

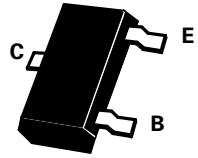
# SOT23 NPN SILICON PLANAR SMALL SIGNAL TRANSISTORS

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**FMMT5088**  
**FMMT5089**

PARTMARKING DETAIL— FMMT5088 - 1Q  
FMMT5089 - 1R

COMPLEMENTARY TYPES — FMMT5088 - FMMT5087  
FMMT5089 - None Available



## ABSOLUTE MAXIMUM RATINGS.

| PARAMETER                                         | SYMBOL         | FMMT5088    | FMMT5089 | UNIT               |
|---------------------------------------------------|----------------|-------------|----------|--------------------|
| Collector-Base Voltage                            | $V_{CBO}$      | 35          | 30       | V                  |
| Collector-Emitter Voltage                         | $V_{CEO}$      | 30          | 25       | V                  |
| Emitter-Base Voltage                              | $V_{EBO}$      | 4.5         | 4.5      | V                  |
| Continuous Collector Current                      | $I_C$          | 50          | 50       | mA                 |
| Power Dissipation at $T_{amb}=25^{\circ}\text{C}$ | $P_{tot}$      | 330         | 330      | mW                 |
| Operating and Storage Temperature Range           | $T_j; T_{stg}$ | -55 to +150 |          | $^{\circ}\text{C}$ |

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

| PARAMETER                             | SYMBOL        | FMMT5088          |      | FMMT5089          |      | UNIT     | CONDITIONS.                                                                                                         |
|---------------------------------------|---------------|-------------------|------|-------------------|------|----------|---------------------------------------------------------------------------------------------------------------------|
|                                       |               | MIN.              | MAX. | MIN.              | MAX. |          |                                                                                                                     |
| Collector-Base Breakdown Voltage      | $V_{(BR)CBO}$ | 35                |      | 25                |      | V        | $I_C=1\text{mA}, I_B=0$                                                                                             |
| Collector-Emitter Breakdown Voltage   | $V_{(BR)CEO}$ | 30                |      | 30                |      | V        | $I_C=100\mu\text{A}, I_E=0^*$                                                                                       |
| Collector- Base Cut-Off Current       | $I_{CBO}$     |                   | 50   |                   | 50   | nA<br>nA | $V_{CB}=20\text{V}, I_E=0$<br>$V_{CB}=15\text{V}, I_E=0$                                                            |
| Emitter-Base Current                  | $I_{EBO}$     |                   | 50   |                   | 100  | nA<br>nA | $V_{EB(off)}=3\text{V}, I_C=0$<br>$V_{EB(off)}=4.5\text{V}, I_C=0$                                                  |
| Emitter Saturation Voltages           | $V_{CE(sat)}$ |                   | 0.5  |                   | 0.5  | V        | $I_C=10\text{mA}, I_B=1\text{mA}$                                                                                   |
|                                       | $V_{BE(sat)}$ |                   | 0.8  |                   | 0.8  | V        |                                                                                                                     |
| Static Forward Current Transfer Ratio | $h_{FE}$      | 300<br>350<br>300 | 900  | 400<br>450<br>400 | 1200 |          | $I_C=100\mu\text{A}, V_{CE}=5\text{V}$<br>$I_C=1\text{mA}, V_{CE}=5\text{V}$<br>$I_C=10\text{mA}, V_{CE}=5\text{V}$ |
| Transition Frequency                  | $f_T$         | 50                |      | 50                |      | MHz      | $I_C=500\mu\text{A}, V_{CE}=5\text{V}$<br>$f=20\text{MHz}$                                                          |
| Output Capacitance                    | $C_{obo}$     |                   | 4    |                   | 4    | pF       | $V_{CB}=5\text{V}, f=1\text{MHz}, I_E=0$                                                                            |
| Emitter-base Capacitance              | $C_{ebo}$     |                   | 10   |                   | 10   | pF       | $V_{BE}=0.5\text{V}, f=1\text{MHz}, I_C=0$                                                                          |
| Noise Figure                          | N             |                   | 3    |                   | 2    | dB       | $I_C=200\text{mA}, V_{CE}=5\text{V}, R_o=10\text{K}\Omega, f=10\text{Hz to } 15\text{KHz}$                          |
| Small Signal Current Transfer Ratio   | $h_{fe}$      | 350               | 1400 | 450               | 1800 |          | $I_C=1\text{mA}, V_{CE}=5\text{V}$<br>$f=1\text{KHz} \quad ++$                                                      |

\*Measured under pulsed conditions. Pulse width=300 $\mu\text{s}$ . Duty cycle  $\leq 2\%$  ++ Periodic Sample test Only  
Spice parameter data is available upon request for this device

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