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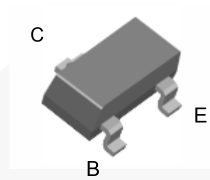
September 2015

FSB619
NPN Low-Saturation Transistor

Features

- This device is designed with high-current gain and low-saturation voltage with collector currents up to 3 A continuous.



SuperSOT™-3 (SOT-23)

Ordering Information

Part Number	Marking	Package	Packing Method
FSB619	619	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	50	V
V_{CBO}	Collector-Base Voltage	50	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

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

Symbol	Parameter	Max.	Unit
P_D	Total Device Dissipation(3)	500	mW
	Derate Above 25°C	4	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	250	°C/W

Note:

3. Device mounted on FR-4 PCB 4.5" X 5"; mounting pad 0.02 in^2 of 2oz copper.

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, $I_B = 0$	50		V
BV_{CBO}	Collector-Base Breakdown Voltage	$I_C = 100$ µA, $I_E = 0$	50		V
BV_{EBO}	Emitter-Base Breakdown Voltage	$I_E = 100$ µA, $I_C = 0$	5		V
I_{CBO}	Collector Cut-Off Current	$V_{CB} = 40$ V, $I_E = 0$		100	nA
I_{EBO}	Emitter Cut-Off Current	$V_{EB} = 4$ V, $I_C = 0$		100	nA
I_{CES}	Collector Emitter Cut-Off Current	$V_{CES} = 40$ V		100	nA
h_{FE}	DC Current Gain(4)	$I_C = 10$ mA, $V_{CE} = 2$ V	200		
		$I_C = 200$ mA, $V_{CE} = 2$ V	300		
		$I_C = 1$ A, $V_{CE} = 2$ V	200		
		$I_C = 2$ A, $V_{CE} = 2$ V	100		
$V_{CE}(sat)$	Collector-Emitter Saturation Voltage(4)	$I_C = 100$ mA, $I_B = 10$ mA		20	mV
		$I_C = 1$ A, $I_B = 10$ mA		235	
		$I_C = 2$ A, $I_B = 50$ mA		320	
$V_{BE}(sat)$	Base-Emitter Saturation Voltage(4)	$I_C = 2$ A, $I_B = 50$ mA		1	V
$V_{BE}(on)$	Base-Emitter On Voltage(4)	$I_C = 2$ A, $V_{CE} = 2$ V		1	V
C_{obo}	Output Capacitance	$V_{CB} = 10$ V, $I_E = 0$, f = 1 MHz		30	pF
f_T	Transition Frequency	$I_C = 50$ mA, $V_{CE} = 10$ V, f = 100 MHz	100		

Note:

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

Typical Performance Characteristics

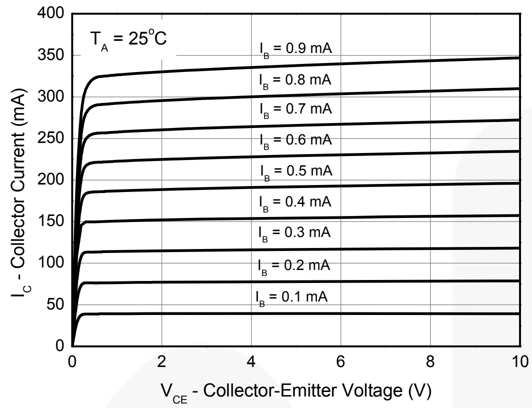


Figure 1. Static Characteristics

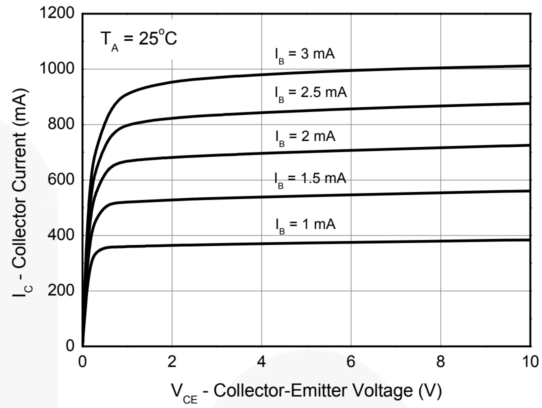


Figure 2. Static Characteristics

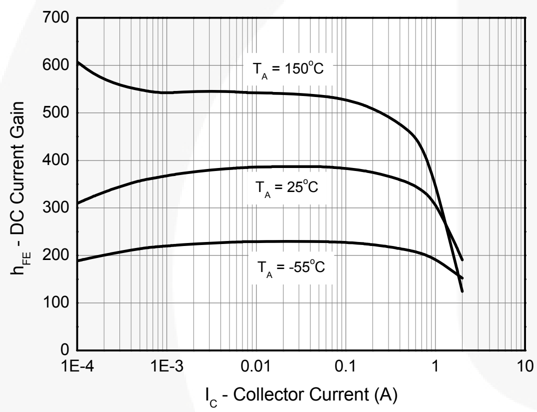


Figure 3. DC Current Gain vs. Collector Current

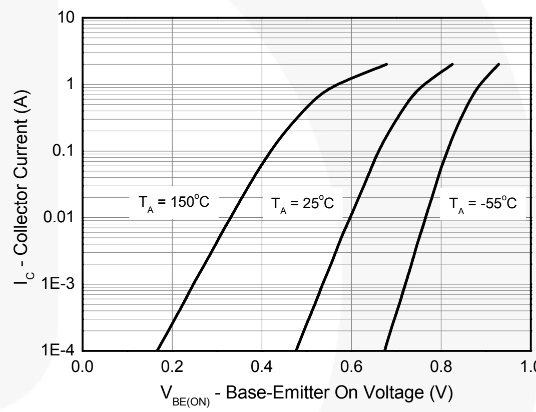


Figure 4. Base-Emitter On Voltage vs. Collector Voltage

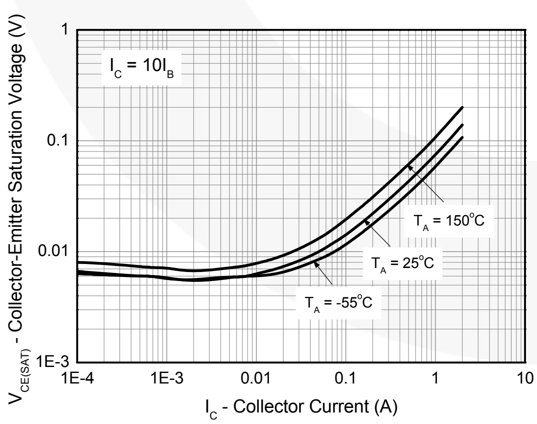


Figure 5. Collector-Emitter Saturation Voltage vs. Collector Voltage

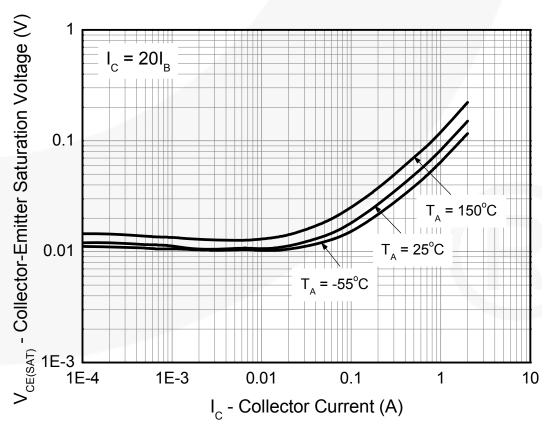


Figure 6. Collector-Emitter Saturation Voltage vs. Collector Voltage

Typical Performance Characteristics (Continued)

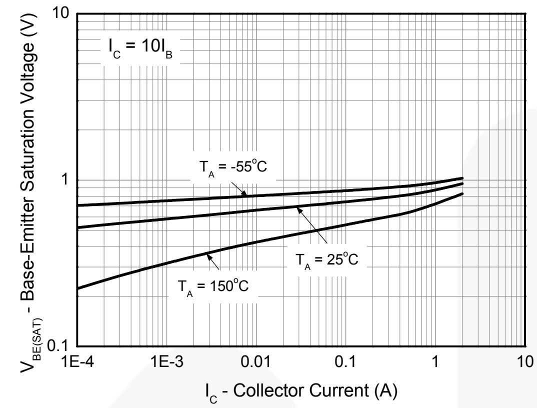


Figure 7. Base-Emitter Saturation Voltage vs. Collector Current

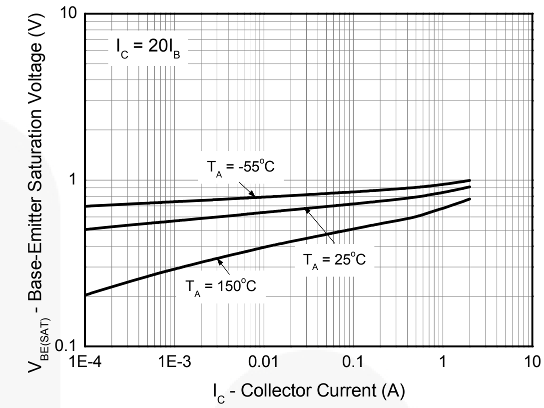


Figure 8. Base-Emitter Saturation Voltage vs. Collector Current

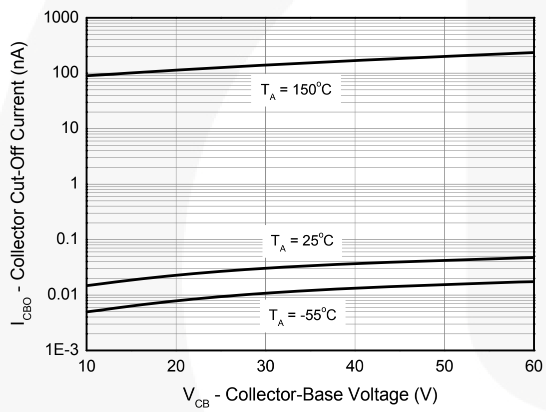


Figure 9. Collector Cut-Off Current vs. Collector-Base Voltage

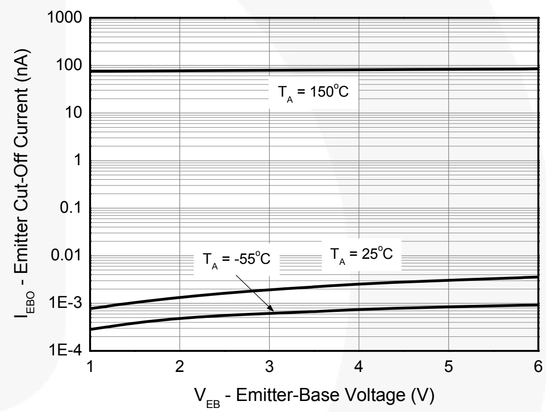


Figure 10. Emitter Cut-Off Current vs. Emitter-Base Voltage

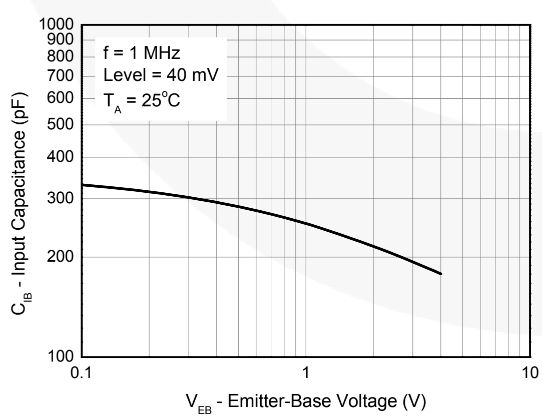


Figure 11. Typical Input Capacitance

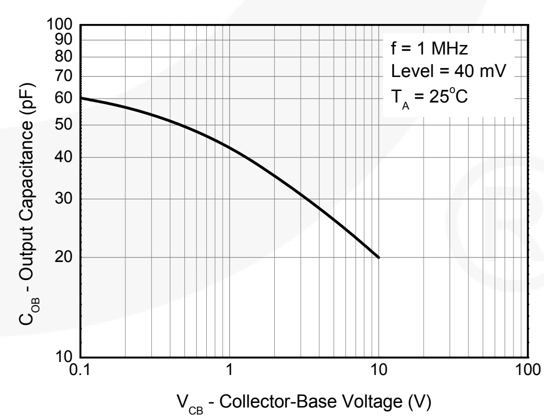
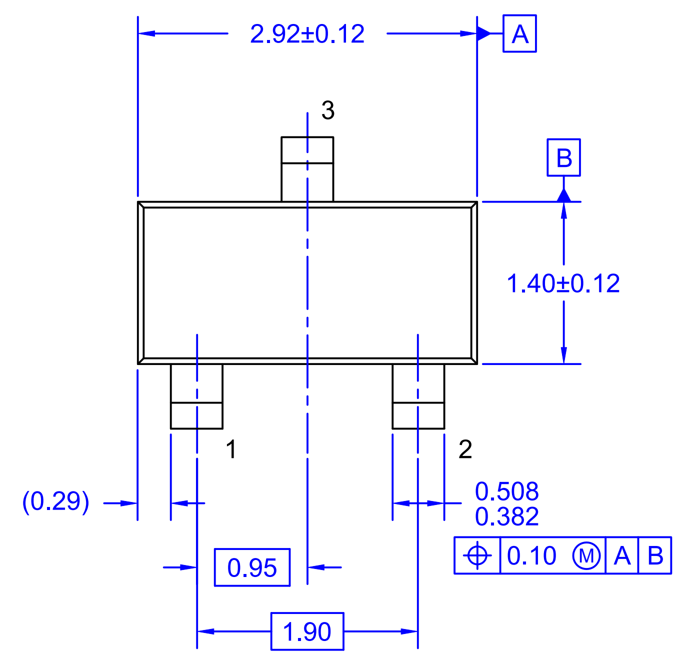
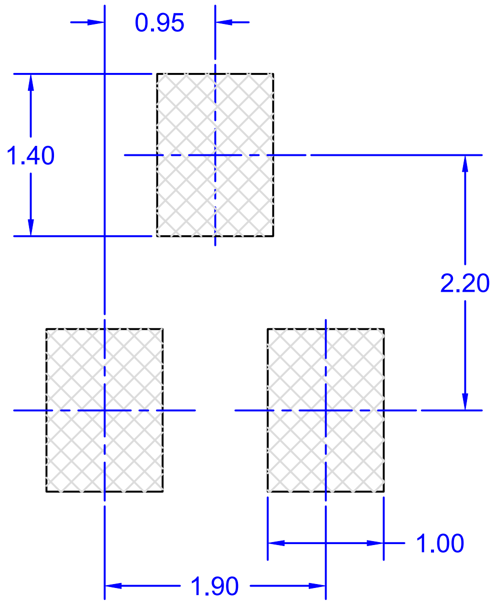
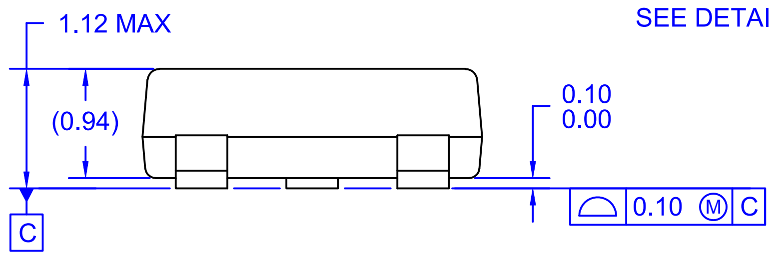


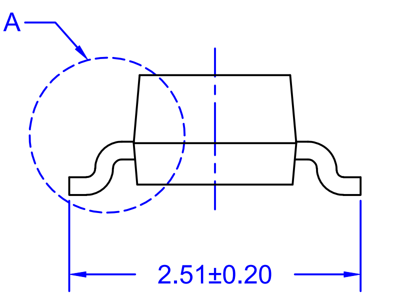
Figure 12. Typical Output Capacitance

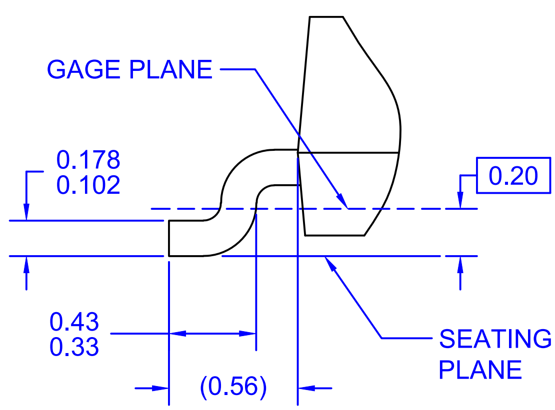




LAND PATTERN RECOMMENDATION







DETAIL A

SCALE: 50:1

NOTES: UNLESS OTHERWISE SPECIFIED

A) NO JEDEC REFERENCE AS OF AUGUST 2003
B) ALL DIMENSIONS ARE IN MILLIMETERS.
C) DIMENSIONS ARE EXCLUSIVE OF BURRS, MOLD FLASH AND TIE BAR EXTRUSIONS.
D) DIMENSIONING AND TOLERANCING PER ASME Y14.5M - 2009.
E) DRAWING FILE NAME: MKT-MA03BREV3

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