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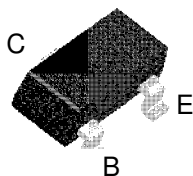
ON Semiconductor®

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FSB649



SuperSOT™-3

NPN Low Saturation Transistor

These devices are designed with high current gain and low saturation voltage with collector currents up to 3A continuous. Sourced from Process NC.

Absolute Maximum Ratings*

$T_A = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | FSB649 | Units |
|----------------|--|-------------|------------------|
| V_{CEO} | Collector-Emitter Voltage | 25 | V |
| V_{CBO} | Collector-Base Voltage | 35 | V |
| V_{EBO} | Emitter-Base Voltage | 5 | V |
| I_C | Collector Current - Continuous | 3 | A |
| T_J, T_{stg} | Operating and Storage Junction Temperature Range | -55 to +150 | $^\circ\text{C}$ |

*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

$T_A = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Characteristic | Max | Units |
|-----------------|---|--------|---------------------------|
| | | FSB649 | |
| P_D | Total Device Dissipation | 500 | mW |
| $R_{\theta JA}$ | Thermal Resistance, Junction to Ambient | 250 | $^\circ\text{C}/\text{W}$ |

NPN Low Saturation Transistor

(continued)

Electrical Characteristics

$T_A = 25^\circ\text{C}$ unless otherwise noted

| Symbol | Parameter | Test Conditions | Min | Max | Units |
|-------------------------------------|--------------------------------------|--|-----------------------|------------|---------------------|
| OFF CHARACTERISTICS | | | | | |
| BV_{CEO} | Collector-Emitter Breakdown Voltage | $I_C = 10\text{ mA}$ | 25 | | V |
| BV_{CBO} | Collector-Base Breakdown Voltage | $I_C = 100\ \mu\text{A}$ | 35 | | V |
| BV_{EBO} | Emitter-Base Breakdown Voltage | $I_E = 100\ \mu\text{A}$ | 5 | | V |
| I_{CBO} | Collector Cutoff Current | $V_{CB} = 30\text{ V}$ $V_{CB} = 30\text{ V}, T_A=100^\circ\text{C}$ | | 100 10 | nA μA |
| I_{EBO} | Emitter Cutoff Current | $V_{EB} = 4\text{ V}$ | | 100 | nA |
| ON CHARACTERISTICS* | | | | | |
| h_{FE} | DC Current Gain | $I_C = 50\text{ mA}, V_{CE} = 2\text{ V}$ $I_C = 1\text{ A}, V_{CE} = 2\text{ V}$ $I_C = 2\text{ A}, V_{CE} = 2\text{ V}$ $I_C = 6\text{ A}, V_{CE} = 2\text{ V}$ | 70 100 75 15 | 300 | - |
| $V_{CE(sat)}$ | Collector-Emitter Saturation Voltage | $I_C = 1\text{ A}, I_B = 100\text{ mA}$ $I_C = 3\text{ A}, I_B = 300\text{ mA}$ | | 300 600 | mV |
| $V_{BE(sat)}$ | Base-Emitter Saturation Voltage | $I_C = 1\text{ A}, I_B = 100\text{ mA}$ | | 1.25 | V |
| $V_{BE(on)}$ | Base-Emitter On Voltage | $I_C = 1\text{ A}, V_{CE} = 2\text{ V}$ | | 1 | V |
| SMALL SIGNAL CHARACTERISTICS | | | | | |
| C_{obo} | Output Capacitance | $V_{CB} = 10\text{ V}, I_E = 0, f = 1\text{ MHz}$ | | 50 | pF |
| f_T | Transition Frequency | $I_C = 100\text{ mA}, V_{CE} = 5\text{ V}, f=100\text{ MHz}$ | 150 | | - |

*Pulse Test: Pulse Width $\leq 300\ \mu\text{s}$, Duty Cycle $\leq 2.0\%$

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|--------------------------|------------------------|---|
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