Ordering number:EN931D

NPN Epitaxial Planar Silicon Transistor

2SC2999

HF Amplifier Applications

Features

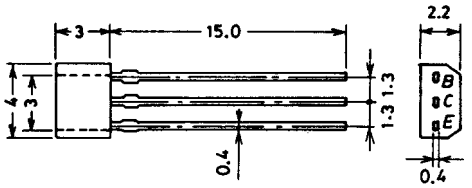
- FBET series.
- Very small-sized package permitting sets to be small-sized and slim.
- High f_T (f_T=750MHz typ.) and small C_{re} (C_{re}=0.6pF typ).

Package Dimensions

unit:mm

2033

[2SC2999]



B : Base
C : Collector
E : Emitter
SANYO : SPA

Specifications

Absolute Maximum Ratings at Ta = 25˚C

Parameter	Symbol	Conditions	Ratings	Unit
Collector-to-Base Voltage	V_{CBO}		25	V
Collector-to-Emitter Voltage	V_{CEO}		20	V
Emitter-to-Base Voltage	V_{EBO}		3	V
Collector Current	I_C		30	mA
Collector Dissipation	P_C		150	mW
Junction Temperature	Tj		125	˚C
Storage Temperature	Tstg		–40 to +125	˚C

Electrical Characteristics at Ta = 25˚C

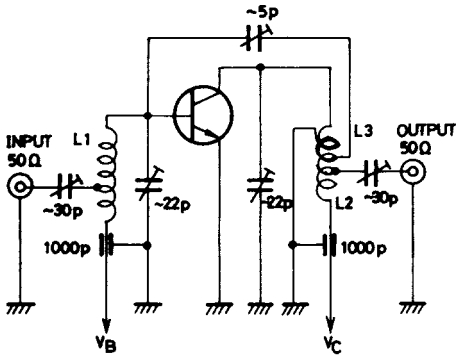
Parameter	Symbol	Conditions	Ratings			Unit
			min	typ	max	
Collector Cutoff Current	I_{CBO}	V_{CB}=10V, I_E=0			0.1	μA
Emitter Cutoff Current	I_{EBO}	V_{EB}=3V, I_C=0			0.1	μA
DC Current Gain	h_{FE}	V_{CE}=6V, I_C=1mA	40*		200*	
Gain-Bandwidth Product	f_T	V_{CE}=6V, I_C=4mA	450	750		MHz
Reverse Transfer Capacitance	C_{re}	V_{CB}=6V, f=1MHz		0.6	0.9	pF
Base-to-Collector Time Constant	rbb'C_C	V_{CE}=6V, I_C=1mA, f=31.9MHz			19	ps
Noise Figure	NF	V_{CE}=6V, I_C=1mA, f=100MHz		2.2		dB
Power Gain	PG	V_{CE}=6V, I_C=1mA, f=100MHz		28		dB

* : The 2SC2999 are classified as follows according to h_{FE} at 1mA :

40	C	80	60	D	120	100	E	200

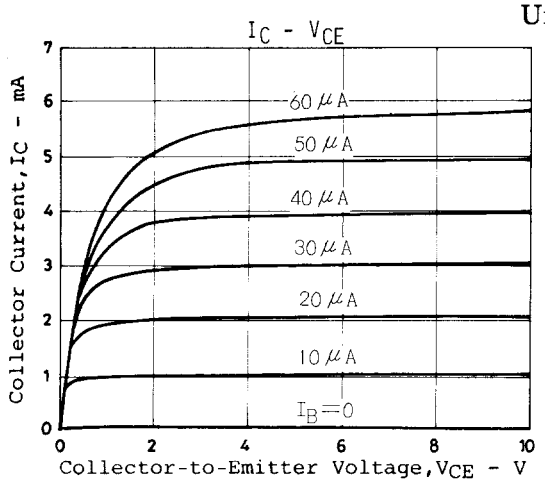
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

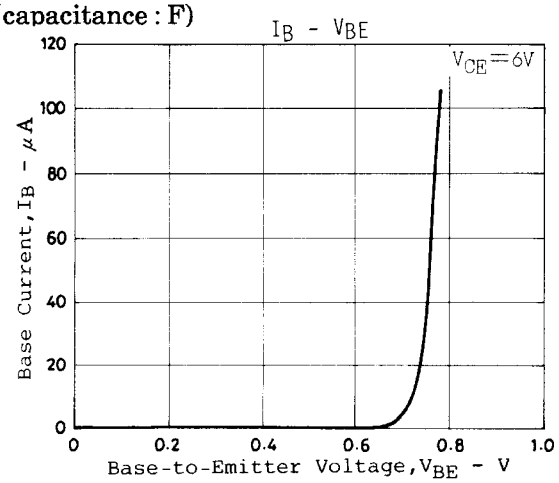
NF, PG Test Circuit

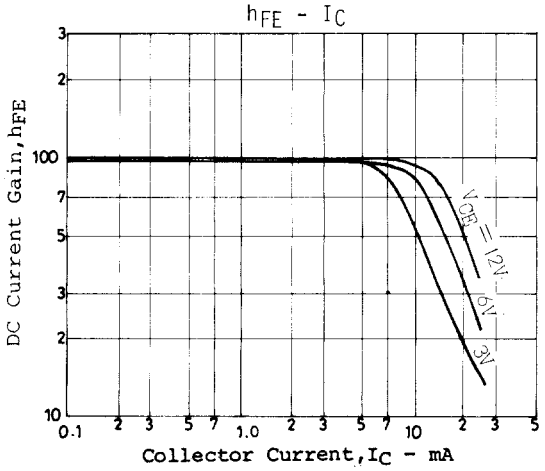


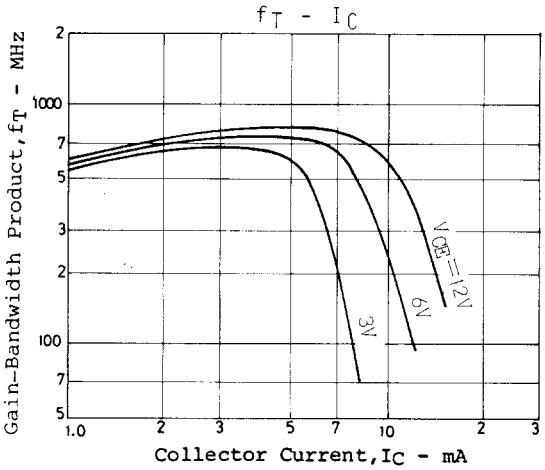
L1: 1mmø plated wire, 10mmø 5T, pitch 15mm,
tapped at 2T from base side.
L2: 1mmø plated wire, 10mmø 7T, pitch 10mm,
patted at 2T from V_C side.
L3: 1mmø enameled wire, 10mmø 3T, pitch 10mm.

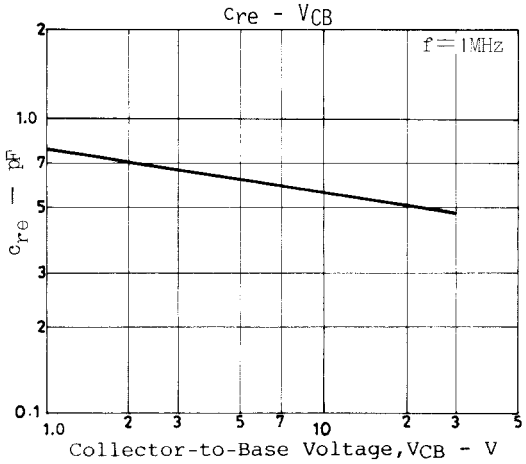
Unit(capacitance : F)

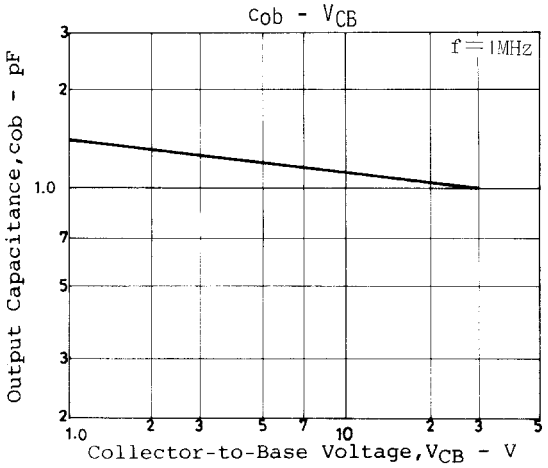


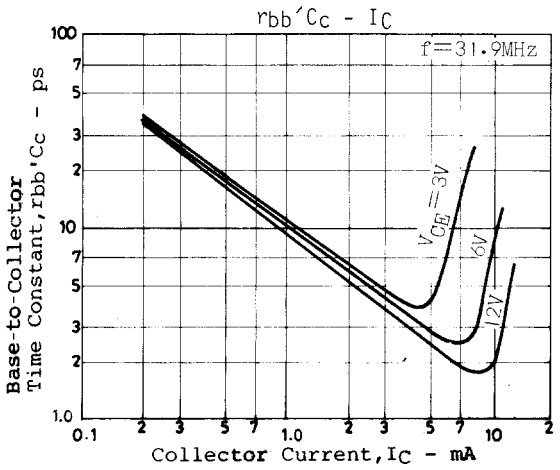


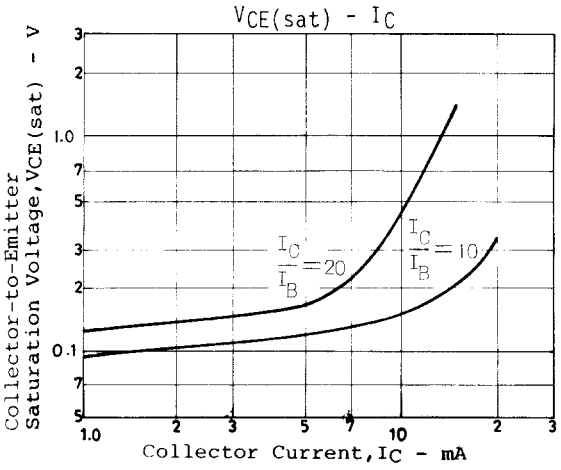


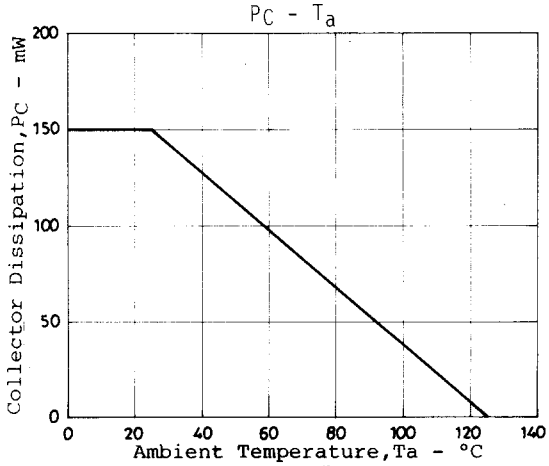


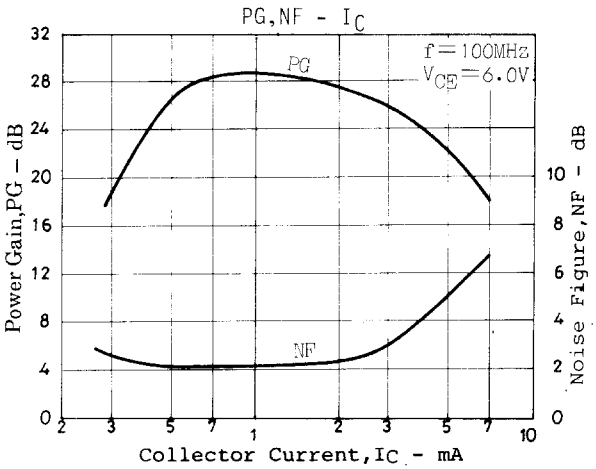


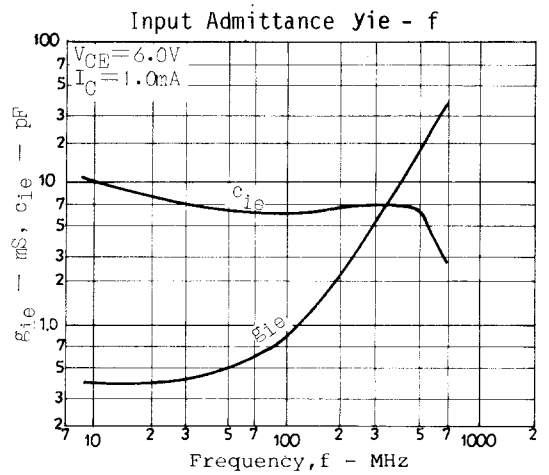


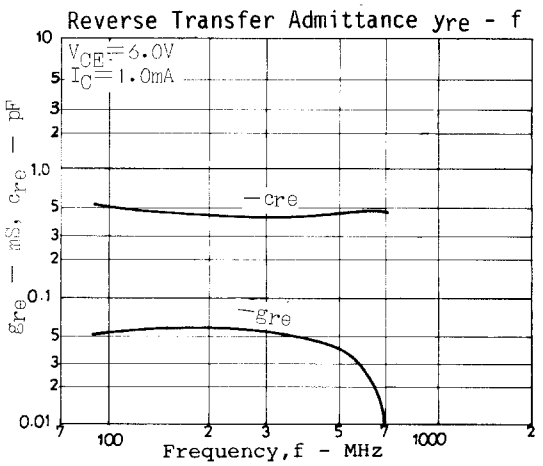

rbb'Cc - IC
f=31.9MHz
VCE=3V
6V
12V
Base-to-Collector Time Constant,rbb'Cc - ps
Collector Current,IC - mA

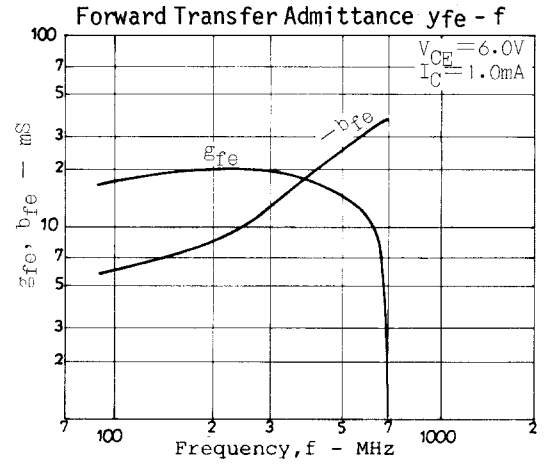

VCE(sat) - IC
IC/IB=20
IC/IB=10
Collector-to-Emitter Saturation Voltage,VCE(sat) - V
Collector Current,IC - mA

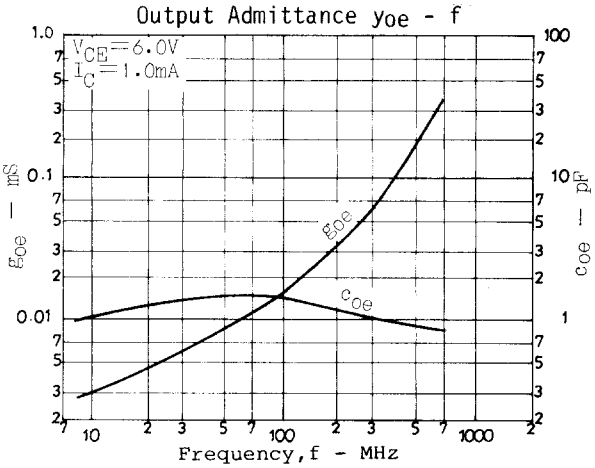

PC - Ta
Collector Dissipation,PC - mW
Ambient Temperature,Ta - °C


PG,NF - IC
f=100MHz
VCE=6.0V
PG
NF
Power Gain,PG - dB
Noise Figure,NF - dB
Collector Current,IC - mA

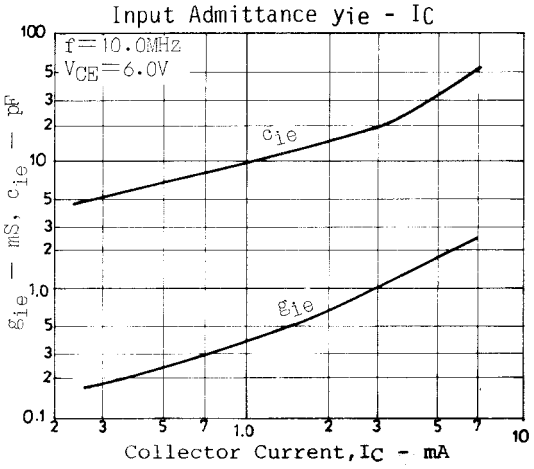

Input Admittance yie - f
VCE=6.0V
IC=1.0mA
Cie
gie
gie, cie - mS, pF
Frequency,f - MHz


Reverse Transfer Admittance yre - f
VCE=6.0V
IC=1.0mA
-Cre
-gre
gre, Cre - mS, pF
Frequency,f - MHz

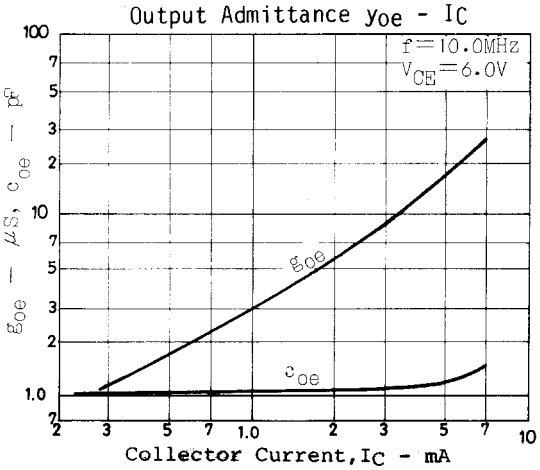

Forward Transfer Admittance yfe - f
VCE=6.0V
IC=1.0mA
gfe
-bfe
gfe, bfe - mS
Frequency,f - MHz


Output Admittance yoe - f
VCE=6.0V
IC=1.0mA
goe
Coe
goe - mS
Coe - pF
Frequency,f - MHz

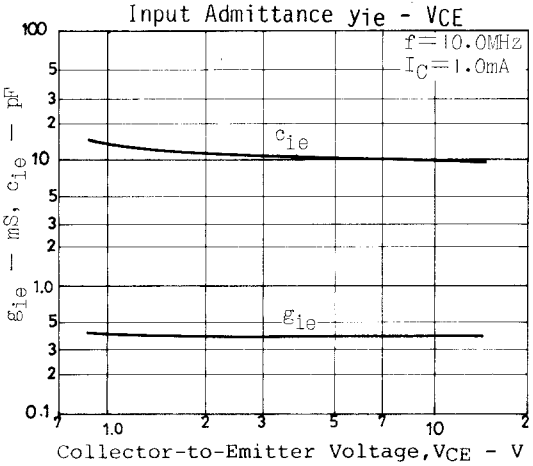
Input Admittance yie - IC



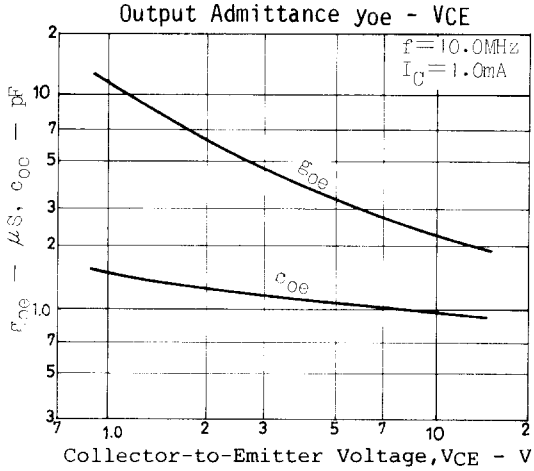
Output Admittance yoe - IC



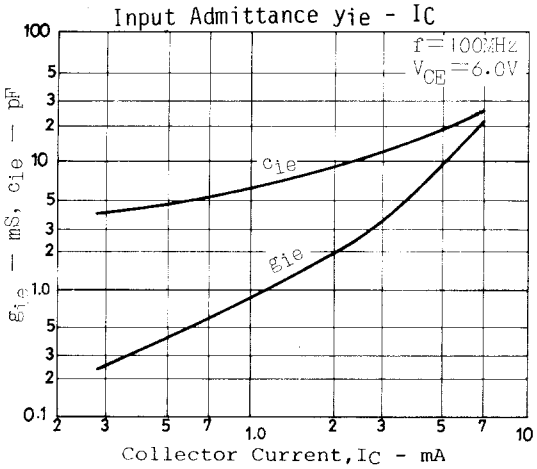
Input Admittance yie - VCE



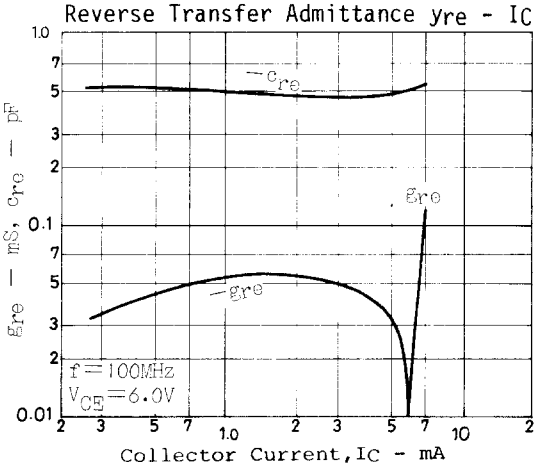
Output Admittance yoe - VCE



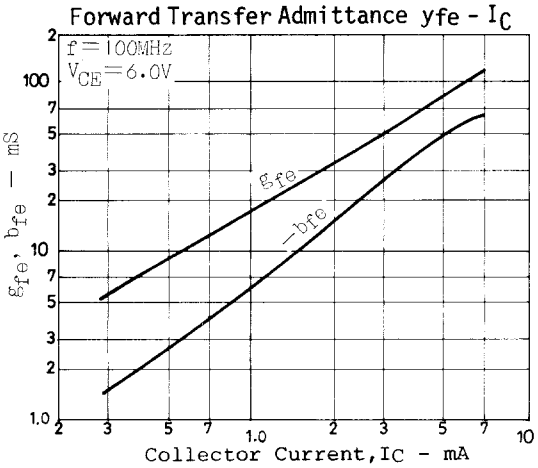
Input Admittance yie - IC



Reverse Transfer Admittance yre - IC



Forward Transfer Admittance yfe - IC



Output Admittance yoe - IC