

# SOT23 NPN SILICON PLANAR HIGH FREQUENCY TRANSISTOR

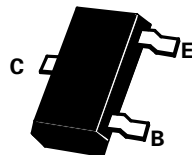
## FMMT5179

ISSUE 3 - JANUARY 1996

### FEATURES

- \* High  $f_T=900\text{MHz}$  Min
- \* Max capacitance=1pF
- \* Low noise 4.5dB

PARTMARKING DETAIL - 179



SOT23

### ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                               | SYMBOL         | VALUE       | UNIT |
|-----------------------------------------|----------------|-------------|------|
| Collector-Base Voltage                  | $V_{CBO}$      | 20          | V    |
| Collector-Emitter Voltage               | $V_{CEO}$      | 12          | V    |
| Emitter-Base Voltage                    | $V_{EBO}$      | 2.5         | V    |
| Continuous Collector Current            | $I_C$          | 50          | mA   |
| Power Dissipation                       | $P_{tot}$      | 330         | mW   |
| Operating and Storage Temperature Range | $T_j, T_{stg}$ | -55 to +150 | °C   |

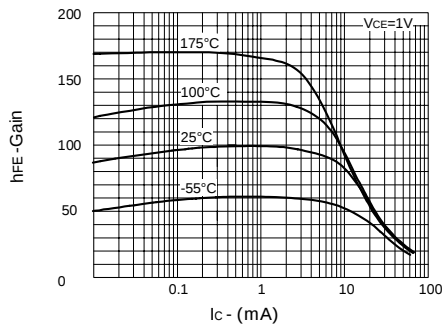
### ELECTRICAL CHARACTERISTICS (at $T_{amb} = 25^\circ\text{C}$ unless otherwise stated).

| PARAMETER                             | SYMBOL         | MIN. | MAX.        | UNIT                           | CONDITIONS.                                                                         |
|---------------------------------------|----------------|------|-------------|--------------------------------|-------------------------------------------------------------------------------------|
| Collector-Emitter Sustaining Voltage  | $V_{CEO(SUS)}$ | 12   |             | V                              | $I_C=3\text{mA}, I_B=0$                                                             |
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$  | 20   |             | V                              | $I_C=1\mu\text{A}, I_E=0$                                                           |
| Emitter-Base Breakdown Voltage        | $V_{(BR)EBO}$  | 2.5  |             | V                              | $I_E=10\mu\text{A}, I_C=0$                                                          |
| Collector Cut-Off Current             | $I_{CBO}$      |      | 0.02<br>1.0 | $\mu\text{A}$<br>$\mu\text{A}$ | $V_{CB}=15\text{V}, I_E=0$<br>$V_{CB}=15\text{V}, I_E=0, T_{amb}=150^\circ\text{C}$ |
| Static Forward Current Transfer Ratio | $h_{FE}$       | 25   | 250         |                                | $I_C=3\text{mA}, V_{CE}=1\text{V}$                                                  |
| Collector-Emitter Saturation Voltage  | $V_{CE(sat)}$  |      | 0.4         | V                              | $I_C=10\text{mA}, I_B=1\text{mA}$                                                   |
| Base-Emitter Saturation Voltage       | $V_{BE(sat)}$  |      | 1.0         | V                              | $I_C=10\text{mA}, I_B=1\text{mA}$                                                   |
| Transition Frequency                  | $f_T$          | 900  | 2000        | MHz                            | $I_C=5\text{mA}, V_{CE}=6\text{V}, f=100\text{MHz}$                                 |
| Collector-Base Capacitance            | $C_{cb}$       |      | 1           | pF                             | $I_E=0, V_{CB}=10\text{V}, f=1\text{MHz}$                                           |
| Small Signal Current Gain             | $h_{fe}$       | 25   | 300         |                                | $I_C=2\text{mA}, V_{CE}=6\text{V}, f=1\text{KHz}$                                   |
| Collector Base Time Constant          | $rb'C_C$       | 3    | 14          | ps                             | $I_E=2\text{mA}, V_{CB}=6\text{V}, f=31.9\text{MHz}$                                |
| Noise Figure                          | $N_F$          |      | 4.5         | dB                             | $I_C=1.5\text{mA}, V_{CE}=6\text{V}$<br>$R_S=50\Omega, f=200\text{MHz}$             |
| Common-Emitter Amplifier Power Gain   | $G_{pe}$       | 15   |             | dB                             | $I_C=5\text{mA}, V_{CE}=6\text{V}$<br>$f=200\text{MHz}$                             |

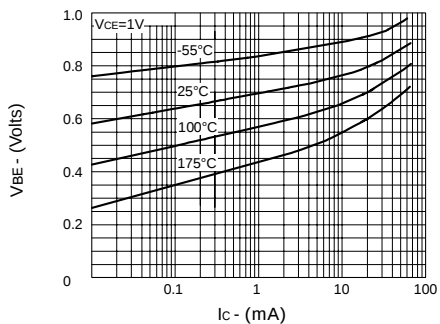
Spice parameter data is available upon request for this device

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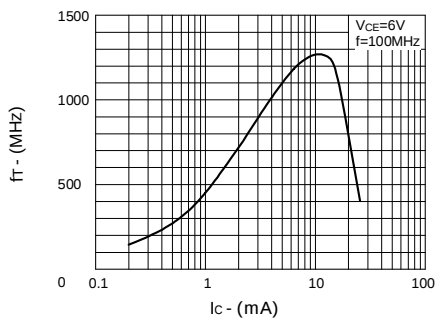
## TYPICAL CHARACTERISTICS



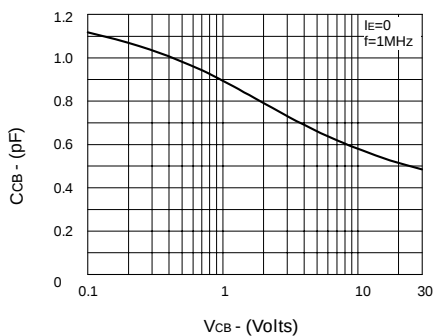
**$hFE$  v  $I_C$**



**$V_{BE(on)}$  v  $I_C$**



**$f_T$  v  $I_C$**



**$C_{CB}$  v  $V_{CB}$**