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FAIRCHILD SEMICONDUCTOR®

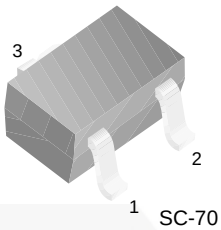
June 2013

FJX3904

NPN Epitaxial Silicon Transistor

Feature

- General-Purpose Transistor



SC-70

1. Base 2. Emitter 3. Collector

Package Marking and Ordering Information

Device Item	Device Marking	Package	Packing Method	Qty (pcs)
FJX3904TF	S1A	SC-70	TAPE & REEL	3,000 units

Absolute Maximum Ratings(1)

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	Units
V_{CBO}	Collector-Base Voltage	60	V
V_{CES}	Collector-Emitter Voltage	40	V
V_{EBO}	Emitter-Base Voltage	6	V
I_C	Collector Current	200	mA
P_C	Collector Power Dissipation	350	mW
T_{STG}(2)	Storage Temperature	-55 to 150	°C

Notes:

1. These ratings are limiting values above which the serviceability of the diode may be impaired.
2. These ratings are bansed on a maximum junction temperature of 150°C.
   These are steady-state limits. Fairchild Semiconductor should be consulted on applications involving pulsed or low duty cycle operations.

Thermal Characteristics(3)

Symbol	Parameter	Value	Unit
P_D	Derate above 25°C	2.8	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction to Air	357	°C/W

Note:

3. PCB board size: FR-4 76 x 114 x 0.6 T mm^3 (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics[4]

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

Symbol	Parameter	Test Conditions	Min.	Max.	Units
BV_{CBO}	Collector-Base Breakdown Voltage	I_C = 10 μA, I_E = 0	60		V
BV_{CEO}	Collector-Emitter Breakdown Voltage	I_C = 1 mA, I_B = 0	40		V
BV_{EBO}	Emitter-Base Breakdown Voltage	I_E = 10 μA, I_C = 0	6		V
I_{CEX}	Collector Cut-Off Current	V_{CE} = 30 V, V_{EB} = 3 V		50	nA
h_{FE}	DC Current Gain	V_{CE} = 1 V, I_C = 0.1 mA	40		
		V_{CE} = 1 V, I_C = 1 mA	70		
		V_{CE} = 1 V, I_C = 10 mA	100	300	
		V_{CE} = 1 V, I_C = 50 mA	60		
		V_{CE} = 1 V, I_C = 100 mA	30		
V_{CE}(sat)	Collector-Emitter Saturation Voltage	I_C = 10 mA, I_B = 1 mA		0.2	V
		I_C = 50 mA, I_B = 5 mA		0.3	V
V_{BE}(sat)	Base-Emitter Saturation Voltage	I_C = 10 mA, I_B = 1 mA	0.65	0.85	V
		I_C = 50 mA, I_B = 5 mA		0.95	V
C_{ob}	Output Capacitance	V_{CB} = 5 V, I_E = 0, f = 1 MHz		4	pF
f_T	Current Gain Bandwidth Product	V_{CE} = 20 V, I_C = 10 mA	300		MHz
NF	Noise Figure	I_C = 100 μA, V_{CE} = 5 V, R_S = 1 kΩ, f = 10 Hz to 15.7 kHz		5	dB
t_{ON}	Turn-On Time	V_{CC} = 3 V, V_{BE} = 0.5 V, I_C = 10 mA, I_{B1} = 1 mA		70	ns
t_{OFF}	Turn-Off Time	V_{CC} = 3 V, I_C = 10 mA, I_{B1} = I_{B2} = 1 mA		250	ns

Note:

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

Typical Performance Characteristics

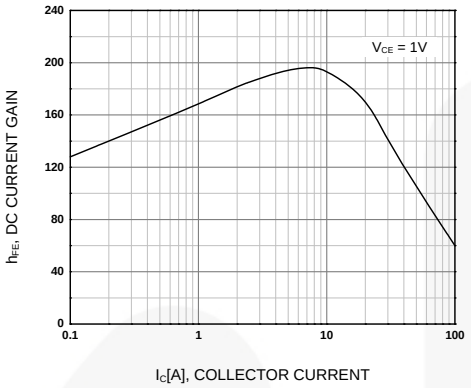


Figure 1. DC Current Gain

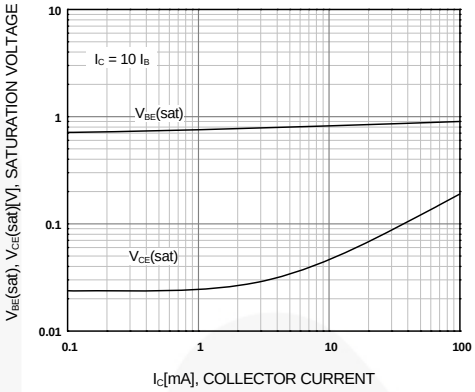


Figure 2. Base-Emitter Saturation Voltage Collector-Emitter Saturation Voltage

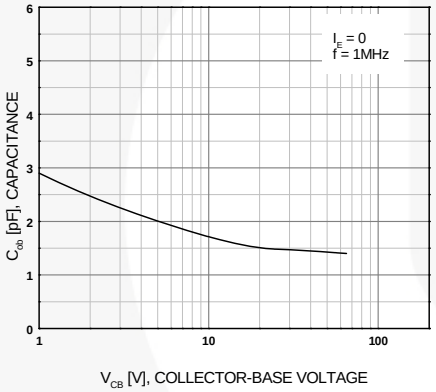


Figure 3. Output Capacitance

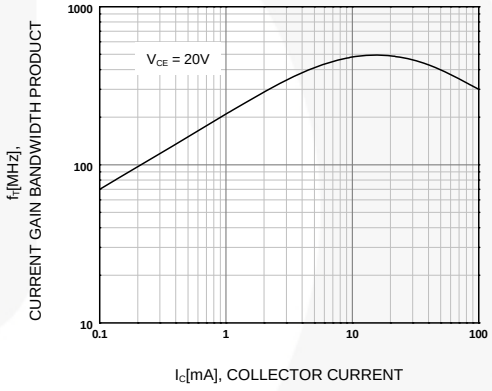


Figure 4. Current Gain Bandwidth Product

Physical Dimensions

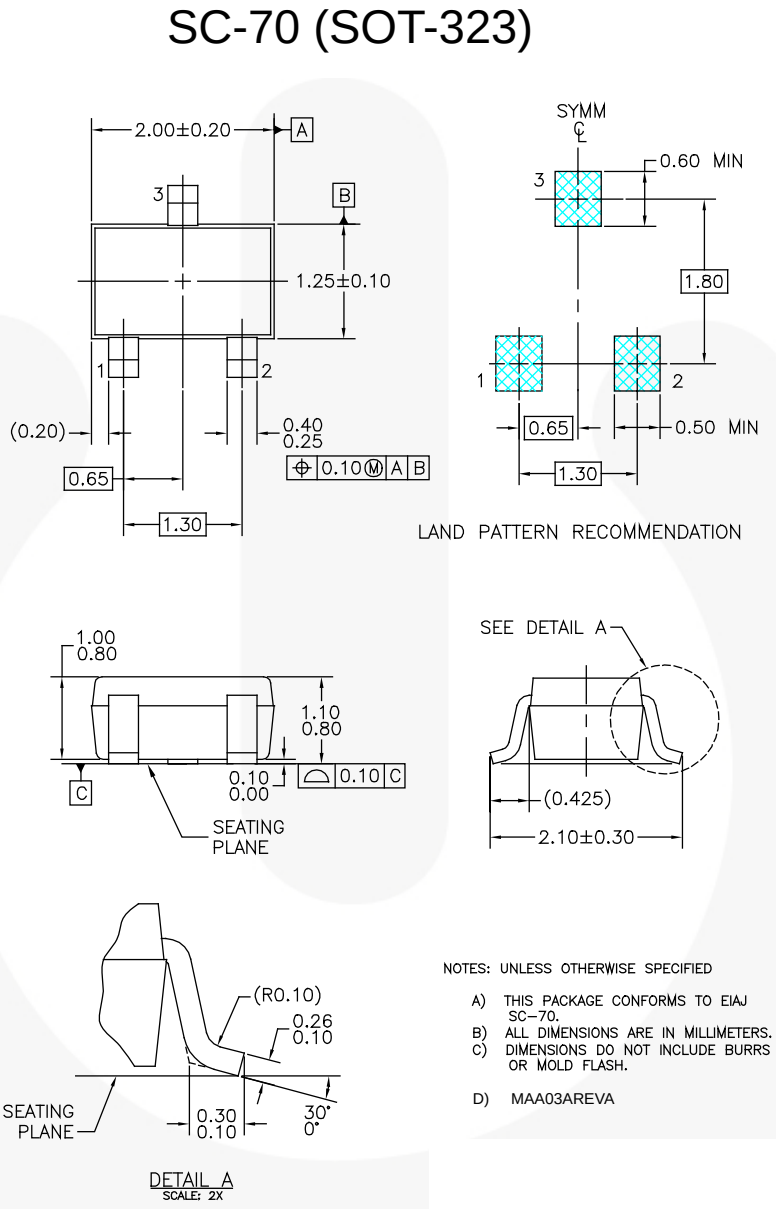


Figure 5. 3 LEAD, SC90, EIAJ SC-70, 1.25 MM WIDE (ACTIVE)

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