

**2SA1688**

## High-Frequency General-Purpose Amplifier Applications

### Applications

- Ideally suited for use in FM RF amplifiers, mixers, oscillators, converters, and IF amplifiers.

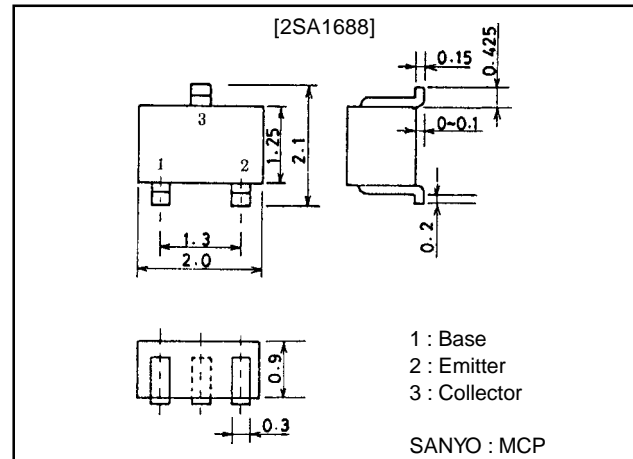
### Features

- High power gain : PG=22dB typ (f=100MHz).
- Very small-sized package permitting 2SA1688-applied sets to be made small and slim.

### Package Dimensions

unit:mm

2059A



### Specifications

#### Absolute Maximum Ratings at Ta = 25°C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	$V_{CB0}$		-30	V
Collector-to-Emitter Voltage	$V_{CEO}$		-20	V
Emitter-to-Base Voltage	$V_{EBO}$		-5	V
Collector Current	$I_C$		-30	mA
Collector Dissipation	$P_C$		150	W
Junction Temperature	$T_j$		150	°C
Storage Temperature	$T_{stg}$		-55 to +150	°C

#### Electrical Characteristics at Ta = 25°C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	$I_{CB0}$	$V_{CB}=-10V, I_E=0$			-0.1	μA
Emitter Cutoff Current	$I_{EBO}$	$V_{EB}=-4V, I_C=0$			-0.1	μA
DC Current Gain	$h_{FE}$	$V_{CE}=-6V, I_C=-1mA$	60*		270*	
Gain-Bandwidth Product	$f_T$	$V_{CE}=-6V, I_C=-1mA$	150	230		MHz
Reverse Transfer Capacitance	$C_{re}$	$V_{CB}=-6V, f=1MHz$		1.1	1.7	pF
Base-to-Collector Time Constant	$\tau_{bb} \cdot C_c$	$V_{CE}=-6V, I_C=-1mA, f=31.9MHz$		11	20	ps
Voltage Gain	PG	See specified Test Circuit.		22		dB
Noise Figure	NF	$V_{CE}=-6V, I_C=-1mA, f=100MHz$		2.5		dB

\* : The 2SA1688 is classified by 1mA  $h_{FE}$  as follows :

60	3	120	90	4	180	135	5	270
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Marking : E

For CP package version, use the 2SA1656.

 $h_{FE}$  rank : 3, 4, 5

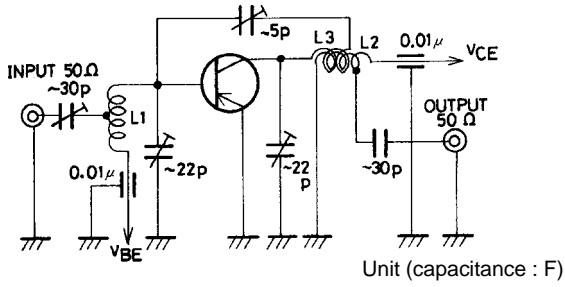
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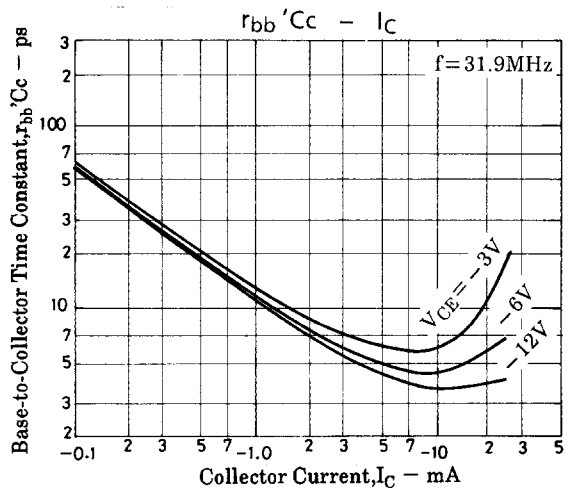
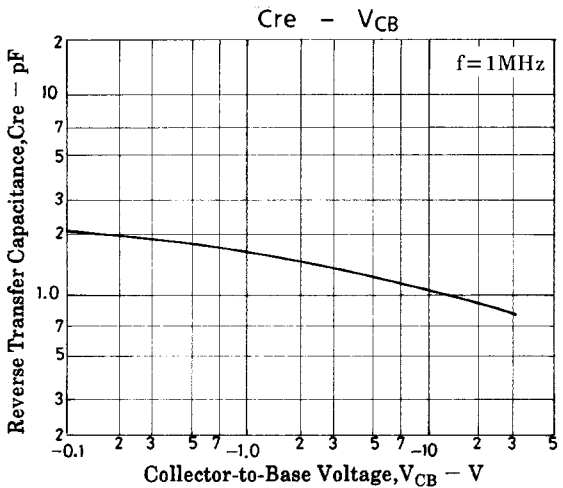
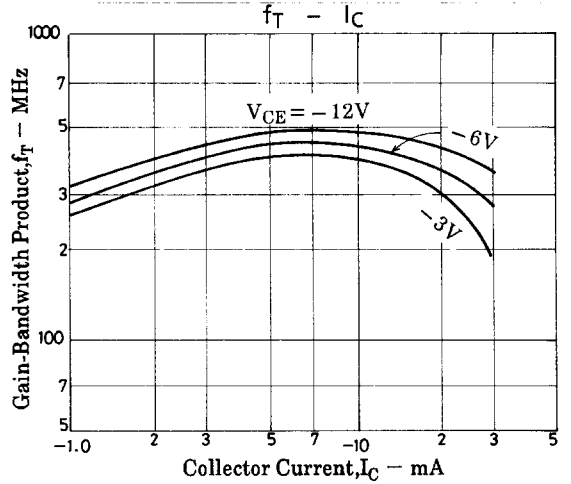
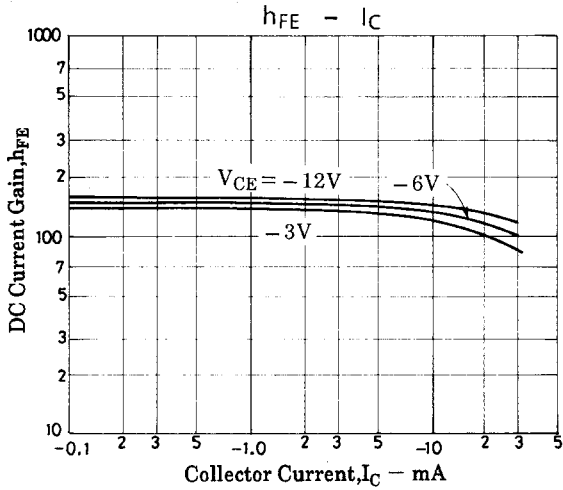
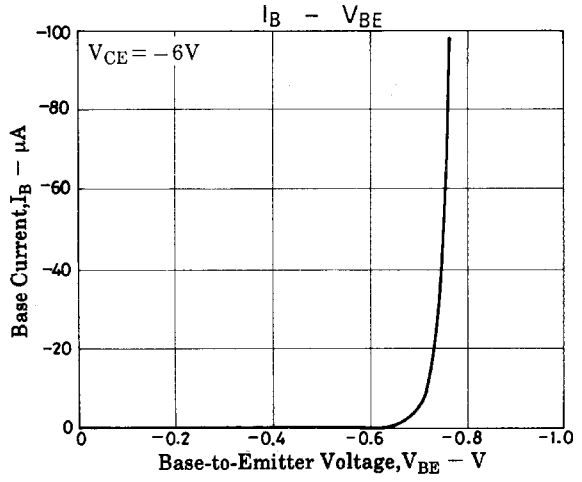
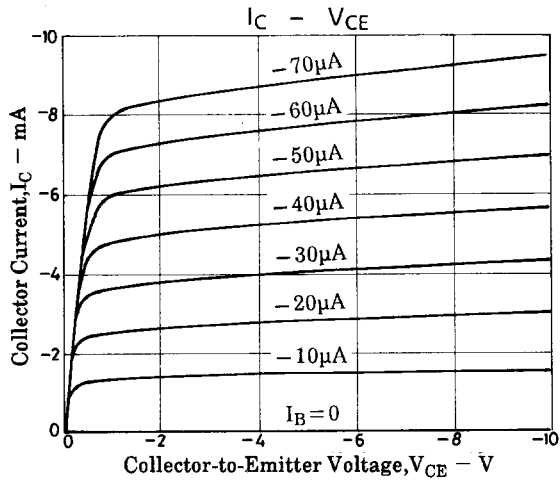
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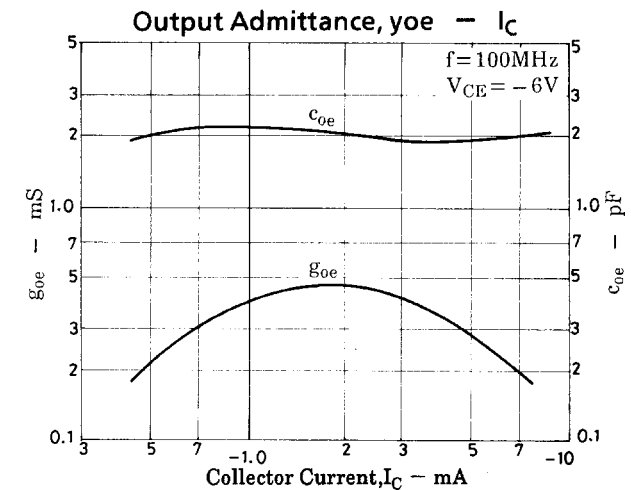
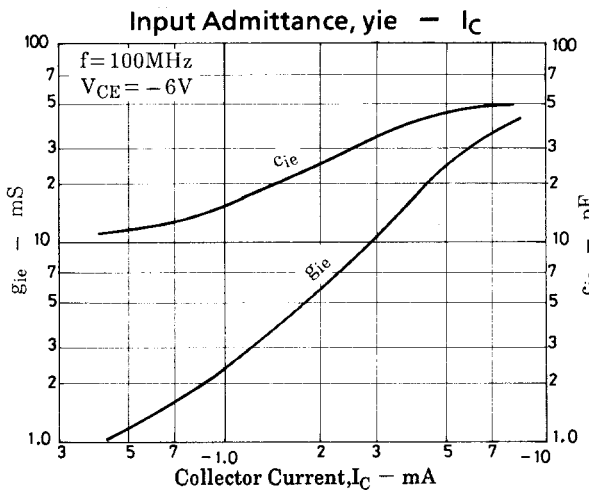
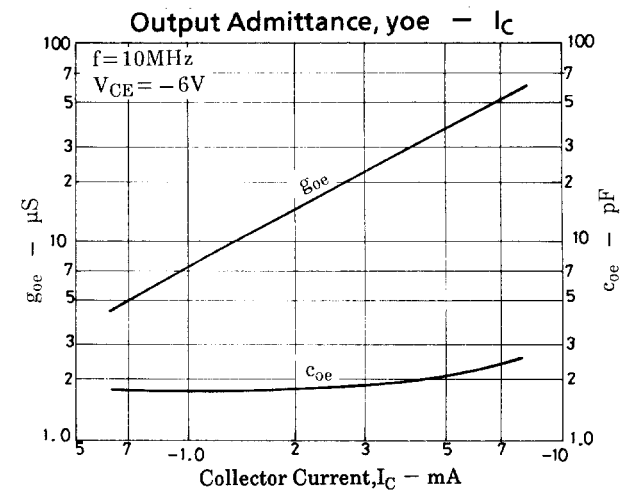
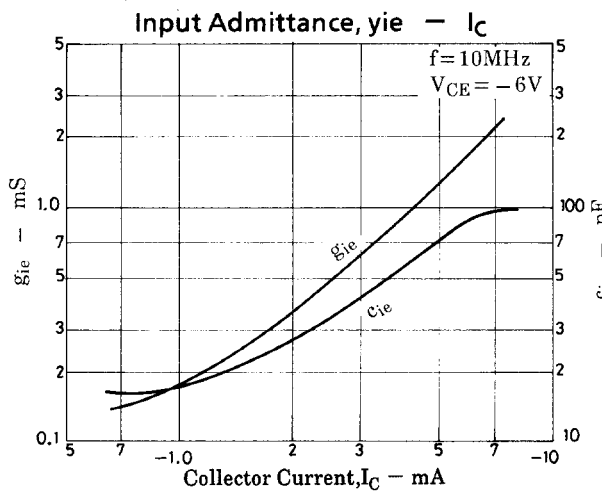
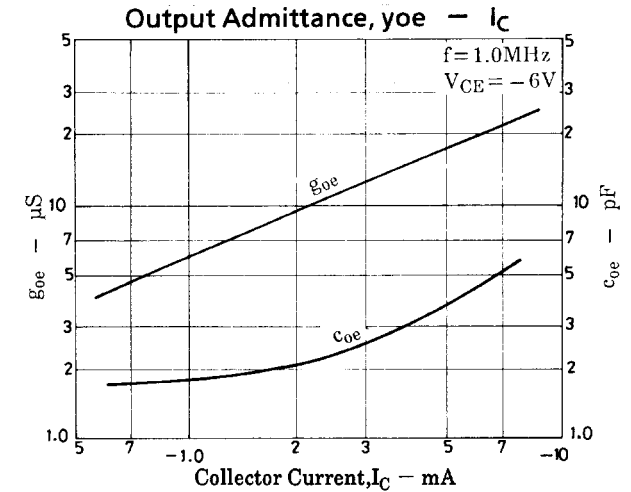
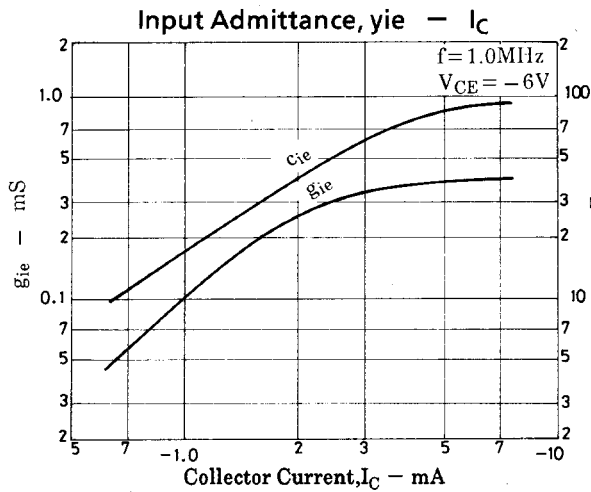
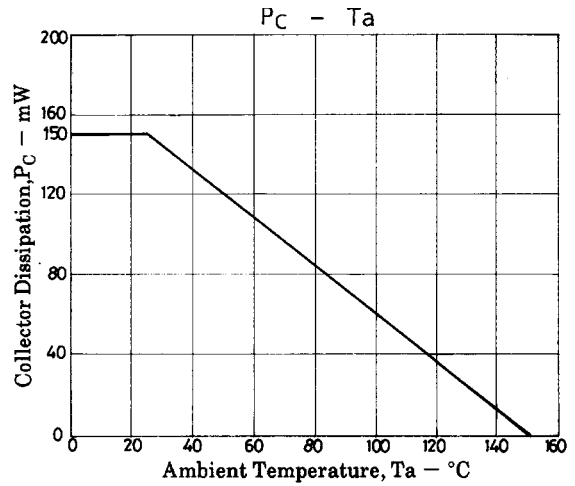
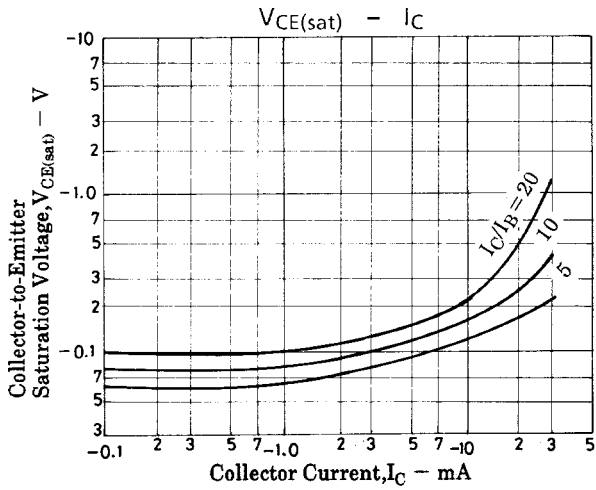
NF, PG Test Circuit



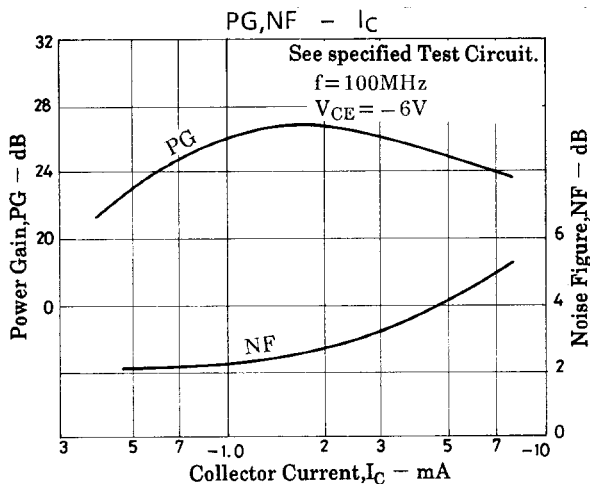
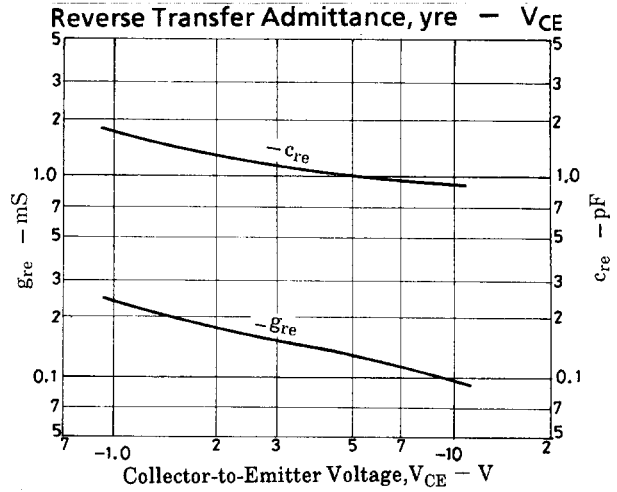
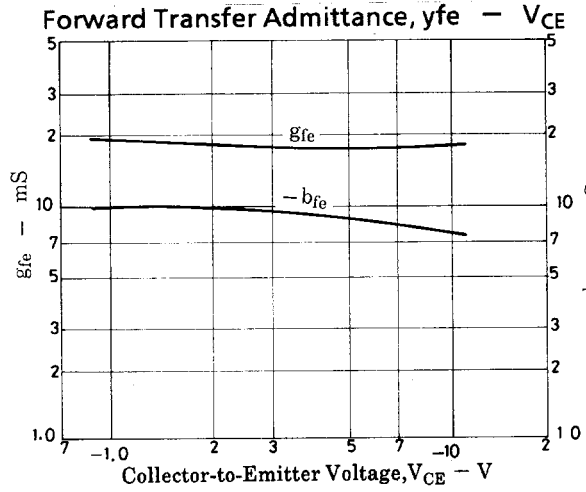
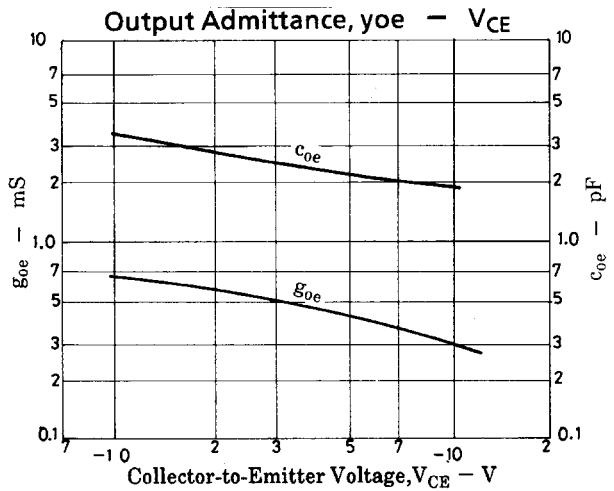
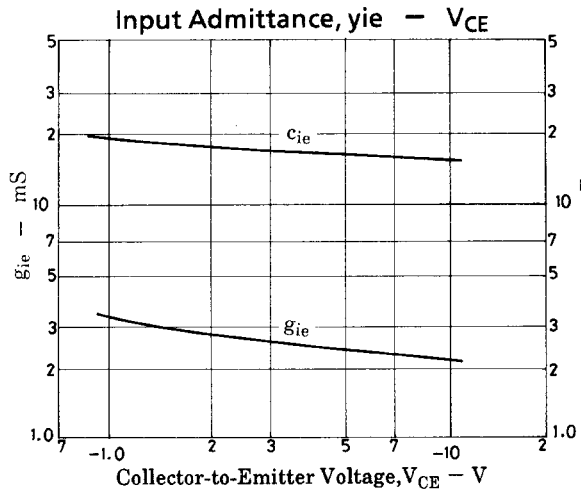
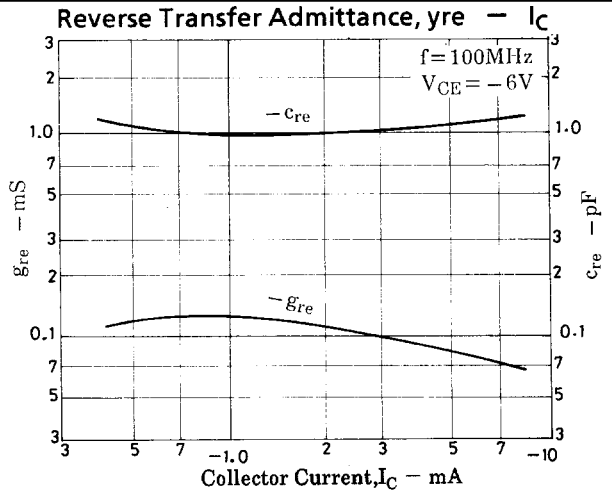
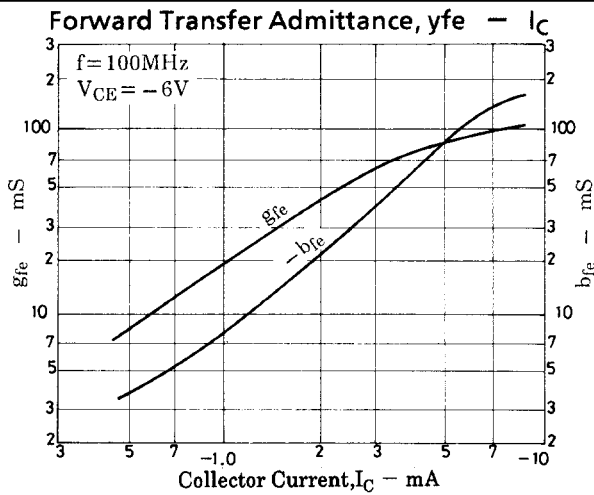
L1 : 1mmϕ plated wire 10mmϕ 5T, tap : 2T from V<sub>BE</sub> side  
 L2 : 1mmϕ plated wire 10mmϕ 7T, tap : 1T from V<sub>CE</sub> side  
 L3 : 1mmϕ enamel wire 10mmϕ 3T



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