

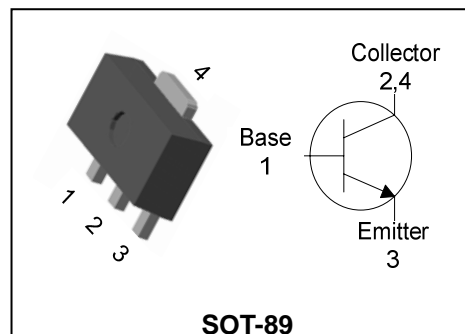
## Descriptions

- General purpose amplifier
- High current application

## Features

- High  $h_{FE}$  :  $h_{FE}=160\sim 320$
- Low collector saturation voltage  
:  $V_{CE(sat)}=0.5V(MAX.)$

## PIN Connection



## Ordering Information

Type No.	Marking	Package Code
STC221F	C221 YWW	SOT-89

C221: DEVICE CODE, YWW(Y : Year code, WW : Weekly code)

## Absolute maximum ratings

( $T_a=25^\circ C$ )

Characteristic	Symbol	Ratings	Unit
Collector-Base voltage	$V_{CBO}$	45	V
Collector-Emitter voltage	$V_{CEO}$	40	V
Emitter-Base voltage	$V_{EBO}$	5	V
Collector current	$I_C$	0.8	A(DC)
	$I_{CP}^*$	1.6	A(Pulse)
Collector power dissipation	$P_C$	0.5	W
	$P_C^{**}$	1	
Junction temperature	$T_J$	150	$^\circ C$
Storage temperature	$T_{stg}$	-55~150	$^\circ C$

Characteristic		Symbol	Typ.	Max	Unit
Thermal resistance	Junction-ambient	$R_{th(J-A)}$	-	250.0	$^\circ C/W$
		$R_{th(J-A)}^{**}$	-	125.0	

\* : Single pulse,  $t_p=300\ \mu s$

\*\* : When mounted on ceramic substrate( $250\ mm^2 \times 0.8t$ )

## Electrical Characteristics

(Ta=25°C)

Characteristic	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Collector-Base breakdown voltage	$BV_{CBO}$	$I_C=100\mu A, I_E=0$	45	-	-	V
Collector-Emitter breakdown voltage	$BV_{CEO}$	$I_C=1mA, I_B=0$	40	-	-	V
Emitter-Base breakdown voltage	$BV_{EBO}$	$I_E=10\mu A, I_C=0$	5	-	-	V
Collector cut-off current	$I_{CBO}$	$V_{CB}=45V, I_E=0$	-	-	0.1	$\mu A$
Emitter cut-off current	$I_{EBO}$	$V_{EB}=5V, I_C=0$	-	-	0.1	$\mu A$
DC current gain	$h_{FE}^*$	$V_{CE}=1V, I_C=100mA$	160	-	320	-
Collector-Emitter saturation voltage	$V_{CE(sat)}$	$I_C=500mA, I_B=50mA$	-	-	0.5	V
Transition frequency	$f_T$	$V_{CE}=5V, I_C=10mA$	-	150	-	MHz
Collector output capacitance	$C_{ob}$	$V_{CB}=10V, I_E=0, f=1MHz$	-	8	-	pF

\* Note 1)  $h_{FE}$  Rank : 160~320 only

\* Note 2) Pulse Tester : Pulse Width  $\leq 300\mu s$ , Duty Cycle  $\leq 2.0\%$

Electrical Characteristic Curves

Fig. 1  $P_C - T_a$

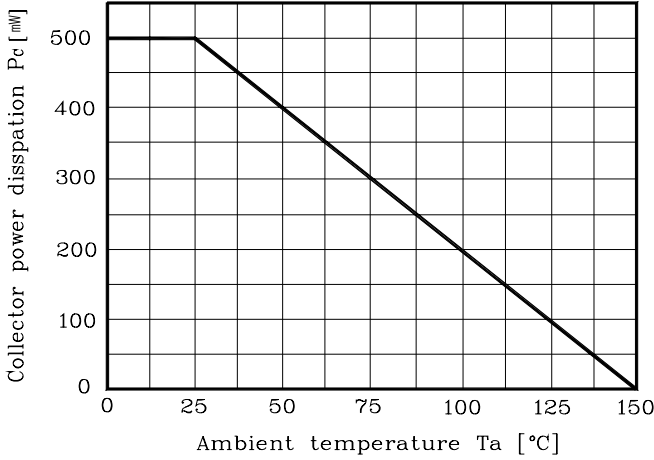


Fig. 2  $I_C - V_{BE}$

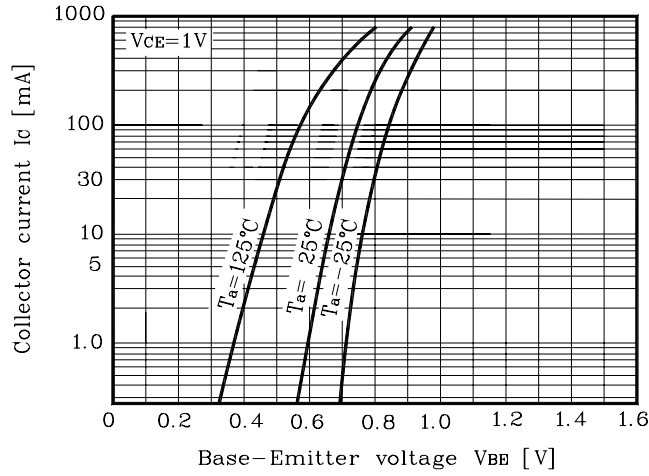


Fig. 3  $V_{CE(sat)} - I_C$

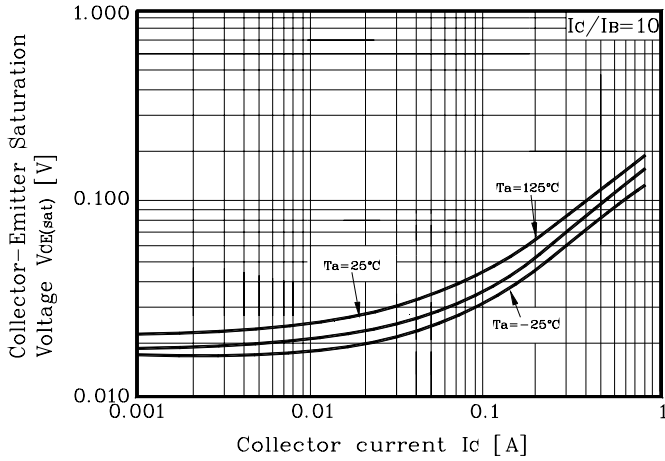


Fig. 4  $I_C - V_{CE}$

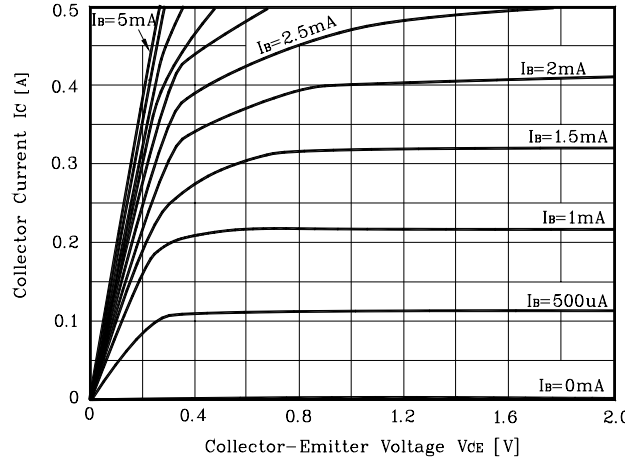


Fig. 5  $I_C - V_{CE}$

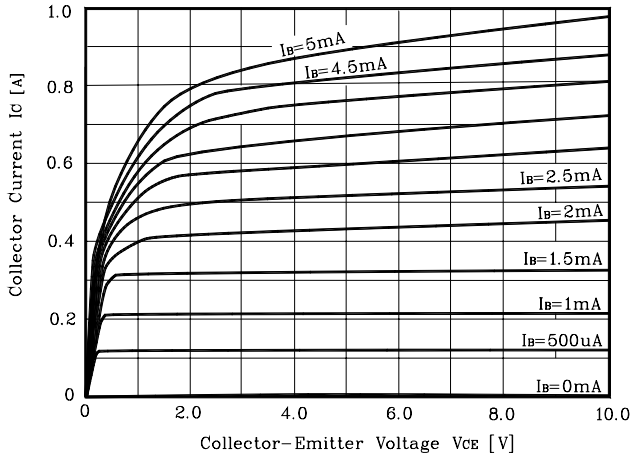
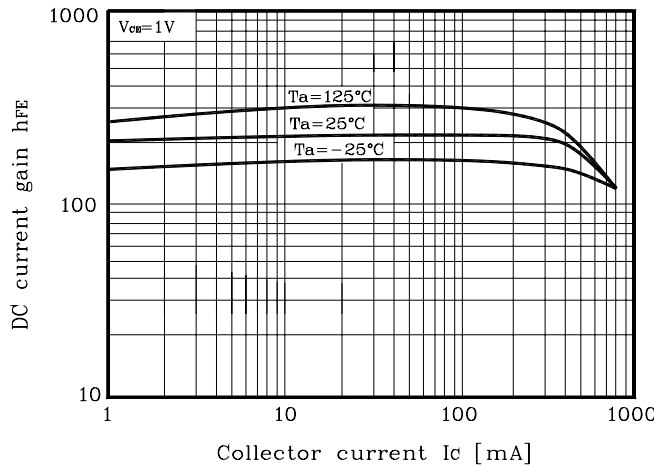
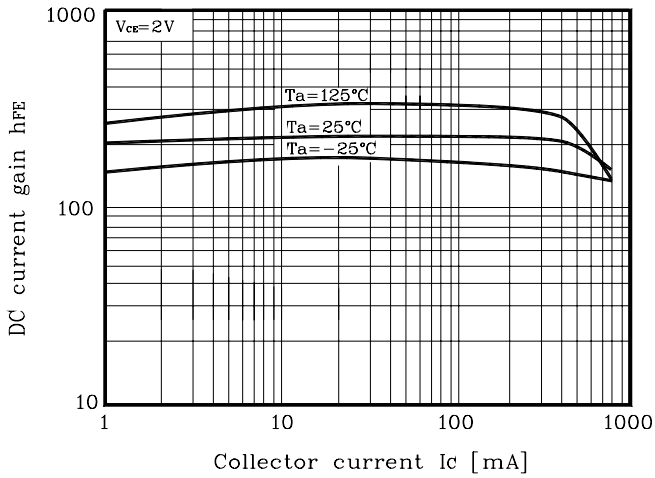


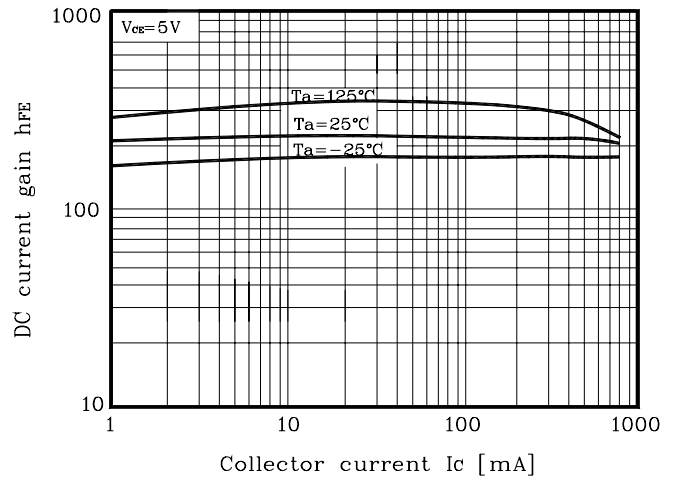
Fig. 6  $h_{FE} - I_C$



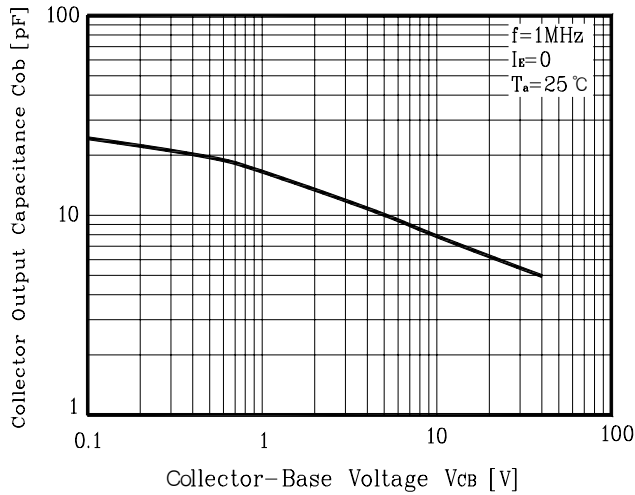
**Fig. 7  $h_{FE} - I_C$**



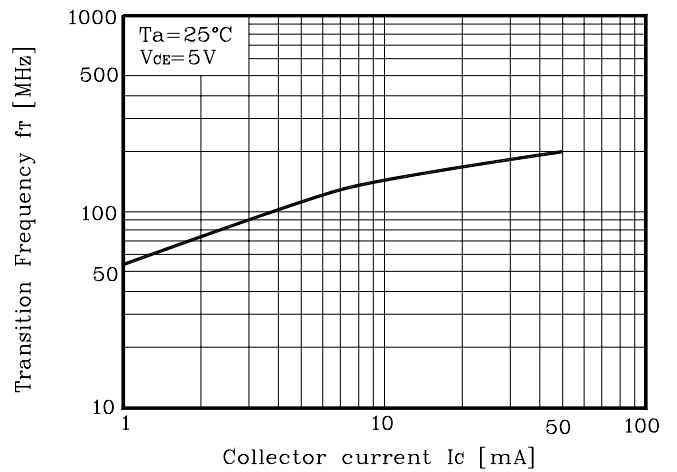
**Fig. 8  $h_{FE} - I_C$**



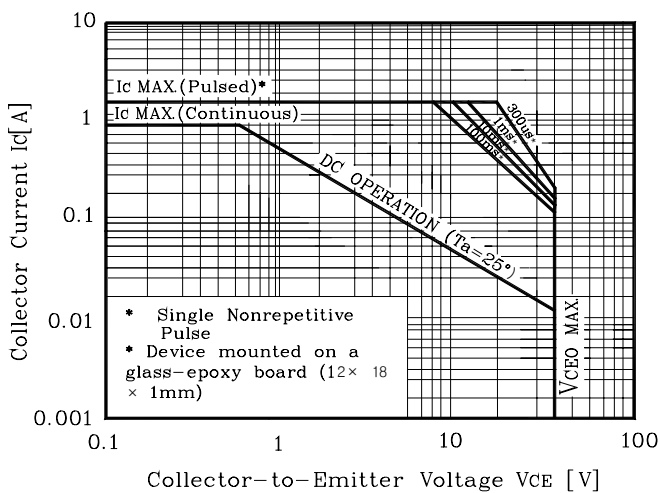
**Fig. 9  $C_{ob} - V_{CB}$**



**Fig. 10  $f_T - I_C$**



**Fig. 11 Safe operating Area**





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