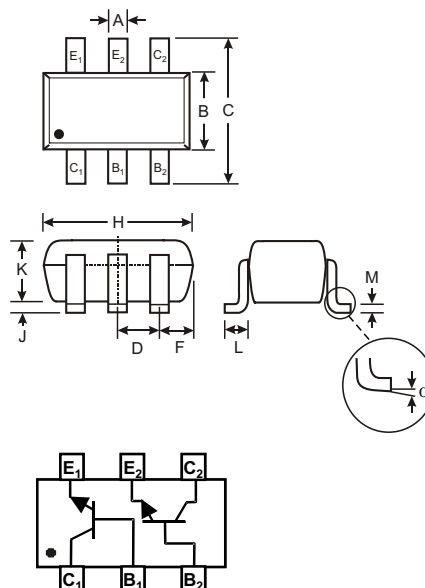


### Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DMMT5401)
- Ideal for Medium Power Amplification and Switching
- Intrinsically Matched NPN Pair (Note 1)
- 2% Matched Tolerance,  $h_{FE}$ ,  $V_{CE(SAT)}$ ,  $V_{BE(SAT)}$
- 1% Matched Tolerance, Available (Note 2)
- Also Available in Lead Free Version

### Mechanical Data

- Case: SOT-26, Molded Plastic
- Case Material - UL Flammability Rating 94V-0
- Moisture sensitivity: Level 1 per J-STD-020A
- Terminals: Solderable per MIL-STD-202, Method 208
- Also Available in Lead Free Plating (Matte Tin Finish). Please see Ordering Information, Note 8, on Page 2
- Terminal Connections: See Diagram
- Marking (See Page 2): K4R
- Ordering & Date Code Information: See Page 2
- Weight: 0.006 grams (approx.)



| SOT-26               |       |      |      |
|----------------------|-------|------|------|
| Dim                  | Min   | Max  | Typ  |
| A                    | 0.35  | 0.50 | 0.38 |
| B                    | 1.50  | 1.70 | 1.60 |
| C                    | 2.70  | 3.00 | 2.80 |
| D                    | —     | —    | 0.95 |
| F                    | —     | —    | 0.55 |
| H                    | 2.90  | 3.10 | 3.00 |
| J                    | 0.013 | 0.10 | 0.05 |
| K                    | 1.00  | 1.30 | 1.10 |
| L                    | 0.35  | 0.55 | 0.40 |
| M                    | 0.10  | 0.20 | 0.15 |
| $\alpha$             | 0°    | 8°   | —    |
| All Dimensions in mm |       |      |      |

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

| Characteristic                                   | Symbol          | DMMT5551    | Unit             |
|--------------------------------------------------|-----------------|-------------|------------------|
| Collector-Base Voltage                           | $V_{CBO}$       | 180         | V                |
| Collector-Emitter Voltage                        | $V_{CEO}$       | 160         | V                |
| Emitter-Base Voltage                             | $V_{EBO}$       | 6.0         | V                |
| Collector Current - Continuous (Note 3)          | $I_C$           | 200         | mA               |
| Power Dissipation (Note 3, 4)                    | $P_d$           | 300         | mW               |
| Thermal Resistance, Junction to Ambient (Note 3) | $R_{\theta JA}$ | 417         | K/W              |
| Operating and Storage and Temperature Range      | $T_j, T_{STG}$  | -55 to +150 | $^\circ\text{C}$ |

- Notes:
1. Built with adjacent die from a single wafer.
  2. Contact the Diodes, Inc. Sales department.
  3. Device mounted on FR-4 PCB, 1 inch x 0.85 inch x 0.062 inch; pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.
  4. Maximum combined dissipation.

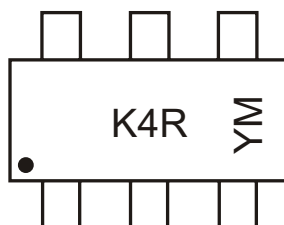
**Electrical Characteristics** @  $T_A = 25^\circ\text{C}$  unless otherwise specified

| Characteristic                       | Symbol        | Min            | Max           | Unit                | Test Condition                                                                                                                                |
|--------------------------------------|---------------|----------------|---------------|---------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|
| <b>OFF CHARACTERISTICS (Note 5)</b>  |               |                |               |                     |                                                                                                                                               |
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | 180            | —             | V                   | $I_C = 100\mu\text{A}$ , $I_E = 0$                                                                                                            |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | 160            | —             | V                   | $I_C = 1.0\text{mA}$ , $I_B = 0$                                                                                                              |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | 6.0            | —             | V                   | $I_E = 10\mu\text{A}$ , $I_C = 0$                                                                                                             |
| Collector Cutoff Current             | $I_{CBO}$     | —              | 50            | nA<br>$\mu\text{A}$ | $V_{CB} = 120\text{V}$ , $I_E = 0$<br>$V_{CB} = 120\text{V}$ , $I_E = 0$ , $T_A = 100^\circ\text{C}$                                          |
| Emitter Cutoff Current               | $I_{EBO}$     | —              | 50            | nA                  | $V_{EB} = 4.0\text{V}$ , $I_C = 0$                                                                                                            |
| <b>ON CHARACTERISTICS (Note 5)</b>   |               |                |               |                     |                                                                                                                                               |
| DC Current Gain (Note 6)             | $h_{FE}$      | 80<br>80<br>30 | —<br>250<br>— | —                   | $I_C = 1.0\text{mA}$ , $V_{CE} = 5.0\text{V}$<br>$I_C = 10\text{mA}$ , $V_{CE} = 5.0\text{V}$<br>$I_C = 50\text{mA}$ , $V_{CE} = 5.0\text{V}$ |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | —              | 0.15<br>0.20  | V                   | $I_C = 10\text{mA}$ , $I_B = 1.0\text{mA}$<br>$I_C = 50\text{mA}$ , $I_B = 5.0\text{mA}$                                                      |
| Base-Emitter Saturation Voltage      | $V_{BE(SAT)}$ | —              | 1.0           | V                   | $I_C = 10\text{mA}$ , $I_B = 1.0\text{mA}$<br>$I_C = 50\text{mA}$ , $I_B = 5.0\text{mA}$                                                      |
| <b>SMALL SIGNAL CHARACTERISTICS</b>  |               |                |               |                     |                                                                                                                                               |
| Output Capacitance                   | $C_{obo}$     | —              | 6.0           | pF                  | $V_{CB} = 10\text{V}$ , $f = 1.0\text{MHz}$ , $I_E = 0$                                                                                       |
| Small Signal Current Gain            | $h_{FE}$      | 50             | 250           | —                   | $V_{CE} = 10\text{V}$ , $I_C = 1.0\text{mA}$ ,<br>$f = 1.0\text{kHz}$                                                                         |
| Current Gain-Bandwidth Product       | $f_T$         | 100            | 300           | MHz                 | $V_{CE} = 10\text{V}$ , $I_C = 10\text{mA}$ ,<br>$f = 100\text{MHz}$                                                                          |
| Noise Figure                         | NF            | —              | 8.0           | dB                  | $V_{CE} = 5.0\text{V}$ , $I_C = 200\mu\text{A}$ ,<br>$R_S = 1.0\text{k}\Omega$ , $f = 1.0\text{kHz}$                                          |

**Ordering Information** (Note 7)

| Device     | Packaging | Shipping         |
|------------|-----------|------------------|
| DMMT5551-7 | SOT-26    | 3000/Tape & Reel |

- Notes:
5. Short duration test pulse used to minimize self-heating effect.
  6. The DC Current Gain,  $h_{FE}$ , (matched at  $I_C = 10\text{mA}$  and  $V_{CE} = 5\text{V}$ ) Collector Emitter Saturation Voltage,  $V_{CE(SAT)}$ , and Base Emitter Saturation Voltage,  $V_{BE(SAT)}$  are matched with typical matched tolerances of 1% and maximum of 2%.
  7. For Packaging Details, go to our website at <http://www.diodes.com/datasheets/ap02007.pdf>.
  8. For Lead Free version (with Lead Free terminal finish) part number, please add "-F" suffix to part number above.  
Example: DMMT5551-7-F.

**Marking Information**


K4R = Product Type Marking Code  
YM = Date Code Marking  
Y = Year ex: P = 2003  
M = Month ex: 9 = September

Date Code Key

| Year |  |  |  |  |  | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 |
|------|--|--|--|--|--|------|------|------|------|------|------|------|
| Code |  |  |  |  |  | P    | R    | S    | T    | U    | V    | W    |

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

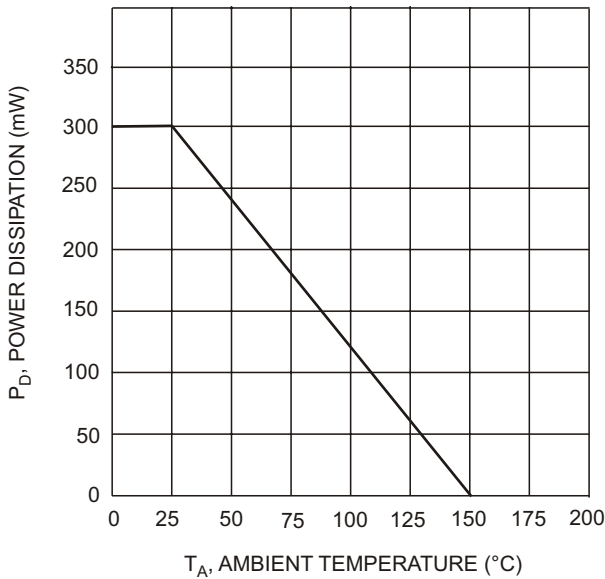


Fig. 1, Max Power Dissipation vs Ambient Temperature

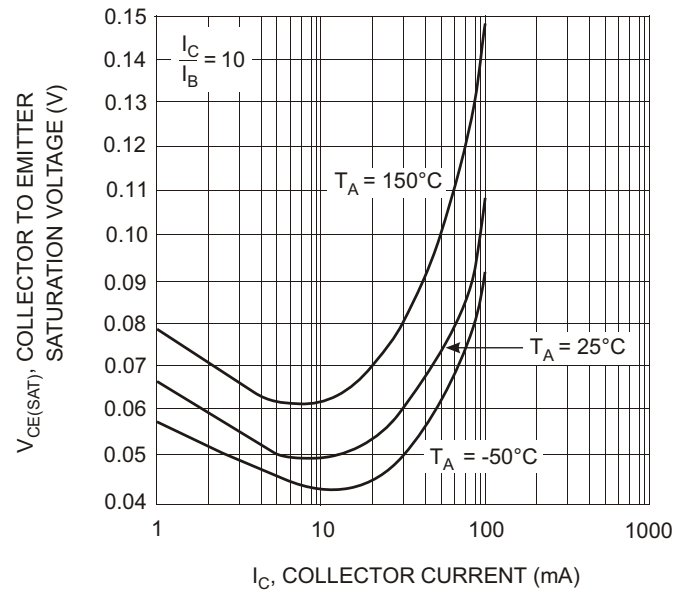


Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

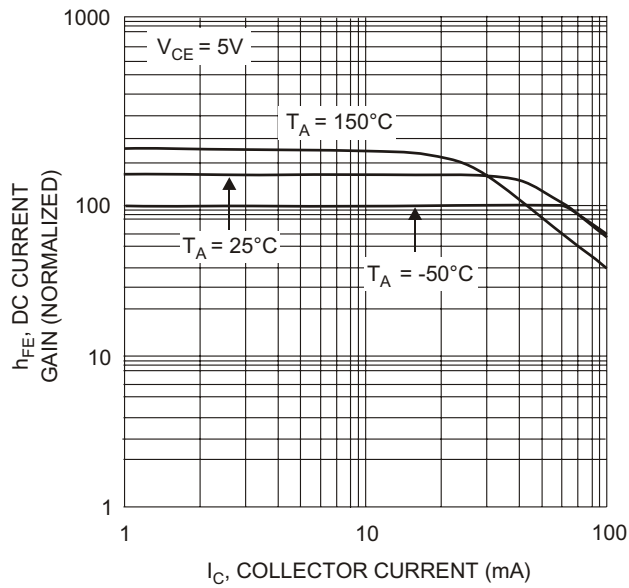


Fig. 3, DC Current Gain vs Collector Current

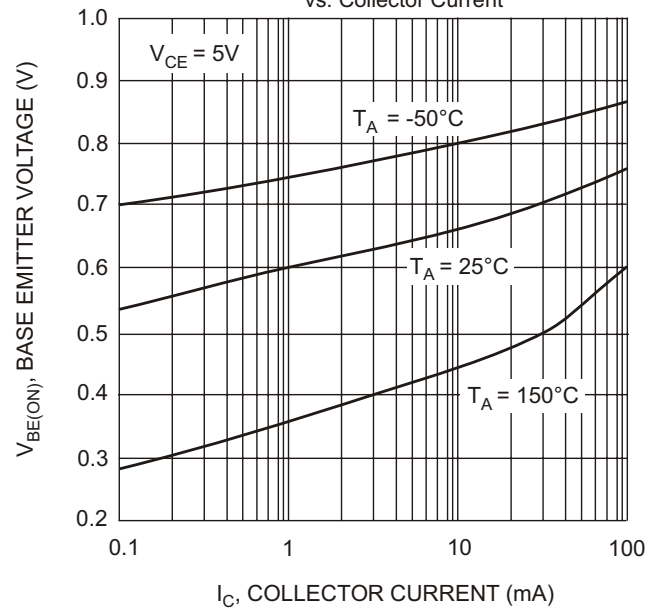


Fig. 4, Base Emitter Voltage vs. Collector Current

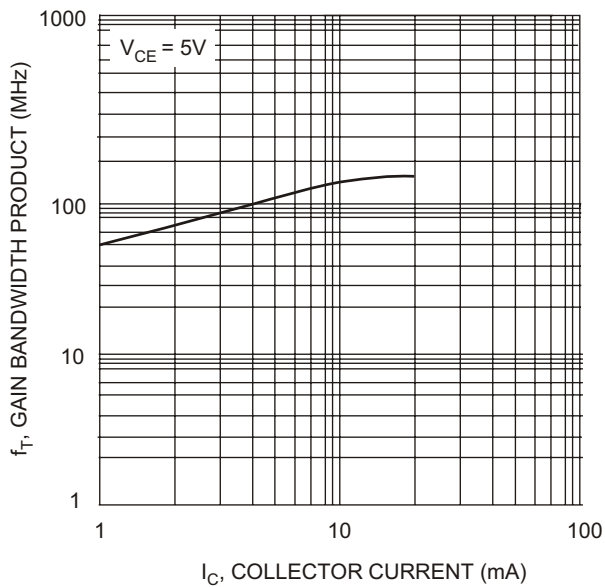


Fig. 5, Gain Bandwidth Product vs. Collector Current