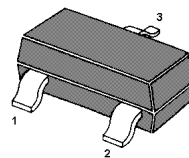
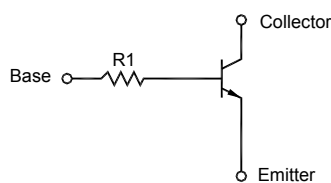


# MMBTRC231SS...MMBTRC234SS

## NPN Silicon Epitaxial Planar Transistor

For switching, audio muting, interface circuit and driver circuit applications



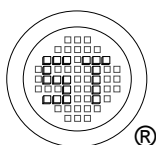
1. Base 2. Emitter 3. Collector  
TO-236 Plastic Package

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

| Parameter                 | Symbol    | Value         | Unit             |
|---------------------------|-----------|---------------|------------------|
| Collector Base Voltage    | $V_{CBO}$ | 30            | V                |
| Collector Emitter Voltage | $V_{CEO}$ | 15            | V                |
| Emitter Base Voltage      | $V_{EBO}$ | 5             | V                |
| Collector Current         | $I_C$     | 100           | mA               |
| Total Power Dissipation   | $P_{tot}$ | 200           | mW               |
| Junction Temperature      | $T_j$     | 150           | $^\circ\text{C}$ |
| Storage Temperature Range | $T_{stg}$ | - 55 to + 150 | $^\circ\text{C}$ |

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

| Parameter                                                                                       | Symbol        | Min. | Typ.             | Max. | Unit          |
|-------------------------------------------------------------------------------------------------|---------------|------|------------------|------|---------------|
| DC Current Gain<br>at $V_{CE} = 5\text{ V}$ , $I_C = 1\text{ mA}$                               | $h_{FE}$      | 100  | -                | 600  | -             |
| Collector Base Breakdown Voltage<br>at $I_C = 50\text{ }\mu\text{A}$                            | $V_{(BR)CBO}$ | 30   | -                | -    | V             |
| Collector Emitter Breakdown Voltage<br>at $I_C = 1\text{ mA}$                                   | $V_{(BR)CEO}$ | 15   | -                | -    | V             |
| Emitter Base Breakdown Voltage<br>at $I_E = 50\text{ }\mu\text{A}$                              | $V_{(BR)EBO}$ | 5    | -                | -    | V             |
| Collector Base Cutoff Current<br>at $V_{CB} = 30\text{ V}$                                      | $I_{CBO}$     | -    | -                | 0.5  | $\mu\text{A}$ |
| Collector Emitter Saturation Voltage<br>at $I_C = 10\text{ mA}$ , $I_B = 0.5\text{ mA}$         | $V_{CE(sat)}$ | -    | -                | 0.3  | V             |
| Transition Frequency<br>at $V_{CE} = 10\text{ V}$ , $-I_E = 5\text{ mA}$ , $f = 100\text{ MHz}$ | $f_T$         | -    | 250              | -    | MHz           |
| Input Resistor                                                                                  | $R1$          | -    | 2.2<br>10<br>4.7 | -    | K $\Omega$    |



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