Ordering number:EN3020

NPN Epitaxial Planar Silicon Transistor

2SC4399

High-Frequency General-Purpose Amplifier Applications

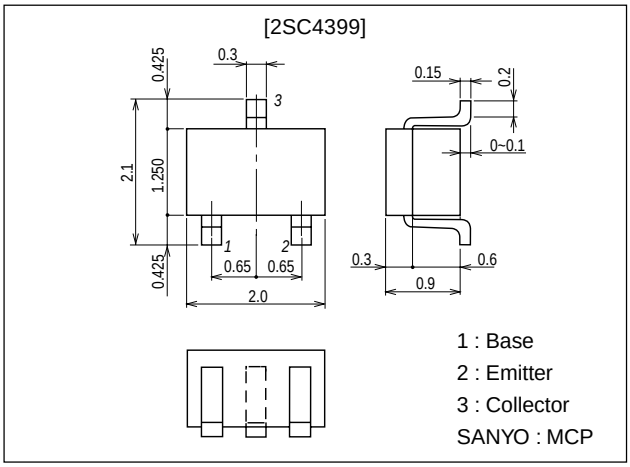
Features

- High power gain : PG=25dB typ (f=100MHz).
- Very small-sized package permitting the 2SC4399-applied sets to be made small and slim.

Package Dimensions

unit:mm

2059B



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	mW
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	200	320		MHz
Reverse transfer Capacitance	C_{re}	V_{CB}=6V, f=1MHz		0.9	1.2	pF
Base-to-Collector Time Constant	$r_{bb}'C_c$	V_{CB}=6V, I_C=1mA, f=31.9MHz		12	20	ps
Power Gain	PG	V_{CB}=6V, I_C=1mA, f=100MHz		25		dB
Noise Figure	NF	V_{CB}=6V, I_C=1mA, f=100MHz		3.0		dB

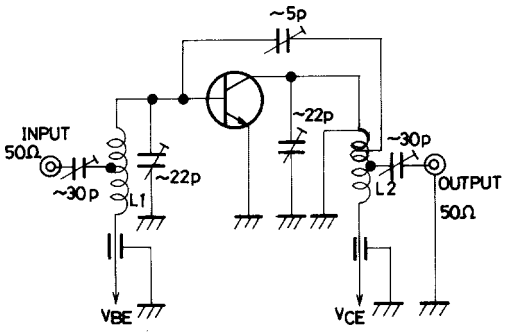
* : The 2SC4399 is classified by 1mA h_{FE} as follows :

60	3	120	90	4	180	135	5	270

Marking : F
h_{FE} rank : 3, 4, 5

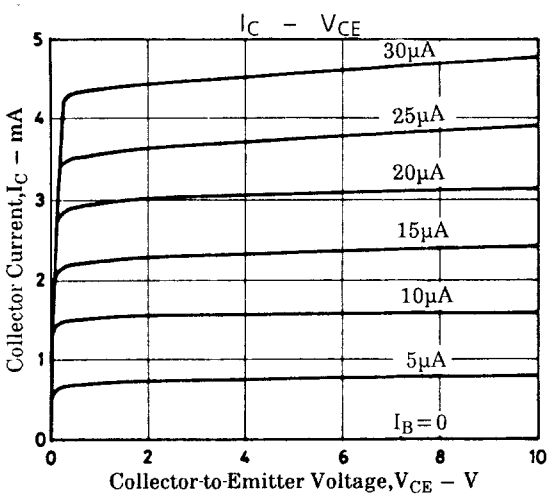
SANYO Electric Co.,Ltd. Semiconductor Bussiness Headquaters
TOKYO OFFICE Tokyo Bldg., 1-10, 1 Chome, Ueno, Taito-ku, TOKYO, 110-8534 JAPAN

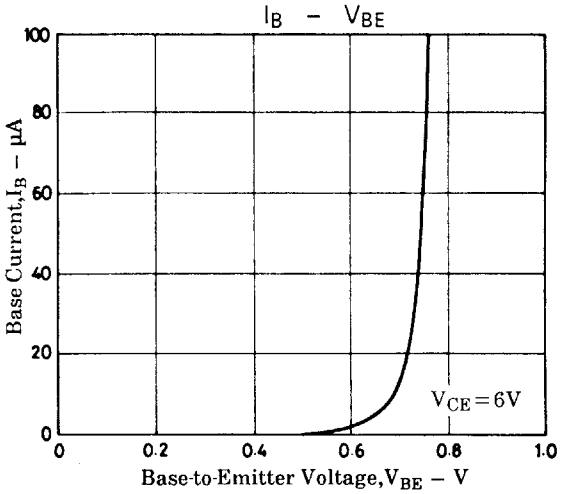
NF, PG Test Circuit

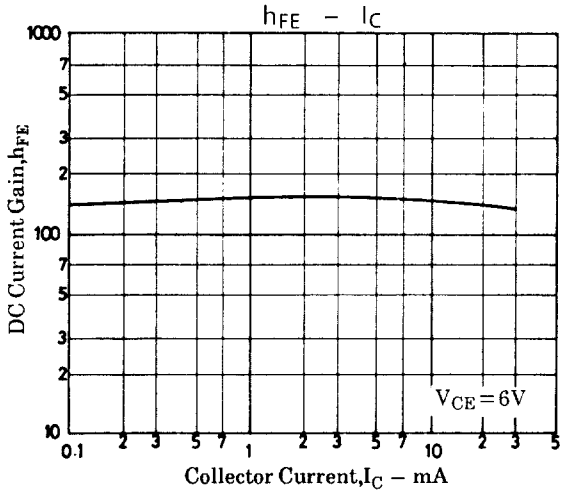


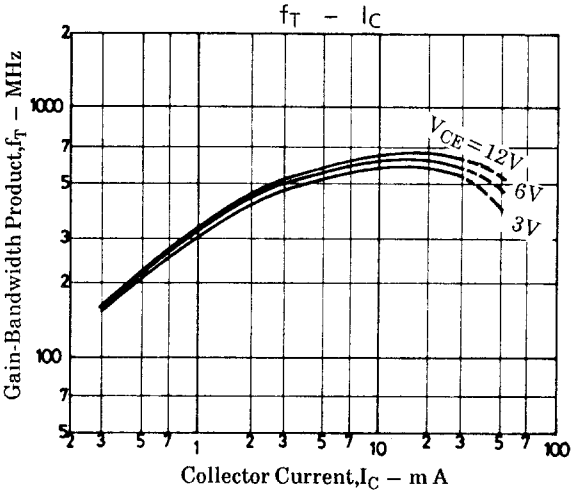
L1 : 1mm$^{\varnothing}$ plated wire 10mm$^{\varnothing}$ 4T, tap : 2T from V_{BE} side
L2 : 1mm$^{\varnothing}$ plated wire 10mm$^{\varnothing}$ 7T, tap : 1T from V_{CE} side
L3 : 1mm$^{\varnothing}$ enameled wire 10mm$^{\varnothing}$ 3T

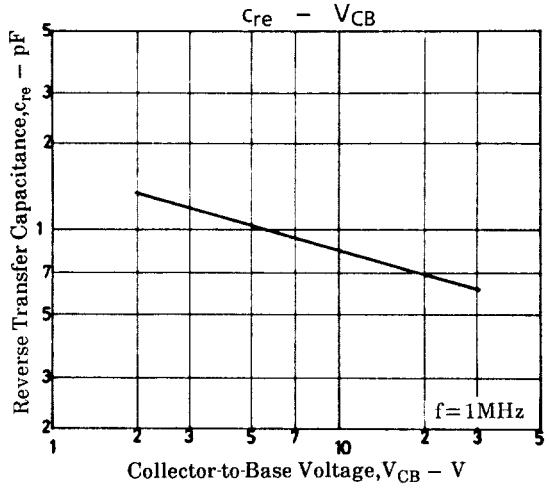
Unit (capacitance : F)

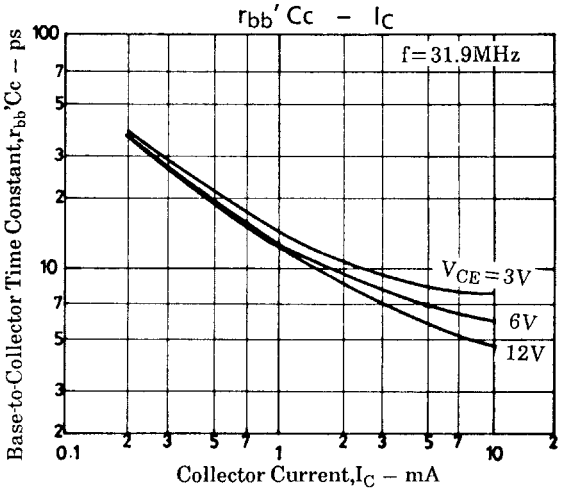


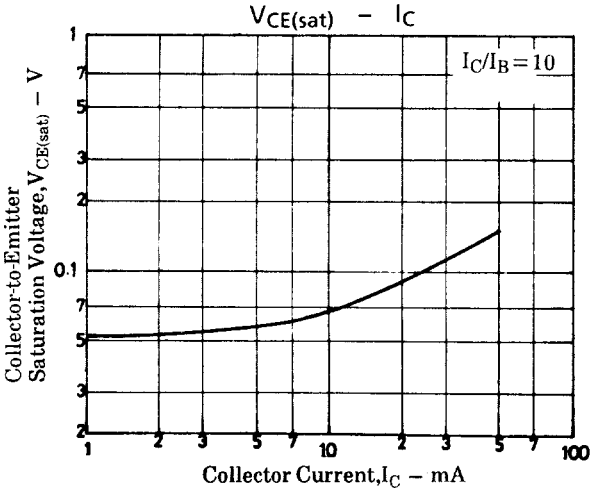


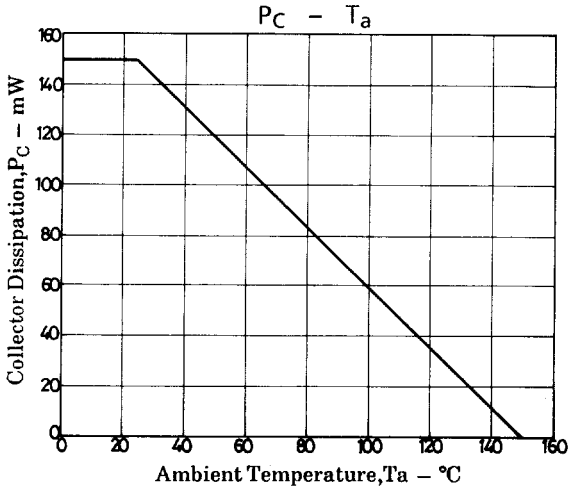


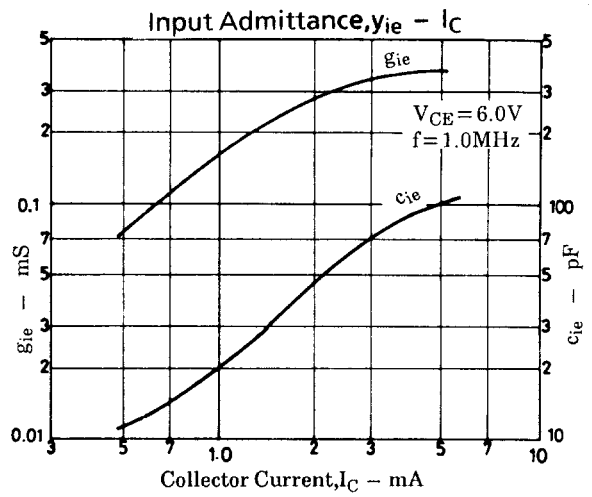


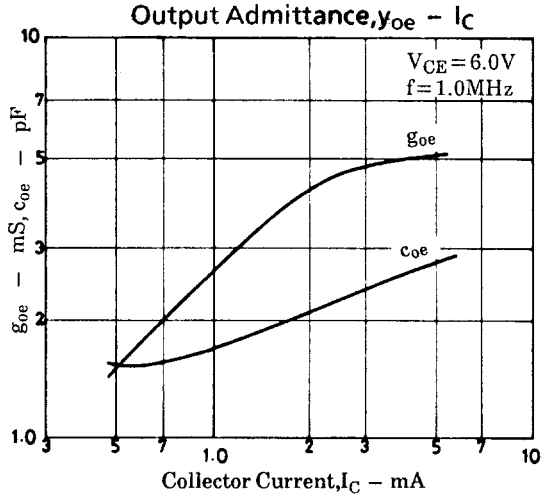

Cre – VCB
Reverse Transfer Capacitance,Cre – pF
f=1MHz
Collector-to-Base Voltage,VCB – V

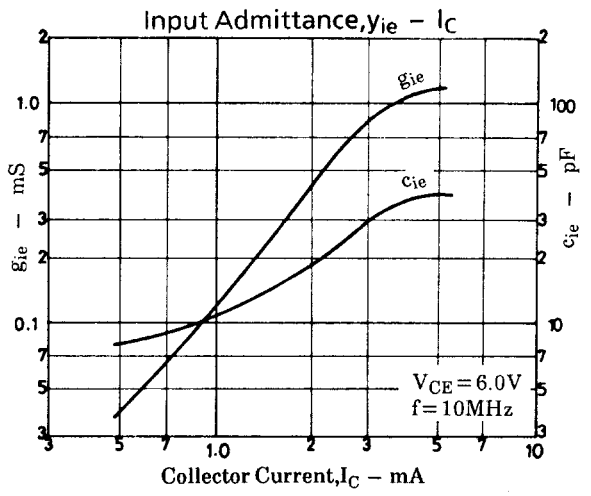

rbb' Cc – IC
Base-to-Collector Time Constant,rbb'Cc – ps
f=31.9MHz
VCE=3V
6V
12V
Collector Current,IC – mA

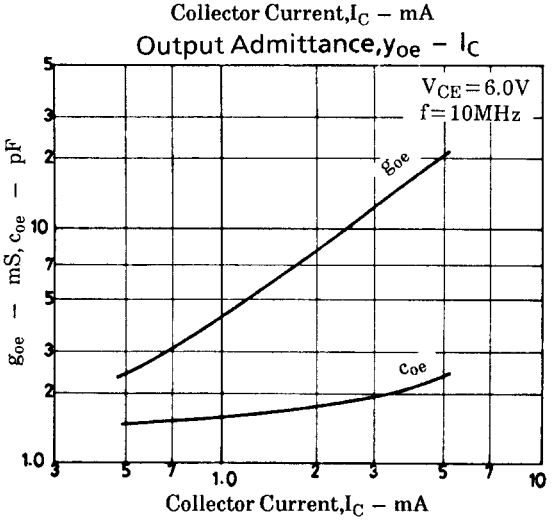

VCE(sat) – IC
Collector-to-Emitter Saturation Voltage,VCE(sat) – V
IC/IB=10
Collector Current,IC – mA


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

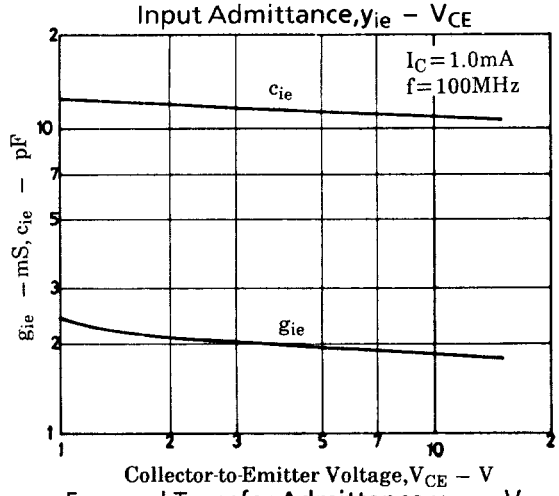

Input Admittance,yie – IC
gie
VCE=6.0V
f=1.0MHz
cie
gie – mS
cie – pF
Collector Current,IC – mA


Output Admittance,yoe – IC
VCE=6.0V
f=1.0MHz
goe
coe
goe – mS, coe – pF
Collector Current,IC – mA

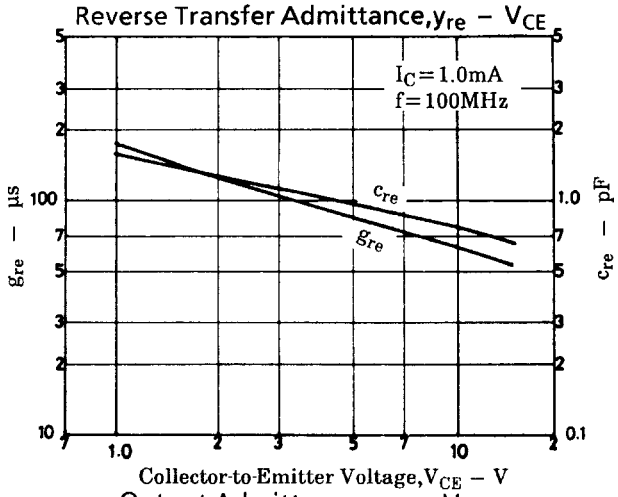

Input Admittance,yie – IC
gie
cie
VCE=6.0V
f=10MHz
gie – mS
cie – pF
Collector Current,IC – mA


Output Admittance,yoe – IC
VCE=6.0V
f=10MHz
goe
coe
goe – mS, coe – pF
Collector Current,IC – mA

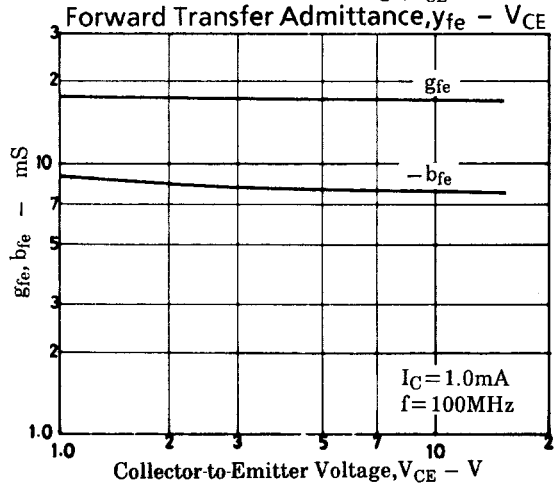
Input Admittance, y_{ie} – V_{CE}



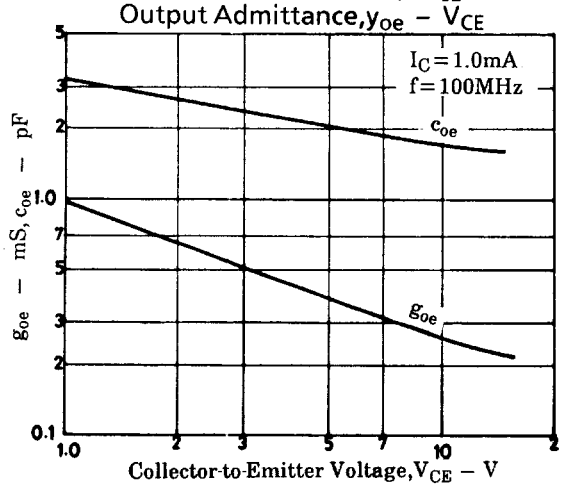
Reverse Transfer Admittance, y_{re} – V_{CE}



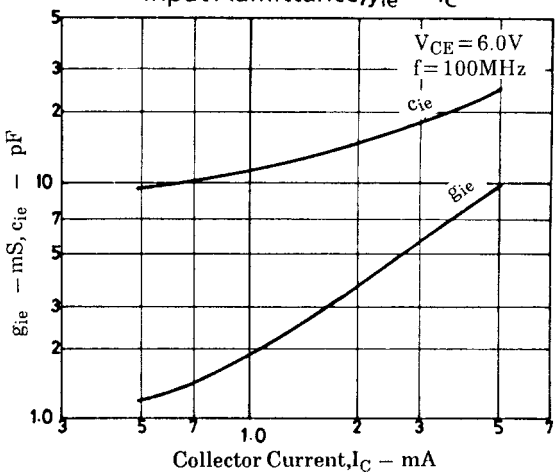
Forward Transfer Admittance, y_{fe} – V_{CE}



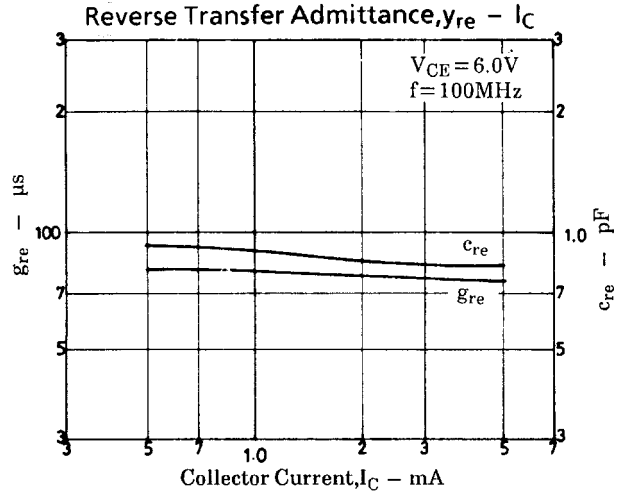
Output Admittance, y_{oe} – V_{CE}



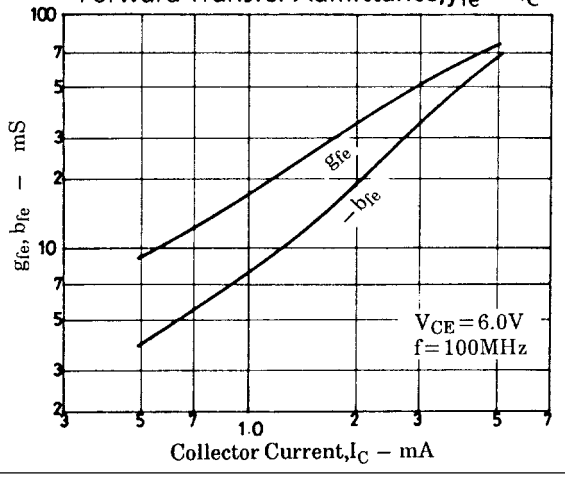
Input Admittance, y_{ie} – I_C



Reverse Transfer Admittance, y_{re} – I_C



Forward Transfer Admittance, y_{fe} – I_C



Output Admittance, y_{oe} – I_C