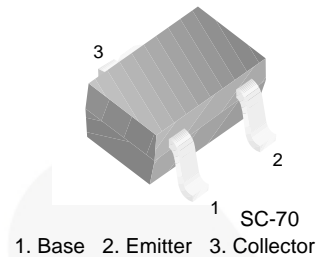


FJX3904

NPN Epitaxial Silicon Transistor

Feature

- General-Purpose Transistor



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 $T_A = 25^\circ\text{C}$ 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	$^\circ\text{C}$

Notes:

1. These ratings are limiting values above which the serviceability of the diode may be impaired.
2. These ratings are based 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/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction to Air	357	$^\circ\text{C}/\text{W}$

Note:

3. PCB board size: FR-4 76 x 114 x 0.6 T mm³ (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

Electrical Characteristics⁽⁴⁾

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

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

Note:

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

Typical Performance Characteristics

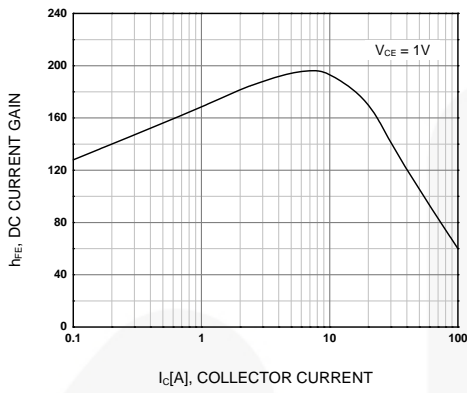


Figure 1. DC Current Gain

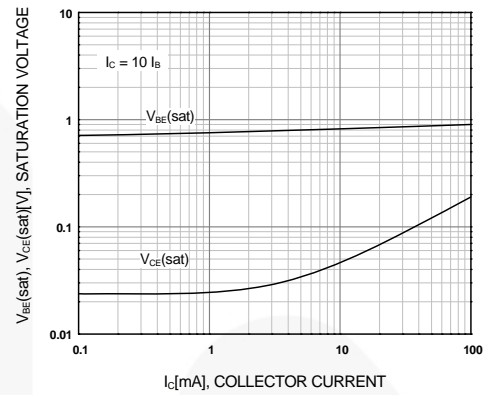


Figure 2. Base-Emitter Saturation Voltage
Collector-Emitter Saturation Voltage

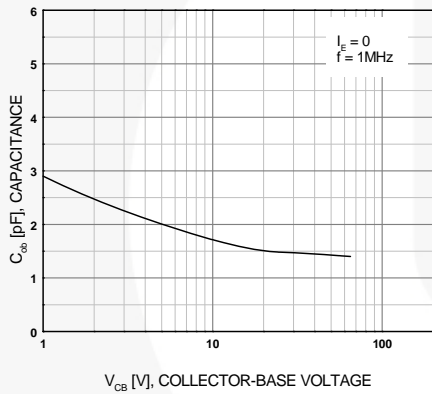


Figure 3. Output Capacitance

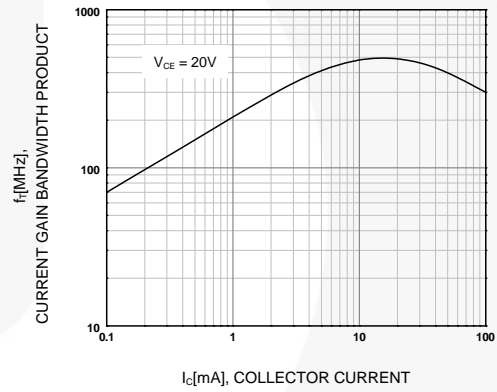


Figure 4. Current Gain Bandwidth Product

Physical Dimensions

SC-70 (SOT-323)

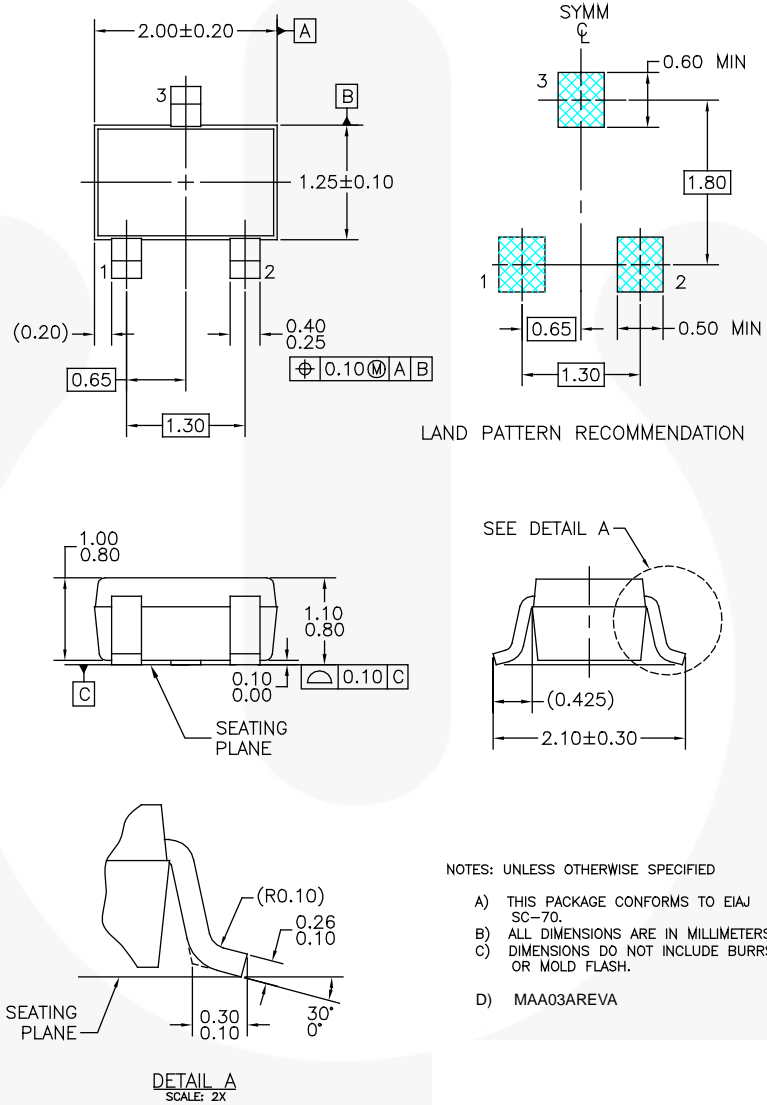


Figure 5. 3 LEAD, SC90, EIAJ SC-70, 1.25 MM WIDE (ACTIVE)

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