

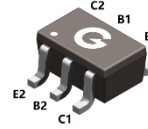
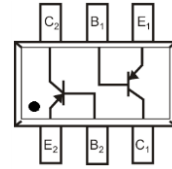
### Features

- Epitaxial planar die construction
- Complementary NPN type available(MMDT5551)

HF

### Mechanical Data

- Case: SOT-363
- Molding compound: UL flammability classification rating 94V-0
- Terminals: Tin-plated; solderability per MIL-STD-202, Method 208



SOT-363

### Ordering Information

| Part Number | Package | Shipping Quantity      | Marking Code |
|-------------|---------|------------------------|--------------|
| MMDT5401    | SOT-363 | 3000 pcs / Tape & Reel | K4M          |

### Maximum Ratings (@ T<sub>A</sub> = 25°C unless otherwise specified)

| Parameter                           | Symbol           | Value | Unit |
|-------------------------------------|------------------|-------|------|
| Collector-Base Voltage              | V <sub>CBO</sub> | -160  | V    |
| Collector-Emitter Breakdown Voltage | V <sub>CEO</sub> | -150  | V    |
| Emitter-Base Breakdown Voltage      | V <sub>EBO</sub> | -5    | V    |
| Collector Current (Continuous)      | I <sub>C</sub>   | -0.6  | A    |
| Collector Current (Peak)            | I <sub>CM</sub>  | -0.8  | A    |

### Thermal Characteristics

| Parameter                              | Symbol           | Value      | Unit |
|----------------------------------------|------------------|------------|------|
| Power Dissipation                      | P <sub>D</sub>   | 0.2        | W    |
| Thermal Resistance Junction-to-Air     | R <sub>θJA</sub> | 625        | °C/W |
| Thermal Resistance Junction-to-Air *1  | R <sub>θJA</sub> | 324        | °C/W |
| Thermal Resistance Junction-to-Case *1 | R <sub>θJC</sub> | 196        | °C/W |
| Thermal Resistance Junction-to-Lead *1 | R <sub>θJL</sub> | 214        | °C/W |
| Junction Temperature Range             | T <sub>J</sub>   | -55 ~ +150 | °C   |
| Storage Temperature Range              | T <sub>STG</sub> | -55 ~ +150 | °C   |

Note 1: The data tested by surface mounted on a 1 inch<sup>2</sup> FR-4 board with 2OZ copper

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

| Parameter                            | Symbol        | Test Condition                                                    | Min. | Typ. | Max. | Unit |
|--------------------------------------|---------------|-------------------------------------------------------------------|------|------|------|------|
| Collector-Base Breakdown Voltage     | $V_{(BR)CBO}$ | $I_C = -100\mu\text{A}, I_E = 0$                                  | -160 | -    | -    | V    |
| Collector-Emitter Breakdown Voltage  | $V_{(BR)CEO}$ | $I_C = -1\text{mA}, I_B = 0$                                      | -150 | -    | -    | V    |
| Emitter-Base Breakdown Voltage       | $V_{(BR)EBO}$ | $I_E = -10\mu\text{A}, I_C = 0$                                   | -5   | -    | -    | V    |
| Collector Cut-off Current            | $I_{CBO}$     | $V_{CB} = -120\text{V}, I_E = 0$                                  | -    | -    | -50  | nA   |
| Emitter Cut-off Current              | $I_{EBO}$     | $V_{EB} = -3\text{V}, I_C = 0$                                    | -    | -    | -50  | nA   |
| DC Current Gain                      | $h_{FE}$      | $V_{CE} = -5\text{V}, I_C = -1\text{mA}$                          | 50   | -    | -    | -    |
|                                      |               | $V_{CE} = -5\text{V}, I_C = -10\text{mA}$                         | 100  | -    | 300  | -    |
|                                      |               | $V_{CE} = -5\text{V}, I_C = -50\text{mA}$                         | 50   | -    | -    | -    |
| Collector-emitter Saturation Voltage | $V_{CE(sat)}$ | $I_C = -10\text{mA}, I_B = -1\text{mA}$                           | -    | -    | -0.2 | V    |
|                                      |               | $I_C = -50\text{mA}, I_B = -5\text{mA}$                           | -    | -    | -0.5 | V    |
| Base-emitter Saturation Voltage      | $V_{BE(sat)}$ | $I_C = -10\text{mA}, I_B = -1\text{mA}$                           | -    | -    | -1   | V    |
|                                      |               | $I_C = -50\text{mA}, I_B = -5\text{mA}$                           | -    | -    | -1   | V    |
| Collector-base Output Capacitance    | $C_{cbo}$     | $V_{CB} = -10\text{V}, f = 1\text{MHz}, I_E = 0$                  | -    | -    | 6    | pF   |
| Current-Gain— Bandwidth Product      | $f_T$         | $I_C = -10\text{mA}, V_{CE} = -10\text{V}$<br>$f = 100\text{MHz}$ | 100  | -    | 300  | MHz  |

Ratings and Characteristics Curves (@  $T_A = 25^\circ\text{C}$  unless otherwise specified)

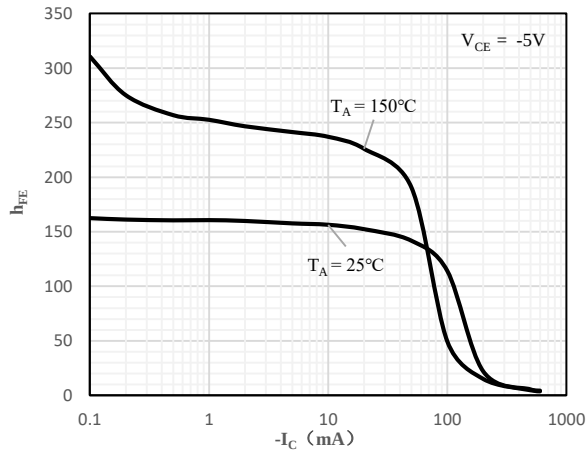


Fig 1  $h_{FE}$  vs.  $I_C$

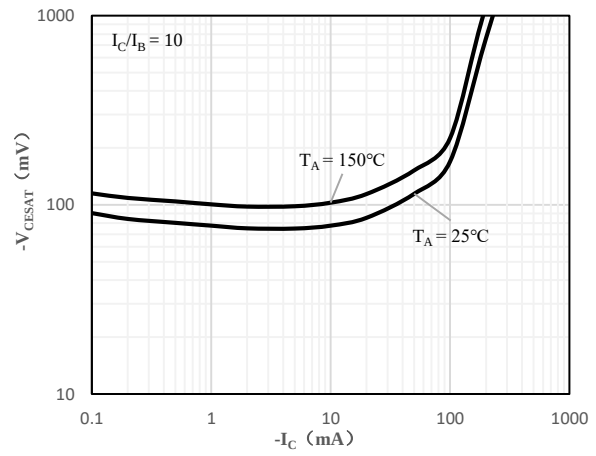


Fig 2  $V_{CE(sat)}$  vs.  $I_C$

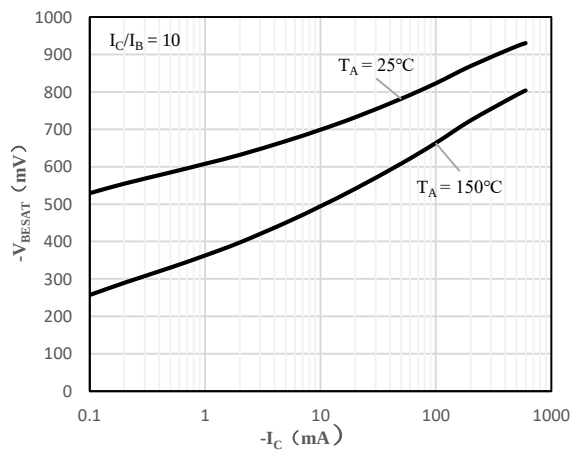


Fig 3  $V_{BE(sat)}$  vs.  $I_C$

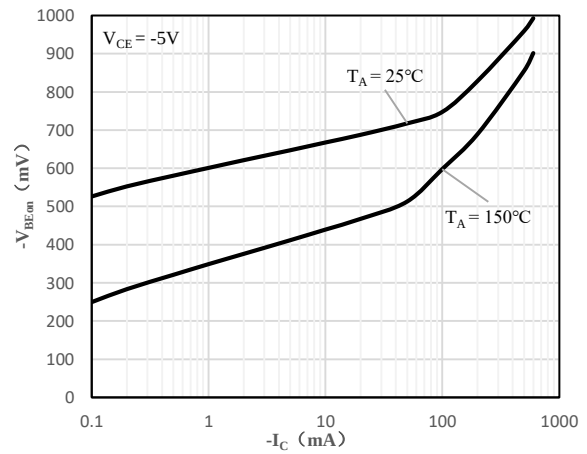
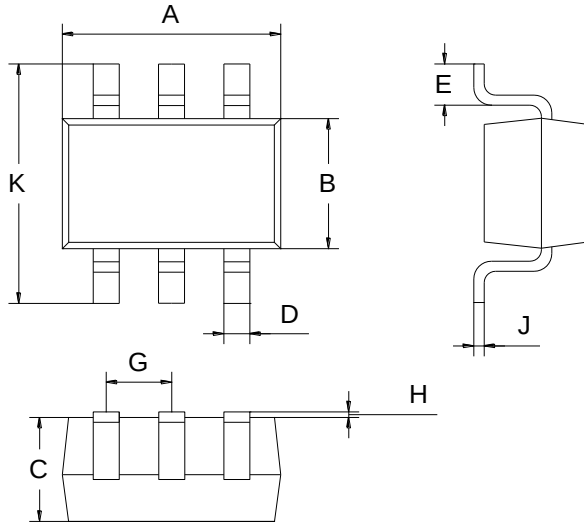


Fig 4  $V_{BE(on)}$  vs.  $I_C$

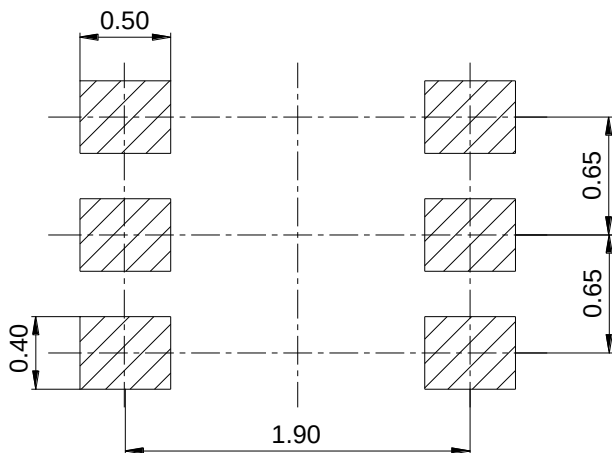
## Package Outline Dimensions (Unit: mm)



| SOT-363   |      |      |
|-----------|------|------|
| Dimension | Min. | Max. |
| A         | 2.00 | 2.20 |
| B         | 1.15 | 1.35 |
| C         | 0.85 | 1.05 |
| D         | 0.15 | 0.35 |
| E         | 0.25 | 0.40 |
| G         | 0.60 | 0.70 |
| H         | 0.02 | 0.10 |
| J         | 0.05 | 0.15 |
| K         | 2.20 | 2.40 |

## Mounting Pad Layout (Unit: mm)

### SOT-363



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