

**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**

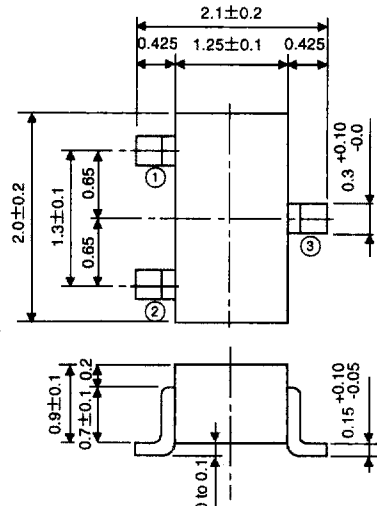
- Small collector to emitter saturation voltage  
 $V_{CE(sat)} = -0.3V$  max (@  $I_C = -100mA, I_B = -10mA$ )
- Excellent linearity of DC forward current gain
- Super mini package for easy mounting

**APPLICATION**

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

**OUTLINE DRAWING**

Unit:mm



TERMINAL CONNECTOR

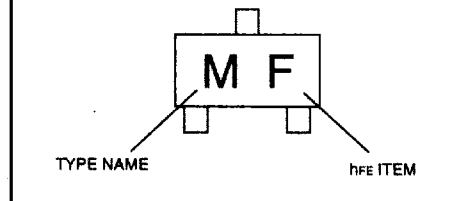
- ① : BASE
  - ② : EMITTER
  - ③ : COLLECTOR
- EIAJ : SC-70

Note)  
The dimension without tolerance represent central value.

**MAXIMUM RATINGS (Ta=25°C)**

Symbol	Parameter	Ratings	Unit
V <sub>CB0</sub>	Collector to Base voltage	-50	V
V <sub>EB0</sub>	Emitter to Base voltage	-6	V
V <sub>CE0</sub>	Collector to Emitter voltage	-50	V
I <sub>C</sub>	Collector current	-200	mA
P <sub>C</sub>	Collector dissipation(Ta=25°C)	150	mW
T <sub>J</sub>	Junction temperature	+125	°C
T <sub>stg</sub>	Storage temperature	-55 to +150	°C

**MARKING**



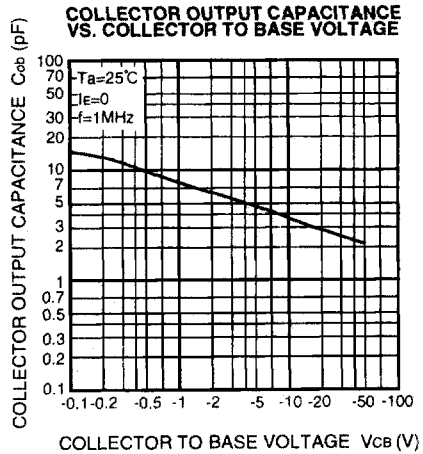
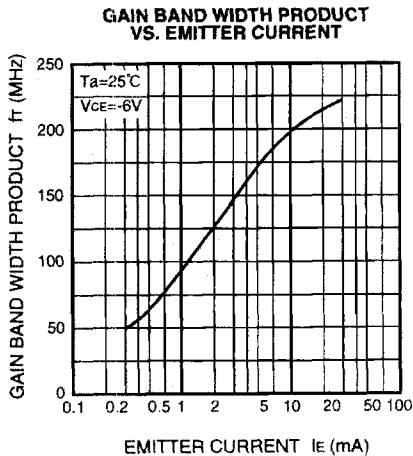
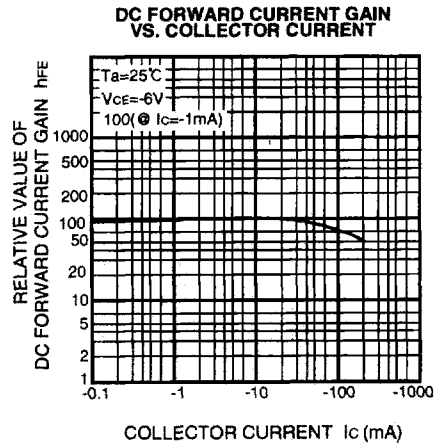
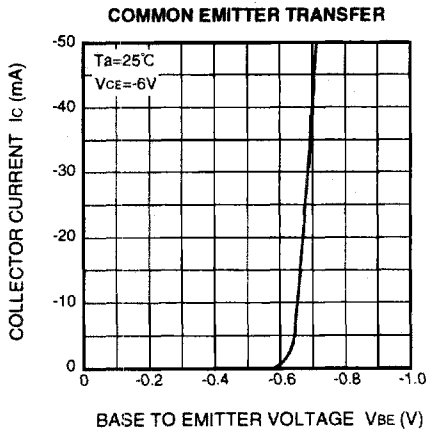
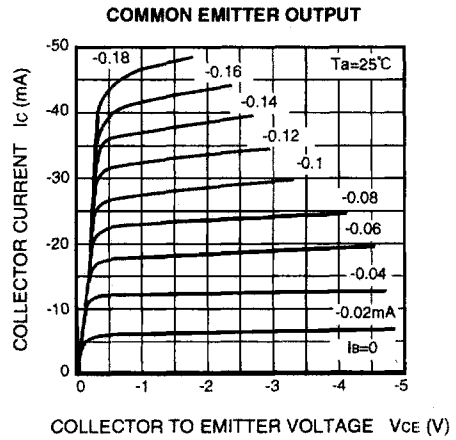
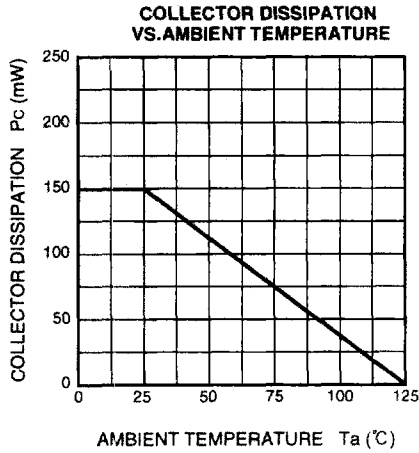
**ELECTRICAL CHARACTERISTICS (Ta=25°C)**

Symbol	Parameter	Test conditions	Limits			Unit
			Min	Typ	Max	
V <sub>(BR)CEO</sub>	C to E break down voltage	I <sub>C</sub> =-100 μA, R <sub>BE</sub> =∞	-50			V
I <sub>CBO</sub>	Collector cut off current	V <sub>CB</sub> =-50V, I <sub>E</sub> =0			-0.1	μA
I <sub>EB0</sub>	Emitter cut off current	V <sub>EB</sub> =-6V, I <sub>C</sub> =0			-0.1	μA
h <sub>FE</sub> *	DC forward current gain	V <sub>CE</sub> =-6V, I <sub>C</sub> =-1mA	150		800	—
h <sub>FE</sub>	DC forward current gain	V <sub>CE</sub> =-6V, I <sub>C</sub> =-0.1mA	90			—
V <sub>CE(sat)</sub>	C to E saturation voltage	I <sub>C</sub> =-100mA, I <sub>B</sub> =-10mA			-0.3	V
f <sub>T</sub>	Gain band width product	V <sub>CE</sub> =-6V, I <sub>E</sub> =10mA		200		MHz
C <sub>ob</sub>	Collector output capacitance	V <sub>CB</sub> =-6V, I <sub>E</sub> =0, f=1MHz		4.0		pF
NF	Noise figure	V <sub>CE</sub> =-6V, I <sub>E</sub> =0.3mA, f=100Hz, R <sub>G</sub> =10kΩ			20	dB

\* : It shows h<sub>FE</sub> classification in right table.

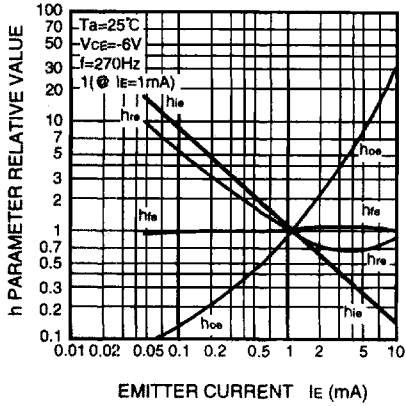
Item	E	F	G
h <sub>FE</sub>	150 to 300	250 to 500	400 to 800
Marking	ME	MF	MG

TYPICAL CHARACTERISTICS

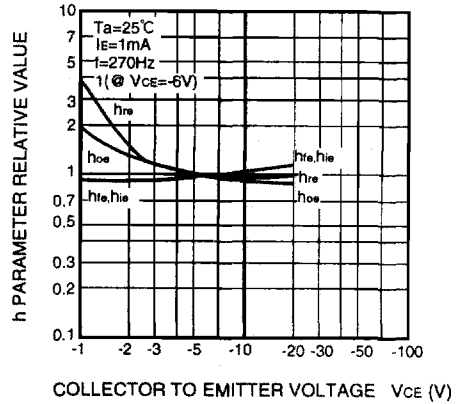


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h PARAMETER VS. EMITTER CURRENT



h PARAMETER VS. COLLECTOR TO EMITTER VOLTAGE



COMMON EMITTER h PARAMETER (TYPICAL VALUE)

Symbol	Parameter	Test conditions	Limits	Unit
$h_{ie}$	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	$\mu\text{S}$