


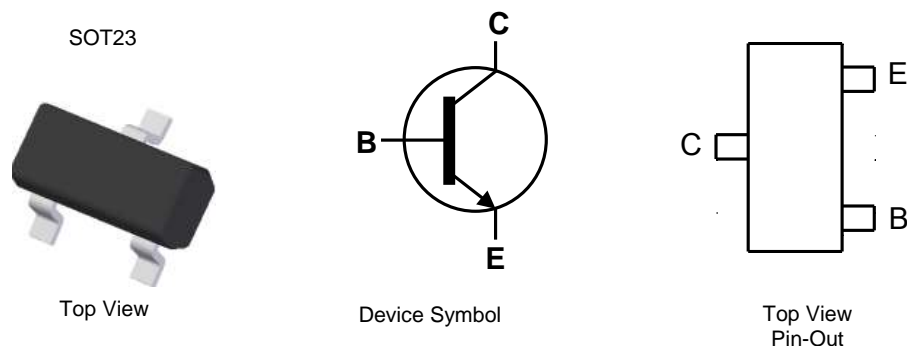
350V NPN HIGH VOLTAGE TRANSISTOR IN SOT23

Features

- $BV_{CEO} > 350V$
- $I_C = 500mA$ High Collector Current
- 350mW Power Dissipation
- h_{FE} of 15 @ $I_C=100mA$
- Complementary Part Number: FMMT6520
- **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)

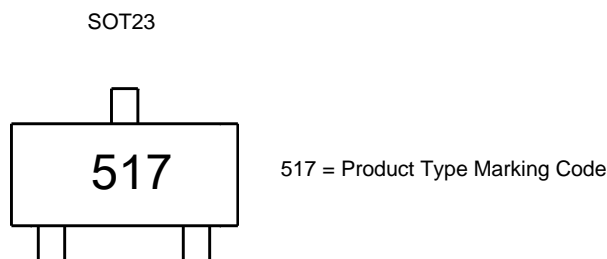


Ordering Information (Note 4)

| Product | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|------------|------------|---------|--------------------|-----------------|-------------------|
| FMMT6517TA | AEC-Q | 517 | 7 | 8 | 3,000 |

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS) & 2011/65/EU (RoHS 2) 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. 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} | 350 | V |
| Collector-Emitter Voltage | V _{CEO} | 350 | V |
| Emitter-Base Voltage | V _{EBO} | 7 | V |
| Collector Current | I _C | 500 | mA |

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

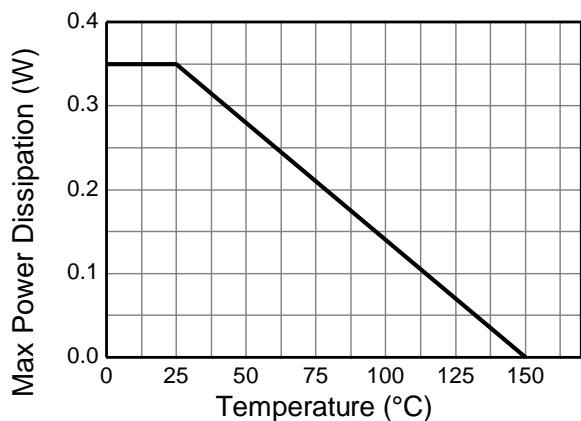
| Characteristic | Symbol | Value | Unit |
|---|-----------------------------------|-------------|------|
| Power Dissipation | P _D | 310 | mW |
| | | 350 | |
| Thermal Resistance, Junction to Ambient | R _{θJA} | 403 | °C/W |
| | | 357 | |
| Thermal Resistance, Junction to Leads | R _{θJL} | 350 | °C/W |
| Operating and Storage Temperature Range | T _J , T _{STG} | -55 to +150 | °C |

ESD Ratings (Note 8)

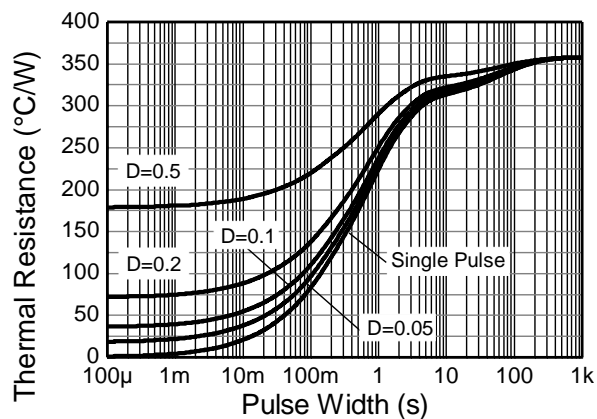
| Characteristic | Symbol | Value | Unit | JEDEC Class |
|--|---------|-------|------|-------------|
| Electrostatic Discharge - Human Body Model | ESD HBM | 4,000 | V | 3A |
| Electrostatic Discharge - Machine Model | ESD MM | 400 | V | C |

- Notes:
5. For the device mounted on minimum recommended pad layout 1oz 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 device is mounted on 15mm x 15mm 1oz copper.
 7. Thermal resistance from junction to solder-point (at the end of the leads).
 8. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

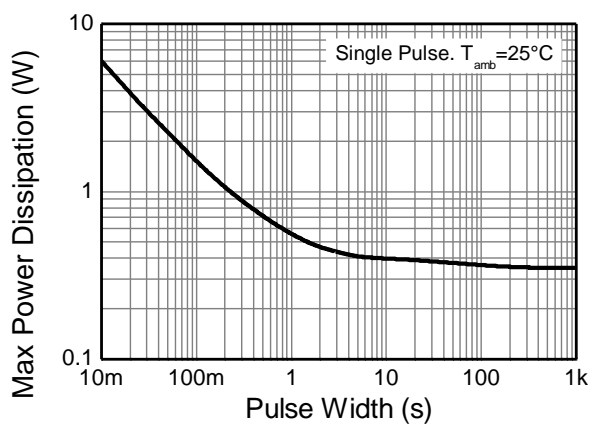
Thermal Characteristics and Derating information



Derating Curve



Transient Thermal Impedance



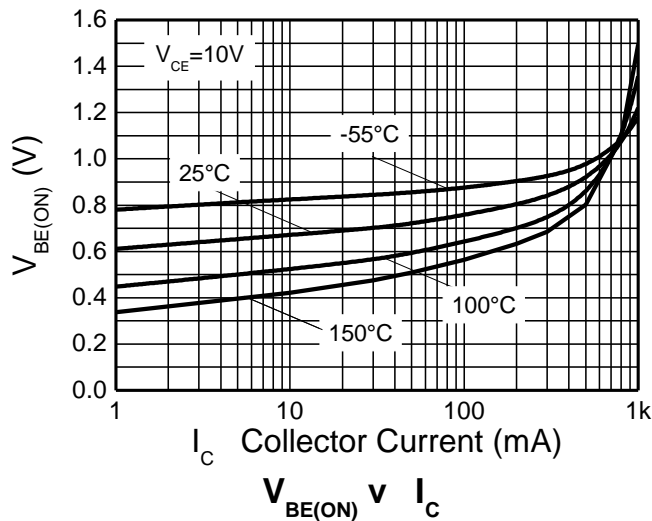
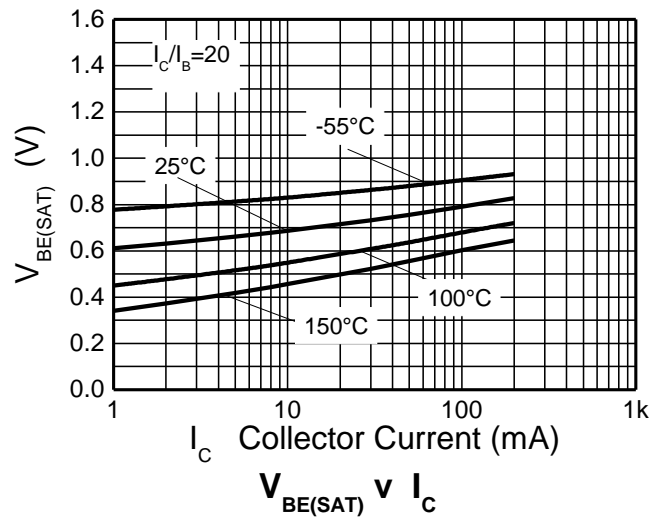
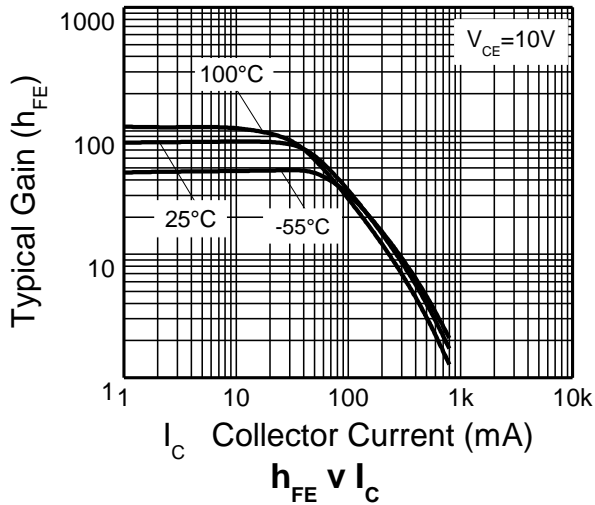
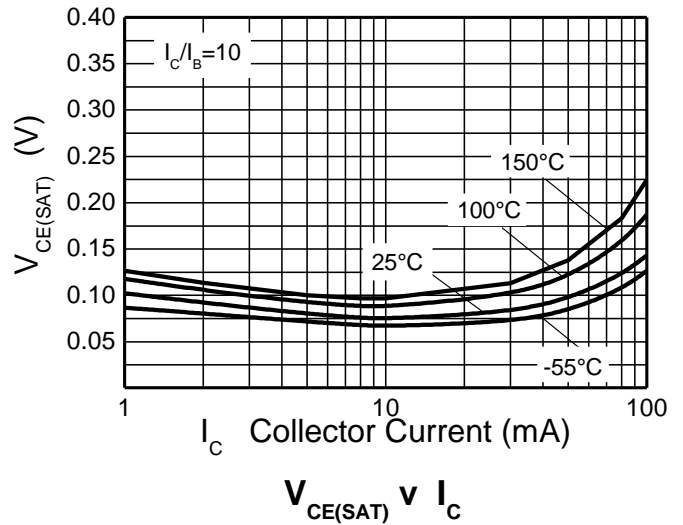
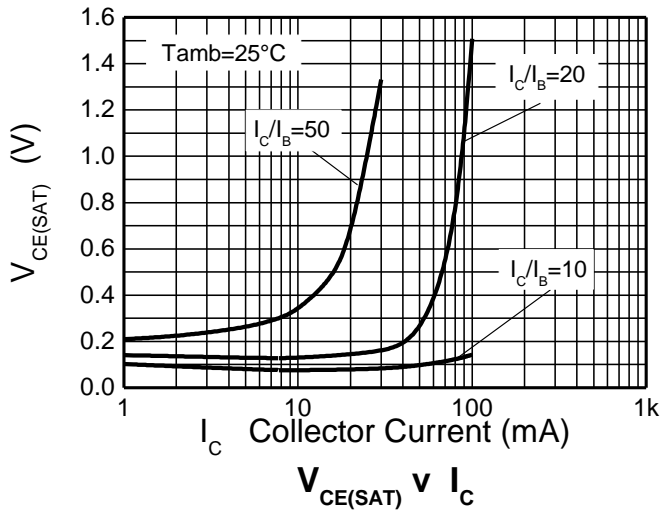
Pulse Power Dissipation

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

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|--|----------------------|----------------------------|-----|---------------------------|------|--|
| Collector-Base Breakdown Voltage | BV _{CBO} | 350 | — | — | V | I _C = 100μA |
| Collector-Emitter Breakdown Voltage (Note 9) | BV _{CEO} | 350 | — | — | V | I _C = 1mA |
| Emitter-Base Breakdown Voltage | BV _{EBO} | 7 | — | — | V | I _E = 100μA |
| Collector Cutoff Current | I _{CBO} | — | — | 50 | nA | V _{CB} = 250V |
| Emitter Cutoff Current | I _{EBO} | — | — | 50 | nA | V _{EB} = 6V |
| Static Forward Current Transfer Ratio (Note 9) | h _{FE} | 20 30 30 20 15 | — | — — 200 200 — | — | I _C = 1mA, V _{CE} = 10V I _C = 10mA, V _{CE} = 10V I _C = 30mA, V _{CE} = 10V I _C = 50mA, V _{CE} = 10V I _C = 100mA, V _{CE} = 10V |
| Collector-Emitter Saturation Voltage (Note 9) | V _{CE(SAT)} | — | — | 0.3 0.35 0.5 1.0 | V | I _C = 10mA, I _B = 1mA I _C = 20mA, I _B = 2mA I _C = 30mA, I _B = 3mA I _C = 50mA, I _B = 5mA |
| Base-Emitter Saturation Voltage (Note 9) | V _{BE(SAT)} | — | — | 0.80 0.85 0.90 | V | I _C = 10mA, I _B = 1mA I _C = 20mA, I _B = 2mA I _C = 30mA, I _B = 3mA |
| Base-Emitter Turn-On Voltage (Note 9) | V _{BE(ON)} | — | — | 2.0 | V | I _C = 100mA, V _{CE} = 10V |
| Output Capacitance | C _{OBO} | — | — | 6 | pF | V _{CB} = 20V, f = 1MHz |
| Transition Frequency | f _T | 50 | — | — | MHz | V _{CE} = 20V, I _C = 10mA, f = 20MHz |

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

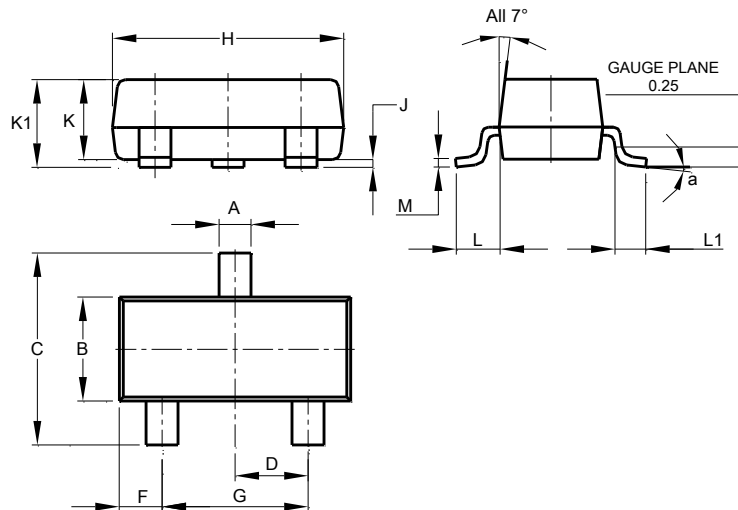
Typical Electrical Characteristics (@ $T_A = +25^\circ\text{C}$, unless otherwise specified.)



Package Outline Dimensions

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

SOT23

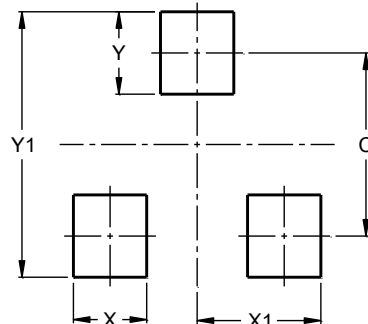


| SOT23 | | | |
|----------------------|-------|-------|-------|
| Dim | Min | Max | Typ |
| A | 0.37 | 0.51 | 0.40 |
| B | 1.20 | 1.40 | 1.30 |
| C | 2.30 | 2.50 | 2.40 |
| D | 0.89 | 1.03 | 0.915 |
| F | 0.45 | 0.60 | 0.535 |
| G | 1.78 | 2.05 | 1.83 |
| H | 2.80 | 3.00 | 2.90 |
| J | 0.013 | 0.10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

Note: For high voltage applications, the appropriate industry sector guidelines should be considered with regards to creepage and clearance distances between device Terminals and PCB tracking.

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