Ordering number:EN1066A

NPN Epitaxial Planar Silicon Transistor

2SC3142

High-Frequency General-Purpose Amplifier Applications

Features

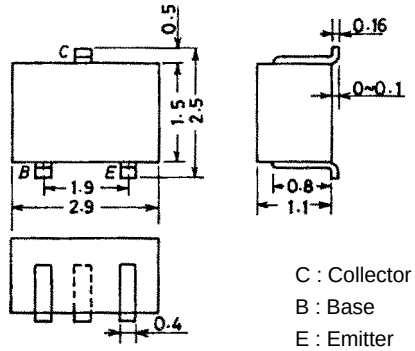
- FBET series.
- Compact package enabling compactness of sets.
- High f_T and small c_{re} (f_T=750MHz typ, c_{re}=0.6 typ).

Package Dimensions

unit:mm

2018A

[2SC3142]



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

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*		180*	
Gain-Bandwidth Product	f_T	V_{CE}=6V, I_C=4mA	450	750		MHz
Feedback Capacitance	C_{re}	V_{CB}=6V, f=1MHz		0.6	0.9	pF
Base-to-Collector Time Constant	$r_{bb}'C_C$	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

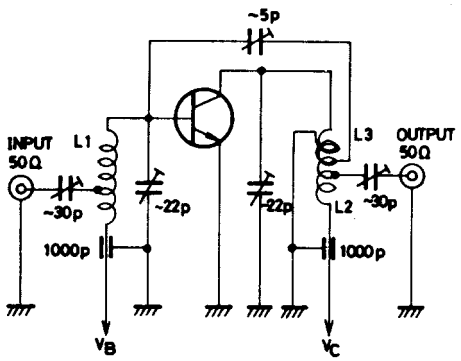
* : The 2SC3142 are classified as follows according to h_{FE} at 1mA :

40	2	80	60	3	120	90	4	180

(Note) Marking : J
h_{FE} rank : 2, 3, 4

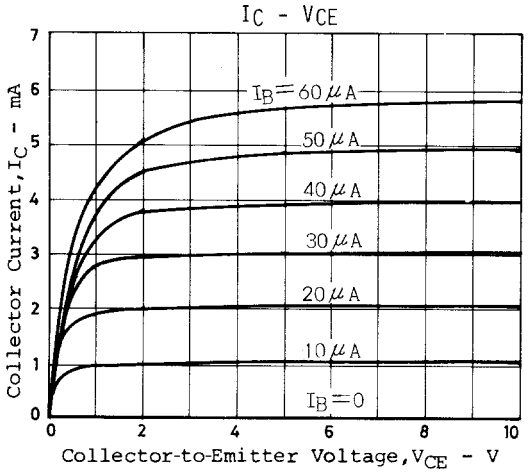
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

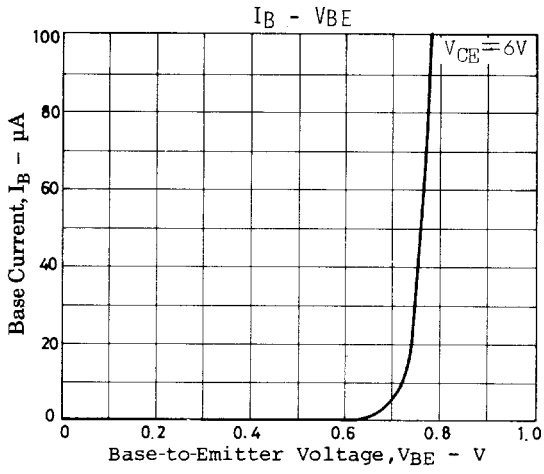
NF, PG Test Circuit

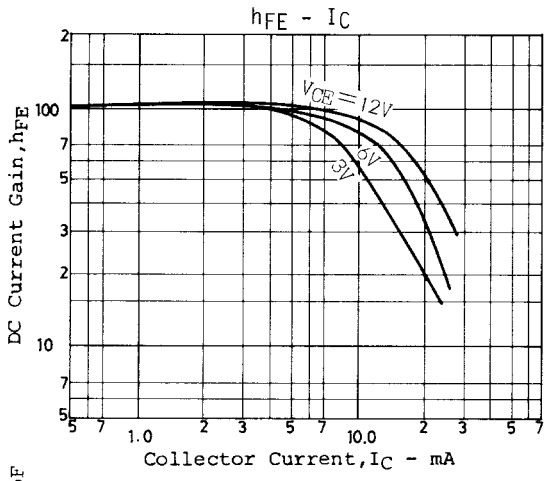


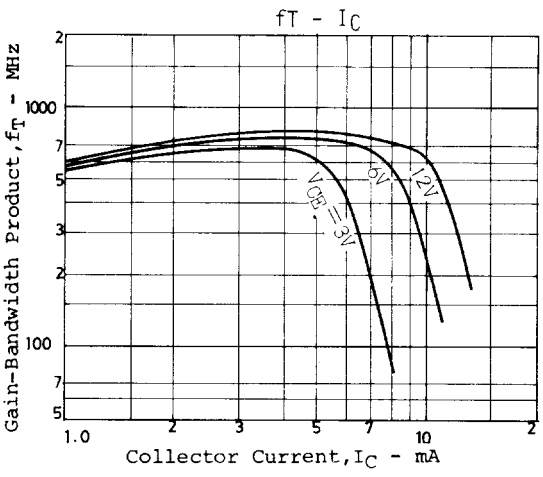
L1 : 1mmø plated wire 10mmø 5T, pitch 15mm, tap : 2T from base.
L2 : 1mmø plated wire 10mmø 7T, pitch 10mm, tap : 2T from V_C.
L3 : 1mmø enameled wire 10mmø 3T, pitch 10mm.

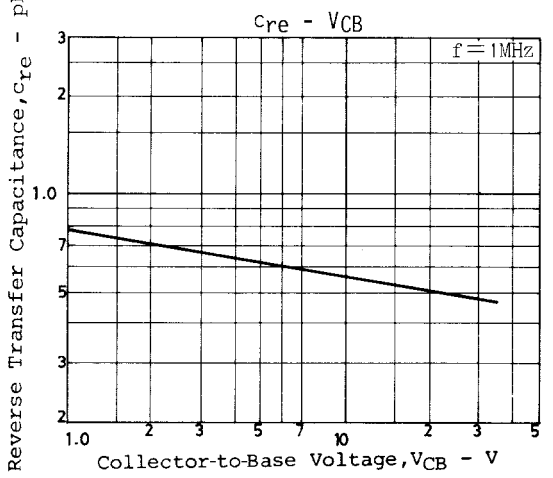
Unit (capacitance : F)

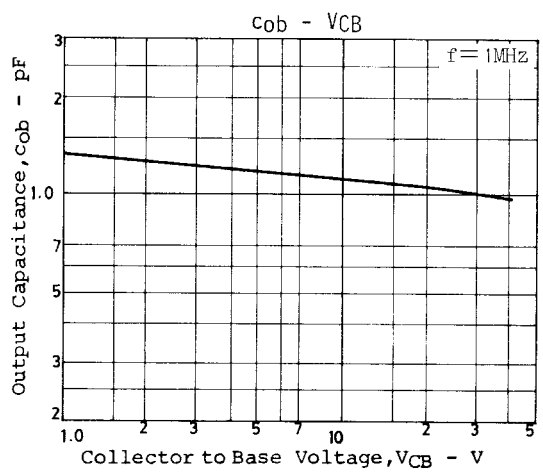


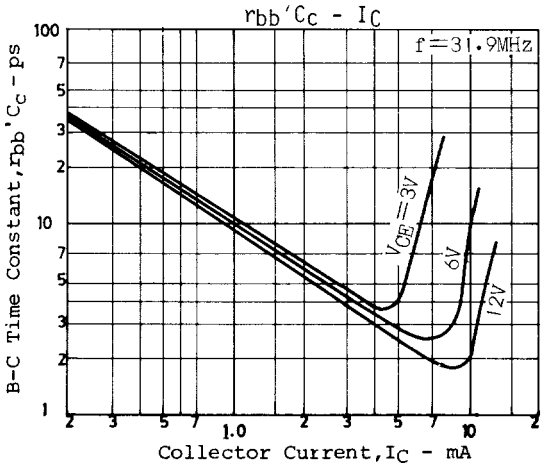


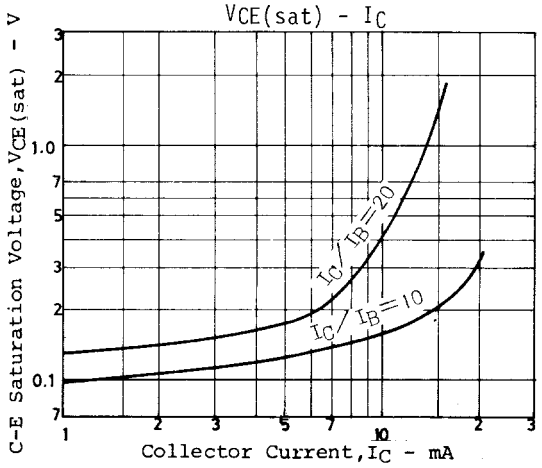


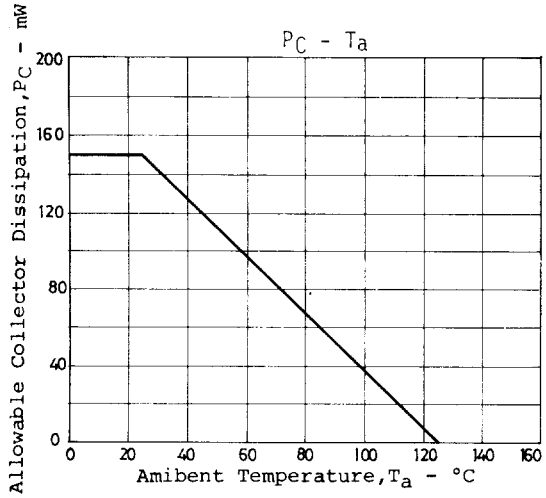


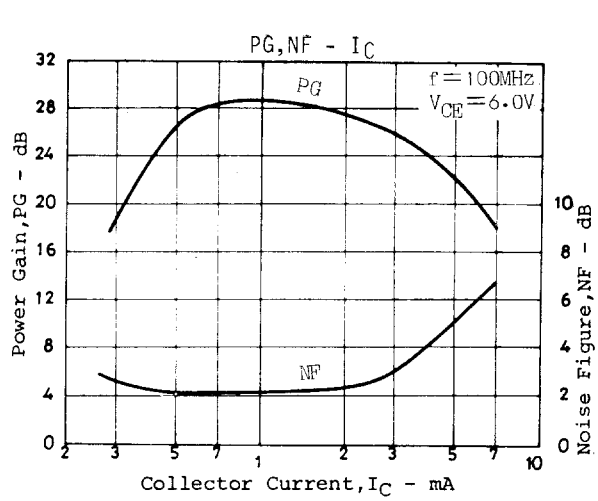


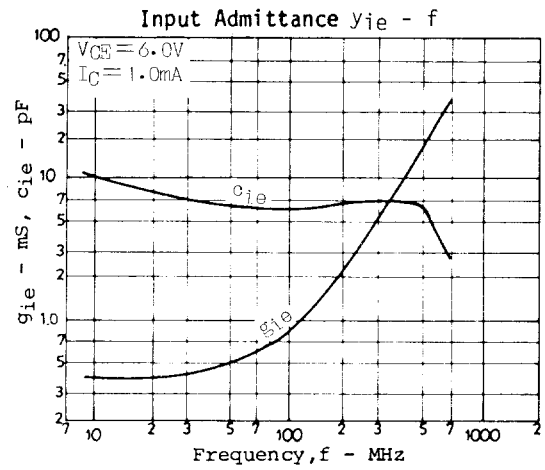


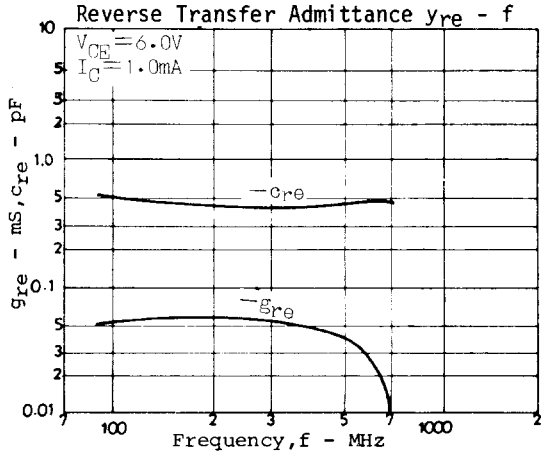

rbb'Cc - IC
f=31.9MHz
VCE=3V
6V
12V
B-C Time Constant,rbb'Cc - ps
Collector Current,IC - mA

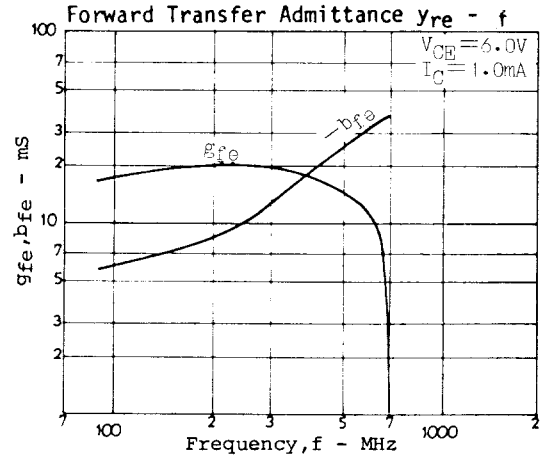

VCE(sat) - IC
IC/IB=20
IC/IB=10
C-E Saturation Voltage,VCE(sat) - V
Collector Current,IC - mA

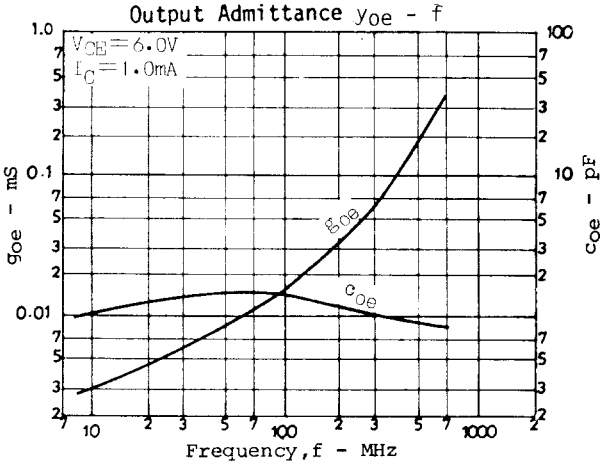

PC - Ta
Allowable Collector Dissipation,PC - mW
Amibent Temperature,Ta - °C

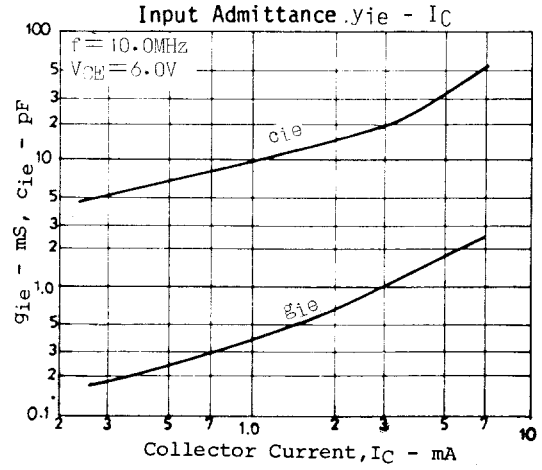

PG,NF - IC
f=100MHz
VCE=6.0V
PG
NF
Power Gain,PG - dB
Noise Figure,NF - dB
Collector Current,IC - mA

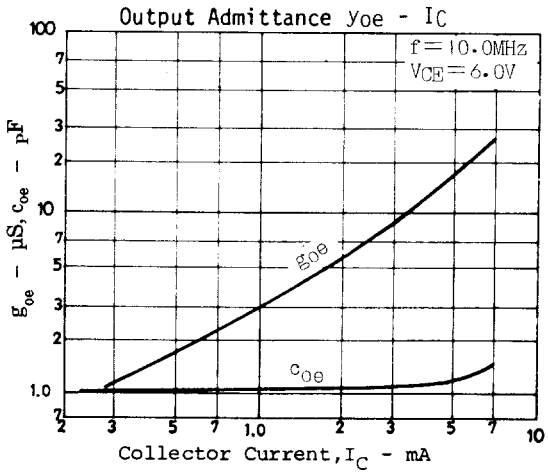

Input Admittance yie - f
VCE=6.0V
IC=1.0mA
Cie
gie
gie - mS, Cie - pF
Frequency,f - MHz

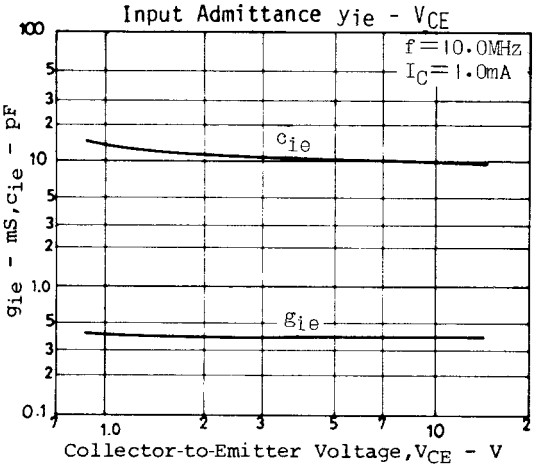

Reverse Transfer Admittance yre - f
VCE=6.0V
IC=1.0mA
-Cre
-gre
gre - mS,Cre - pF
Frequency,f - MHz

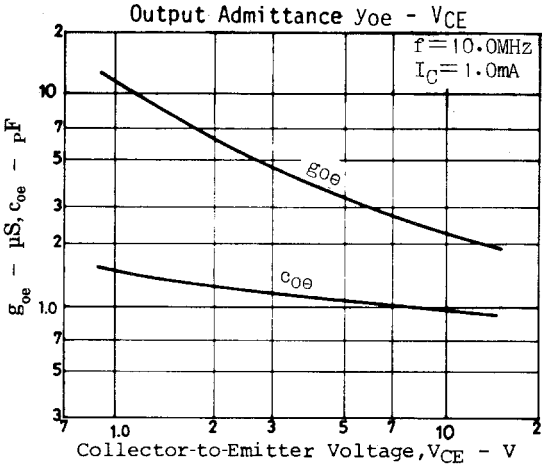

Forward Transfer Admittance yfe - f
VCE=6.0V
IC=1.0mA
gfe
-bfe
gfe,bfe - mS
Frequency,f - MHz

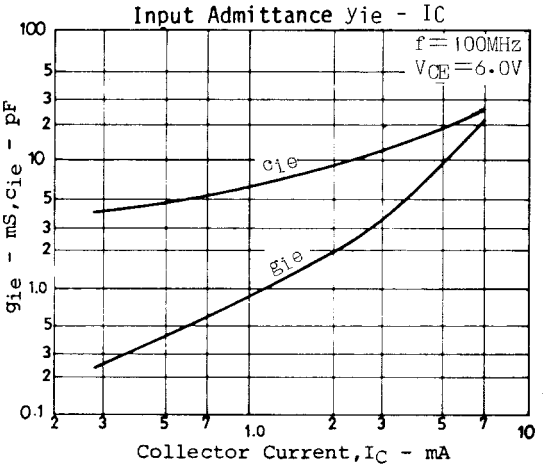

Output Admittance yoe - f
VCE=6.0V
IC=1.0mA
goe
Coe
goe - mS
Coe - pF
Frequency,f - MHz

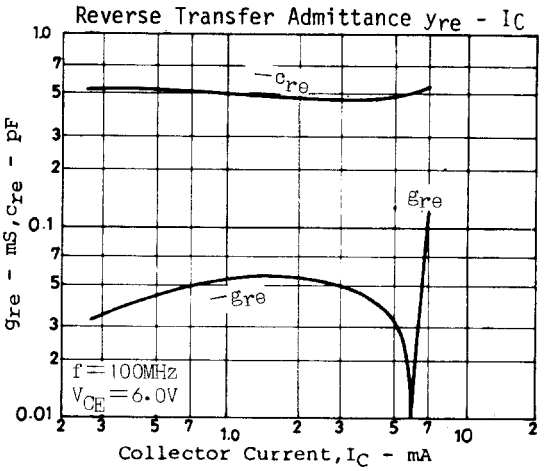

Input Admittance yie - IC
f=10.0MHz
VCE=6.0V
cie
gie
gie - mS, cie - pF
Collector Current,IC - mA

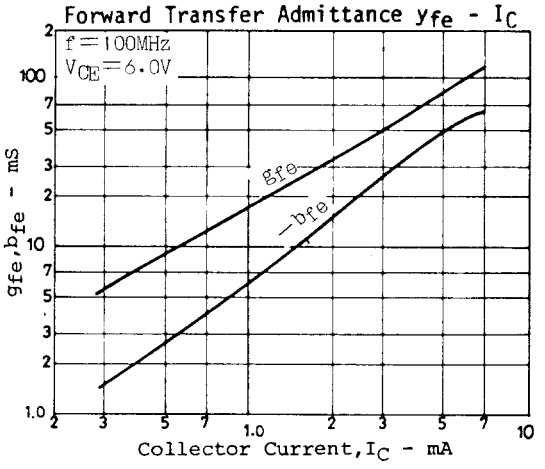

Output Admittance yoe - IC
f=10.0MHz
VCE=6.0V
goe
coe
goe - μS, coe - pF
Collector Current,IC - mA

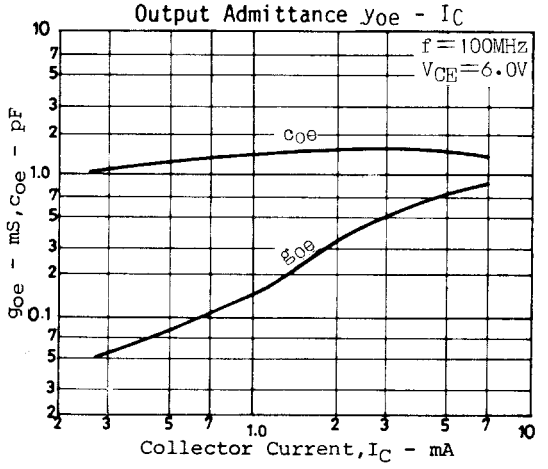

Input Admittance yie - VCE
f=10.0MHz
IC=1.0mA
cie
gie
gie - mS,cie - pF
Collector-to-Emitter Voltage,VCE - V


Output Admittance yoe - VCE
f=10.0MHz
IC=1.0mA
goe
coe
goe - μS, coe - pF
Collector-to-Emitter Voltage,VCE - V


Input Admittance yie - IC
f=100MHz
VCE=6.0V
cie
gie
gie - mS,cie - pF
Collector Current,IC - mA


Reverse Transfer Admittance yre - IC
-cre
gre
-gre
f=100MHz
VCE=6.0V
gre - mS,cre - pF
Collector Current,IC - mA


Forward Transfer Admittance yfe - IC
f=100MHz
VCE=6.0V
gfe
-bfe
gfe,bfe - mS
Collector Current,IC - mA


Output Admittance yoe - IC
f=100MHz
VCE=6.0V
coe
goe
goe - mS,coe - pF
Collector Current,IC - mA