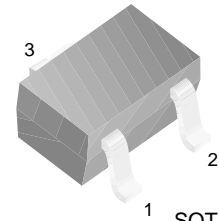


# FJX3904

## NPN Epitaxial Silicon Transistor

- General Purpose Transistor



1. Base 2. Emitter 3. Collector

### Absolute Maximum Ratings\* $T_a=25^\circ\text{C}$ 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
$T_{STG}$	Storage Temperature	-55 ~ 150	$^\circ\text{C}$

\* These ratings are limiting values above which the serviceability of any semiconductor device may be impaired.

**NOTES:**

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

### Electrical Characteristics\* $T_a = 25^\circ\text{C}$ 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	$V_{CE}=1\text{V}, I_C=0.1\text{mA}$ $V_{CE}=1\text{V}, I_C=1\text{mA}$ $V_{CE}=1\text{V}, I_C=10\text{mA}$ $V_{CE}=1\text{V}, I_C=50\text{mA}$ $V_{CE}=1\text{V}, I_C=100\text{mA}$	40 70 100 60 30	300	
$V_{CE(sat)}$	* Collector-Emitter Saturation Voltage	$I_C=10\text{mA}, I_B=1\text{mA}$ $I_C=50\text{mA}, I_B=5\text{mA}$		0.2 0.3	V V
$V_{BE(sat)}$	* Base-Emitter Saturation Voltage	$I_C=10\text{mA}, I_B=1\text{mA}$ $I_C=50\text{mA}, I_B=5\text{mA}$	0.65	0.85 0.95	V 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

\* Pulse Test: Pulse Width  $\leq 300\mu\text{s}$ , Duty Cycle  $\leq 2.0\%$

## Package Marking and Ordering Information

Device Item (note)	Device Marking	Package	Packing Method	Qty(pcs)
FJX3904TF	S1A	SOT-323	TAPE & REEL	3,000

Note : The Suffix "-TF" means Tape& Reel packing method, which can be on fairchildsemi website at <http://www.fairchildsemi.com/packaging>

## Typical Performance Characteristics

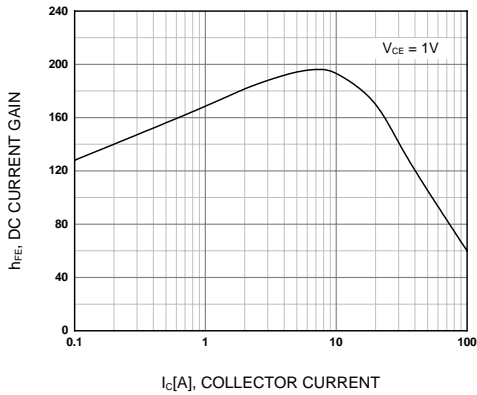


Figure 1. DC current Gain

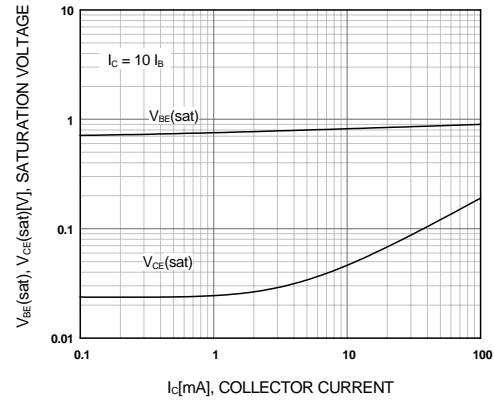


Figure 2. Base-Emitter Saturation Voltage  
Collector-Emitter Saturation Voltage

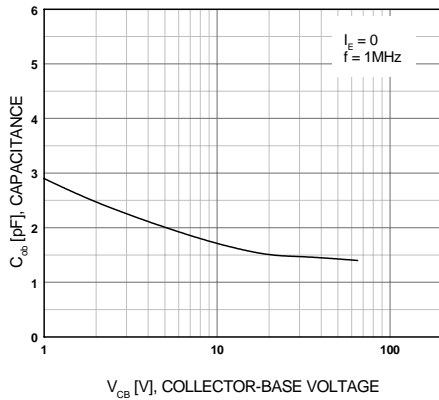


Figure 3. Output Capacitance

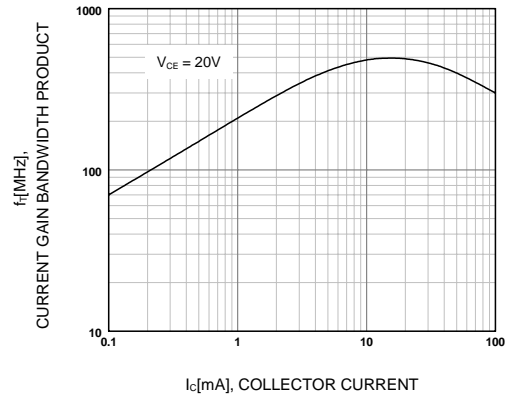
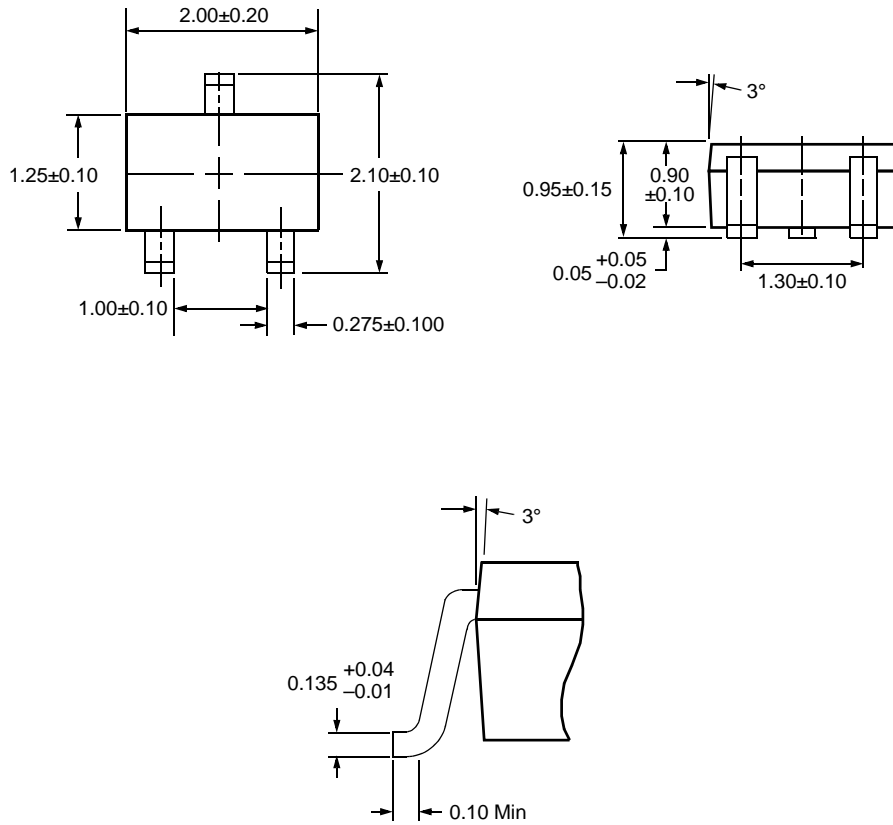


Figure 4. Current Gain Bandwidth Product

**Mechanical Dimensions**

**SOT-323**



Dimensions in Millimeters

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Bottomless™	GTO™	OPTOLOGIC®	SPM™	Wire™
Build it Now™	HiSeC™	OPTOPLANAR™	Stealth™	
CoolFET™	I <sup>2</sup> C™	PACMAN™	SuperFET™	
CROSSVOLT™	i-Lo™	POP™	SuperSOT™-3	
DOME™	ImpliedDisconnect™	Power247™	SuperSOT™-6	
EcoSPARK™	IntelliMAX™	PowerEdge™	SuperSOT™-8	
E <sup>2</sup> CMOS™	ISOPLANAR™	PowerSaver™	SyncFET™	
EnSigna™	LittleFET™	PowerTrench®	TCM™	
FACT®	MICROCOUPLER™	QFET®	TinyBoost™	
FAST®	MicroFET™	QS™	TinyBuck™	
FASTr™	MicroPak™	QT Optoelectronics™	TinyPWM™	
FPST™	MICROWIRE™	Quiet Series™	TinyPower™	
FRFET™	MSX™	RapidConfigure™	TinyLogic®	
	MSXPro™	RapidConnect™	TINYOPTO™	
Across the board. Around the world.™		µSerDes™	TruTranslation™	
The Power Franchise®		ScalarPump™	UHC®	
Programmable Active Droop™				

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**PRODUCT STATUS DEFINITIONS**

**Definition of Terms**

Datasheet Identification	Product Status	Definition
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