



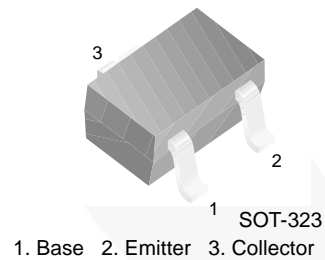
November 2014

# FJX2222A

## NPN Epitaxial Silicon Transistor

### Features

- General-Purpose Transistor
- Collector-Emitter Voltage:  $V_{CE0} = 40\text{ V}$



### Ordering Information

Part Number	Marking	Package	Packing Method
FJX2222ATF	S1P	SC70 3L	Tape and Reel

### Absolute Maximum Ratings

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	Unit
$V_{CBO}$	Collector-Base Voltage	75	V
$V_{CEO}$	Collector-Emitter Voltage	40	V
$V_{EBO}$	Emitter-Base Voltage	6	V
$I_C$	Collector Current	600	mA
$T_J$	Junction Temperature	150	$^\circ\text{C}$
$T_{STG}$	Storage Temperature	150	$^\circ\text{C}$

**Thermal Characteristics<sup>(1)</sup>**

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

Symbol	Parameter	Value	Unit
$P_D$	Power Dissipation	325	mW
	Derate Above $25^\circ\text{C}$	2.6	mW/ $^\circ\text{C}$
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	385	$^\circ\text{C}/\text{W}$

**Note:**

1. 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**

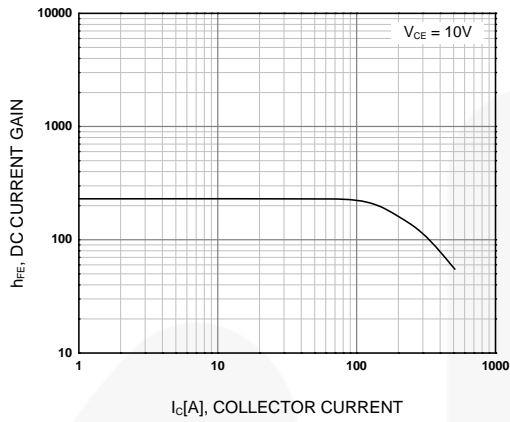
Values are at  $T_A = 25^\circ\text{C}$  unless otherwise noted.

Symbol	Parameter	Conditions	Min.	Max.	Unit
$BV_{CBO}$	Collector-Base Breakdown Voltage	$I_C = 10 \mu\text{A}, I_E = 0$	75		V
$BV_{CEO}$	Collector-Emitter Breakdown Voltage	$I_C = 10 \text{mA}, I_B = 0$	40		V
$BV_{EBO}$	Emitter-Base Breakdown Voltage	$I_E = 10 \mu\text{A}, I_C = 0$	6		V
$I_{CBO}$	Collector Cut-Off Current	$V_{CB} = 60 \text{V}, I_E = 0$		0.01	$\mu\text{A}$
$h_{FE}$	DC Current Gain <sup>(2)</sup>	$V_{CE} = 10 \text{V}, I_C = 0.1 \text{mA}$	35		
		$V_{CE} = 10 \text{V}, I_C = 1 \text{mA}$	50		
		$V_{CE} = 10 \text{V}, I_C = 10 \text{mA}$	75		
		$V_{CE} = 10 \text{V}, I_C = 150 \text{mA}$	100	300	
		$V_{CE} = 10 \text{V}, I_C = 500 \text{mA}$	40		
$V_{CE(sat)}$	Collector-Emitter Saturation Voltage <sup>(2)</sup>	$I_C = 150 \text{mA}, I_B = 15 \text{mA}$		0.3	V
		$I_C = 500 \text{mA}, I_B = 50 \text{mA}$		1.0	
$V_{BE(sat)}$	Base-Emitter Saturation Voltage <sup>(2)</sup>	$I_C = 150 \text{mA}, I_B = 15 \text{mA}$	0.6	1.2	V
		$I_C = 500 \text{mA}, I_B = 50 \text{mA}$		2.0	
$f_T$	Current Gain Bandwidth Product	$I_C = 20 \text{mA}, V_{CE} = 20 \text{V}, f = 100 \text{MHz}$	300		MHz
$C_{ob}$	Output Capacitance	$V_{CB} = 10 \text{V}, I_E = 0, f = 1 \text{MHz}$		8	pF
NF	Noise Figure	$I_C = 100 \mu\text{A}, V_{CE} = 10 \text{V}, R_S = 1 \text{k}\Omega, f = 1 \text{kHz}$		4	dB
$t_{ON}$	Turn-On Time	$V_{CC} = 30 \text{V}, I_C = 150 \text{mA}, V_{BE} = 0.5 \text{V}, I_{B1} = 15 \text{mA}$		35	ns
$t_{OFF}$	Turn-Off Time	$V_{CC} = 30 \text{V}, I_C = 150 \text{mA}, I_{B1} = I_{B2} = 15 \text{mA}$		285	ns

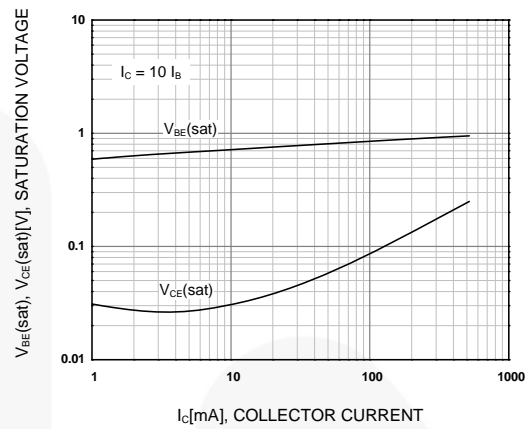
**Note:**

2. Pulse test: Pulse width  $\leq 300 \mu\text{s}$ , duty cycle  $\leq 2\%$

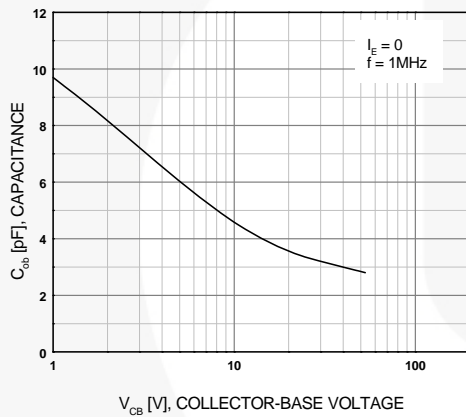
## Typical Performance Characteristics



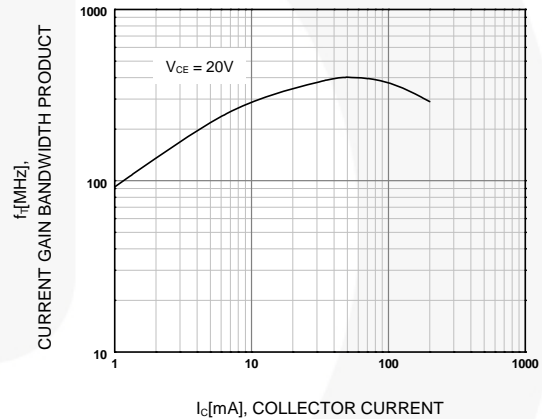
**Figure 1. DC Current Gain**



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

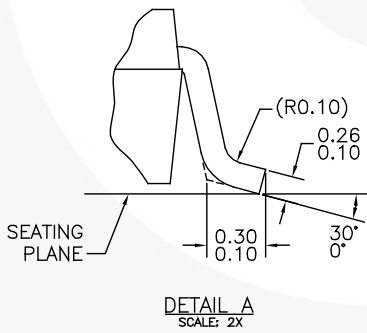
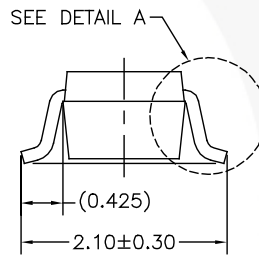
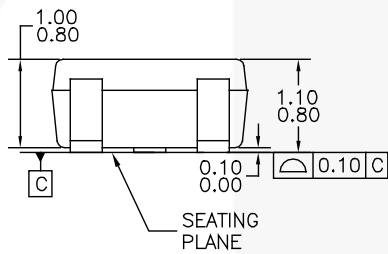
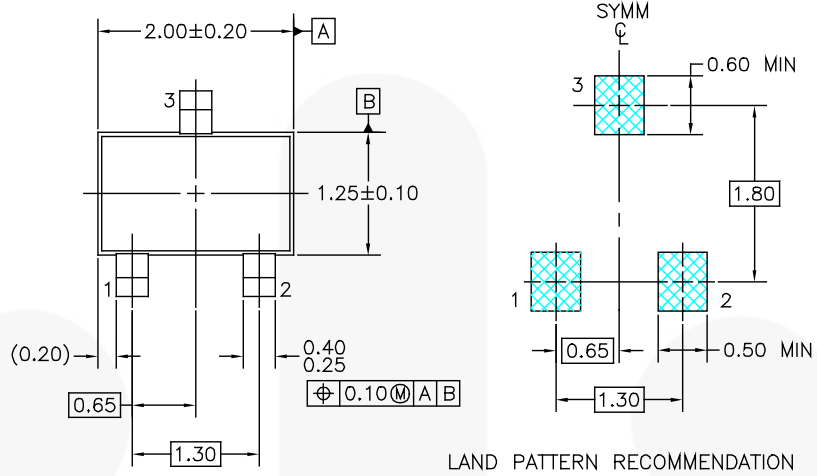


**Figure 3. Output Capacitance**



**Figure 4. Current Gain Bandwidth Product**

### Physical Dimensions



NOTES: UNLESS OTHERWISE SPECIFIED

- A) THIS PACKAGE CONFORMS TO EIAJ SC-70.
- B) ALL DIMENSIONS ARE IN MILLIMETERS.
- C) DIMENSIONS DO NOT INCLUDE BURRS OR MOLD FLASH.

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**Figure 7. 3-LEAD, SC70, EIAJ SC-70, 1.25 MM WIDE**



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