2SA847A

FOR LOW FREQUENCY LOW NOISE AMPLIFY APPLICATION SILICON PNP EPITAXIAL TYPE

DESCRIPTION

Mitsubishi 2SA847A is a silicon PNP epitaxial type high voltage low frequency low noise transistor. It has low noise at super low frequency range,low pulse noise and high current application of low current range. It is most suitable for low noise amplify application of high class pre-amplifier and main amplify.

FEATURE

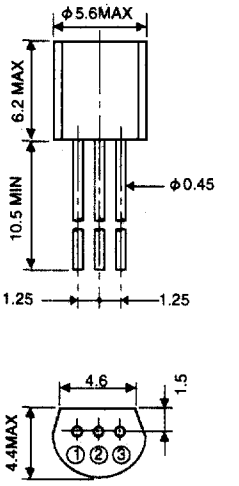
- ●High voltage V_{CEO}=-120V
- ●Low noise voltage,low pulse noise voltage
- ●High current amplification of low current range,excellent linearity
- ●High gain band width product f_T=150MHz typ

APPLICATION

Low noise voltage amplify,level voltage amplify,DC amplify.

OUTLINE DRAWING

Unit:mm



TERMINAL CONNECTOR

①: BASE
②: COLLECTOR
③: EMITTER

EIAJ : SC-43
JEDEC :TO-92 resemblance

Note)
The dimension without tolerance represent central value.

MAXIMUM RATINGS (Ta=25℃)

Symbol	Parameter	Ratings	Unit
V_{CBO}	Collector to Base voltage	-120	V
V_{EBO}	Emitter to Base voltage	-5	V
V_{CEO}	Collector to Emitter voltage	-120	V
I_C	Collector current	-50	mA
P_C	Collector dissipation(Ta=25℃)	200	mW
T_j	Junction temperature	+125	℃
T_{stg}	Storage temperature	-50 to +125	℃

ELECTRICAL CHARACTERISTICS (Ta=25℃)

Symbol	Parameter		Test conditions	Limits			Unit
				Min	Typ	Max	
$V_{(BR)CEO}$	C to E break down voltage		I_C = -100 μA, R_{BE}= ∞	-120			V
I_{CBO}	Collector cut off current		V_{CB} = -100 V, I_E=0			-0.1	μA
I_{EBO}	Emitter cut off current		V_{EB} = -2 V, I_C=0			-0.1	μA
I_{CER}	Collector cut off current		V_{CE} = -120 V, R_{BE}=100kΩ			-10	μA
h_{FE} *	DC forward current gain		V_{CE} = -6V, I_C=-1mA	250		800	—
$V_{CE(sat)}$	C to E saturation voltage		I_C = -10 mA, I_B=-1mA			-0.6	V
f_T	Gain band width product		V_{CE}= -6V, I_E=1mA		150		MHz
C_{ob}	Collector output capacitance		V_{CB}= -6V, I_E= 0, f=1MHz		2.5		pF
NF	Noise figure		V_{CE}= -6V, I_E= 0.1mA, f=1kHz, R_G=10kΩ		0.5		dB
NV	Low frequency broadband noise voltage	effective value	V_{CE}= -10V, I_E= 1mA, R_G= 100kΩ, Gv= 80dB, (Refer to test circuit)			170	mV
NV_M		peaked value				1.7	V

* : It shows h_{FE} classification in right table.

Item	F	G
h_{FE}	250 to 500	400 to 800

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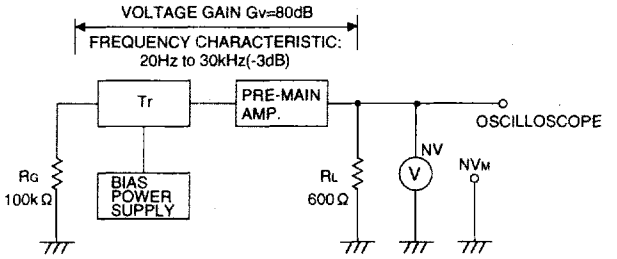
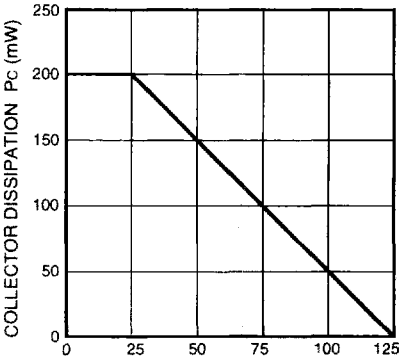
LOW FREQUENCY WIDE BAND NOISE VOLTAGE TEST CIRCUIT

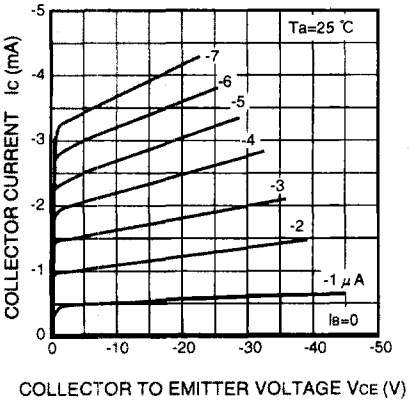


TYPICAL CHARACTERISTICS

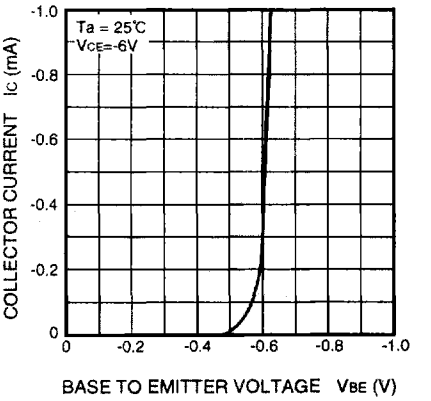
COLLECTOR DISSIPATION VS. AMBIENT TEMPERATURE



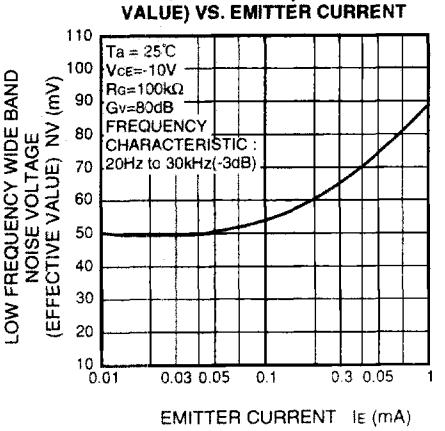
COMMON EMITTER OUTPUT



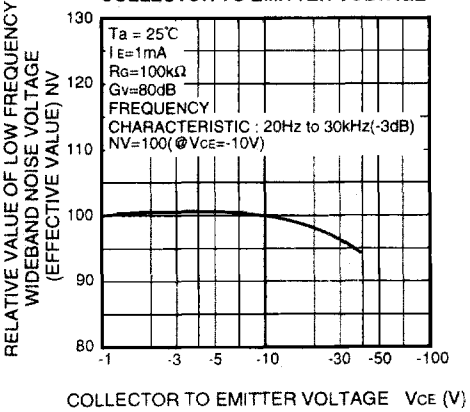
COMMON EMITTER TRANSFER



LOW FREQUENCY WIDE BAND NOISE VOLTAGE (EFFECTIVE VALUE) VS. EMITTER CURRENT



RELATIVE VALUE OF LOW FREQUENCY WIDE BAND NOISE VOLTAGE (EFFECTIVE VALUE) VS. COLLECTOR TO EMITTER VOLTAGE



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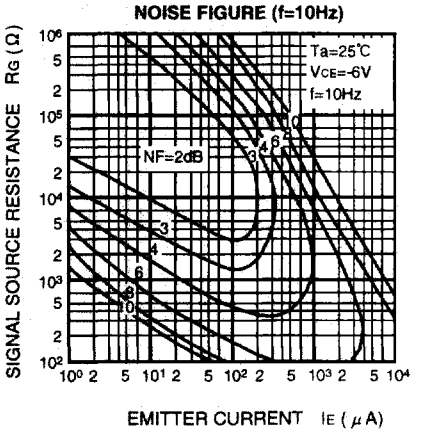
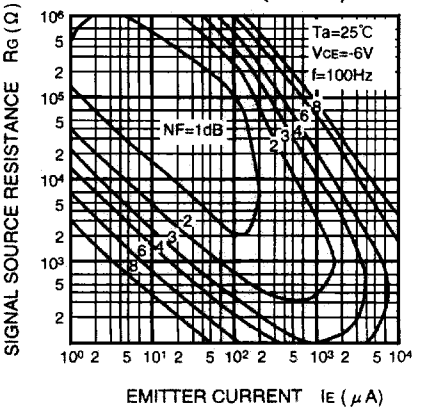
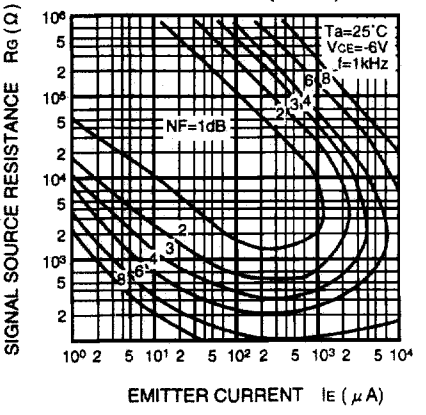
NOISE FIGURE (f=10Hz)



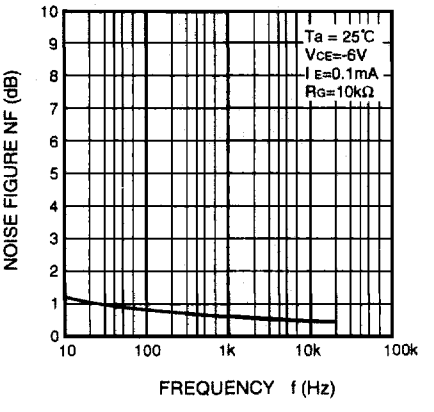
NOISE FIGURE (f=100Hz)



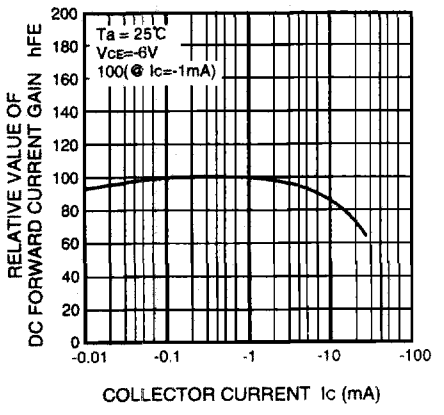
NOISE FIGUE (f=1kHz)



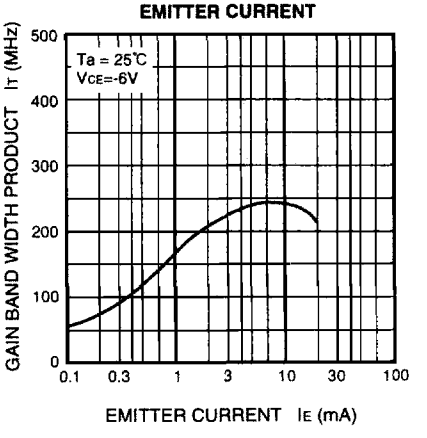
NOISE FIGURE VS. FREQUENCY



DC FORWARD CURRENT GAIN VS. COLLECTOR CURRENT



GAIN BAND WIDTH PRODUCT VS. EMITTER CURRENT



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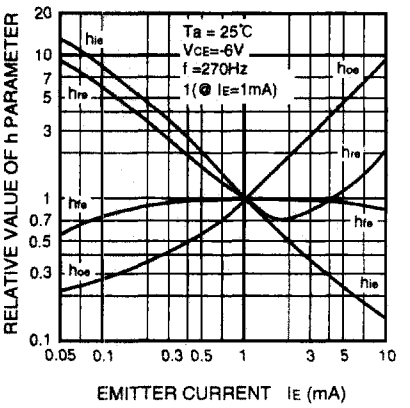
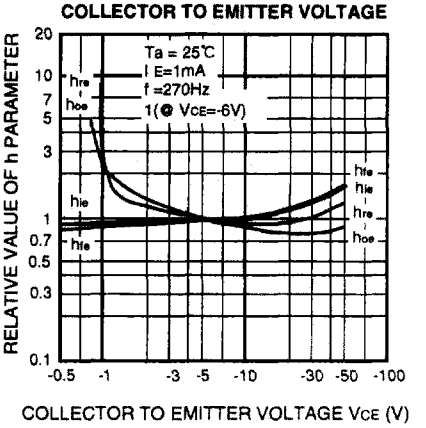
h PARAMETER VS. EMITTER CURRENT



h PARAMETER VS. COLLECTOR TO EMITTER VOLTAGE



COMMON EMITTER h PARAMETER (TYPICAL VALUE)

Symbol	Parameter	Test Conditions	Limits	Unit
hie	Closed loop small signal input impedance	Ta=25℃ VCE=-6V IE=1mA f=270Hz	14	kΩ
hre	Open loop small signal reverse voltage amplification factor		0.08	$\times 10^{-3}$
hfe	Closed loop small signal forward current amplification factor		500	—
hoe	Open loop small signal output admittance		19	μS

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