

**350V PNP SILICON PLANAR HIGH VOLTAGE TRANSISTOR IN SOT23**

**Features and Benefits**

- $BV_{CEO} > -350V$
- Maximum Continuous Collector Current  $I_C = -500mA$
- 330mW power dissipation
- Complementary part number FMMT6517
- **Lead Free, RoHS Compliant (Note 1)**
- **Halogen and Antimony Free "Green" Device (Note 2)**
- **Qualified to AEC-Q101 Standards for High Reliability**

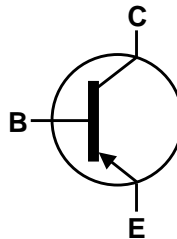
**Mechanical Data**

- Case: SOT-23
- UL Flammability Rating 94V-0
- Case material: molded Plastic.
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Matte Tin Finish; Solderable per MIL-STD-202, Method 208
- Weight: 0.008 grams (Approximate)

**Applications**

- Power switches

SOT-23



Top View

Device Symbol

Top View  
Pin-Out

**Ordering Information** (Note 3)

| Product    | Marking | Reel size (inches) | Tape width (mm) | Quantity per reel |
|------------|---------|--------------------|-----------------|-------------------|
| FMMT6520TA | 520     | 7                  | 8               | 3,000             |

- 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**

520 = Product Type Marking Code

**Maximum Ratings** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic               | Symbol    | Value | Unit |
|------------------------------|-----------|-------|------|
| Collector-Base Voltage       | $V_{CBO}$ | -350  | V    |
| Collector-Emitter Voltage    | $V_{CEO}$ | -350  | V    |
| Emitter-Base Voltage         | $V_{EBO}$ | -5    | V    |
| Continuous Collector Current | $I_C$     | -500  | mA   |

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

| Characteristic                                   | Symbol          | Value       | Unit               |
|--|-----------------|-------------|--------------------|
| Power Dissipation (Note 4)                       | $P_D$           | 330         | mW                 |
| Thermal Resistance, Junction to Ambient (Note 4) | $R_{\theta JA}$ | 379         | $^\circ\text{C/W}$ |
| Thermal Resistance, Junction to Lead (Note 5)    | $R_{\theta JL}$ | 350         | $^\circ\text{C/W}$ |
| Operating and Storage Temperature Range          | $T_J, T_{STG}$  | -55 to +150 | $^\circ\text{C}$   |

- Notes: 4. For a device surface mounted FR4 PCB with minimum recommended pad layout; high coverage of single sided 1 oz copper, in still air conditions; the device is measured when operating in a steady-state condition.  
5. Thermal resistance from junction to solder-point (at the end of the collector lead).

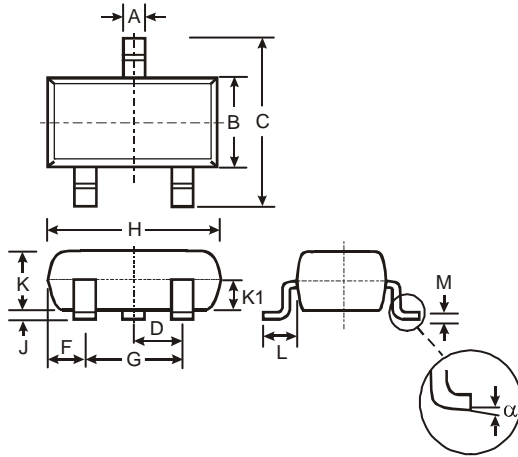
**Electrical Characteristics** @ $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                                 | Symbol        | Min                        | Typ | Max                           | Unit                 | Test Condition   |
|--|---------------|----------------------------|-----|-------------------------------|----------------------|--|
| Collector-Base Breakdown Voltage               | $BV_{CBO}$    | -350                       |     |                               | V                    | $I_C = -100\mu\text{A}$  |
| Collector-Emitter Breakdown Voltage (Note 6)   | $BV_{CEO}$    | -350                       |     |                               | V                    | $I_C = -1\text{mA}$  |
| Emitter-Base Breakdown Voltage                 | $BV_{EBO}$    | -5                         |     |                               | V                    | $I_E = -10\mu\text{A}$   |
| Collector Cutoff Current                       | $I_{CBO}$     |                            |     | -50                           | nA                   | $V_{CB} = -250\text{V}$  |
| Emitter Cutoff Current                         | $I_{EBO}$     |                            |     | -50                           | nA                   | $V_{EB} = -3\text{V}$  |
| Static Forward Current Transfer Ratio (Note 6) | $h_{FE}$      | 20<br>30<br>30<br>20<br>15 |     | 200<br>200                    |                      | $I_C = -1\text{mA}, V_{CE} = -10\text{V}$<br>$I_C = -10\text{mA}, V_{CE} = -10\text{V}$<br>$I_C = -30\text{mA}, V_{CE} = -10\text{V}$<br>$I_C = -50\text{mA}, V_{CE} = -10\text{V}$<br>$I_C = -100\text{mA}, V_{CE} = -10\text{V}$ |
| Collector-Emitter Saturation Voltage (Note 6)  | $V_{CE(sat)}$ |                            |     | -300<br>-350<br>-500<br>-1000 | mV<br>mV<br>mV<br>mV | $I_C = -10\text{mA}, I_B = -1\text{mA}$<br>$I_C = -20\text{mA}, I_B = -2\text{mA}$<br>$I_C = -30\text{mA}, I_B = -3\text{mA}$<br>$I_C = -50\text{mA}, I_B = -5\text{mA}$   |
| Base-Emitter Saturation Voltage (Note 6)       | $V_{BE(sat)}$ |                            |     | -750<br>-850<br>-900          | mV                   | $I_C = -10\text{mA}, I_B = -1\text{mA}$<br>$I_C = -20\text{mA}, I_B = -2\text{mA}$<br>$I_C = -30\text{mA}, I_B = -3\text{mA}$  |
| Base-Emitter Turn-On Voltage (Note 6)          | $V_{BE(on)}$  |                            |     | -2.0                          | V                    | $I_C = -100\text{mA}, V_{CE} = -10\text{V}$  |
| Output Capacitance                             | $C_{obo}$     |                            |     | 6                             | pF                   | $V_{CB} = -20\text{V}, f = 1\text{MHz}$  |
| Transition Frequency                           | $f_T$         | 50                         |     |                               | MHz                  | $V_{CE} = -20\text{V}, I_C = -10\text{mA}, f = 20\text{MHz}$   |

- Note: 6. Measured under pulsed conditions. Pulse width  $\leq 300 \mu\text{s}$ . Duty cycle  $\leq 2\%$

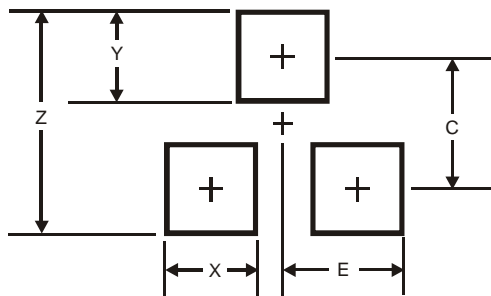
**FMMT6520**

**Package Outline Dimensions**



| 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                    | 0.903 | 1.10 | 1.00  |
| K1                   | -     | -    | 0.400 |
| L                    | 0.45  | 0.61 | 0.55  |
| M                    | 0.085 | 0.18 | 0.11  |
| α                    | 0°    | 8°   | -     |
| All Dimensions in mm |       |      |       |

**Suggested Pad Layout**



| Dimensions | Value (in mm) |
|------------|---------------|
| Z          | 2.9           |
| X          | 0.8           |
| Y          | 0.9           |
| C          | 2.0           |
| E          | 1.35          |

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