

OBSOLETE - PART DISCONTINUED

**Features**

- $BV_{CE0} > -25V$
- $I_C = -200mA$  Collector Current
- Epitaxial Planar Die Construction
- Ultra-Small Surface Mount Package
- Complementary NPN Type: MMST4124
- **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**

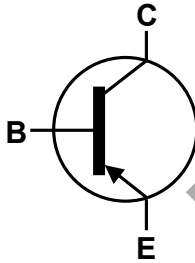
**Mechanical Data**

- Case: SOT323
- Case Material: Molded Plastic. "Green" Molding Compound. UL Flammability Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Finish - Matte Tin Plated Leads. Solderable per MIL-STD-202, Method 208 <sup>(3)</sup>
- Weight: 0.006 grams (Approximate)

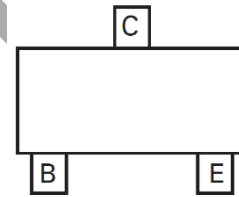


SOT323

Top View



Device Symbol



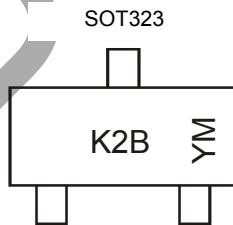
Pin-Out Top View

**Ordering Information (Note 4)**

| Product      | Compliance | Marking | Reel Size (inches) | Tape Width (mm) | Quantity per Reel |
|--------------|------------|---------|--------------------|-----------------|-------------------|
| MMST4126-7-F | Standard   | K2B     | 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](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**



K2B = Product Type Marking Code  
 YM = Date Code Marking  
 Y or Y = Year (ex: D = 2016)  
 M or M = Month (ex: 9 = September)

Date Code Key

| Year | 2010 | 2011 | 2012 | 2013 | 2014 | 2015 | 2016 | 2017 | 2018 | 2019 | 2020 |
|------|------|------|------|------|------|------|------|------|------|------|------|
| Code | X    | Y    | Z    | A    | B    | C    | D    | E    | F    | G    | H    |

| Month | Jan | Feb | Mar | Apr | May | Jun | Jul | Aug | Sep | Oct | Nov | Dec |
|-------|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| Code  | 1   | 2   | 3   | 4   | 5   | 6   | 7   | 8   | 9   | O   | N   | D   |

**Absolute Maximum Ratings** (@T<sub>A</sub> = +25°C unless otherwise specified.)

| Characteristic            | Symbol           | Value | Unit |
|---------------------------|------------------|-------|------|
| Collector-Base Voltage    | V <sub>CB0</sub> | -25   | V    |
| Collector-Emitter Voltage | V <sub>CEO</sub> | -25   | V    |
| Emitter-Base Voltage      | V <sub>EBO</sub> | -4    | V    |
| Collector Current         | I <sub>C</sub>   | -200  | mA   |

**Thermal Characteristics** (@T<sub>A</sub> = +25°C unless otherwise specified.)

| Characteristic                                   | Symbol                            | Value       | Unit |
|--|-----------------------------------|-------------|------|
| Power Dissipation (Note 5)                       | P <sub>d</sub>                    | 200         | mW   |
| Thermal Resistance, Junction to Ambient (Note 5) | R <sub>θJA</sub>                  | 625         | °C/W |
| Operating and Storage Temperature Range          | T <sub>j</sub> , T <sub>STG</sub> | -55 to +150 | °C   |

**ESD Ratings** (Note 6)

| 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 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 a steady-state.  
6. Refer to JEDEC specification JESD22-A114 and JESD22-A115.

**Thermal Characteristics and Derating Information**

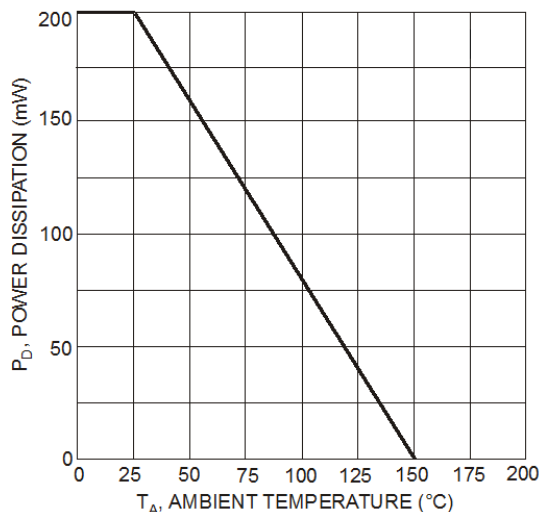


Fig. 1 Max Power Dissipation vs. Ambient Temperature

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**Electrical Characteristics** (@T<sub>A</sub> = +25°C, unless otherwise specified.)

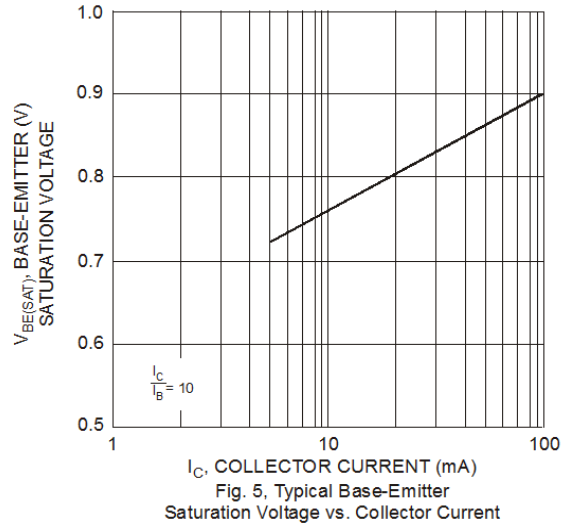
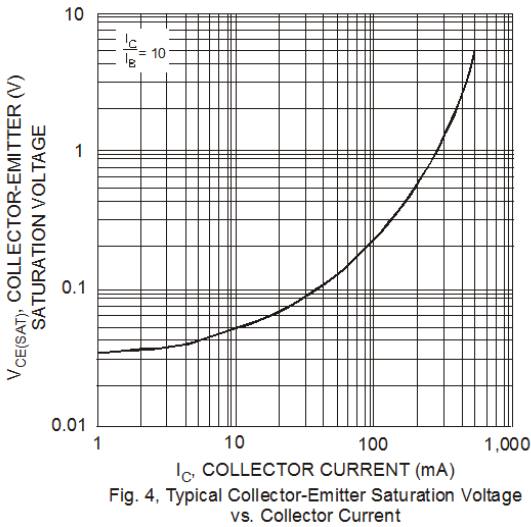
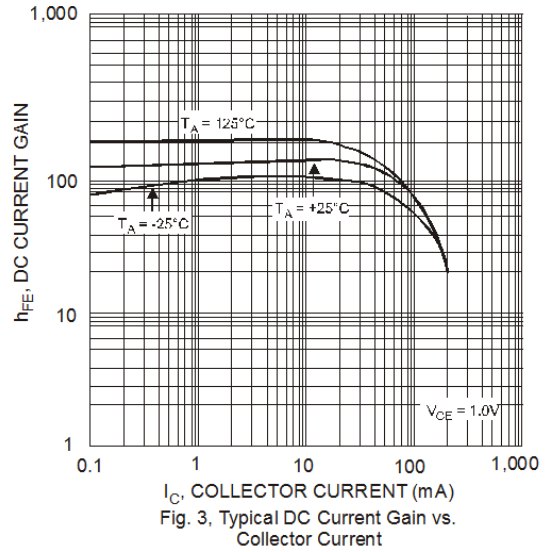
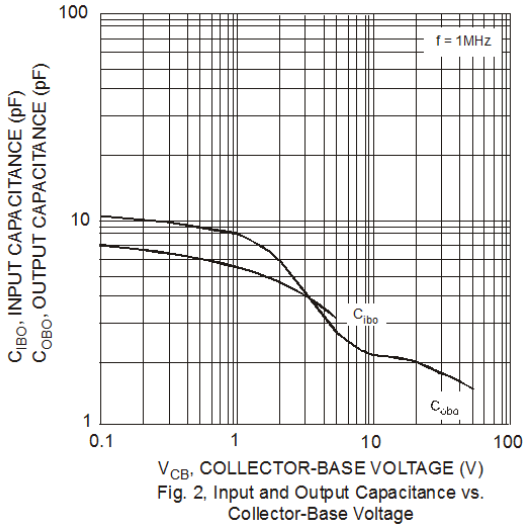
| Characteristic                       | Symbol               | Min       | Max      | Unit | Test Condition  |
|--------------------------------------|----------------------|-----------|----------|------|---|
| <b>OFF CHARACTERISTICS (Note 7)</b>  |                      |           |          |      |   |
| Collector-Base Breakdown Voltage     | BV <sub>CBO</sub>    | -25       | —        | V    | I <sub>C</sub> = -10μA, I <sub>E</sub> = 0  |
| Collector-Emitter Breakdown Voltage  | BV <sub>CEO</sub>    | -25       | —        | V    | I <sub>C</sub> = -1mA, I <sub>B</sub> = 0   |
| Emitter-Base Breakdown Voltage       | BV <sub>EB0</sub>    | 5         | —        | V    | I <sub>E</sub> = -10μA, I <sub>C</sub> = 0  |
| Collector Base Cut-Off Current       | I <sub>CBO</sub>     | —         | -50      | nA   | V <sub>CB</sub> = -20V, I <sub>E</sub> = 0  |
| Collector Cut-Off Current            | I <sub>EB0</sub>     | —         | -50      | nA   | V <sub>EB</sub> = 5V, I <sub>E</sub> = 0  |
| <b>ON CHARACTERISTICS (Note 7)</b>   |                      |           |          |      |   |
| DC Current Gain                      | h <sub>FE</sub>      | 120<br>60 | 360<br>— | —    | I <sub>C</sub> = -2.0mA, V <sub>CE</sub> = -1.0V<br>I <sub>C</sub> = -50mA, V <sub>CE</sub> = -1.0V |
| Collector-Emitter Saturation Voltage | V <sub>CE(sat)</sub> | —         | -0.40    | V    | I <sub>C</sub> = -50mA, I <sub>B</sub> = -5.0mA   |
| Base-Emitter Saturation Voltage      | V <sub>BE(sat)</sub> | —         | -0.95    | V    | I <sub>C</sub> = -50mA, I <sub>B</sub> = -5.0mA   |
| <b>SMALL SIGNAL CHARACTERISTICS</b>  |                      |           |          |      |   |
| Output Capacitance                   | C <sub>obo</sub>     | —         | 4.5      | pF   | V <sub>CB</sub> = -5.0V, f = 1.0MHz, I <sub>E</sub> = 0   |
| Input Capacitance                    | C <sub>ibo</sub>     | —         | 10       | pF   | V <sub>EB</sub> = -0.5V, f = 1.0MHz, I <sub>C</sub> = 0   |
| Small Signal Current Gain            | h <sub>fe</sub>      | 120       | 480      | —    | V <sub>CE</sub> = 1.0V, I <sub>C</sub> = -2.0mA, f = 1.0kHz   |
| Current Gain-Bandwidth Product       | f <sub>T</sub>       | 250       | —        | MHz  | V <sub>CE</sub> = -20V, I <sub>C</sub> = -10mA,<br>f = 100MHz                                       |
| Noise Figure                         | NF                   | —         | 4.0      | dB   | V <sub>CE</sub> = -5.0V, I <sub>C</sub> = -100μA,<br>R <sub>S</sub> = 1.0kΩ, f = 1.0kHz             |

Note: 7. Measured under pulsed conditions. Pulse width ≤ 300μs. Duty cycle ≤ 2%.

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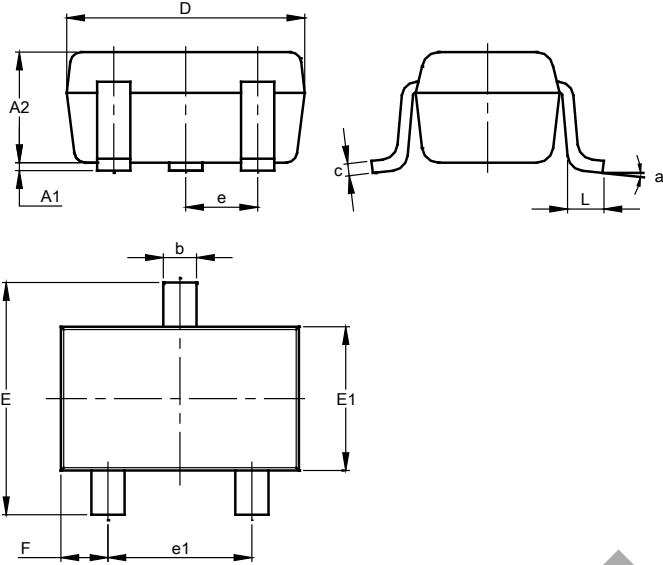
**Typical Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

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**Package Outline Dimensions**

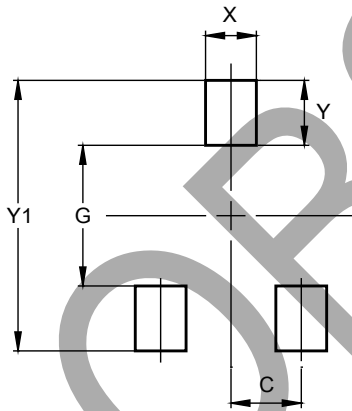
Please see <http://www.diodes.com/package-outlines.html> for the latest version.



| SOT323               |           |       |       |
|----------------------|-----------|-------|-------|
| Dim                  | Min       | Max   | Typ   |
| A1                   | 0.00      | 0.10  | 0.05  |
| A2                   | 0.90      | 1.00  | 0.95  |
| b                    | 0.25      | 0.40  | 0.30  |
| c                    | 0.10      | 0.18  | 0.11  |
| D                    | 1.80      | 2.20  | 2.15  |
| E                    | 2.00      | 2.20  | 2.10  |
| E1                   | 1.15      | 1.35  | 1.30  |
| e                    | 0.650 BSC |       |       |
| e1                   | 1.20      | 1.40  | 1.30  |
| F                    | 0.375     | 0.475 | 0.425 |
| L                    | 0.25      | 0.40  | 0.30  |
| a                    | 0°        | 8°    | --    |
| All Dimensions in mm |           |       |       |

**Suggested Pad Layout**

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



| Dimensions | Value (in mm) |
|------------|---------------|
| C          | 0.650         |
| G          | 1.300         |
| X          | 0.470         |
| Y          | 0.600         |
| Y1         | 2.500         |

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