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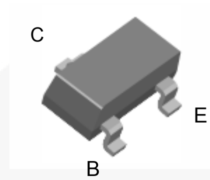
October 2014

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.



SuperSOT™-3 (SOT-23)

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°C unless otherwise noted.

Symbol	Parameter	Value	Unit
V_{CEO}	Collector-Emitter Voltage	60	V
V_{CBO}	Collector-Base Voltage	80	V
V_{EBO}	Emitter-Base Voltage	5	V
I_C	Collector Current - Continuous	2	A
T_J, T_{STG}	Operating and Storage Junction Temperature Range	-55 to +150	°C

Notes:

1. These ratings are based on a maximum junction temperature of 150°C.
2. These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low-duty-cycle operations.

Thermal Characteristics[3]

Values are at $T_A = 25°C$ unless otherwise noted.

Symbol	Parameter	Max.	Unit
P_D	Total Device Dissipation	500	mW
	Derate Above 25°C	4	mW/°C
$R_{\theta JA}$	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 $T_A = 25°C$ unless otherwise noted.

Symbol	Parameter	Conditions		Min.	Max.	Unit
BV_{CEO}	Collector-Emitter Breakdown Voltage	$I_C = 10$ mA, $I_B = 0$		60		V
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 100$ µA, $I_E = 0$		80		V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 100$ µA, $I_C = 0$		5		V
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 30$ V, $I_E = 0$			100	nA
		$V_{CB} = 30$ V, $I_E = 0$, $T_A = 100°C$			10	µA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 4$ V, $I_C = 0$			100	nA
h_{FE}	DC Current Gain[4]	$I_C = 100$ mA, $V_{CE} = 2$ V		70		
		$I_C = 500$ mA, $V_{CE} = 2$ V	FSB560	100	300	
			FSB560A	250	550	
		$I_C = 1$ A, $V_{CE} = 2$ V		80		
		$I_C = 2$ A, $V_{CE} = 2$ V		40		
$V_{CE}(sat)$	Collector-Emitter Saturation Voltage[4]	$I_C = 1$ A, $I_B = 100$ mA			300	mV
		$I_C = 2$ A, $I_B = 200$ mA	FSB560		350	
			FSB560A		300	
$V_{BE}(sat)$	Base-Emitter Saturation Voltage[4]	$I_C = 1$ A, $I_B = 100$ mA			1.25	V
$V_{BE}(on)$	Base-Emitter On Voltage[4]	$I_C = 1$ A, $V_{CE} = 2$ V			1	V
C_{obo}	Output Capacitance	$V_{CB} = 10$ V, $I_E = 0$, f = 1.0 MHz			30	pF
f_T	Transition Frequency	$I_C = 100$ mA, $V_{CE} = 5$ V, f = 100 MHz		75		MHz

Note:

4. Pulse test: pulse width ≤ 300 µs, duty cycle ≤ 2.0%

Typical Performance Characteristics

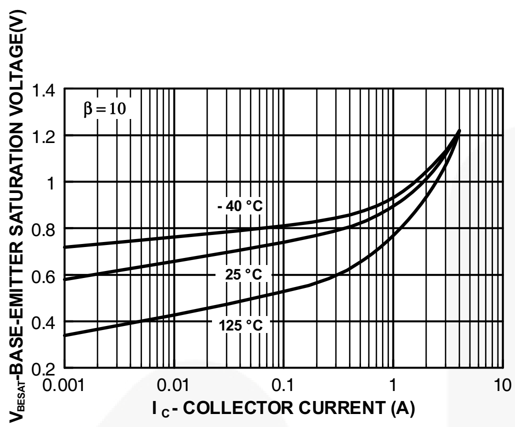


Figure 1. Base-Emitter Saturation Voltage vs. Collector Current

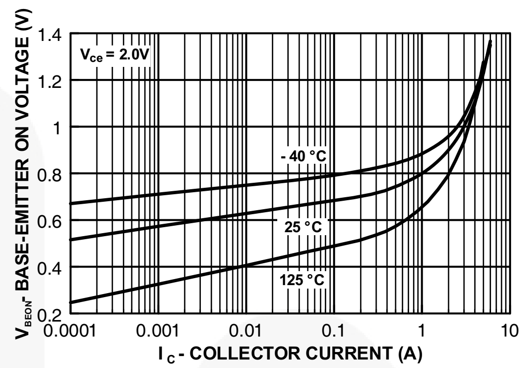


Figure 2. Base-Emitter On Voltage vs. Collector Current

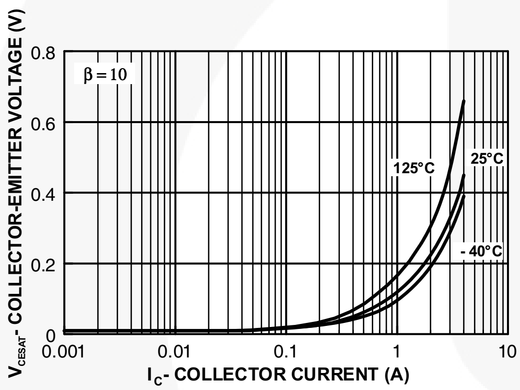


Figure 3. Collector-Emitter Saturation Voltage vs. Collector Current

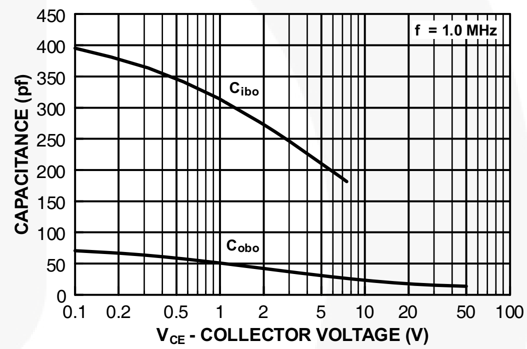


Figure 4. Input / Output Capacitance vs. Reverse Bias Voltage

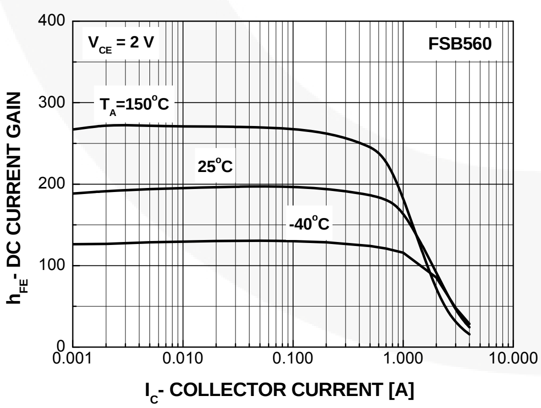


Figure 5. Current Gain vs. Collector Current

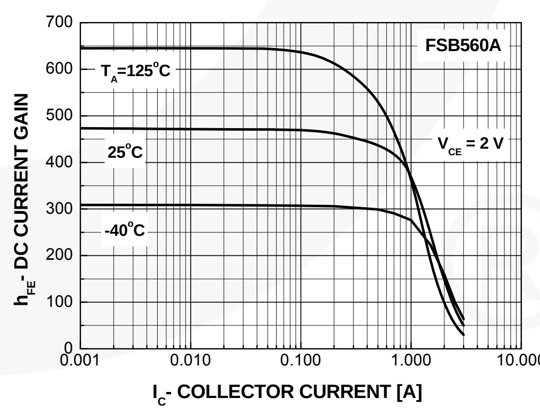


Figure 6. Current Gain vs. Collector Current

Physical Dimensions

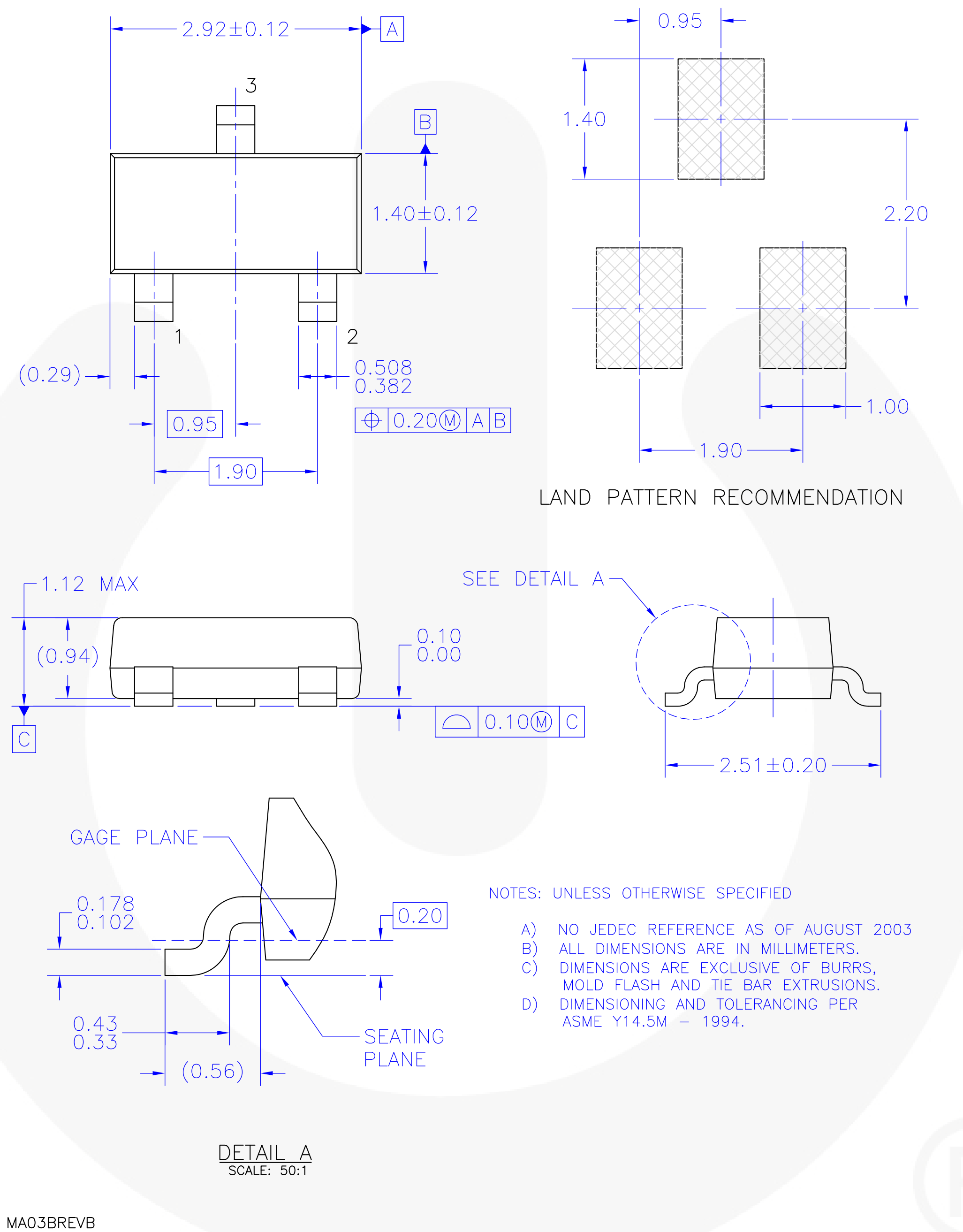


Figure 7. MOLDED PACKAGE, SUPERSOT, 3-LEAD

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Preliminary	First Production	Datasheet contains preliminary data; supplementary data will be published at a later date. Fairchild Semiconductor reserves the right to make changes at any time without notice to improve design.
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