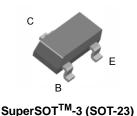


**ON Semiconductor®** 

# FSB560 / FSB560A NPN Low-Saturation Transistor

# Features

• These devices are designed with high-current gain and low-saturation voltage with collector currents up to 2 A continuous.



## **Ordering Information**

Part Number Marking		Package	Packing Method		
FSB560	560	SSOT 3L	Tape and Reel		
FSB560A	560A	SSOT 3L	Tape and Reel		

## Absolute Maximum Ratings(1),(2)

Stresses exceeding the absolute maximum ratings may damage the device. The device may not function or be operable above the recommended operating conditions and stressing the parts to these levels is not recommended. In addition, extended exposure to stresses above the recommended operating conditions may affect device reliability. The absolute maximum ratings are stress ratings only. Values are at  $T_A = 25^{\circ}$ C unless otherwise noted.

Symbol	Parameter	Value	Unit
V <sub>CEO</sub>	Collector-Emitter Voltage	60	V
V <sub>CBO</sub>	Collector-Base Voltage	80	V
V <sub>EBO</sub>	Emitter-Base Voltage	5	V
Ι <sub>C</sub>	Collector Current - Continuous	2	Α
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Junction Temperature Range	-55 to +150	°C

## Notes:

- 1. These ratings are based on a maximum junction temperature of 150  $^\circ\text{C}.$
- 2. These are steady-state limits. ON Semiconductor should be consulted on applications involving pulsed or lowduty-cycle operations.

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## Thermal Characteristics<sup>(3)</sup>

Values are at  $T_A = 25^{\circ}C$  unless otherwise noted.

Symbol	Parameter	Max.	Unit
P <sub>D</sub>	Total Device Dissipation	500	mW
	Derate Above 25°C	4	mW/°C
R <sub>θJA</sub>	Thermal Resistance, Junction-to-Ambient	250	°C/W

Note:

3. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

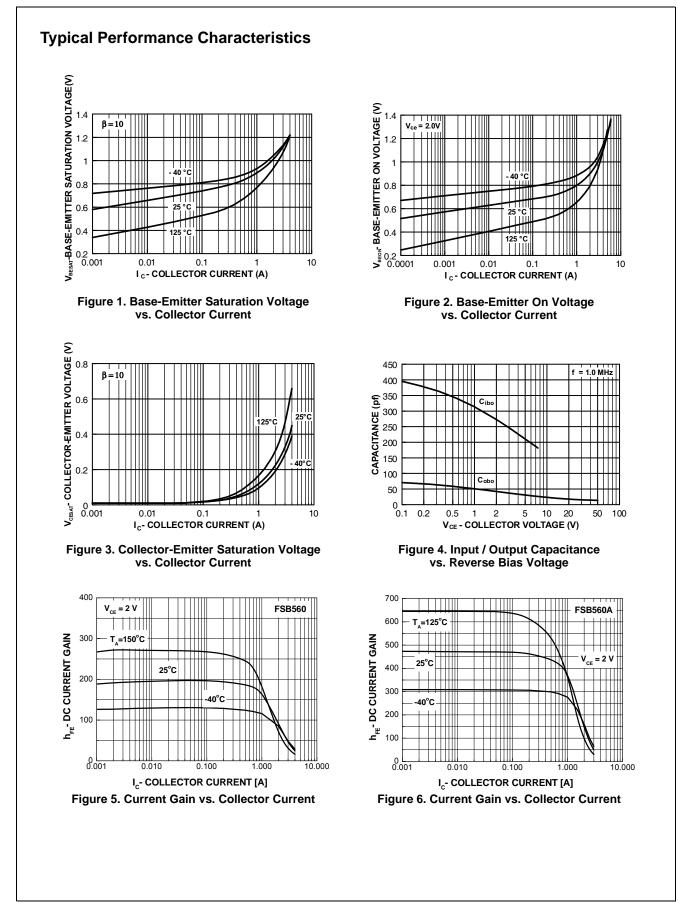
## **Electrical Characteristics**

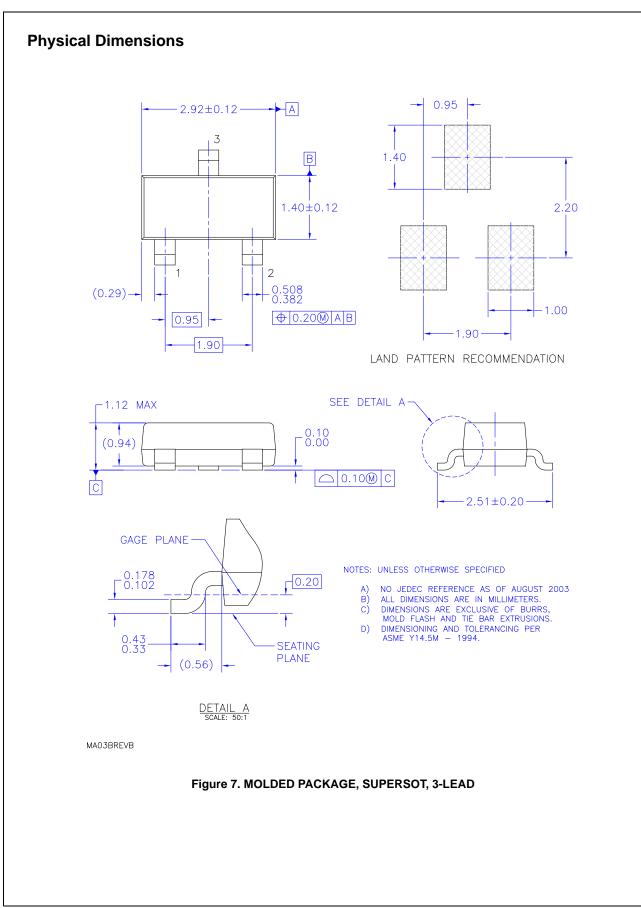
Values are at  $T_A = 25^{\circ}C$  unless otherwise noted.

Symbol	Parameter	Conditions		Min.	Max.	Unit
BV <sub>CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0		60		V
BV <sub>CBO</sub>	Collector-Base Breakdown Voltage	I <sub>C</sub> = 100 μA, I <sub>E</sub> = 0		80		V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	I <sub>E</sub> = 100 μA, I <sub>C</sub> = 0		5		V
I <sub>CBO</sub>	Collector Cut-Off Current	V <sub>CB</sub> = 30 V, I <sub>E</sub> = 0			100	nA
	Collector Cut-On Current	V <sub>CB</sub> = 30 V, I <sub>E</sub> = 0, T <sub>A</sub> = 100°C			10	μA
I <sub>EBO</sub>	Emitter Cut-Off Current	V <sub>EB</sub> = 4 V, I <sub>C</sub> = 0			100	nA
	DC Current Gain <sup>(4)</sup>	I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 2 V		70		
		I <sub>C</sub> = 500 mA, V <sub>CE</sub> = 2 V	FSB560	100	300	
h <sub>FE</sub>			FSB560A	250	550	
		I <sub>C</sub> = 1 A, V <sub>CE</sub> = 2 V		80		
		I <sub>C</sub> = 2 A, V <sub>CE</sub> = 2 V		40		
V <sub>CE</sub> (sat)	Collector-Emitter Saturation Voltage <sup>(4)</sup>	I <sub>C</sub> = 1 A, I <sub>B</sub> = 100 mA			300	
		$I_{\rm C} = 2$ A. $I_{\rm B} = 200$ mA	FSB560		350	mV
			FSB560A		300	1
V <sub>BE</sub> (sat)	Base-Emitter Saturation Voltage <sup>(4)</sup>	I <sub>C</sub> = 1 A, I <sub>B</sub> = 100 mA			1.25	V
V <sub>BE</sub> (on)	Base-Emitter On Voltage <sup>(4)</sup>	I <sub>C</sub> = 1 A, V <sub>CE</sub> = 2 V			1	V
C <sub>obo</sub>	Output Capacitance	V <sub>CB</sub> = 10 V, I <sub>E</sub> = 0, f = 1.0 MHz			30	pF
f <sub>T</sub>	Transition Frequency	I <sub>C</sub> = 100 mA, V <sub>CE</sub> = 5 V, f = 100 MHz		75		MHz

Note:

4. Pulse test: pulse width  $\leq$  300  $\mu$ s, duty cycle  $\leq$  2.0%





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