

Features

- $BV_{CEO} > -150V$
- $I_C = -1A$ High Continuous Collector Current
- $I_{CM} = -2A$ Peak Pulse Current
- Complementary NPN Type: FMMT455
- **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**

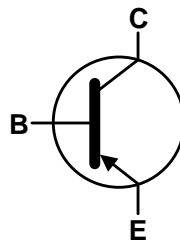
Mechanical Data

- 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 [Ⓔ]
- Weight: 0.008 grams (Approximate)

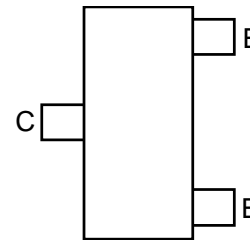


SOT23

Top View



Device Symbol



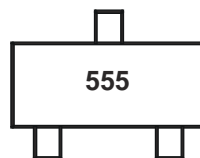
Top View
Pin-Out

Ordering Information (Note 4)

| Part Number | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|-------------|------------|---------|--------------------|-----------------|-------------------|
| FMMT555TA | AEC-Q101 | 555 | 7 | 8 | 3,000 |
| FMMT555TC | AEC-Q101 | 555 | 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/>.

Marking Information



555 = Product Type Marking Code

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

| Characteristic | Symbol | Value | Unit |
|------------------------------|------------------|-------|------|
| Collector-Base Voltage | V _{CBO} | -160 | V |
| Collector-Emitter Voltage | V _{CEO} | -150 | V |
| Emitter-Base Voltage | V _{EBO} | -7 | V |
| Continuous Collector Current | I _C | -1 | A |
| Peak Pulse Current | I _{CM} | -2 | A |
| Base Current | I _B | -200 | mA |

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

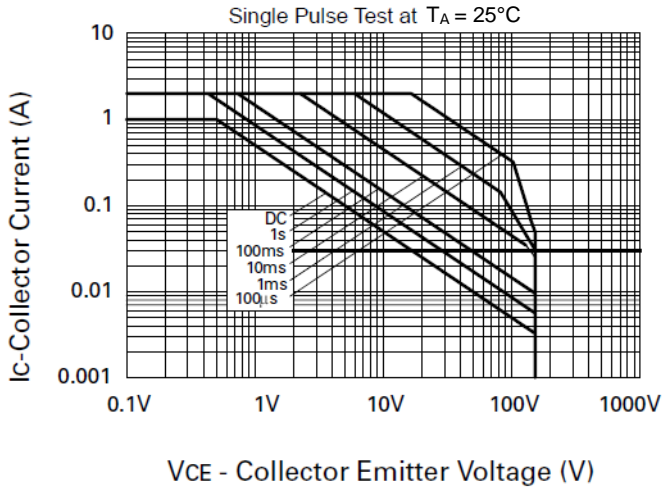
| Characteristic | Symbol | Value | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 5) | P _D | 500 | mW |
| Thermal Resistance, Junction to Ambient (Note 5) | R _{θJA} | 250 | °C/W |
| Thermal Resistance, Junction to Lead (Note 6) | R _{θJL} | 197 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

ESD Ratings (Note 7)

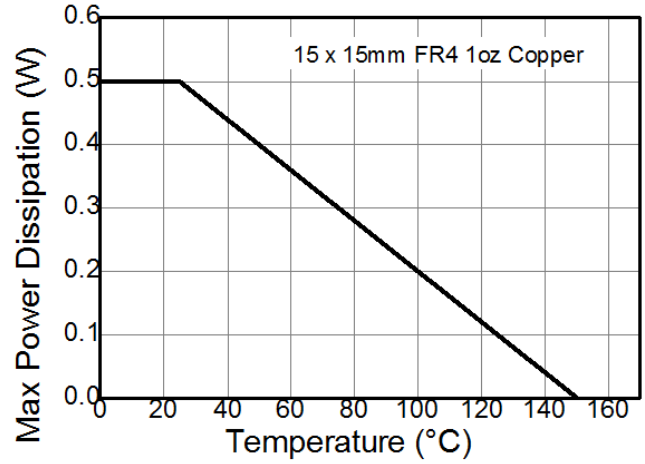
| Characteristic | Symbol | Value | Unit | JEDEC Class |
|--|---------|-------|------|-------------|
| Electrostatic Discharge - Human Body Model | ESD HBM | 4,000 | V | 3A |
| Electrostatic Discharge - Machine Model | ESD MM | 400 | V | C |

- Notes:
5. For a device mounted with the collector lead on 15mm x 15mm 1oz copper that is on a single-sided FR-4 PCB; device is measured under still air conditions whilst operating in a steady-state.
 6. Thermal resistance from junction to solder-point (at the end of the collector lead).
 7. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

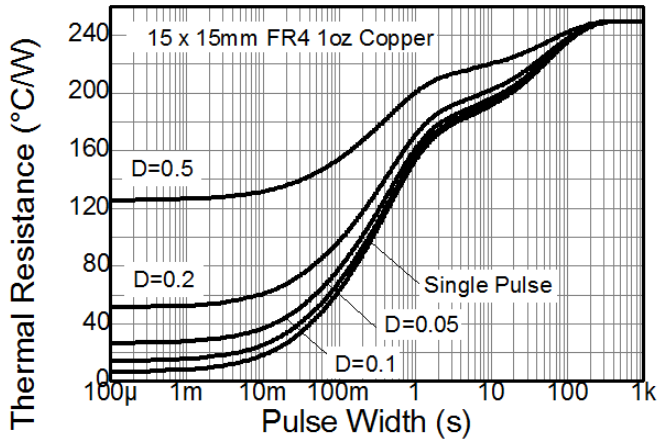
Thermal Characteristics and Derating Information



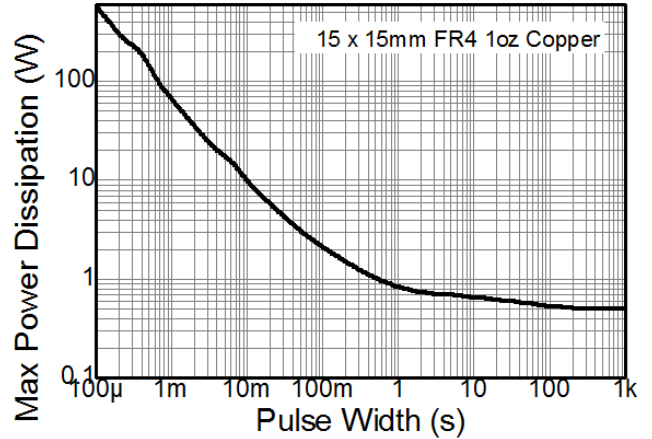
Safe Operating Area



Derating Curve



Transient Thermal Impedance



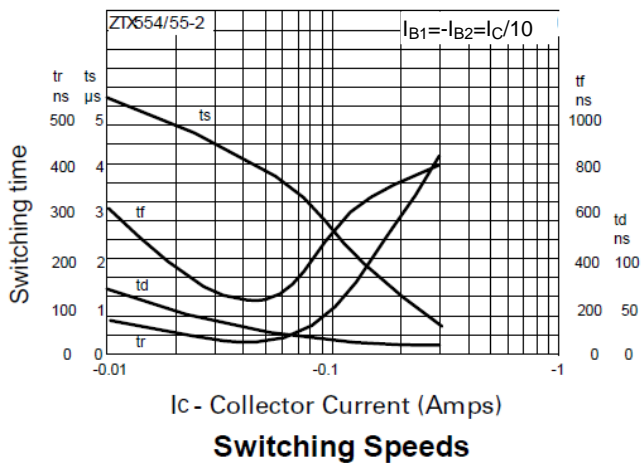
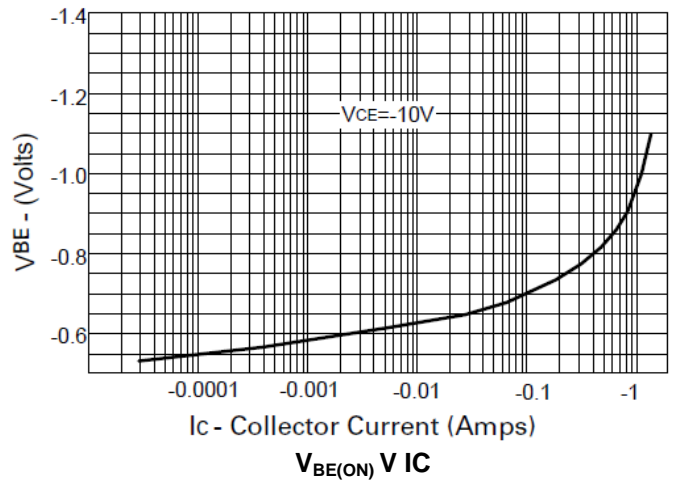
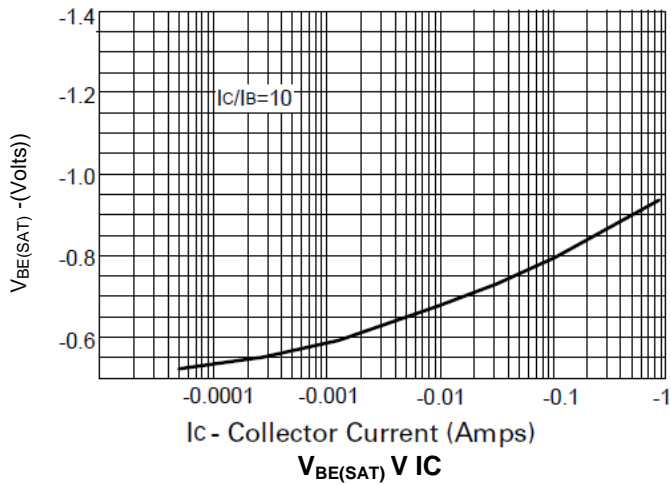
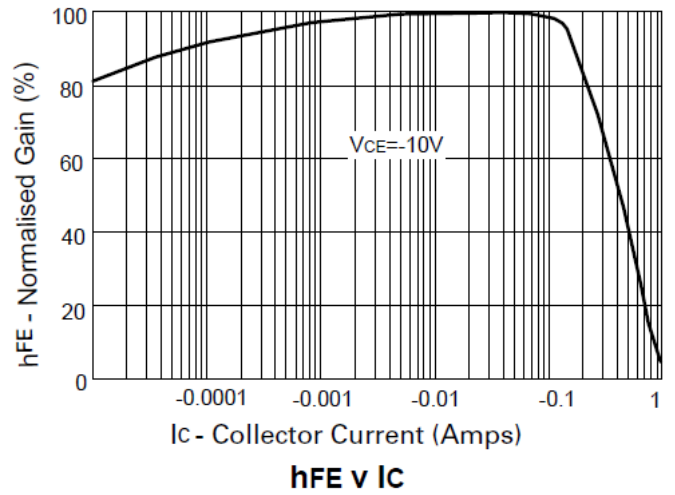
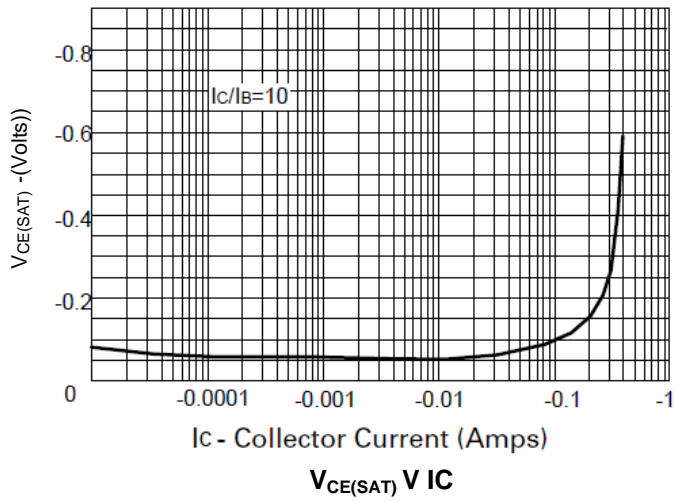
Pulse Power Dissipation

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|----------------------|------|-------|------|------|---|
| Collector-Base Breakdown Voltage | BV _{CB0} | -160 | -290 | — | V | I _C = -100μA |
| Collector-Emitter Breakdown Voltage (Note 8) | BV _{CEO} | -150 | -230 | — | V | I _C = -10mA |
| Emitter-Base Breakdown Voltage | BV _{EBO} | -7 | -8.3 | — | V | I _E = -100μA |
| Collector-Base Cutoff Current | I _{CB0} | — | -2 | -100 | nA | V _{CB} = -140V |
| Collector-Emitter Cut-Off Current | I _{CES} | — | -2 | -100 | nA | V _{CE} = -140V |
| Emitter-Base Cutoff Current | I _{EBO} | — | -1 | -20 | nA | V _{EB} = -6V |
| Static Forward Current Transfer Ratio (Note 8) | h _{FE} | 50 | 185 | — | — | I _C = -10mA, V _{CE} = -10V |
| | | 50 | 155 | 300 | — | I _C = -300mA, V _{CE} = -10V |
| Collector-Emitter Saturation Voltage (Note 8) | V _{CE(SAT)} | — | -97 | -300 | mV | I _C = -100mA, I _B = -10mA |
| Base-Emitter Saturation Voltage (Note 8) | V _{BE(SAT)} | — | -0.79 | -1 | V | I _C = -100mA, I _B = -10mA |
| Base-Emitter Turn-On Voltage (Note 8) | V _{BE(ON)} | — | -0.72 | -1 | V | I _C = -100mA, V _{CE} = -10V |
| Transition Frequency | f _T | 100 | — | — | MHz | V _{CE} = -10V, I _C = -50mA, f = 100MHz |
| Output Capacitance | C _{obo} | — | — | 10 | pF | V _{CB} = -10V, f = 1MHz |

Note: 8. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

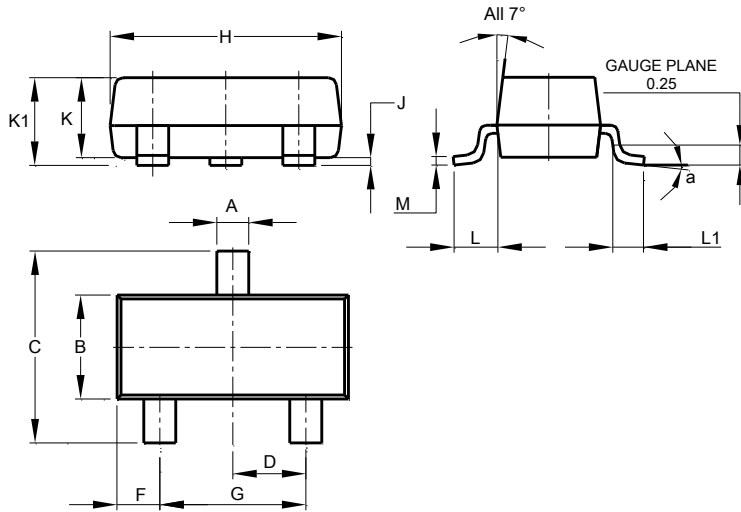
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

SOT23

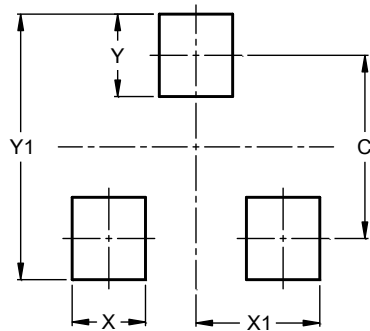


| SOT23 | | | |
|----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.37 | 0.51 | 0.40 |
| B | 1.20 | 1.40 | 1.30 |
| C | 2.30 | 2.50 | 2.40 |
| D | 0.89 | 1.03 | 0.915 |
| F | 0.45 | 0.60 | 0.535 |
| G | 1.78 | 2.05 | 1.83 |
| H | 2.80 | 3.00 | 2.90 |
| J | 0.013 | 0.10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