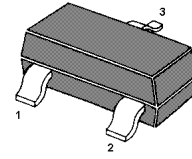


# MMBT2369 / MMBT2369A

## NPN Silicon Switching Transistor

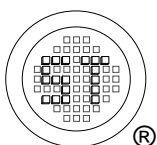


1. Base 2. Emitter 3. Collector  
TO-236 Plastic Package

### Absolute Maximum Ratings ( $T_a = 25\text{ }^\circ\text{C}$ )

| Parameter   | Symbol          | Value       | Unit               |
|---|-----------------|-------------|--------------------|
| Collector Base Voltage                            | $V_{CBO}$       | 40          | V                  |
| Collector Emitter Voltage                         | $V_{CEO}$       | 15          | V                  |
| Collector Emitter Voltage                         | $V_{CES}$       | 40          | V                  |
| Emitter Base Voltage                              | $V_{EBO}$       | 4.5         | V                  |
| Collector Current Continuous                      | $I_C$           | 200         | mA                 |
| Total Device Dissipation FR-5 Board <sup>1)</sup> | $P_{tot}$       | 225         | mW                 |
| Thermal Resistance Junction to Ambient            | $R_{\theta JA}$ | 556         | $^\circ\text{C/W}$ |
| Junction and Storage Temperature Range            | $T_J, T_{Stg}$  | -55 to +150 | $^\circ\text{C}$   |

<sup>1)</sup> FR-5=1×0.75×0.062 in.



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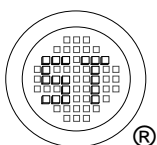


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# MMBT2369 / MMBT2369A

## Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

| Parameter  | Symbol    | Min.          | Max. | Unit |               |
|--|-----------|---------------|------|------|---------------|
| DC Current Gain  |           |               |      |      |               |
| at $V_{CE} = 1\text{ V}$ , $I_C = 10\text{ mA}$                                  | MMBT2369  | $h_{FE}$      | 40   | 120  | -             |
| at $V_{CE} = 1\text{ V}$ , $I_C = 10\text{ mA}$                                  | MMBT2369A | $h_{FE}$      | -    | 120  | -             |
| at $V_{CE} = 0.35\text{ V}$ , $I_C = 10\text{ mA}$                               | MMBT2369A | $h_{FE}$      | 40   | -    | -             |
| at $V_{CE} = 0.35\text{ V}$ , $I_C = 10\text{ mA}$ , $T_A = -55^{\circ}\text{C}$ | MMBT2369A | $h_{FE}$      | 20   | -    | -             |
| at $V_{CE} = 0.4\text{ V}$ , $I_C = 30\text{ mA}$                                | MMBT2369A | $h_{FE}$      | 30   | -    | -             |
| at $V_{CE} = 2.0\text{ V}$ , $I_C = 100\text{ mA}$                               | MMBT2369  | $h_{FE}$      | 20   | -    | -             |
| at $V_{CE} = 1.0\text{ V}$ , $I_C = 100\text{ mA}$                               | MMBT2369A | $h_{FE}$      | 20   | -    | -             |
| Collector Emitter Saturation Voltage   |           |               |      |      |               |
| at $I_C = 10\text{ mA}$ , $I_B = 1\text{ mA}$                                    | MMBT2369  | $V_{CEsat}$   | -    | 0.25 | V             |
| at $I_C = 10\text{ mA}$ , $I_B = 1\text{ mA}$                                    | MMBT2369A | $V_{CEsat}$   | -    | 0.2  |               |
| at $I_C = 10\text{ mA}$ , $I_B = 1\text{ mA}$ , $T_A = +125^{\circ}\text{C}$     | MMBT2369A | $V_{CEsat}$   | -    | 0.3  |               |
| at $I_C = 30\text{ mA}$ , $I_B = 3.0\text{ mA}$                                  | MMBT2369A | $V_{CEsat}$   | -    | 0.25 |               |
| at $I_C = 100\text{ mA}$ , $I_B = 10\text{ mA}$                                  | MMBT2369A | $V_{CEsat}$   | -    | 0.5  |               |
| Base Emitter Saturation Voltage  |           |               |      |      |               |
| at $I_C = 10\text{ mA}$ , $I_B = 1\text{ mA}$                                    | MMBT2369A | $V_{BEsat}$   | 0.7  | 0.85 | V             |
| at $I_C = 10\text{ mA}$ , $I_B = 1\text{ mA}$ , $T_A = -55^{\circ}\text{C}$      | MMBT2369A | $V_{BEsat}$   | -    | 1.02 |               |
| at $I_C = 30\text{ mA}$ , $I_B = 3\text{ mA}$                                    | MMBT2369A | $V_{BEsat}$   | -    | 1.15 |               |
| at $I_C = 100\text{ mA}$ , $I_B = 10\text{ mA}$                                  | MMBT2369A | $V_{BEsat}$   | -    | 1.60 |               |
| Collector Cutoff Current   |           |               |      |      |               |
| at $V_{CE} = 20\text{ V}$  | MMBT2369A | $I_{CES}$     | -    | 0.4  | $\mu\text{A}$ |
| Collector Cutoff Current   |           |               |      |      |               |
| at $V_{CB} = 20\text{ V}$  |           | $I_{CBO}$     | -    | 0.4  | $\mu\text{A}$ |
| at $V_{CB} = 20\text{ V}$ , $T_A = 150^{\circ}\text{C}$                          |           |               | -    | 30   |               |
| Collector Emitter Breakdown Voltage  |           |               |      |      |               |
| at $I_C = 10\text{ mA}$  |           | $V_{(BR)CEO}$ | 15   | -    | V             |
| Collector Base Breakdown Voltage   |           |               |      |      |               |
| at $I_C = 10\text{ }\mu\text{A}$   |           | $V_{(BR)CBO}$ | 40   | -    | V             |
| Collector Emitter Breakdown Voltage  |           |               |      |      |               |
| at $I_C = 10\text{ }\mu\text{A}$   |           | $V_{(BR)CES}$ | 40   | -    | V             |
| Emitter Base Breakdown Voltage   |           |               |      |      |               |
| at $I_E = 10\text{ }\mu\text{A}$   |           | $V_{(BR)EBO}$ | 4.5  | -    | V             |



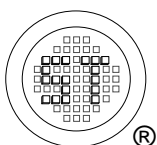
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# MMBT2369 / MMBT2369A

## Characteristics at $T_{amb}=25\text{ }^{\circ}\text{C}$

| Parameter   | Symbol    | Min. | Typ. | Max. | Unit |
|---|-----------|------|------|------|------|
| Output Capacitance<br>at $V_{CB} = 5\text{ V}$ , $f = 1\text{ MHz}$   | $C_{obo}$ | -    | -    | 4    | pF   |
| Small Signal Current Gain<br>at $I_C = 10\text{ mA}$ , $V_{CE} = 10\text{ V}$ , $f = 100\text{ MHz}$                | $H_{fe}$  | 5.0  | -    | -    | -    |
| Storage Time<br>$I_{B1} = I_{B2} = I_C = 10\text{ mA}$  | $t_s$     | -    | 5.0  | 13   | ns   |
| Turn-On Time<br>$V_{CC} = 3\text{ V}$ , $I_C = 10\text{ mA}$ , $I_{B1} = 3\text{ mA}$                               | $t_{on}$  | -    | 8.0  | 12   | ns   |
| Turn-Off Time<br>$V_{CC} = 3\text{ V}$ , $I_C = 10\text{ mA}$ , $I_{B1} = 3.0\text{ mA}$ , $I_{B2} = 1.5\text{ mA}$ | $t_{off}$ | -    | 10   | 18   | ns   |



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