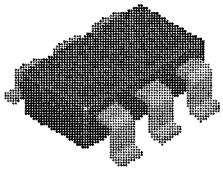
FAIRCHILD SEMICONDUCTOR TM

*Discrete Power & Signal Technologies*

# FMB1020



Package: SuperSOT-6
Device Marking: **.004**
Note: The " **.** " (dot) signifies Pin 1
Transistor 1 is NPN device,
transistor 2 is PNP device.

## NPN & PNP Complementary Dual Transistor
## SuperSOT-6 Surface Mount Package

This dual complementary device was designed for use as a general purpose amplifier applications at collector currents to 300mA. Sourced from Process 10 (NPN ) and Process 68 (PNP).

## 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 | 60 | V |
| $V_{EBO}$ | Emitter-Base Voltage | 6 | V |
| $I_C$ | Collector Current | 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°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 | Characteristics | Max | Units |
|---|---|---|---|
| $P_D$ | Total Device Dissipation, total<br>per side | 700<br>350 | mW |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient, total | 180 | °C/W |

## NPN & PNP Complementary Dual Transistor
(continued)

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

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|---|---|---|---|---|---|
| OFF CHARACTERISTICS | | | | | |
| $BV_{CEO}$ | Collector to Emitter Voltage | Ic = 1.0 mA | 45 | | V |
| $BV_{CBO}$ | Collector to Base Voltage | Ic = 10 uA | 60 | | V |
| $BV_{EBO}$ | Emitter to Base Voltage | Ie = 10 uA | 6 | | V |
| $I_{CBO}$ | Collector Cutoff Current | Vcb = 50 V | | 50 | nA |
| $I_{CES}$ | Collector Cutoff Current | Vce = 40 V | | 50 | nA |
| $I_{EBO}$ | Emitter Cutoff Current | Veb = 4 V | | 50 | nA |
| ON CHARACTERISTICS | | | | | |
| $h_{FE}$ | DC Current Gain | Vce = 1V, Ic = 100uA<br>Vce = 1V, Ic = 10mA<br>Vce = 1V, Ic = 100mA<br>Vce = 5V, Ic = 150mA | 80<br>100<br>100<br>100 | <br>450<br><br>350 | - |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | Ic = 10mA, Ib = 1mA<br>Ic = 200mA, Ib = 20mA | | 0.2<br>0.4 | V |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | Ic = 10mA, Ib = 1mA<br>Ic = 200mA, Ib = 20mA | | 0.85<br>1.0 | V |

| SMALL SIGNAL CHARACTERISTICS | | | | TYP | | |
|---|---|---|---|---|---|---|
| $C_{OB}$ | Output Capacitance | Vcb = 10V, f = 1MHz | | 4.5 | | pF |
| $f_T$ | Current Gain - Bandwidth Product | Vce = 20V, Ic = 20mA, f = 100MHz | | 300 | | MHz |
| NF | Noise Figure | Vce = 5V, Ic = 100uA,<br>Rs = 2kohms, f = 1 kHz | | 2.5 | | dB |