



MMDT8050S

NPN EPITAXIAL SILICON TRANSISTOR

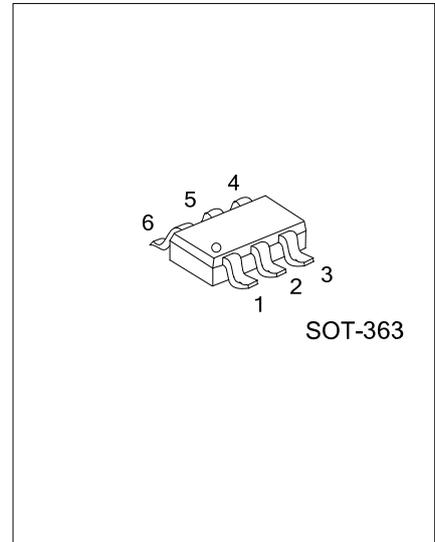
LOW V_{CE(sat)} NPN EPITAXIAL PLANAR TRANSISTOR

■ DESCRIPTION

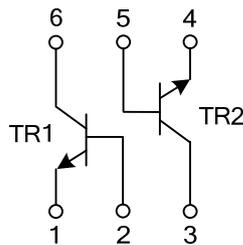
The UTC **MMDT8050S** is a Dual NPN epitaxial planar transistor. It has low $V_{CE(sat)}$ performance, and the transistor elements are independent, eliminating interference.

■ FEATURES

- * Low $V_{CE(sat)}$, $V_{CE(sat)} = 40mV$ (typ.) @ $I_C / I_B = 50mA / 2.5mA$
- * Transistor elements are independent, eliminating interference.
- * Mounting cost and area can be cut in half.



■ EQUIVALENT CIRCUIT

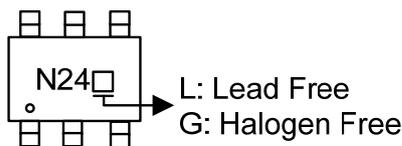


■ ORDERING INFORMATION

| Ordering Number | | Package | Pin Assignment | | | | | | Packing |
|------------------|------------------|---------|----------------|----|----|----|----|----|-----------|
| Lead Free | Halogen Free | | 1 | 2 | 3 | 4 | 5 | 6 | |
| MMDT8050SL-AL6-R | MMDT8050SG-AL6-R | SOT-363 | E1 | B1 | C2 | E2 | B2 | C1 | Tape Reel |

| | |
|--|---|
| <p>MMDT8050SG-AL6-R</p> <ul style="list-style-type: none"> (1)Packing Type (2)Package Type (3)Green Package | <ul style="list-style-type: none"> (1) R: Tape Reel (2) AL6: SOT-363 (3) G: Halogen Free and Lead Free, L: Lead Free |
|--|---|

■ MARKING



MMDT8050S

NPN EPITAXIAL SILICON TRANSISTOR

■ ABSOLUTE MAXIMUM RATINGS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | RATINGS | UNIT |
|---------------------------|-----------|--------------|--------------------|
| Collector-Base Voltage | V_{CBO} | 30 | V |
| Collector-Emitter Voltage | V_{CEO} | 20 | V |
| Emitter-Base Voltage | V_{EBO} | 6 | V |
| Collector Current (DC) | I_C | 700 | mA |
| Collector Current (Pulse) | I_{CP} | 1.5 (Note 2) | A |
| Total Power Dissipation | P_D | 200 | mW |
| Junction Temperature | T_J | +150 | $^{\circ}\text{C}$ |
| Storage Temperature | T_{STG} | -55 ~ +150 | $^{\circ}\text{C}$ |

Notes: 1. Absolute maximum ratings are those values beyond which the device could be permanently damaged.

Absolute maximum ratings are stress ratings only and functional device operation is not implied.

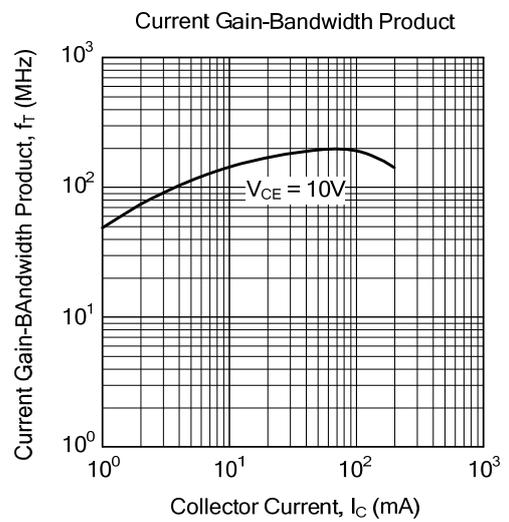
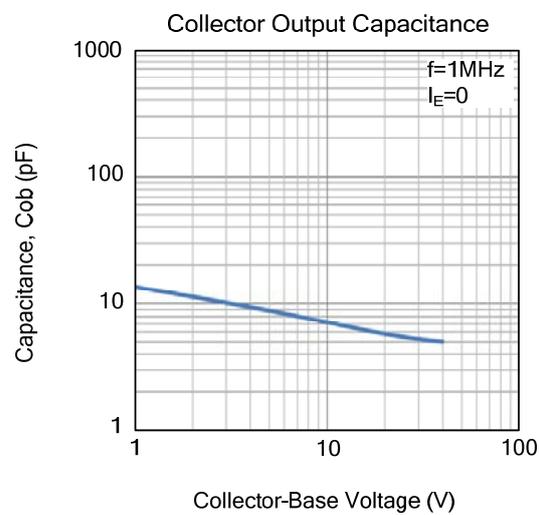
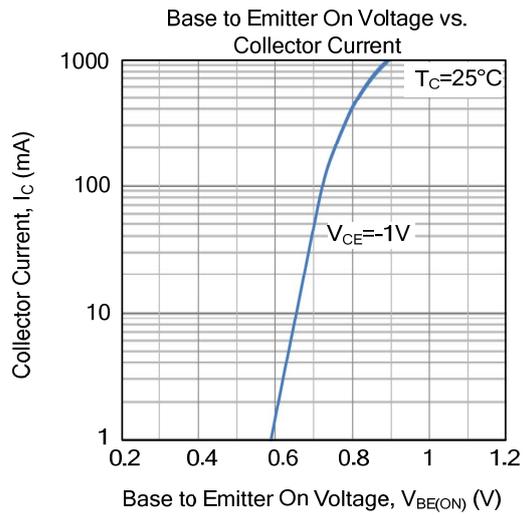
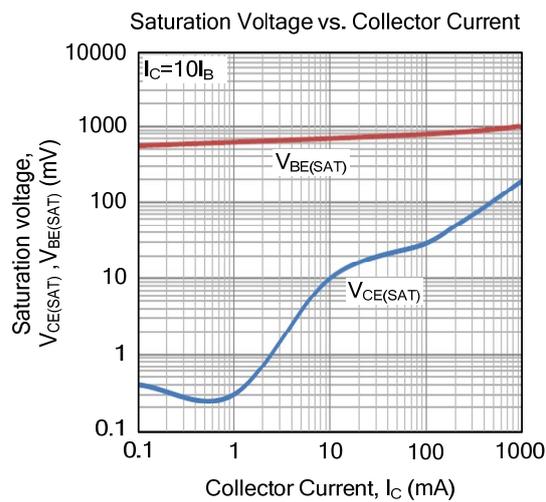
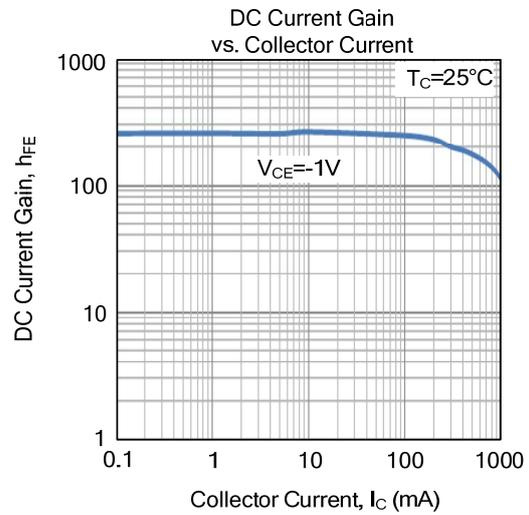
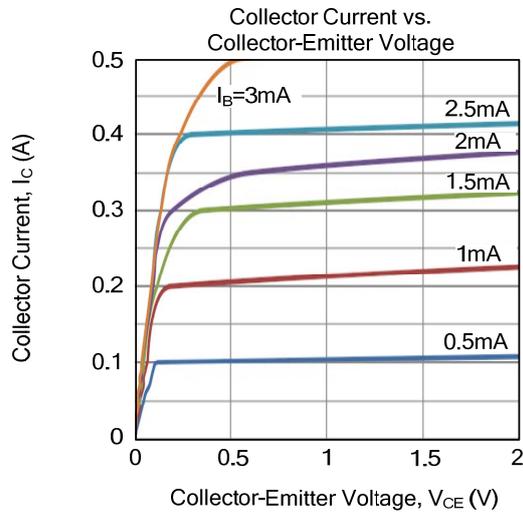
2. Single pulse, $P_W=10\text{ms}$.

■ ELECTRICAL CHARACTERISTICS ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

| PARAMETER | SYMBOL | TEST CONDITIONS | MIN | TYP | MAX | UNIT |
|--------------------------------------|---------------|---|-----|-----|-----|---------------|
| Collector-Base Breakdown Voltage | BV_{CBO} | $I_C = 100\mu\text{A}, I_E = 0$ | 30 | | | V |
| Collector-Emitter Breakdown Voltage | BV_{CEO} | $I_C = 1\text{mA}, I_B = 0$ | 20 | | | V |
| Emitter-Base Breakdown Voltage | BV_{EBO} | $I_E = 100\mu\text{A}, I_C = 0$ | 5 | | | V |
| Collector Cut-Off Current | I_{CBO} | $V_{CB} = 30\text{V}, I_E = 0$ | | | 1 | μA |
| Emitter Cut-Off Current | I_{EBO} | $V_{EB} = 5\text{V}, I_C = 0$ | | | 100 | nA |
| DC Current Gain(note) | h_{FE1} | $V_{CE} = 1\text{V}, I_C = 1\text{mA}$ | 100 | | | |
| | h_{FE2} | $V_{CE} = 1\text{V}, I_C = 150\text{mA}$ | 120 | | 400 | |
| | h_{FE3} | $V_{CE} = 1\text{V}, I_C = 500\text{mA}$ | 40 | | | |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$ | | | 0.5 | V |
| Base-Emitter Saturation Voltage | $V_{BE(SAT)}$ | $I_C = 500\text{mA}, I_B = 50\text{mA}$ | | | 1.2 | V |
| Base Emitter On Voltage | $V_{BE(ON)}$ | $V_{CE} = 1\text{V}, I_C = 10\text{mA}$ | | | 1.0 | V |
| Current Gain Bandwidth Product | f_T | $V_{CE} = 10\text{V}, I_C = 50\text{mA}$ | 100 | | | MHz |
| Output Capacitance | C_{ob} | $V_{CB} = 10\text{V}, I_E = 0, f = 1\text{MHz}$ | | 9.0 | | pF |

Note: Pulse Test: Pulse Width $\leq 380\mu\text{s}$, Duty Cycle $\leq 2\%$

TYPICAL CHARACTERISTICS



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