

2SA1235A 2SA1602A

2SA1993

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

FEATURE

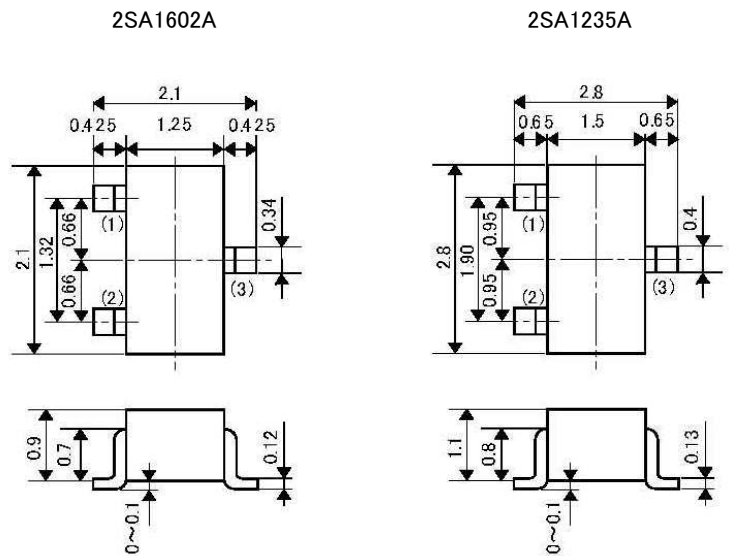
- Super mini package for easy mounting
- Excellent linearity of DC forward gain
- Small collector to emitter saturation voltage
VCE(sat)=-0.3V max

APPLICATION

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

OUTLINE DRAWING

Unit : mm



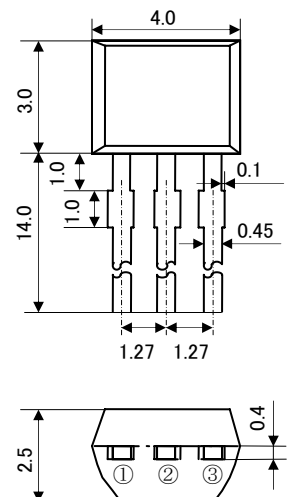
JEITA: SC-70
JEDEC: -

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
②: COLLECTOR
③: BASE

2SA1235A 2SA1602A**2SA1993**FOR LOW FREQUENCY AMPLIFY APPLICATION
SILICON PNP EPITAXIAL TYPE(Super mini type)**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	$I_C = -100 \mu A, R_{BE} = \infty$	-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	$V_{CE} = -6V, I_E = 0.3mA, f = 100Hz, R_G = 10k \Omega$			20	dB

*: It shows hFE classification in below table.

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

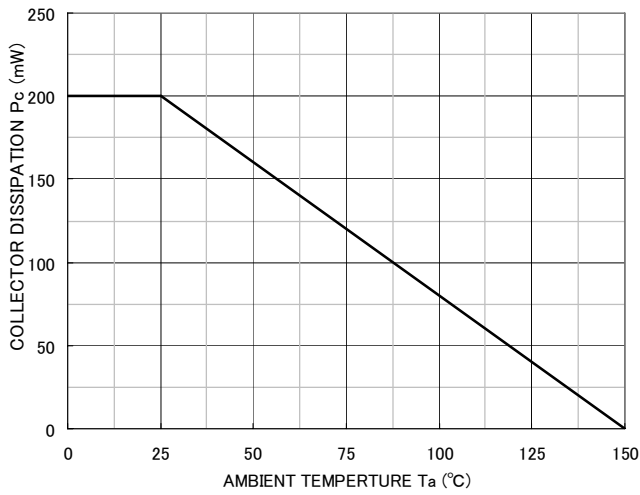
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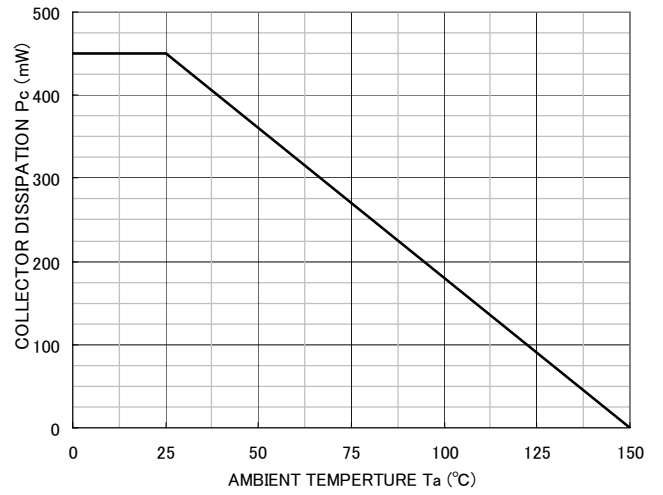
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COLLECTOR DISSIPATION VS.AMBIENT TEMPERTURE



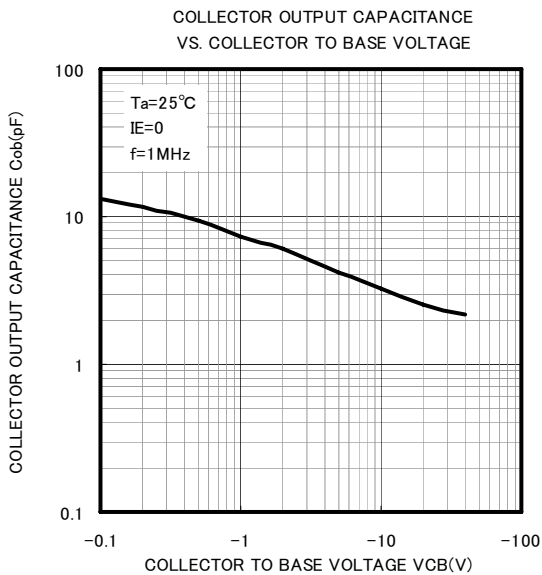
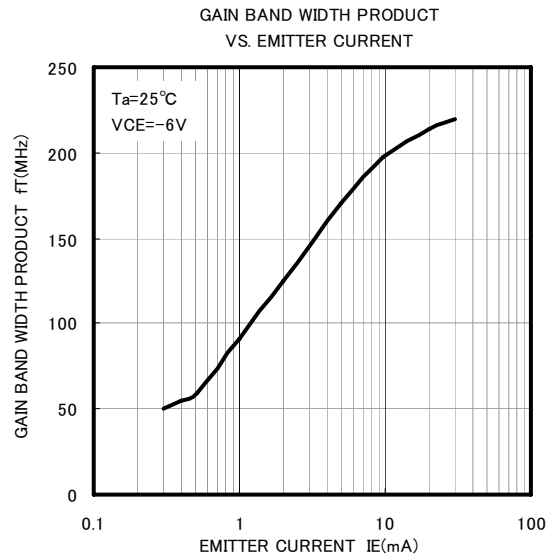
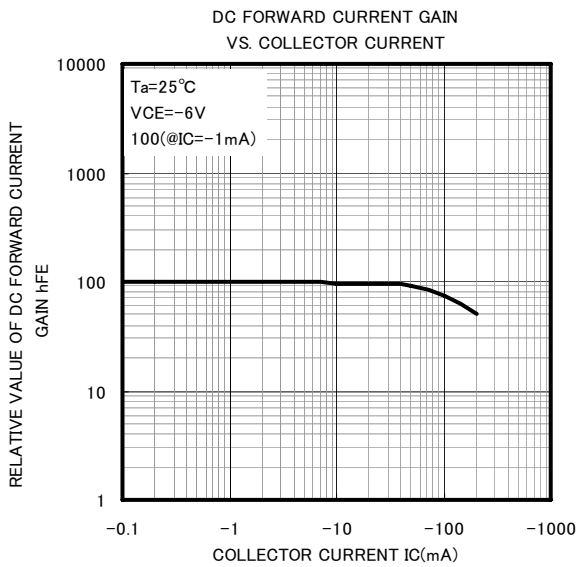
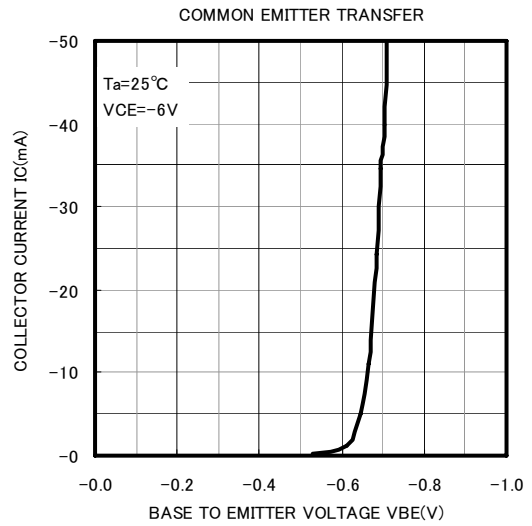
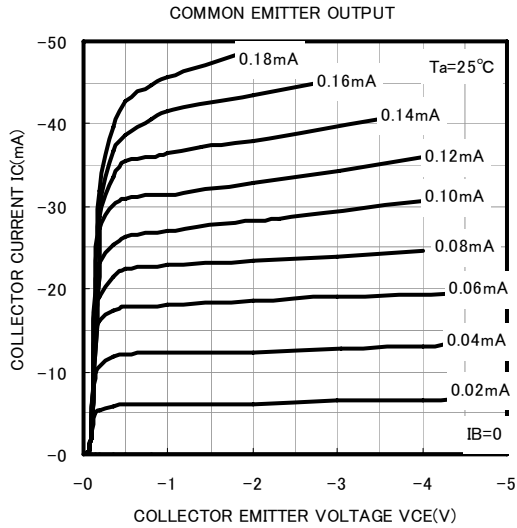
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COLLECTOR DISSIPATION VS.AMBIENT TEMPERTURE



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