

# 2SA1602A

FOR LOW FREQUENCY AMPLIFY APPLICATION  
SILICON PNP EPITAXIAL TYPE(Super mini type)

## DESCRIPTION

2SA1602A is a super mini package resin sealed silicon PNP epitaxial transistor. It is designed for low frequency voltage application.

## FEATURE

- Small collector to emitter saturation voltage.  
VCE(sat)=-0.3V max
- Excellent linearity of DC forward gain.
- Super mini package for easy mounting

## APPLICATION

For Hybrid IC, small type machine low frequency voltage Amplify application.

## MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings	Unit
V <sub>CBO</sub>	Collector to Base voltage	-50	V
V <sub>CEO</sub>	Collector to Emitter voltage	-50	V
V <sub>EBO</sub>	Emitter to Base voltage	-6	V
I <sub>O</sub>	Collector current	-200	mA
P <sub>c</sub>	Collector dissipation	150	mW
T <sub>j</sub>	Junction temperature	+125	°C
T <sub>stg</sub>	Storage temperature	-55 ~ +125	°C

## ELECTRICAL CHARACTERISTICS (Ta=25°C)

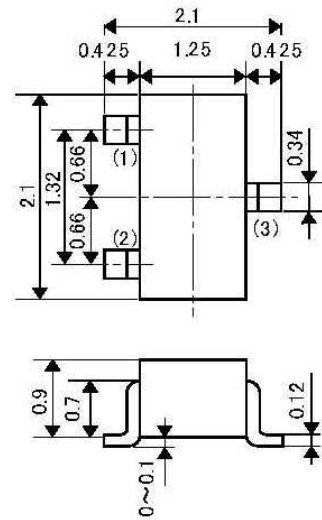
Parameter	Symbol	Test conditions	Limits			Unit
			Min	Typ	Max	
C to E break down voltage	V(BR) <sub>CEO</sub>	I <sub>C</sub> =-100 μA, R <sub>BE</sub> =∞	-50	-	-	V
Collector cut off current	ICBO	V <sub>CB</sub> =-50V, I <sub>E</sub> =0mA	-	-	-0.1	μA
Emitter cut off current	IEBO	V <sub>EB</sub> =-6V, I <sub>C</sub> =0mA	-	-	-0.1	μA
DC forward current gain	hFE	V <sub>CE</sub> =-6V, I <sub>C</sub> =-1mA ※	150	-	500	
DC forward current gain	hFE	V <sub>CE</sub> =-6V, I <sub>C</sub> =-0.1mA	90	-	-	
C to E Saturation Voltage	VCE(sat)	I <sub>C</sub> =-100mA, I <sub>B</sub> =-10mA	-	-	-0.3	V
Gain bandwidth product	fT	V <sub>CE</sub> =-6V, I <sub>E</sub> =-10mA	-	200	-	MHz
Collector output capacitance	Cob	V <sub>CB</sub> =-6V, I <sub>E</sub> =0, f=1MHz	-	4.0	-	pF

※ It shows hFE classification in below table.

Item	E	F
hFE Item	150~300	250~500

## OUTLINE DRAWING

Unit: mm



JEITA: SC-70

## TERMINAL CONNECTER

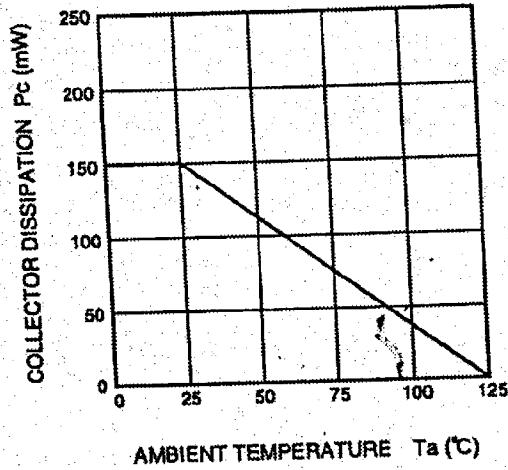
- ①: BASE
- ②: EMITTER
- ③: COLLECTOR

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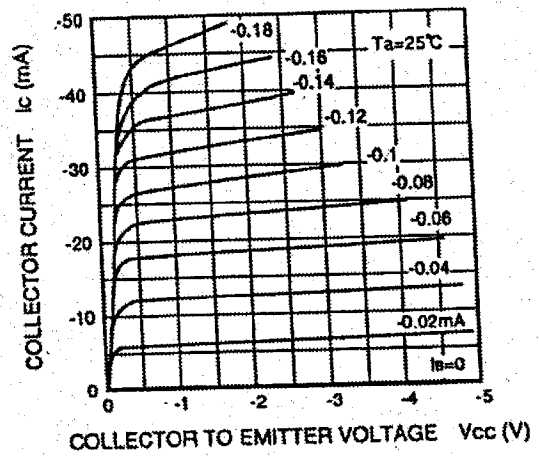
For Low Frequency Amplify Application  
Silicon PNP Epitaxial Type (Super Mini type)

## TYPICAL CHARACTERISTICS

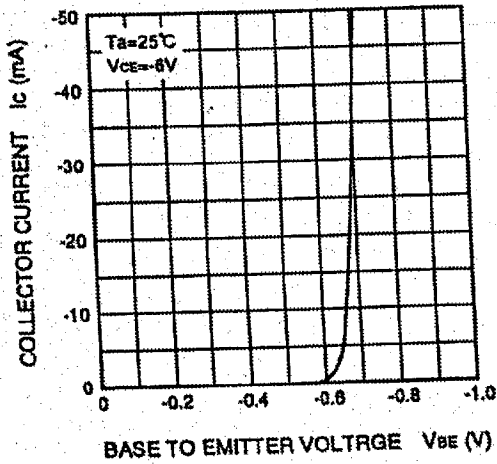
COLLECTOR DISSIPATION  
VS. AMBIENT TEMPERATURE



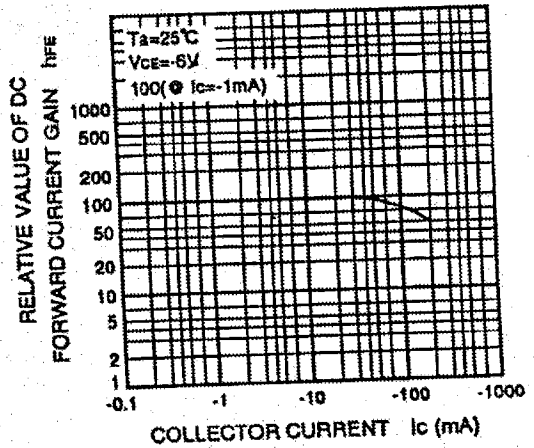
COMMON EMITTER OUTPUT



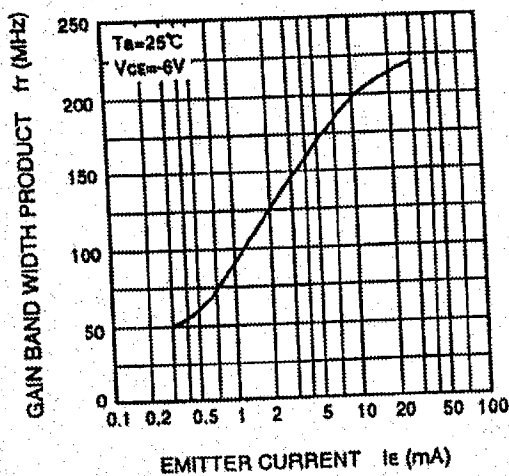
COMMON EMITTER TRANSFER



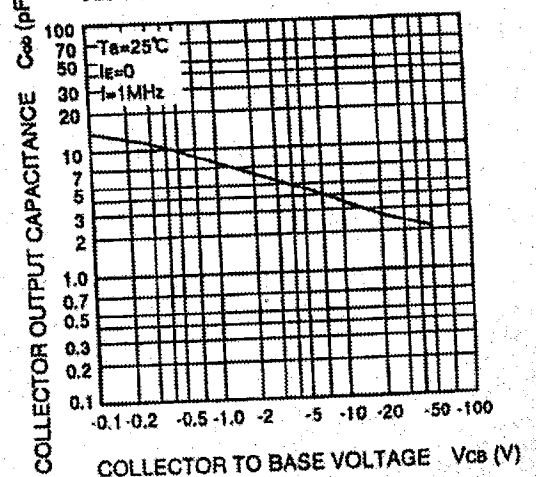
DC FORWARD CURRENT GAIN  
VS. COLLECTOR CURRENT



GAIN BAND WIDTH PRODUCT  
VS. EMITTER CURRENT



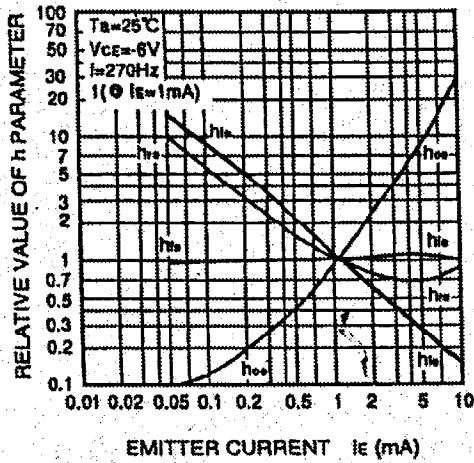
COLLECTOR OUTPUT CAPACITANCE  
VS. COLLECTOR TO BASE VOLTAGE



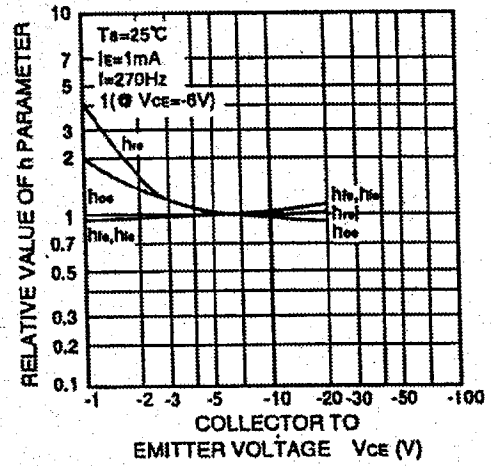
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**h PARAMETER VS.  
EMITTER CURRENT**



**h PARAMETER VS.  
COLLECTOR TO EMITTER VOLTAGE**



**COMMON EMITTER h PARAMETER (TYPICAL VALUE)**

Symbol	Parameter	Test conditions	Limits	Unit
$h_{ie}$	Closed loop small signal input impedance	$T_a=25^\circ\text{C}$	7.0	$k\Omega$
$h_{re}$	Open loop small signal reverse voltage amplification factor	$V_{CE}=-6\text{V}$	0.1	$\times 10^{-3}$
$h_{fe}$	Closed loop small signal forward current amplification factor	$I_E=1\text{mA}$	250	—
$h_{oe}$	Open loop small signal output admittance	$f=270\text{Hz}$	18	$\mu\text{S}$



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