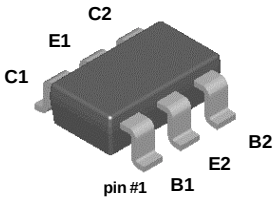
FAIRCHILD
SEMICONDUCTOR TM

# FMB100




**SuperSOT™-6**
**Mark: .NA**
**Dot denotes pin #1**

## NPN Multi-Chip General Purpose Amplifier

This device is designed for general purpose amplifier applications at collector currents to 300 mA. Sourced from Process 10.

### Absolute Maximum Ratings* $T_A$ =25°C unless otherwise noted

| Symbol | Parameter | Value | Units |
|---|---|---|---|
| $V_{CEO}$ | Collector-Emitter Voltage | 45 | V |
| $V_{CBO}$ | Collector-Base Voltage | 75 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 6.0 | V |
| $I_C$ | Collector Current - Continuous | 500 | mA |
| $T_J$, $T_{stg}$ | Operating and Storage Junction Temperature Range | -55 to +150 | °C |

*These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

**NOTES**:
**1)** These ratings are based on a maximum junction temperature of 150 degrees C.
**2)** These are steady state limits. The factory should be consulted on applications involving pulsed or low duty cycle operations.

### Thermal Characteristics $T_A$= 25°C unless otherwise noted

| Symbol | Characteristic | Max | Units |
|---|---|---|---|
| | | FMB100 | |
| $P_D$ | Total Device Dissipation<br>Derate above 25°C | 700<br>5.6 | mW<br>mW/°C |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 180 | °C/W |

## NPN Multi-Chip General Purpose Amplifier
(continued)

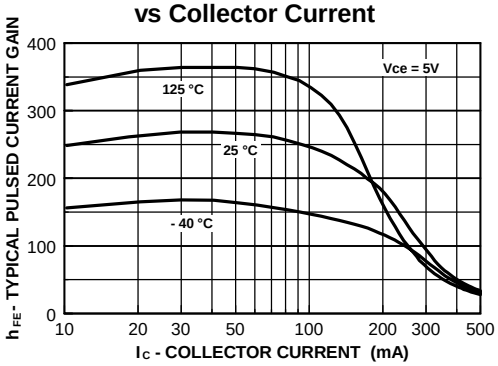
### Electrical Characteristics
$T_A$ = 25°C unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Typ | Max | Units |
|---|---|---|---|---|---|---|
| **OFF CHARACTERISTICS** | | | | | | |
| $BV_{CBO}$ | Collector-Base Breakdown Voltage | $I_C$ = 10 µA, $I_B$ = 0 | 75 | | | V |
| $BV_{CEO}$ | Collector-Emitter Breakdown Voltage* | $I_C$ = 1 mA, $I_E$ = 0 | 45 | | | V |
| $BV_{EBO}$ | Emitter-Base Breakdown Voltage | $I_E$ = 10 µA, $I_C$ = 0 | 6.0 | | | V |
| $I_{CBO}$ | Collector Cutoff Current | $V_{CB}$ = 60 V | | | 50 | nA |
| $I_{CES}$ | Collector Cutoff Current | $V_{CE}$ = 40 V | | | 50 | nA |
| $I_{EBO}$ | Emitter Cutoff Current | $V_{EB}$ = 4 V | | | 50 | nA |
| **ON CHARACTERISTICS** | | | | | | |
| $h_{FE}$ | DC Current Gain | $I_C$ = 100 µA, $V_{CE}$ = 1.0 V<br>$I_C$ = 10 mA, $V_{CE}$ = 1.0 V<br>$I_C$ = 100 mA, $V_{CE}$ = 1.0 V*<br>$I_C$ = 150 mA, $V_{CE}$ = 5.0 V* | 80<br>100<br>100<br>100 | | <br>450<br><br>350 | |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C$ = 10 mA, $I_B$ = 1.0 mA<br>$I_C$ = 200 mA, $I_B$ = 20 mA* | | | 0.2<br>0.4 | V<br>V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C$ = 10 mA, $I_B$ = 1.0 mA<br>$I_C$ = 200 mA, $I_B$ = 20 mA* | | | 0.85<br>1.0 | V<br>V |
| **SMALL SIGNAL CHARACTERISTICS** | | | | | | |
| $f_T$ | Current Gain - Bandwidth Product | $V_{CE}$ = 20 V, $I_C$ = 20 mA | | 300 | | MHz |
| $C_{obo}$ | Output Capacitance | $V_{CB}$ = 5.0 V, f = 1.0 MHz | | 3.5 | | pF |
| NF | Noise Figure | $I_C$ = 100 µA, $V_{CE}$ = 5.0 V,<br>$R_G$ = 2.0 kΩ, f = 1.0 kHz | | 2.5 | | dB |

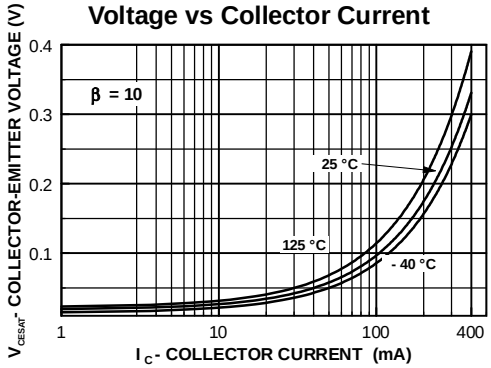
*Pulse Test: Pulse Width ≤ 300 µs, Duty Cycle ≤ 2.0%

### Typical Characteristics

**Typical Pulsed Current Gain vs Collector Current**

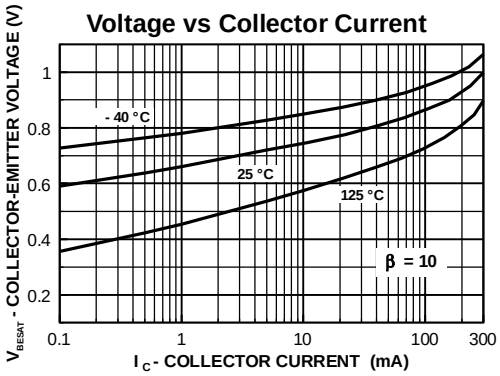



**Collector-Emitter Saturation Voltage vs Collector Current**

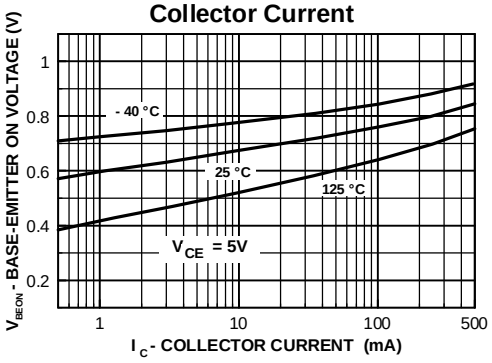


## Typical Characteristics (continued)

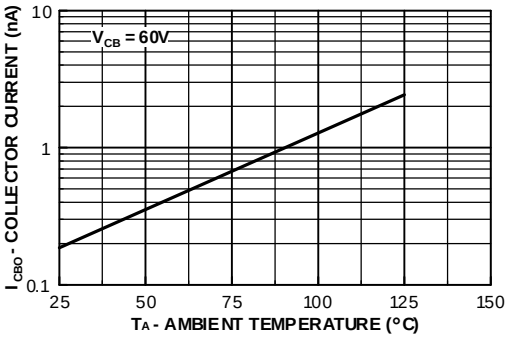
**Base-Emitter Saturation Voltage vs Collector Current**



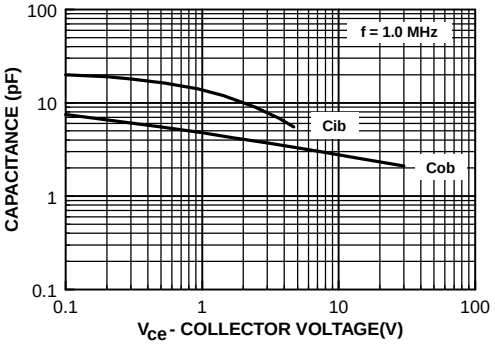

**Base-Emitter ON Voltage vs Collector Current**



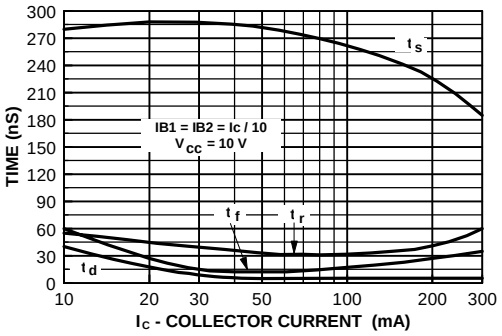

**Collector-Cutoff Current vs Ambient Temperature**



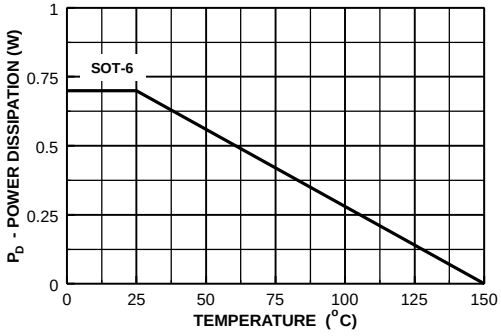

**Input and Output Capacitance vs Reverse Voltage**




**Switching Times vs Collector Current**




**Power Dissipation vs Ambient Temperature**



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