Ordering number:EN2798A

PNP Epitaxial Planar Silicon Transistors

2SA1688

High-Frequency General-Purpose Amplifier Applications

Applications

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

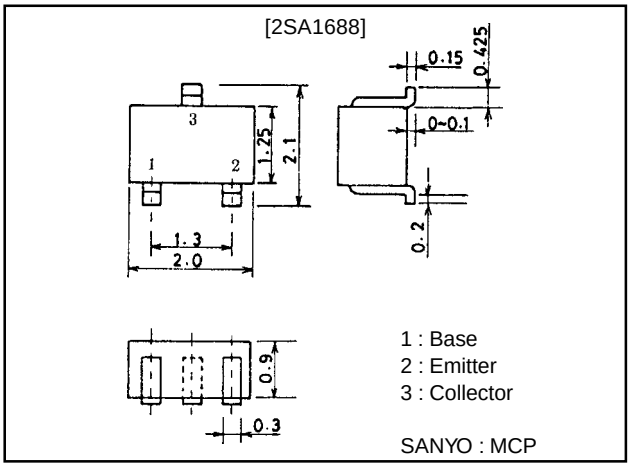
Features

· 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_{CBO}		–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	Tj		150	˚C
Storage Temperature	Tstg		–55 to +150	˚C

Electrical Characteristics at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	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	r_{bb}' Cc	V_{CE}=–6V, I_C=–1mA, f=31.9MHz		11	20	ps
Voltage Gain	PG	See specified Test Circuit, V_{CE}=–6V, I_C=–1mA, f=100MHz		22		dB
Noise Figure	NF			2.5		dB

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

60 3 120	90 4 180	135 5 270

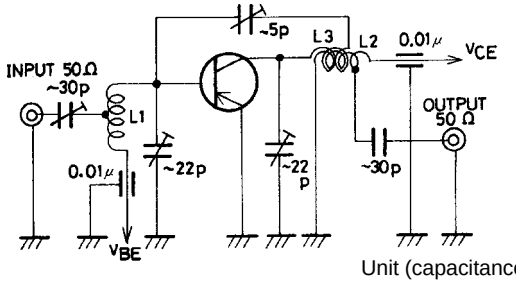
Marking : E

h_{FE} rank : 3, 4, 5

For CP package version, use the 2SA1656.

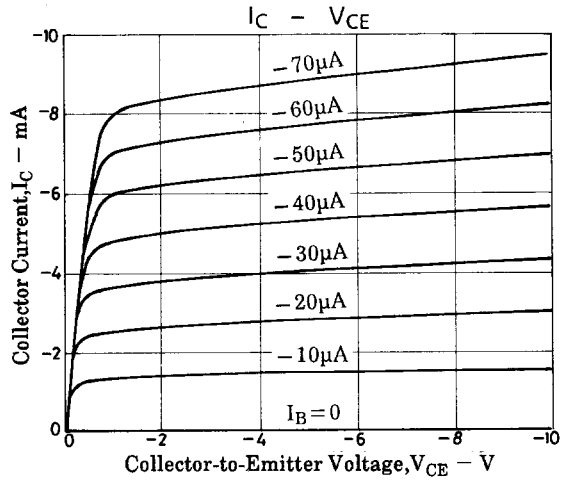
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

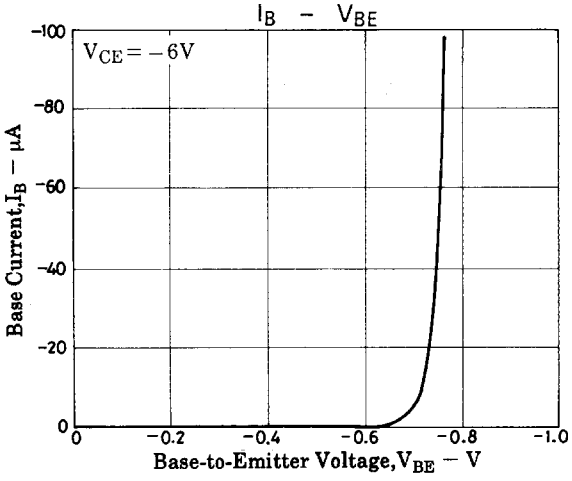
NF, PG Test Circuit

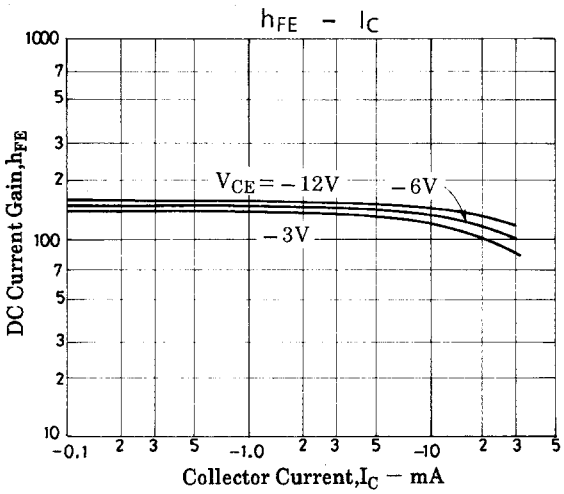


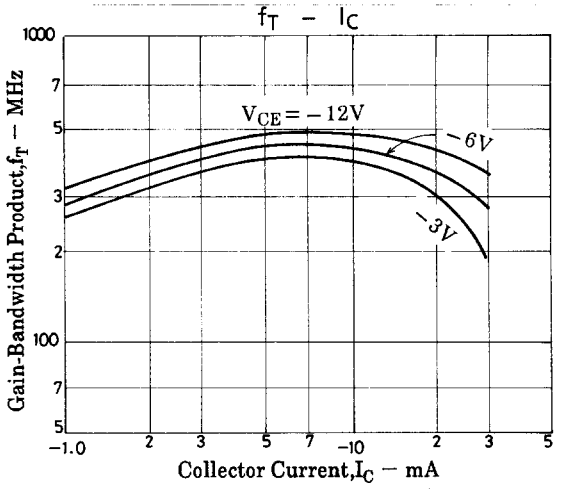
Unit (capacitance : F)

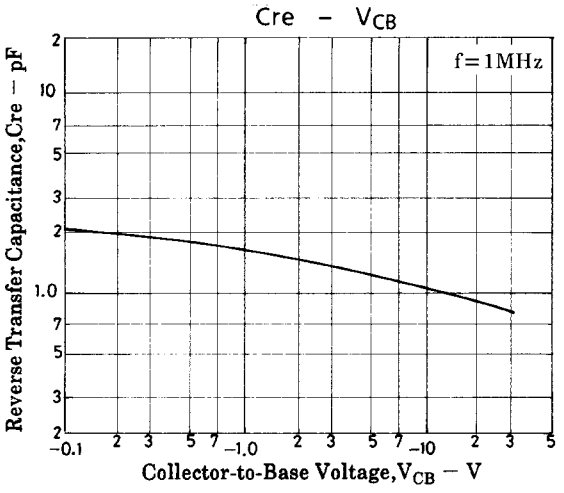
L1 : 1mmø plated wire 10mmø 5T, tap : 2T from V_{BE} side
L2 : 1mmø plated wire 10mmø 7T, tap : 1T from V_{CE} side
L3 : 1mmø enamel wire 10mmø 3T

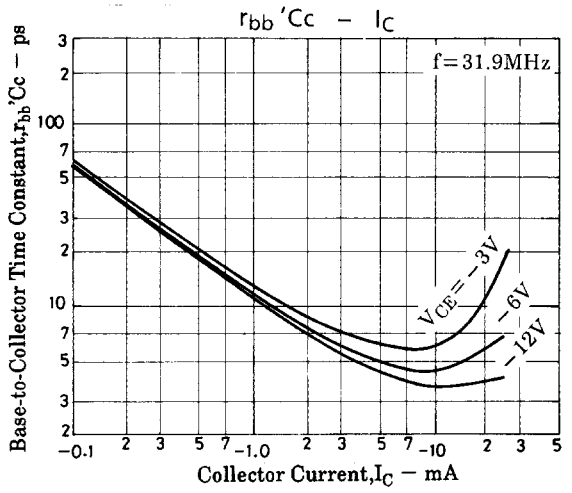




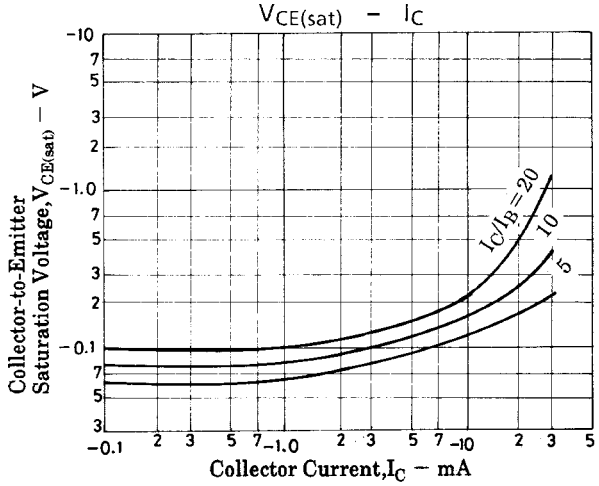




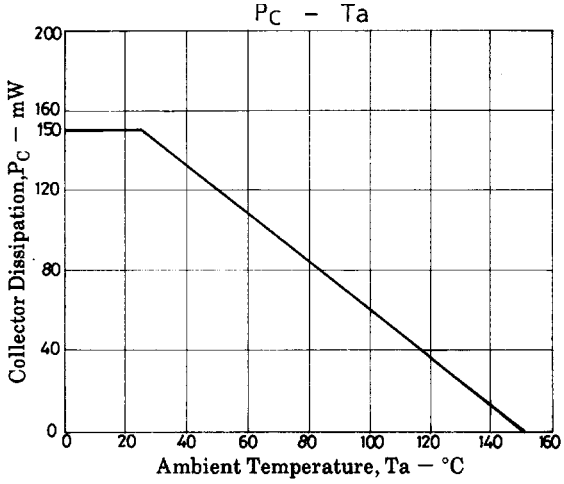




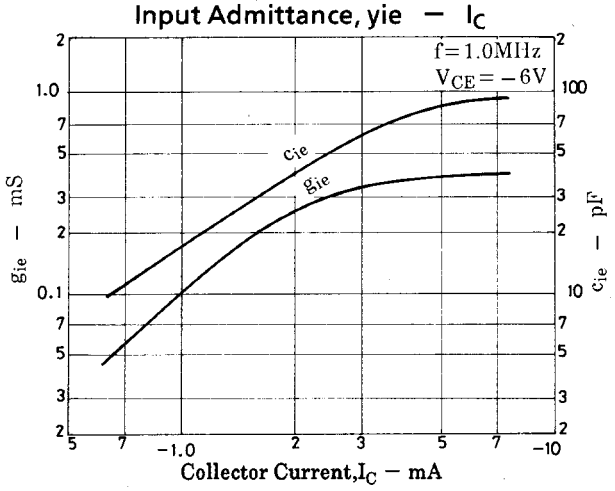
$V_{CE(sat)}$ – I_C



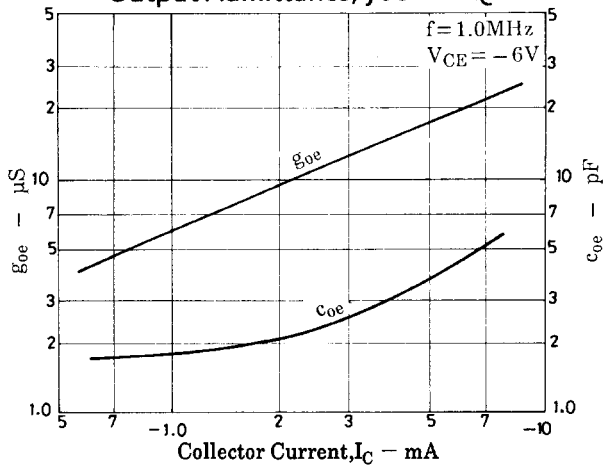
P_C – Ta



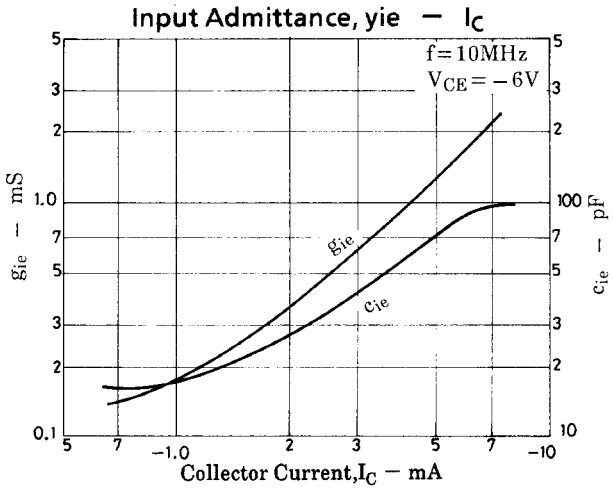
Input Admittance, yie – I_C



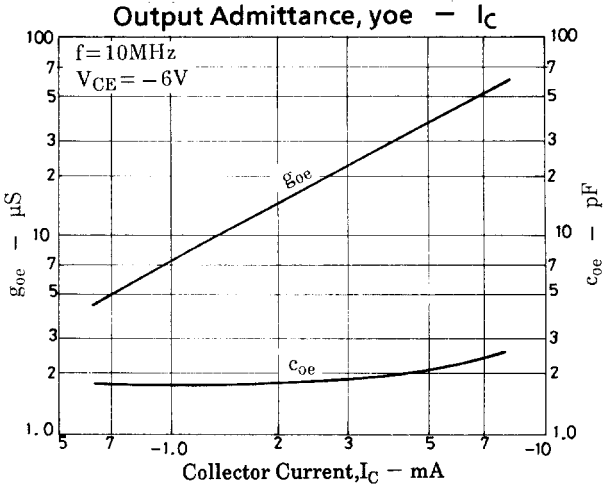
Output Admittance, yoe – I_C



Input Admittance, yie – I_C



Output Admittance, yoe – I_C



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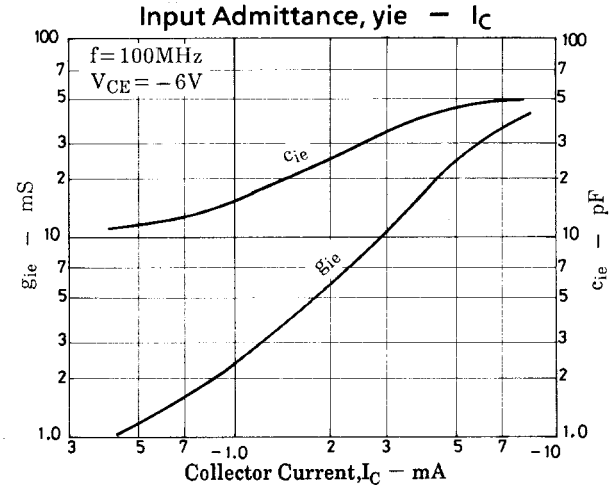
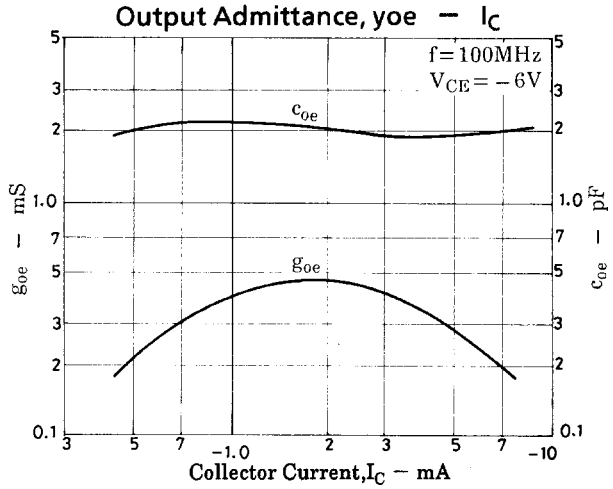
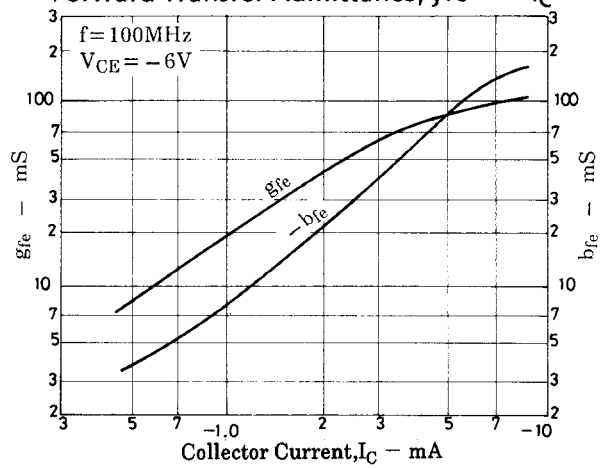


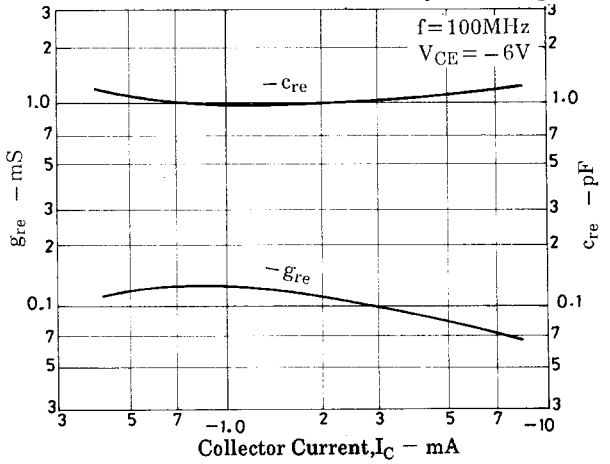
Output Admittance, yoe – I_C



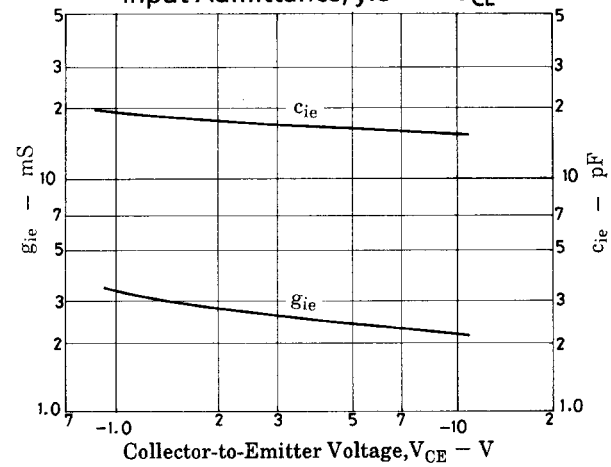
Forward Transfer Admittance, yfe — I_C



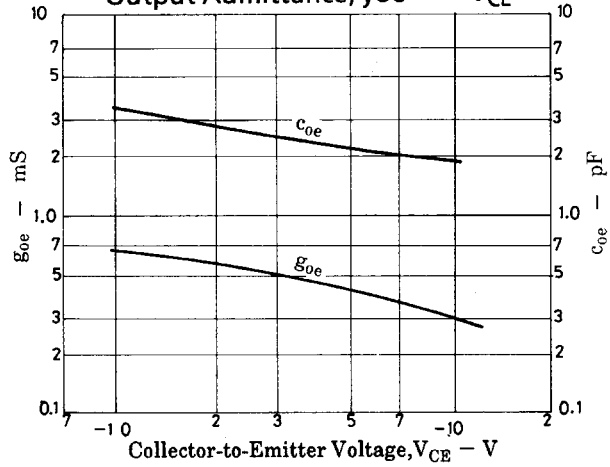
Reverse Transfer Admittance, yre — I_C



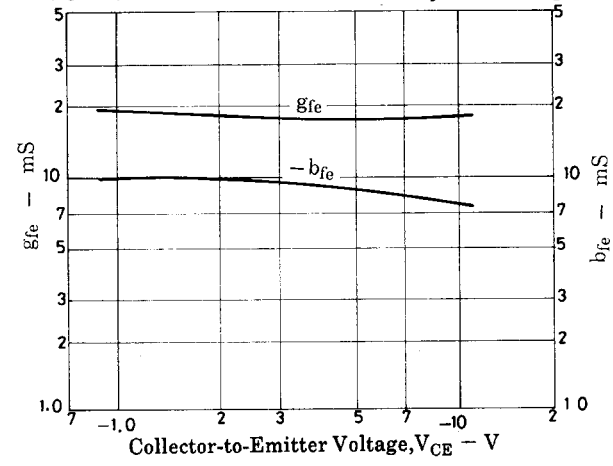
Input Admittance, yie — V_{CE}



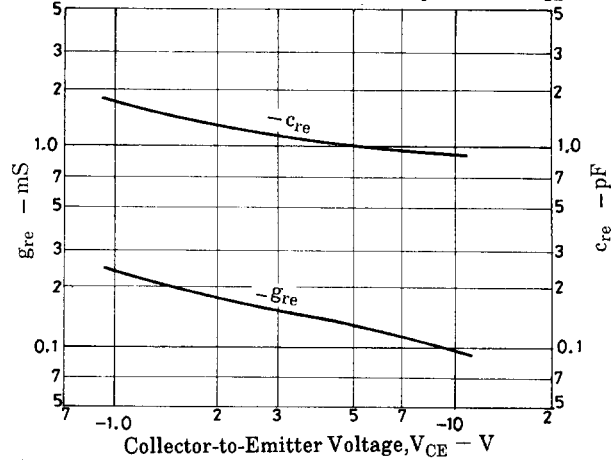
Output Admittance, yoe — V_{CE}



Forward Transfer Admittance, yfe — V_{CE}



Reverse Transfer Admittance, yre — V_{CE}



PG,NF — I_C