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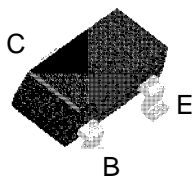
**ON Semiconductor®**

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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  $150^\circ\text{C}$ .
- 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
<b>OFF CHARACTERISTICS</b>					
$BV_{CEO}$	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 uA
$I_{EBO}$	Emitter Cutoff Current	$V_{EB} = 4\text{V}$		100	nA
<b>ON CHARACTERISTICS*</b>					
$h_{FE}$	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
<b>SMALL SIGNAL CHARACTERISTICS</b>					
$C_{obo}$	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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