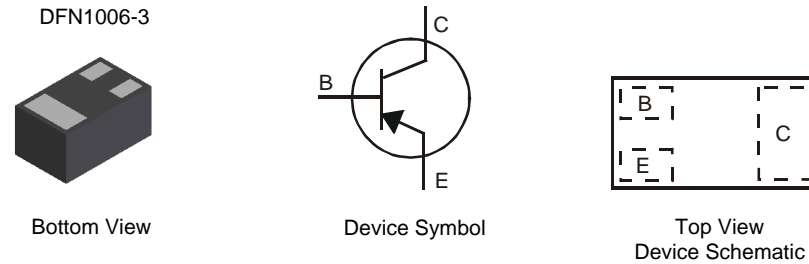


Features

- Low Collector-Emitter Saturation Voltage, $V_{CE(sat)}$
- Ultra-Small Leadless Surface Mount Package
- ESD: HBM 8kV, MM 400V
- Complementary NPN Type Available (DSS2540M)
- "Lead Free", RoHS Compliant (Note 1)
- Halogen and Antimony Free, "Green" Device (Note 2)

Mechanical Data

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

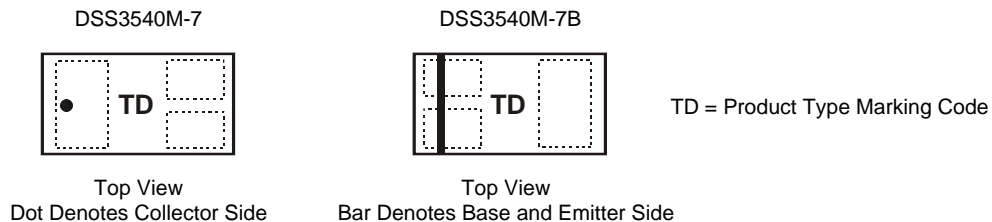


Ordering Information (Note 3)

| Product | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|-------------|---------|--------------------|-----------------|-------------------|
| DSS3540M-7 | TD | 7 | 8mm | 3,000 |
| DSS3540M-7B | TD | 7 | 8mm | 10,000 |

- 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



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} | -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 (Note 4) @ T _A = 25°C | P _D | 250 | mW |
| Thermal Resistance, Junction to Ambient (Note 4) @ T _A = 25°C | R _{θJA} | 500 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

Notes: 4. Device mounted on FR-4 PCB with minimum recommended pad layout.

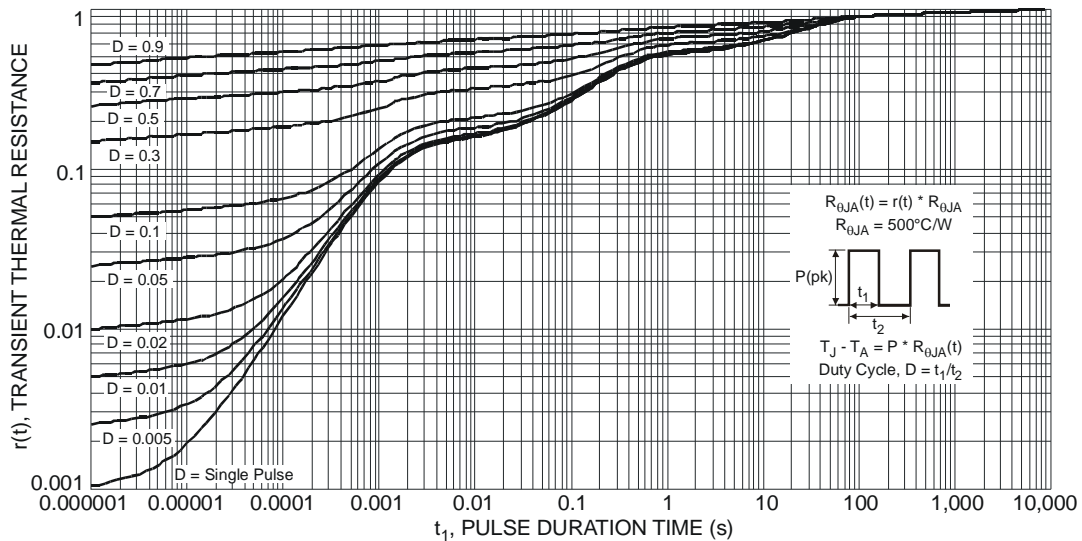


Fig. 1 Transient Thermal Response

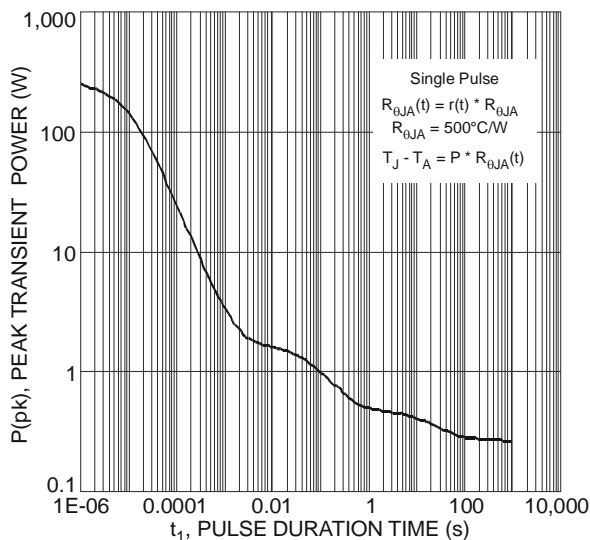


Fig. 2 Single Pulse Maximum Power Dissipation

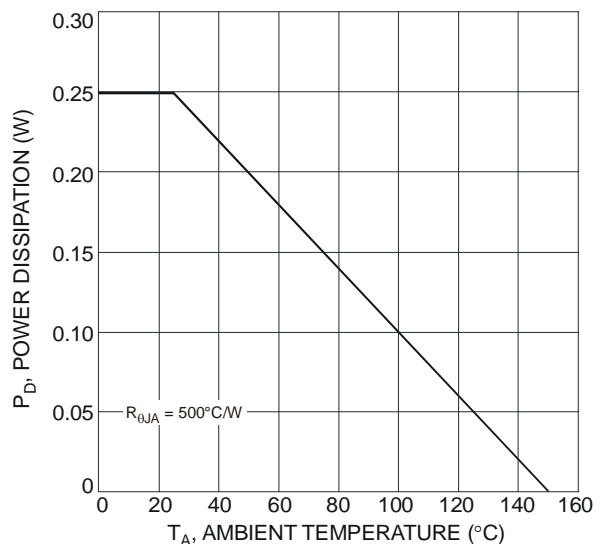


Fig. 3 Power Dissipation vs. Ambient Temperature (Note 4)

Electrical Characteristics @ $T_A = 25^\circ\text{C}$ unless otherwise specified

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|---------------|------------------|------------------|-----------------------------|------------|---|
| OFF CHARACTERISTICS | | | | | | |
| Collector-Base Breakdown Voltage | BV_{CBO} | -40 | — | — | V | $I_C = -100\mu\text{A}, I_E = 0$ |
| Collector-Emitter Breakdown Voltage (Note 5) | BV_{CEO} | -40 | — | — | V | $I_C = -10\text{mA}, I_B = 0$ |
| Emitter-Base Breakdown Voltage | BV_{EBO} | -6 | — | — | V | $I_E = -100\mu\text{A}, I_C = 0$ |
| Collector Cutoff Current | I_{CBO} | — | — | -100 | nA | $V_{CB} = -30\text{V}, I_E = 0$ |
| Emitter Cutoff Current | I_{EBO} | — | — | -100 | nA | $V_{CB} = -30\text{V}, I_E = 0, T_A = 150^\circ\text{C}$ |
| ON CHARACTERISTICS (Note 5) | | | | | | |
| DC Current Gain | h_{FE} | 200 150 40 | — — — | — — — | — | $V_{CE} = -2\text{V}, I_C = -10\text{mA}$ $V_{CE} = -2\text{V}, I_C = -100\text{mA}$ $V_{CE} = -2\text{V}, I_C = -500\text{mA}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(sat)}$ | — — — — | — — — — | -50 -130 -200 -350 | mV | $I_C = -10\text{mA}, I_B = -0.5\text{mA}$ $I_C = -100\text{mA}, I_B = -5\text{mA}$ $I_C = -200\text{mA}, I_B = -10\text{mA}$ $I_C = -500\text{mA}, I_B = -50\text{mA}$ |
| Collector-Emitter Saturation Resistance | $R_{CE(sat)}$ | — | — | 700 | m Ω | $I_C = -500\text{mA}, I_B = -50\text{mA}$ |
| Base-Emitter Saturation Voltage | $V_{BE(sat)}$ | — | — | -1.2 | V | $I_C = -500\text{mA}, I_B = -50\text{mA}$ |
| Base-Emitter Turn On Voltage | $V_{BE(on)}$ | — | — | -1.1 | V | $V_{CE} = -2\text{V}, I_C = -100\text{mA}$ |
| SMALL SIGNAL CHARACTERISTICS | | | | | | |
| Output Capacitance | C_{obo} | — | — | 10 | pF | $V_{CB} = -10\text{V}, f = 1.0\text{MHz}$ |
| Current Gain-Bandwidth Product | f_T | 100 | — | — | MHz | $V_{CE} = -5\text{V}, I_C = -100\text{mA}, f = 100\text{MHz}$ |

Notes: 5. Measured under pulsed conditions. Pulse width = 300 μs . Duty cycle $\leq 2\%$.

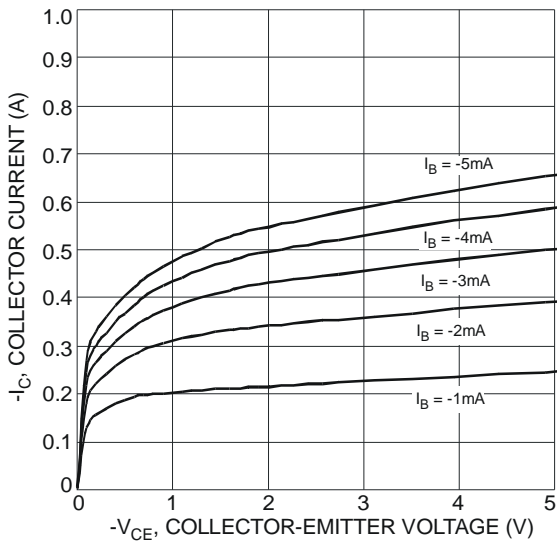


Fig. 4 Typical Collector Current vs. Collector-Emitter Voltage

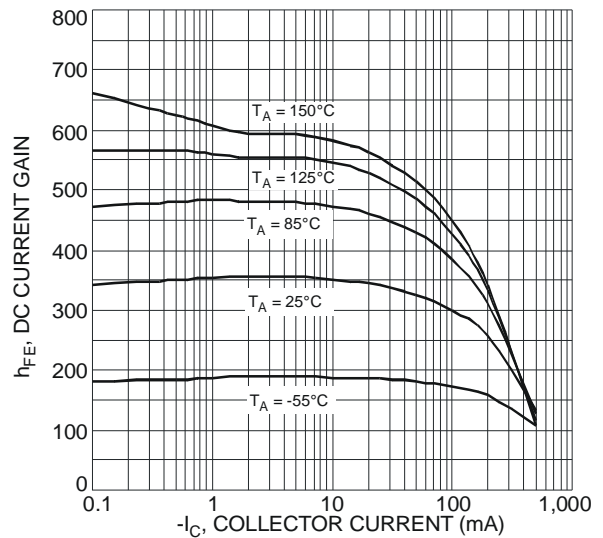


Fig. 5 Typical DC Current Gain vs. Collector Current

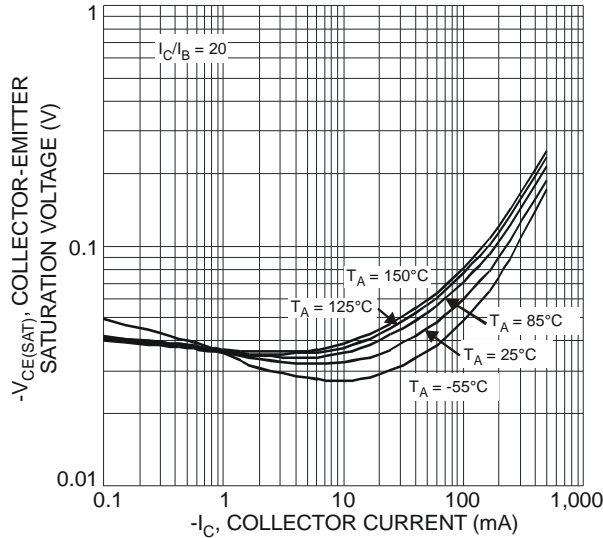


Fig. 6 Typical Collector-Emitter Saturation Voltage vs. Collector Current

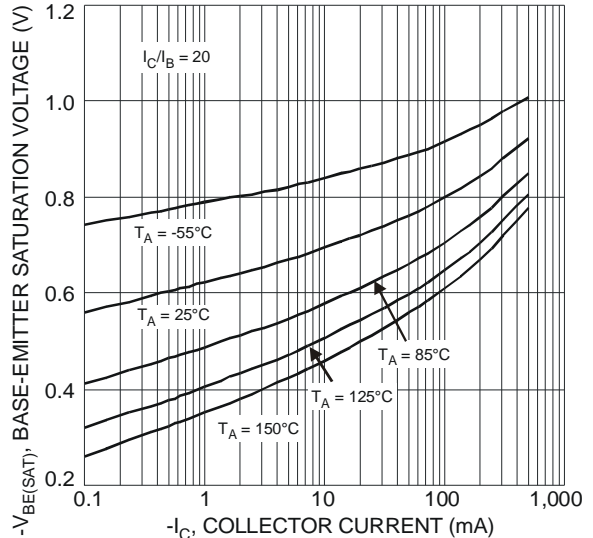


Fig. 7 Typical Base-Emitter Saturation Voltage vs. Collector Current

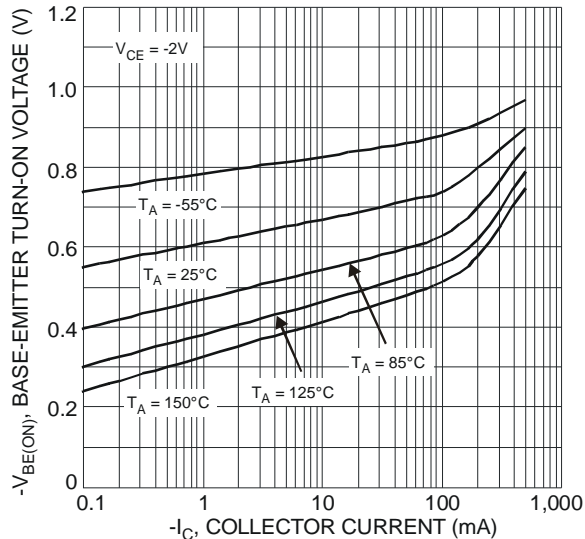


Fig. 8 Typical Base-Emitter Turn-On Voltage vs. Collector Current

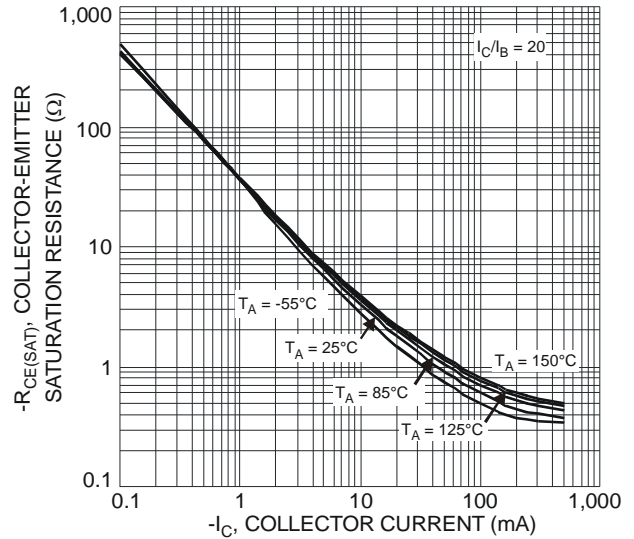
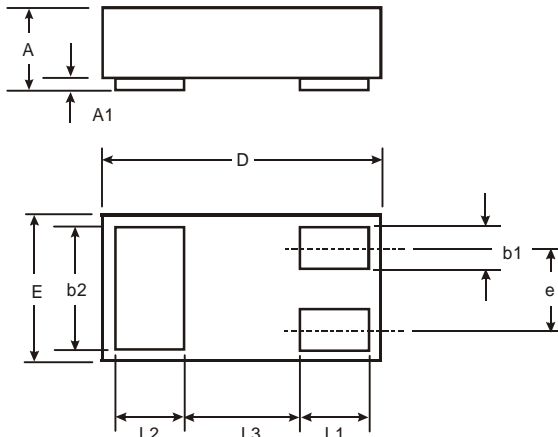


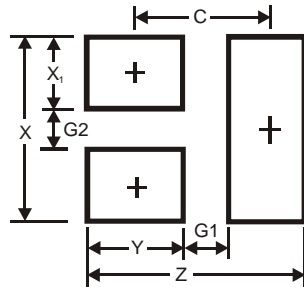
Fig. 9 Typical Collector-Emitter Saturation Resistance vs. Collector Current

Package Outline Dimensions



| DFN1006-3 | | | |
|----------------------|------|-------|------|
| Dim | Min | Max | Typ |
| A | 0.47 | 0.53 | 0.50 |
| A1 | 0 | 0.05 | 0.03 |
| b1 | 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 |
| All Dimensions in mm | | | |

Suggested Pad Layout



| Dimensions | Value (in mm) |
|------------|---------------|
| Z | 1.1 |
| G1 | 0.3 |
| G2 | 0.2 |
| X | 0.7 |
| X1 | 0.25 |
| Y | 0.4 |
| C | 0.7 |

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