

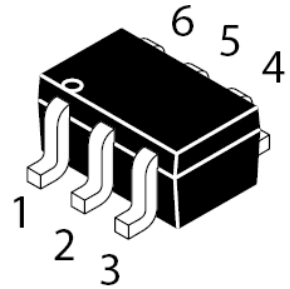
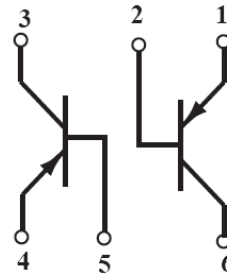
**PNP/PNP Multi-Chip Transistor**

**FEATURES**

- Ideal for Medium Power Amplification and Switching
- Complementary NPN Type Available(MMDT 5551)

**MECHANICAL DATA**

- Case: SOT-363 Plastic
- Case material: "Green" molding compound, UL flammability classification 94V-0, (No Br. Sb. Cl)
- Lead Free in RoHS 2002/95/EC Compliant



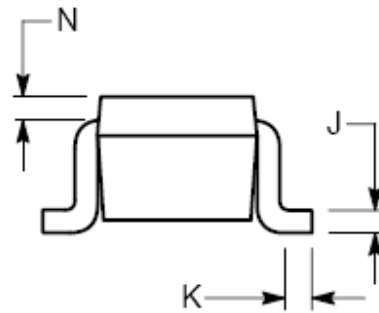
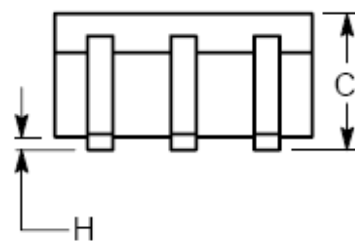
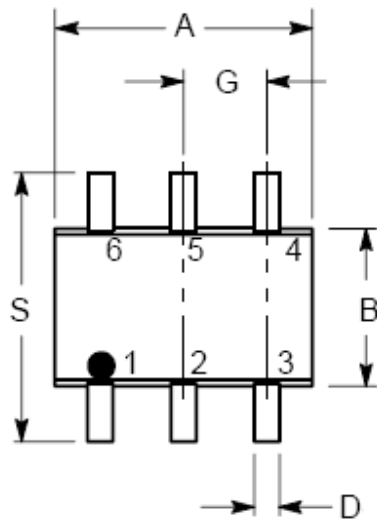
**Maximum Ratings @  $T_A = 25^\circ\text{C}$**

| Characteristic                | Symbol    | Value    | Unit             |
|-------------------------------|-----------|----------|------------------|
| Collector-Base Voltage        | $V_{CBO}$ | -160     | V                |
| Collector-Emitter Voltage     | $V_{CEO}$ | -150     | V                |
| Emitter-Base Voltage          | $V_{EBO}$ | -5       | V                |
| Collector Current -Continuous | $I_C$     | -200     | mA               |
| Collector Power Dissipation   | $P_C$     | 200      | mW               |
| Junction Temperature          | $T_J$     | 150      | $^\circ\text{C}$ |
| Storage Temperature Range     | $T_{STG}$ | -55~+150 | $^\circ\text{C}$ |

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

| Characteristic                       | Test Condition                                                                    | Symbol         | Min. | Typ. | Max.  | Unit          |
|--------------------------------------|-----------------------------------------------------------------------------------|----------------|------|------|-------|---------------|
| Collector-base breakdown voltage     | $I_C = -100\mu\text{A}, I_E = 0$                                                  | $V_{CBO}$      | -160 |      |       | V             |
| Collector-emitter breakdown voltage  | $I_C = -1\text{mA}, I_B = 0$                                                      | $V_{CEO}$      | -150 |      |       | V             |
| Emitter-base breakdown voltage       | $I_E = -10\mu\text{A}, I_C = 0$                                                   | $V_{EBO}$      | -5   |      |       | V             |
| Collector-base cut-off current       | $V_{CB} = -120\text{V}, I_E = 0$                                                  | $I_{CBO}$      |      |      | -0.05 | $\mu\text{A}$ |
| Emitter-base cut-off current         | $V_{EB} = -3\text{V}, I_C = 0$                                                    | $I_{EBO}$      |      |      | -0.05 | $\mu\text{A}$ |
| DC current gain                      | $V_{CE} = -5\text{V}, I_C = -1\text{mA}$                                          | $h_{FE1}$      | 50   |      |       |               |
|                                      | $V_{CE} = -5\text{V}, I_C = -10\text{mA}$                                         | $h_{FE2}$      | 100  |      | 300   |               |
|                                      | $V_{CE} = -5\text{V}, I_C = -50\text{mA}$                                         | $h_{FE3}$      | 50   |      |       |               |
| Collector-emitter saturation voltage | $I_C = -10\text{mA}, I_B = -1\text{mA}$                                           | $V_{CE(sat)1}$ |      |      | -0.2  | V             |
|                                      | $I_C = -50\text{mA}, I_B = -5\text{mA}$                                           | $V_{CE(sat)2}$ |      |      | -0.5  | V             |
| Base-emitter saturation voltage      | $I_C = -10\text{mA}, I_B = -1\text{mA}$                                           | $V_{BE(sat)1}$ |      |      | -1    | V             |
|                                      | $I_C = -50\text{mA}, I_B = -5\text{mA}$                                           | $V_{BE(sat)2}$ |      |      | -1    | V             |
| Transition frequency                 | $V_{CE} = -10\text{V}, I_C = -0\text{mA}, f = 100\text{MHz}$                      | $f_T$          | 100  |      |       | MHz           |
| Collector output capacitance         | $V_{CB} = -10\text{V}, I_E = 0, f = 1\text{MHz}$                                  | $C_{ob}$       |      |      | 6     | pF            |
| Noise Figure                         | $V_{CE} = -5.0\text{V}, I_C = -200\mu\text{A}, R_s = 10\Omega, f = 1.0\text{kHz}$ | NF             |      |      | 8     | dB            |

## SOT-363 Outline Dimension



| Symbol | Dimension In Millimeters |      |
|--------|--------------------------|------|
|        | Min                      | Max. |
| A      | 1.89                     | 2.20 |
| B      | 1.15                     | 1.35 |
| C      | 0.80                     | 1.10 |
| D      | 0.10                     | 0.30 |
| G      | 0.65 BSC                 |      |
| H      | ---                      | 0.10 |
| J      | 0.10                     | 0.25 |
| K      | 0.10                     | 0.30 |
| N      | 0.20 REF                 |      |
| S      | 2.00                     | 2.20 |

### Device Marking :

| Device P/N | Marking code |
|------------|--------------|
| MMDT5401   | 2L           |

Electrical characteristic curves

Fig.1 Power Dissipation vs. Ambient Temperature

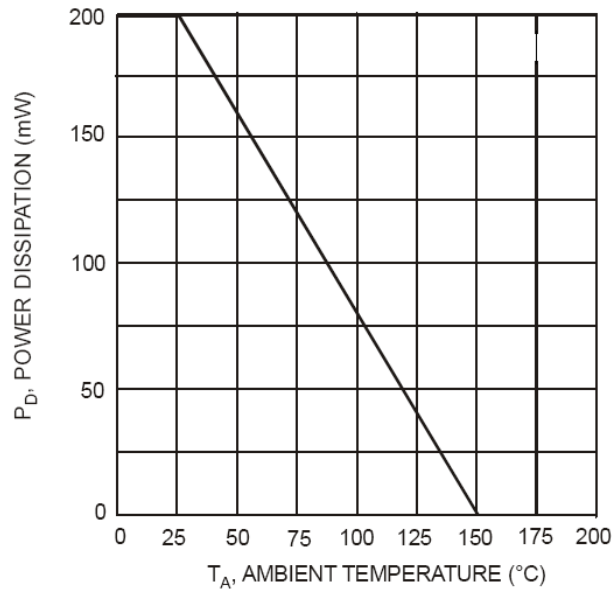


Fig.3 DC Current Gain vs. Collector Current

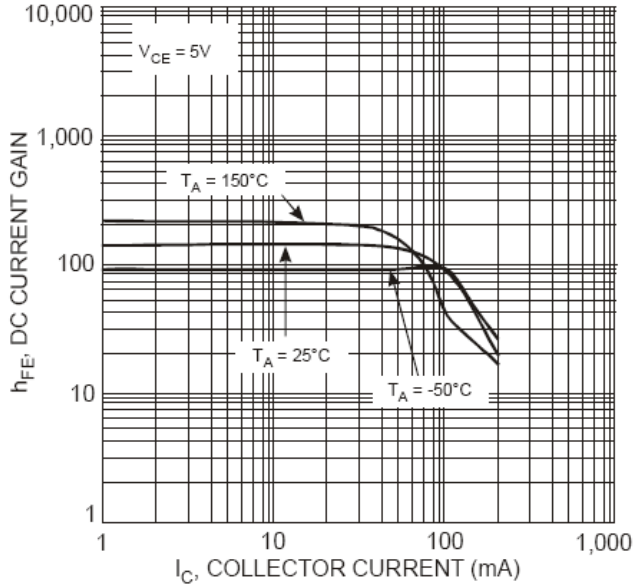


Fig.5 Gain-Bandwidth Product vs. Collector Current

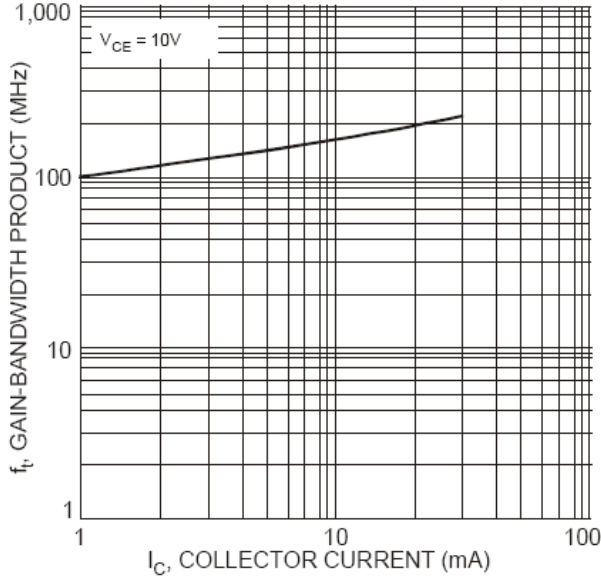


Fig.2 Collector-Emitter Saturation Voltage vs. Collector Current

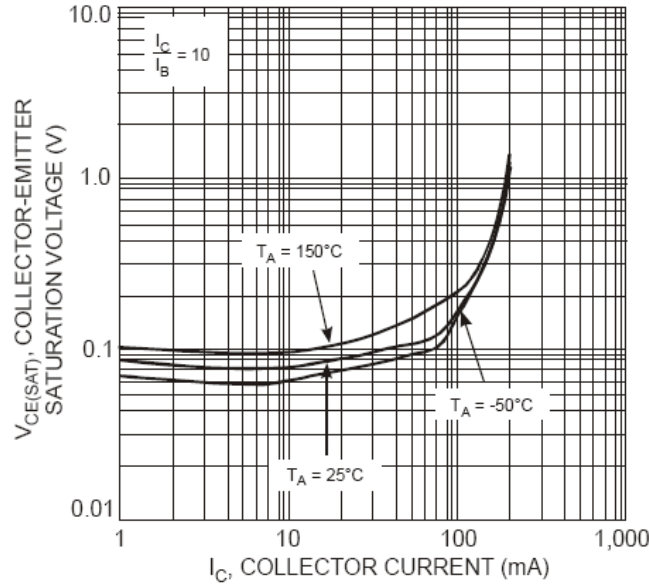
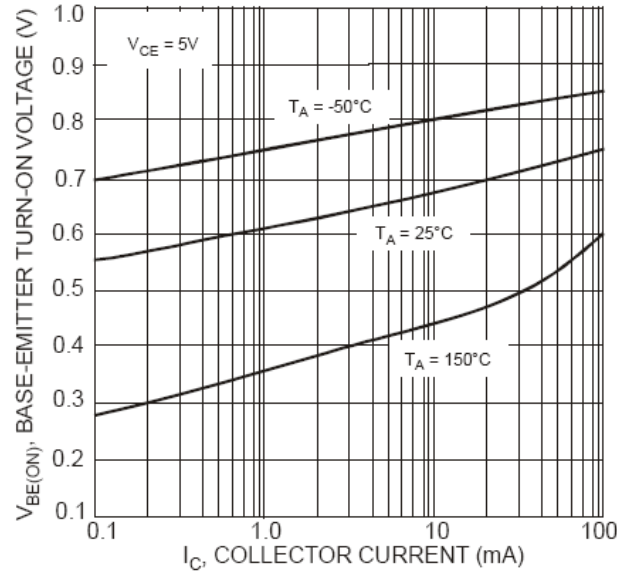


Fig.4 Base-Emitter Turn-On Voltage vs. Collector Current



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## New Marking Rule Notification

Range: In order to have well management in process control, the new marking rule is applied to small signal device including Switching Diode, Transistor and Schottky Diode.

Package: SOT-363

