

2SA1989

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

DESCRIPTION

2SA1989 is a ultra 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 (@ I_C=-30mA, I_B=-1.5mA)
- Excellent linearity of DC forward gain.
- Super mini package for easy mounting

APPLICATION

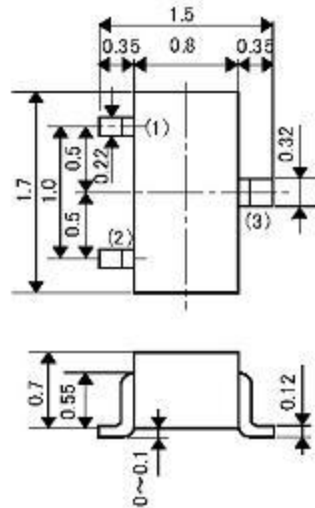
For Hybrid IC, small type machine low frequency voltage Amplify application.

MAXIMUM RATINGS (T_a=25°C)

Symbol	Parameter	Ratings	Unit
V _{CBO}	Collector to Base voltage	-50	V
V _{CEO}	Collector to Emitter voltage	-50	V
V _{EBO}	Emitter to Base voltage	-6	V
I _O	Collector current	-100	mA
P _c	Collector dissipation	150	mW
T _j	Junction temperature	+150	°C
T _{stg}	Storage temperature	-55~+150	°C

OUTLINE DRAWING

Unit:mm



JEITA: SC-75A

TERMINAL CONNECTER

- ①: BASE
- ②: EMITTER
- ③: COLLECTOR

ELECTRICAL CHARACTERISTICS (T_a=25°C)

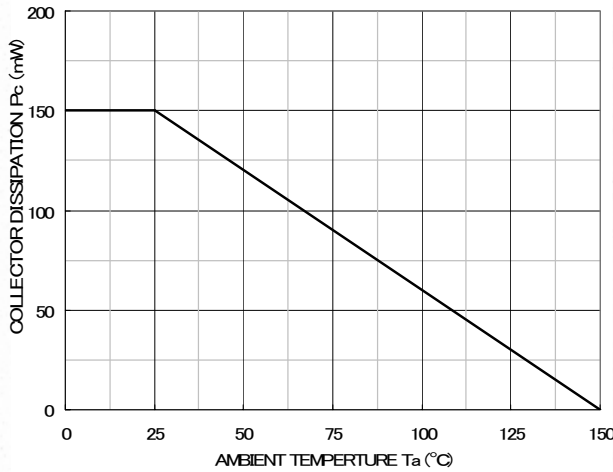
Parameter	Symbol	Test conditions	Limits			Unit
			Min	Typ	Max	
C to E break down voltage	V(BR) _{CEO}	I _C =-100μA, R _{BE} =∞	-50	-	-	V
Collector cut off current	ICBO	V _{CB} =-50V, I _E =0mA	-	-	-0.5	μA
Emitter cut off current	IEBO	V _{EB} =-4V, I _C =0mA	-	-	-0.5	μA
DC forward current gain	hFE	V _{CE} =-6V, I _C =-1mA	120	-	820	
DC forward current gain	hFE	V _{CE} =-6V, I _C =-0.1mA	70	-	-	
C to E Saturation Voltage	VCE(sat)	I _C =-30mA, I _B =-1.5mA	-	-	-0.3	V
Gain bandwidth product	fT	V _{CE} =-6V, I _E =10mA	-	200	-	MHz
Collector output capacitance	Cob	V _{CB} =-6V, I _E =0, f=1MHz	-	2.5	-	pF

※) It shows hFE classification in below table.

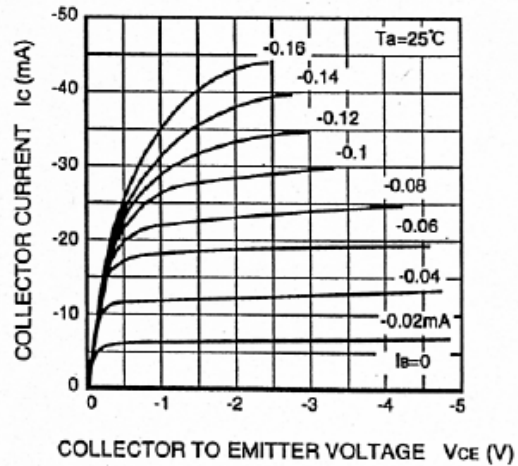
Item	Q	R	S	T
hFE Item	120~270	180~390	270~560	390~820

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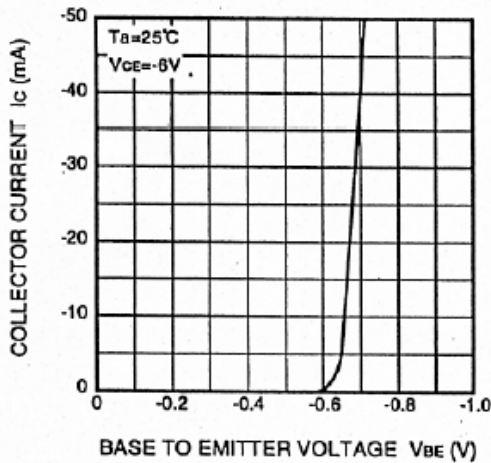
COLLECTOR DISSIPATION VS.AMBIENT TEMPERATURE



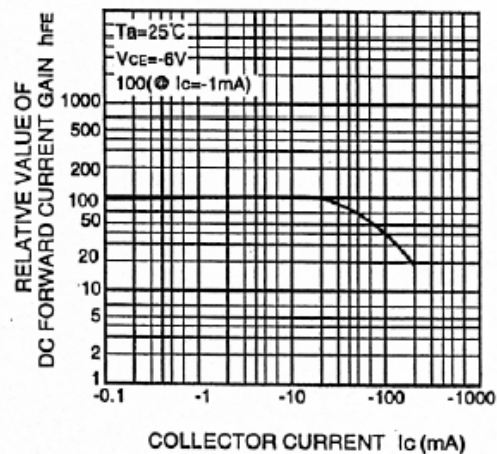
COMMON EMITTER OUTPUT



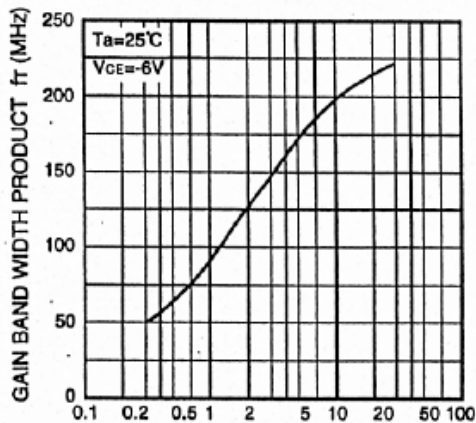
COMMON EMITTER TRANSFER



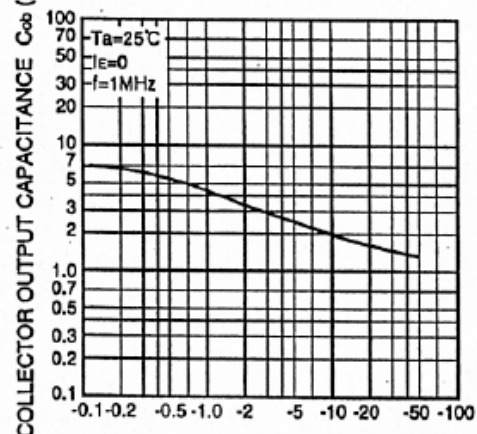
DC FORWARD CURRENT GAIN VS. COLLECTOR CURRENT



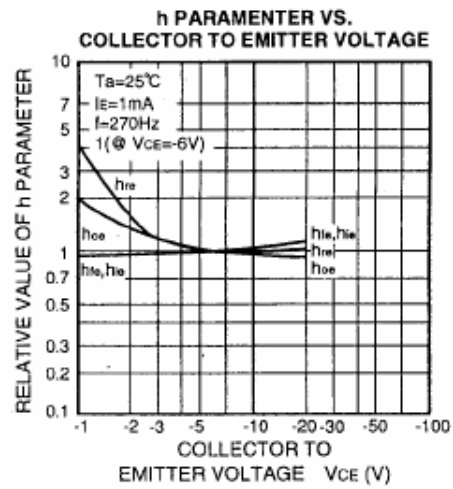
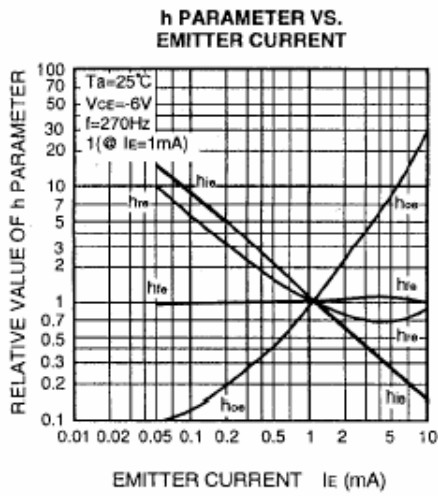
GAIN BAND WIDTH PRODUCT VS. EMITTER CURRENT



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



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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	$\text{k}\Omega$
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	μS



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