2SA1602

FOR LOW FREQUENCY AMPLIFY APPLICATION
SILICON PNP EPITAXIAL TYPE

DESCRIPTION

Mitsubishi 2SA1602 is a super mini package resin sealed silicon PNP epitaxial type transistor. It is designed for low frequency voltage amplify application.

Complementary with 2SC4154.

With the equivalent feature of SC-59 package 2SA1235.

FEATURE

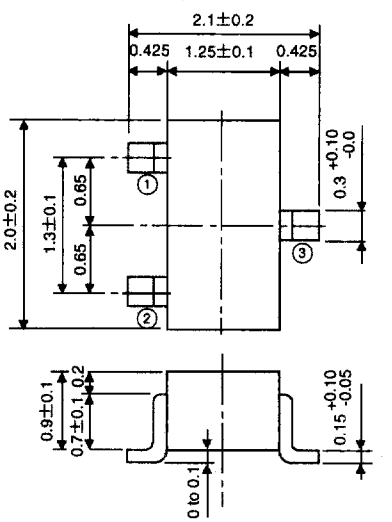
- Small collector to emitter saturation voltage
  $V_{CE(sat)}$=-0.3V max (@I_C=-100mA,I_B=-10mA)
- Excellent linearity of DC forward current gain
- Super mini package for easy mounting

APPLICATION

For hybrid IC,small type machine low frequency voltage amplify application.

OUTLINE DRAWING

Unit:mm



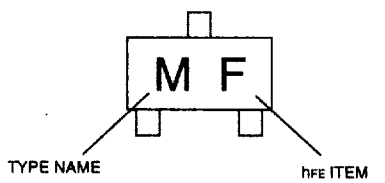
TERMINAL CONNECTOR

① : BASE
② : EMITTER
③ : COLLECTOR

EIAJ : SC-70

Note)
The dimension without tolerance represent central value.

MARKING



MAXIMUM RATINGS (Ta=25℃)

Symbol	Parameter	Ratings	Unit
V_{CBO}	Collector to Base voltage	-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(Ta=25℃)	150	mW
T_j	Junction temperature	+125	℃
T_{stg}	Storage temperature	-55 to +150	℃

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}=∞	-50			V
I_{CBO}	Collector cut off current	V_{CB}=-50V,I_E=0			-0.1	μA
I_{EBO}	Emitter cut off current	V_{EB}=-6V,I_C=0			-0.1	μA
h_{FE} *	DC forward current gain	V_{CE}=-6V,I_C=-1mA	150		800	—
h_{FE}	DC forward current gain	V_{CE}=-6V,I_C=-0.1mA	90			—
$V_{CE(sat)}$	C to E saturation voltage	I_C=-100mA,I_B=-10mA			-0.3	V
f_T	Gain band width product	V_{CE}=-6V,I_E=10mA		200		MHz
C_{ob}	Collector output capacitance	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 h_{FE} classification in right table.

Item	E	F	G
h_{FE}	150 to 300	250 to 500	400 to 800
Marking	ME	MF	MG

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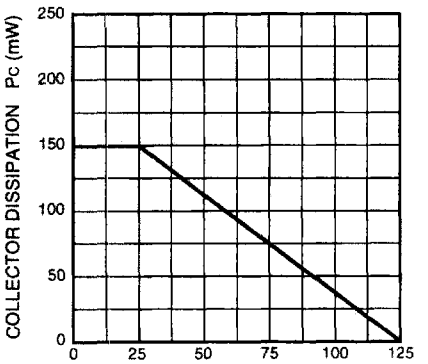
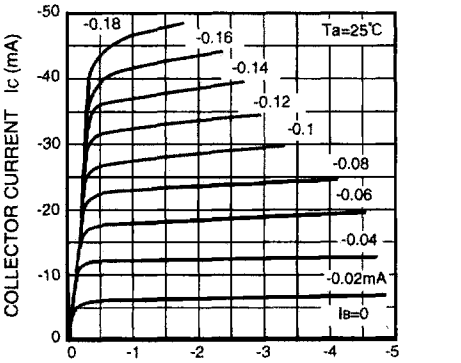
TYPICAL CHARACTERISTICS

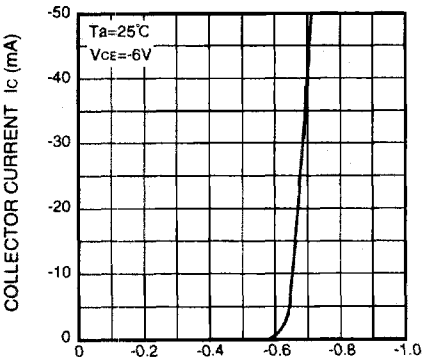
COLLECTOR DISSIPATION VS.AMBIENT TEMPERATURE



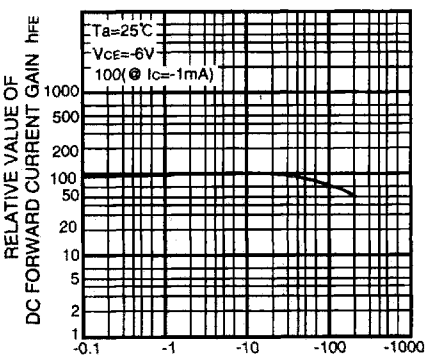
COMMON EMITTER OUTPUT



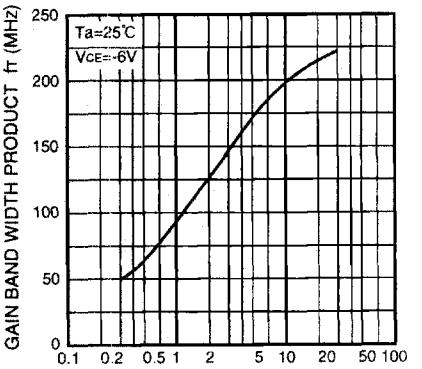
COMMON EMITTER TRANSFER



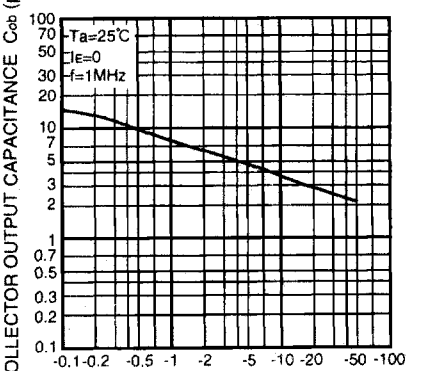
DC FORWARD CURRENT GAIN VS. COLLECTOR CURRENT



GAIN BAND WIDTH PRODUCT VS. EMITTER CURRENT



COLLECTOR OUTPUT CAPACITANCE VS. COLLECTOR TO BASE VOLTAGE



MITSUBISHI ELECTRIC

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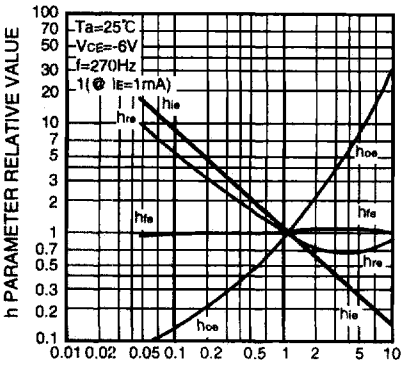
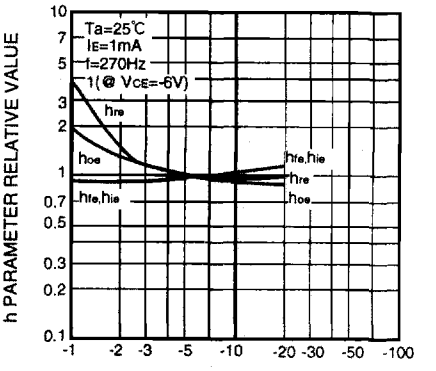
h PARAMETER VS. EMITTER CURRENT



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	7.0	kΩ
hre	Open loop small signal reverse voltage amplification factor		0.1	$\times 10^{-3}$
hfe	Closed loop small signal forward current amplification factor		250	—
hoe	Open loop small signal output admittance		18	μS