

2SA1235A 2SA1602A

2SA1993

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

FEATURE

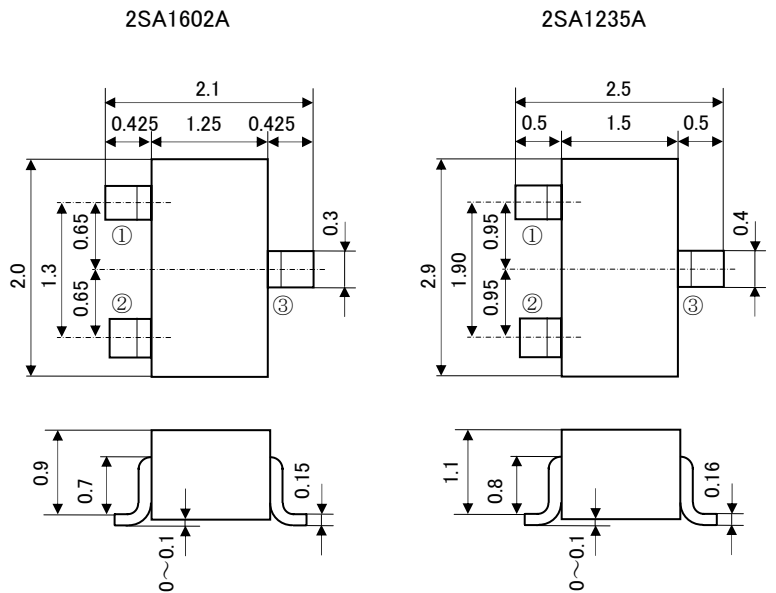
- Super mini package for easy mounting
- Excellent linearity of DC forward gain
- Small collector to emitter saturation voltage
VCE(sat)=-0.3V max

APPLICATION

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

OUTLINE DRAWING

Unit: mm



JEITA: SC-70
JEDEC: -

TERMINAL CONNECTER

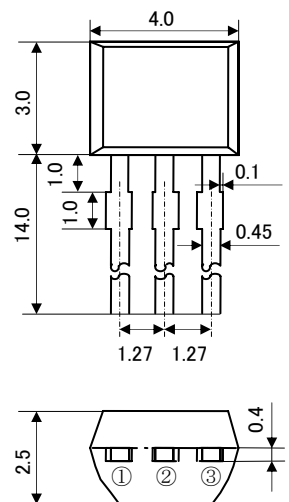
- ①: BASE
- ②: EMITTER
- ③: COLLECTOR

JEITA: SC-59
JEDEC: TO-236 類似

TERMINAL CONNECTER

- ①: BASE
- ②: EMITTER
- ③: COLLECTOR

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JEITA: -
JEDEC: -

TERMINAL CONNECTER

- ①: EMITTER
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MAXIMUM RATINGS (Ta=25°C)

Symbol	Parameter	Ratings			Unit
		2SA1235A	2SA1602A	2SA1993	
V _{CBO}	Collector to Base voltage	-60	-60	-50	V
V _{EBO}	Emitter to Base voltage	-6			V
V _{CEO}	Collector to Emitter voltage	-50			V
I _C	Collector current	200			mA
P _C	Collector dissipation	200	200	450	mW
T _J	Junction temperature	+150			°C
T _{stg}	Storage temperature	-55~+150			°C

ELECTRICAL CHARACTERISTICS (Ta=25°C)

Parameter	Symbol	Test conditions	Limits			Unit
			Min	Typ	Max	
V _{(BR)CEO}	C to E break down voltage	I _C = -100 μA, R _{BE} = ∞	-50			V
I _{CBO}	Collector cut off current	2SA1993			-0.1	μA
	Emitter cut off current	2SA1235A, 2SA1602A			-0.1	μA
I _{EBO}	DC forward current gain	V _{EB} = -6V, I _C = 0			-0.1	μA
h _{FE} *	DC forward current gain	V _{CE} = -6V, I _C = -1mA	150		500	—
h _{FE}	C to E Saturation Voltage	2SA1993	50			—
		2SA1235A, 2SA1602A	90			—
V _{CE(sat)}	Gain bandwidth product	I _C = -100mA, I _B = -10mA			-0.3	V
f _T	Collector output capacitance	V _{CE} = -6V, I _E = 10mA		200		MHz
Cob	C to E break down voltage	V _{CB} = -6V, I _E = 0, f = 1MHz		4.0		pF
NF	Noise figure	V _{CE} = -6V, I _E = 0.3mA, f = 100Hz, R _G = 10kΩ			20	dB

*: It shows hFE classification in below table.

		E	F
hFE	2SA1235A	150~300	250~500
	2SA1602A		
	2SA1993		

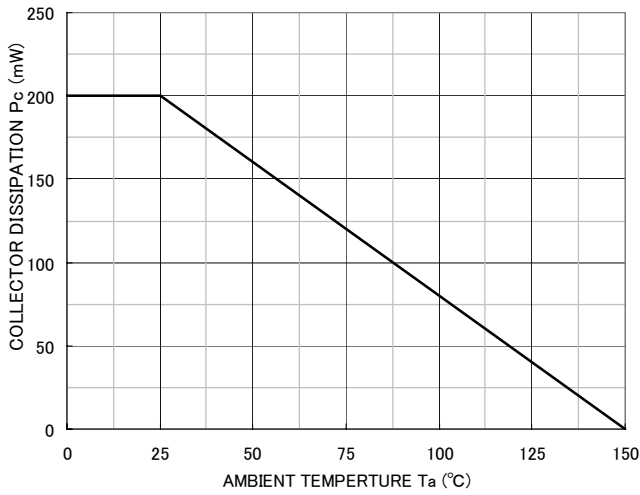
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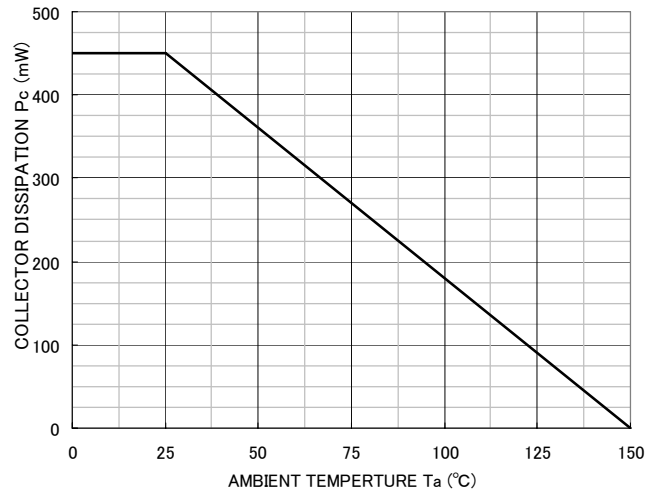
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COLLECTOR DISSIPATION VS.AMBIENT TEMPERATURE



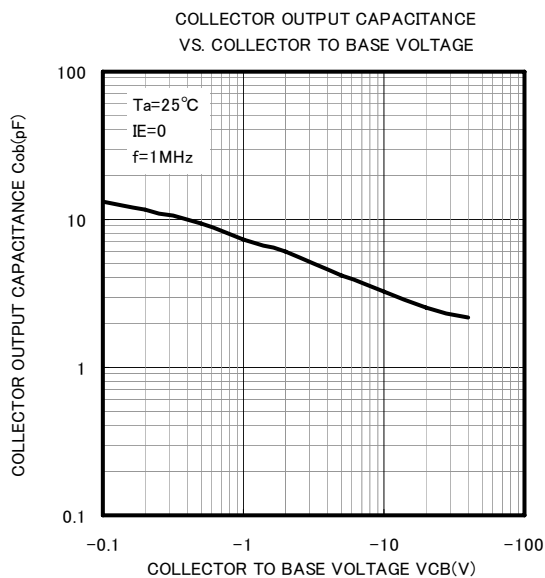
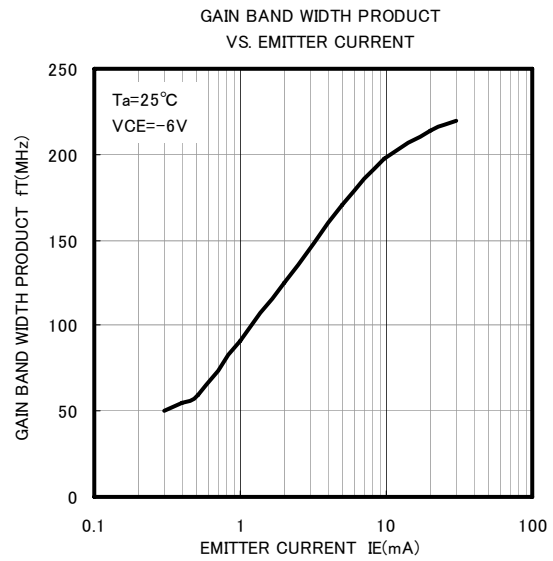
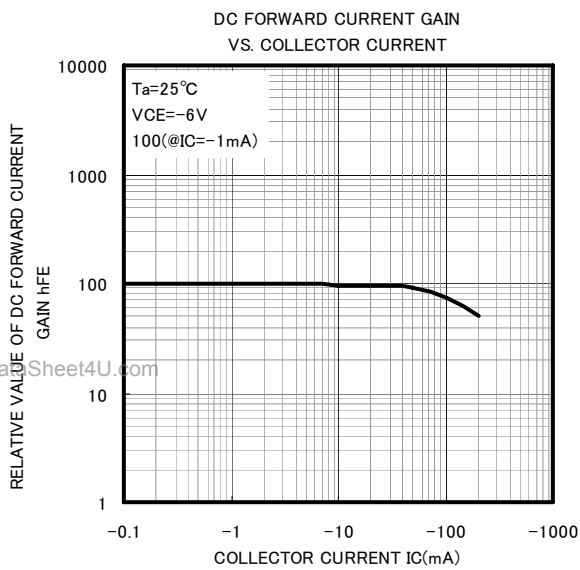
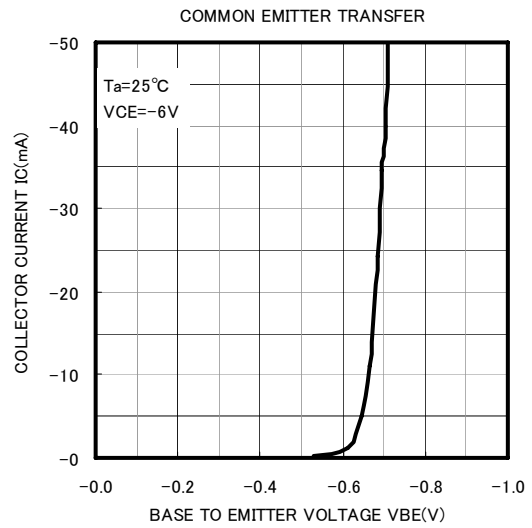
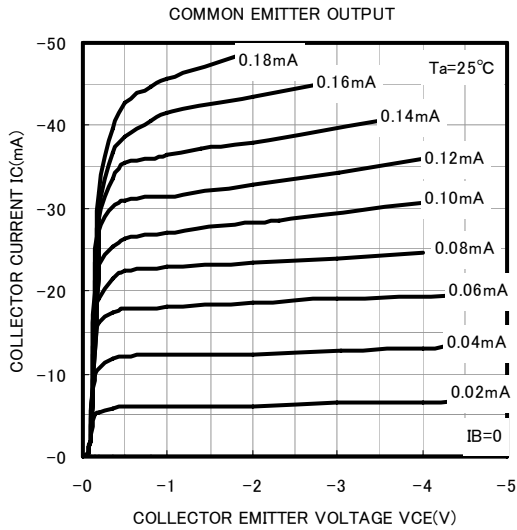
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COLLECTOR DISSIPATION VS.AMBIENT TEMPERATURE



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