# Excellent Integrated System Limited

Stocking Distributor

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Diodes Incorporated
DMMT5551-7-F

For any questions, you can email us directly:
sales@integrated-circuit.com

# DMMT5551/DMMT5551S

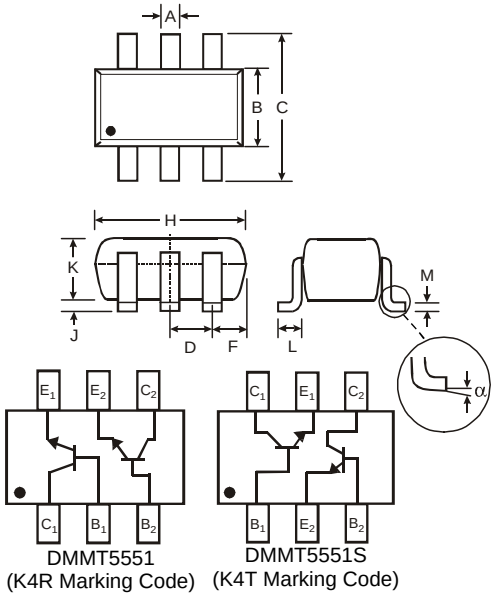
**MATCHED NPN SMALL SIGNAL SURFACE MOUNT TRANSISTOR**

## Features

- Epitaxial Planar Die Construction
- Complementary PNP Type Available (DMMT5401)
- Ideal for Low Power Amplification and Switching
- Intrinsically Matched NPN Pair (Note 1)
- 2% Matched Tolerance, $h_{FE}$, $V_{CE(SAT)}$, $V_{BE(SAT)}$
- **Lead Free/RoHS Compliant (Note 4)**
- **"Green" Device (Note 5 and 6)**

## Mechanical Data

- Case: SOT-26
- Case Material: Molded Plastic, "Green" Molding Compound, Note 7. UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020C
- Terminal Connections: See Diagram
- Terminals: Solderable per MIL-STD-202, Method 208
- Lead Free Plating (Matte Tin Finish annealed over Copper leadframe).
- Marking Information: K4R & K4T, See Page 3
- Ordering & Date Code Information: See Page 3
- Weight: 0.006 grams (approximate)




DMMT5551 (K4R Marking Code)

DMMT5551S (K4T Marking Code)

| 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 |
| **α** | 0° | 8° | — |
| **All Dimensions in mm** | | | |

## Maximum Ratings @$T_A$ = 25°C unless otherwise specified

| Characteristic | Symbol | Value | 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 2) | $I_C$ | 200 | mA |
| Power Dissipation (Note 2, 3) | $P_d$ | 300 | mW |
| Thermal Resistance, Junction to Ambient (Note 2) | $R_{\theta JA}$ | 417 | °C/W |
| Operating and Storage Temperature Range | $T_j$, $T_{STG}$ | -55 to +150 | °C |

Notes:
1. Built with adjacent die from a single wafer.
2. Device mounted on FR5 PCB: 1.0 x 0.75 x 0.62 in.; pad layout as shown on suggested pad layout document AP02001, which can be found on our website at http://www.diodes.com/datasheets/ap02001.pdf.
3. Maximum combined dissipation.
4. No purposefully added lead.
5. Diodes Inc.'s "Green" policy can be found on our website at http://www.diodes.com/products/lead_free/index.php.
6. Product manufactured with Date Code 0627 (week 27, 2006) and newer are built with Green Molding Compound. Product manufactured prior to Date Code 0627 are built with Non-Green Molding Compound and may contain Halogens or Sb2O3 Fire Retardants.

## Electrical Characteristics @$T_A$ = 25°C unless otherwise specified

| Characteristic | Symbol | Min | Max | Unit | Test Condition |
|---|---|---|---|---|---|
| **OFF CHARACTERISTICS (Note 7)** | | | | | |
| Collector-Base Breakdown Voltage | $V_{(BR)CBO}$ | 180 | — | V | $I_C$ = 100μA, $I_E$ = 0 |
| Collector-Emitter Breakdown Voltage | $V_{(BR)CEO}$ | 160 | — | V | $I_C$ = 1.0mA, $I_B$ = 0 |
| Emitter-Base Breakdown Voltage | $V_{(BR)EBO}$ | 6.0 | — | V | $I_E$ = 10μA, $I_C$ = 0 |
| Collector Cutoff Current | $I_{CBO}$ | — | 50 | nA<br>μA | $V_{CB}$ = 120V, $I_E$ = 0<br>$V_{CB}$ = 120V, $I_E$ = 0, $T_A$ = 100°C |
| Emitter Cutoff Current | $I_{EBO}$ | — | 50 | nA | $V_{EB}$ = 4.0V, $I_C$ = 0 |
| **ON CHARACTERISTICS (Note 7)** | | | | | |
| DC Current Gain (Note 8) | $h_{FE}$ | 80<br>80<br>30 | —<br>250<br>— | — | $I_C$ = 1.0mA, $V_{CE}$ = 5.0V<br>$I_C$ = 10mA, $V_{CE}$ = 5.0V<br>$I_C$ = 50mA, $V_{CE}$ = 5.0V |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | — | 0.15<br>0.20 | V | $I_C$ = 10mA, $I_B$ = 1.0mA<br>$I_C$ = 50mA, $I_B$ = 5.0mA |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | — | 1.0 | V | $I_C$ = 10mA, $I_B$ = 1.0mA<br>$I_C$ = 50mA, $I_B$ = 5.0mA |
| **SMALL SIGNAL CHARACTERISTICS** | | | | | |
| Output Capacitance | $C_{obo}$ | — | 6.0 | pF | $V_{CB}$ = 10V, f = 1.0MHz, $I_E$ = 0 |
| Small Signal Current Gain | $h_{FE}$ | 50 | 250 | — | $V_{CE}$ = 10V, $I_C$ = 1.0mA, f = 1.0kHz |
| Current Gain-Bandwidth Product | $f_T$ | 100 | 300 | MHz | $V_{CE}$ = 10V, $I_C$ = 10mA, f = 100MHz |
| Noise Figure | NF | — | 8.0 | dB | $V_{CE}$ = 5.0V, $I_C$ = 200μA, $R_S$ = 1.0kΩ, f = 1.0kHz |

Notes:
7. Short duration pulse test used to minimize self-heating effect.
8. The DC Current Gain, $h_{FE}$, (matched at $I_C$ = 10mA and $V_{CE}$ = 5V) 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%.

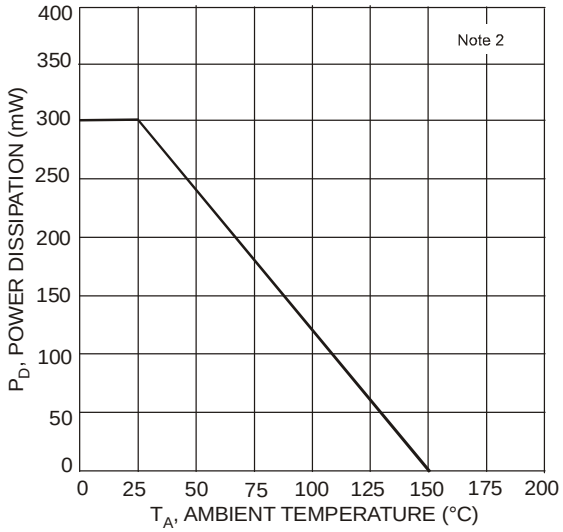


Fig. 1, Max Power Dissipation vs. Ambient Temperature

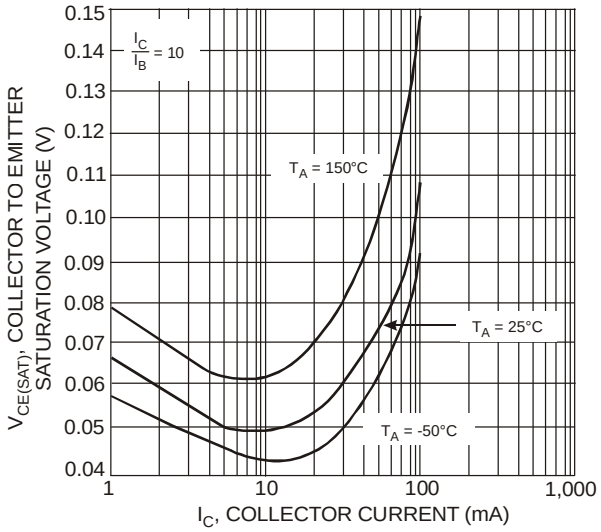


Fig. 2, Collector Emitter Saturation Voltage vs. Collector Current

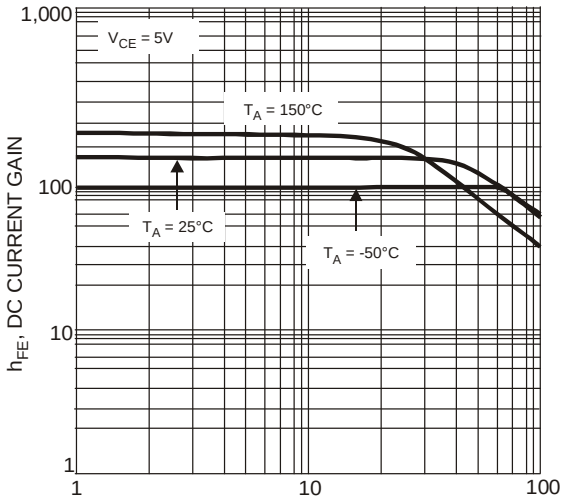



Fig. 3, DC Current Gain vs. Collector Current

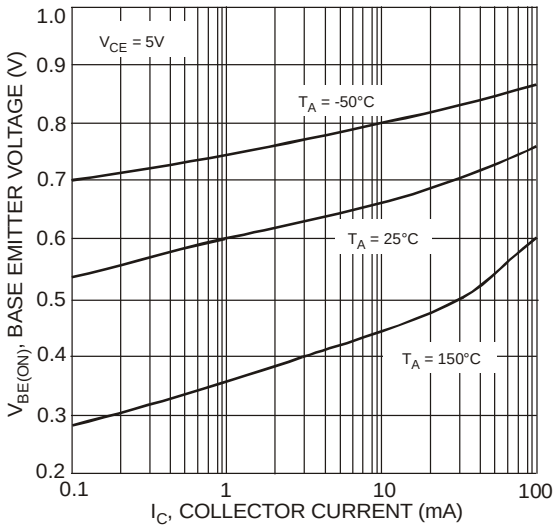



Fig. 4, Base Emitter Voltage vs. Collector Current

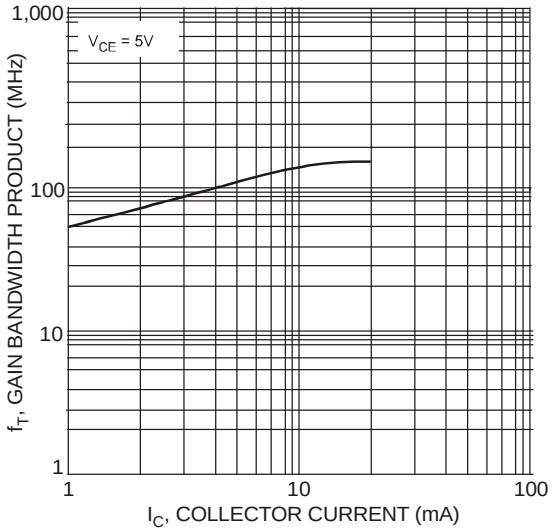


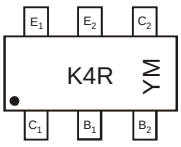

Fig. 5, Gain Bandwidth Product vs. Collector Current

## Ordering Information (Note 6 & 9 )

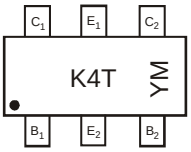
| Device | Packaging | Shipping |
|---|---|---|
| DMMT5551-7-F | SOT-26 | 3000/Tape & Reel |
| DMMT5551S-7-F | SOT-26 | 3000/Tape & Reel |

Notes: 9. For packaging details, go to our website at http://www.diodes.com/datasheets/ap02007.pdf.

## Marking Information




K4R = DMMT5551 Product Type Marking Code
YM = Date Code Marking
Y = Year ex: T = 2006
M = Month ex: 9 = September




K4T = DMMT5551S Product Type Marking Code
YM = Date Code Marking
Y = Year ex: T = 2006
M = Month ex: 9 = September

Date Code Key

| Year | 2003 | 2004 | 2005 | 2006 | 2007 | 2008 | 2009 | 2010 | 2011 | 2012 |
|---|---|---|---|---|---|---|---|---|---|---|
| Code | P | R | S | T | U | V | W | X | Y | Z |

| 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 |

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