S2508

シリコンNPNエピタキシアルプレーナ形トランジスタ
SILICON NPN EPITAXIAL PLANAR TRANSISTOR

○ UHF～Lバンド低雑音増幅用

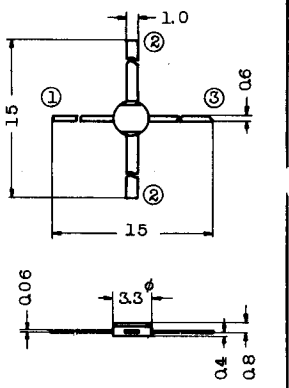
○ UHF～L Band Low Noise Amplifier Applications.

○ High Speed Switching Applications.

- NF = 2.0 dB (f = 500 MHz)
- S_{21} = 15 dB (f = 500 MHz)
- f_T = 3.5 GHz

通信工業用
INDUSTRIAL APPLICATIONS

Unit in mm



1. BASE
2. EMITTER
3. COLLECTOR

JEDEC	
EIAJ	
TOSHIBA	2-3A1A

最大定格 MAXIMUM RATINGS (Ta = 25℃)

CHARACTERISTIC	SYMBOL	RATING	UNIT
コレクタ・ベース間電圧	V_{CBO}	20	V
コレクタ・エミッタ間電圧	V_{CEO}	15	V
エミッタ・ベース間電圧	V_{EBO}	3.0	V
コレクタ電流	I_C	30	mA
エミッタ電流	I_E	−30	mA
コレクタ損失	P_C	175	mW
接合部温度	T_j	175	℃
保存温度	T_{stg}	−65～175	℃

マイクロ波特性 MICROWAVE CHARACTERISTICS (Ta = 25℃)

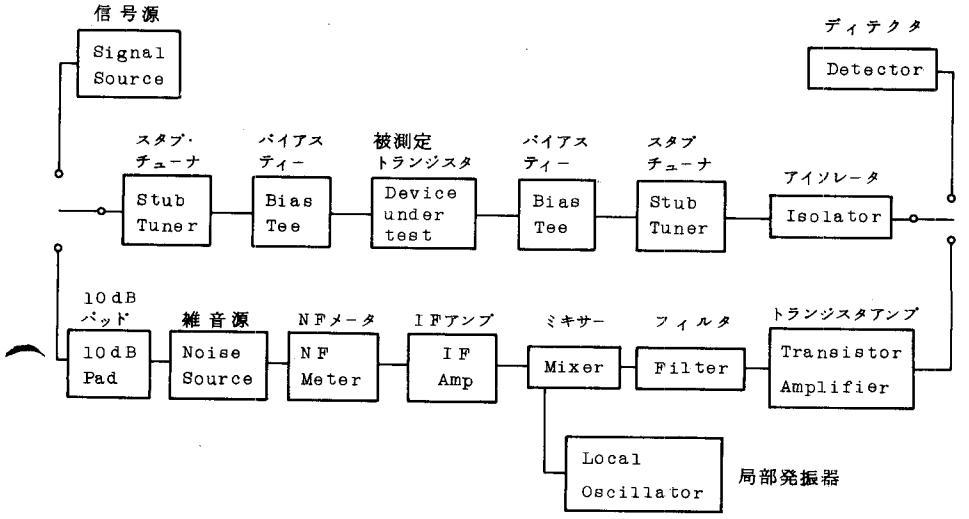
CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
雑音指数 Fig 1	NF	V_{CE} = 10 V, I_C = 3 mA f = 500 MHz	—	2.0	3.0	dB
		V_{CE} = 10 V, I_C = 3 mA f = 1000 MHz	—	3.3	—	dB
挿入電力利得	$\|S_{21}\|^2$	V_{CE} = 10 V, I_C = 10 mA f = 500 MHz	13.0	15.0	—	dB
		V_{CE} = 10 V, I_C = 10 mA f = 1000 MHz	—	10.0	—	dB
トランジション周波数	f_T	V_{CE} = 10 V, I_C = 10 mA	2.5	3.5	—	GHz

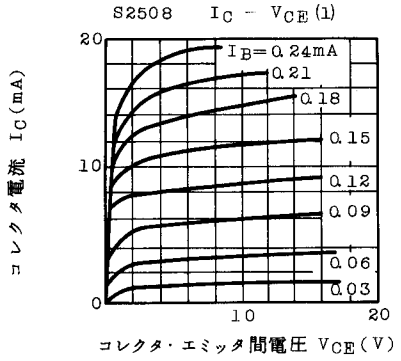
電気的特性 ELECTRICAL CHARACTERISTICS (Ta = 25℃)

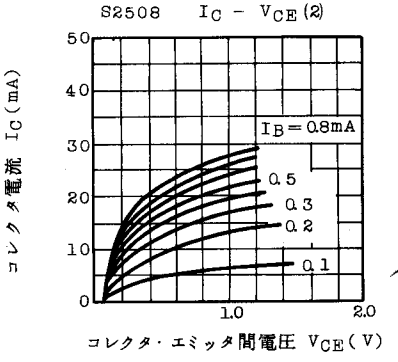
CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
コレクタしゃ断電流	I_{CBO}	V_{CB} = 10 V, I_E = 0	—	—	1.0	μA
エミッタしゃ断電流	I_{EBO}	V_{EB} = 2.0V, I_E = 0	—	—	1.0	μA
直流電流増幅率	h_{FE}	V_{CE} = 10 V, I_C = 5 mA	30	80		
コレクタ出力容量	C_{ob}	V_{CB} = 10 V, I_E = 0	—	0.8	1.0	pF
帰還容量	C_{re}	V_{CB} = 10 V, I_E = 0 (Note 1)	—	0.45		pF
エミッタ入力容量	C_{ib}	V_{EB} = 0 V, I_C = 0 f = 1 MHz	—	1.5	—	pF

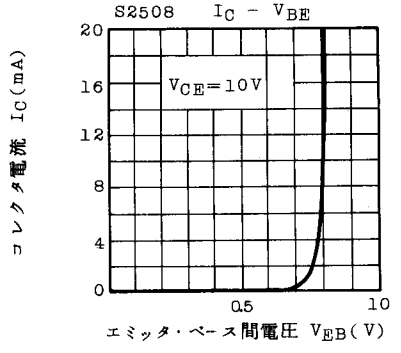
Fig 1 雑音指数および電力利得測定ブロックダイアグラム

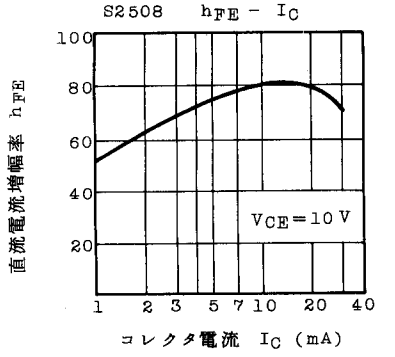
Noise Figure and Power Gain Test Set Block Diagram

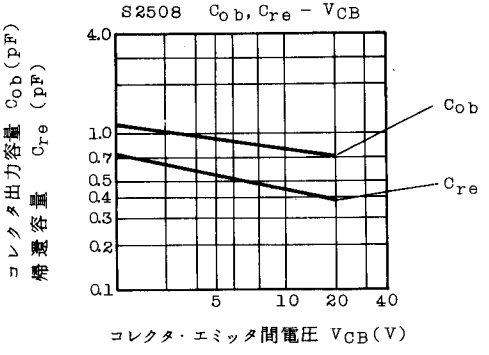


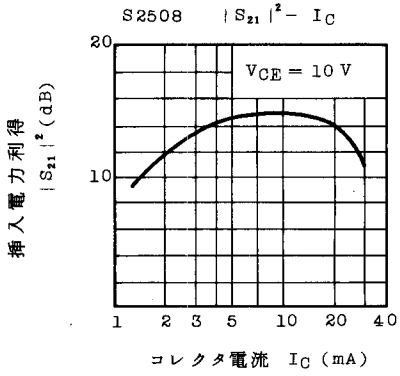

S2508 IC - VCE (1)
IB=0.24mA
0.21
0.18
0.15
0.12
0.09
0.06
0.03
20
10
0
10
20
コレクタ電流 IC(mA)
コレクタ・エミッタ間電圧 VCE(V)

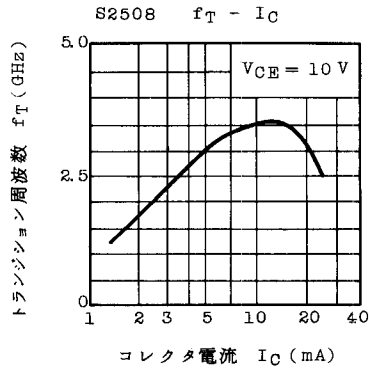

S2508 IC - VCE (2)
IB=0.8mA
0.5
0.3
0.2
0.1
50
40
30
20
10
0
1.0
2.0
コレクタ電流 IC(mA)
コレクタ・エミッタ間電圧 VCE(V)

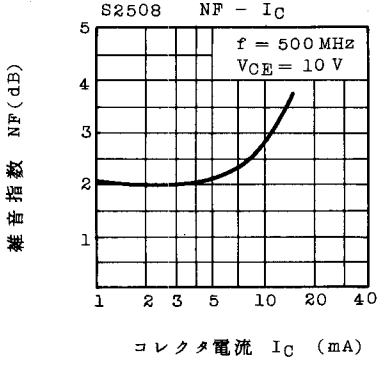

S2508 IC - VBE
VCE=10V
20
16
12
8
4
0
0.5
10
コレクタ電流 IC(mA)
エミッタ・ベース間電圧 VEB(V)

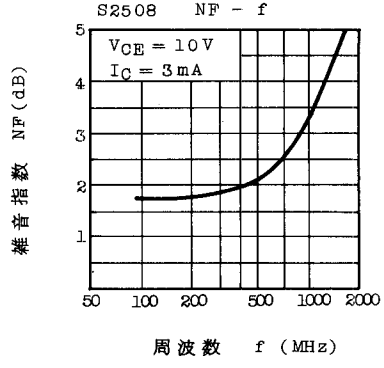

S2508 hFE - IC
VCE=10V
100
80
60
40
20
1
2
3
5
7
10
20
40
直流電流増幅率 hFE
コレクタ電流 IC (mA)


S2508 Cob, Cre - VCB
Cob
Cre
4.0
1.0
0.7
0.5
0.4
0.3
0.2
0.1
5
10
20
40
コレクタ出力容量 Cob(pF)
帰還容量 Cre (pF)
コレクタ・エミッタ間電圧 VCB(V)









Note 1 C_{re} は Boonton Electronics Corp 製 75D Direct Capacitance Bridge によつて三端子法で測定

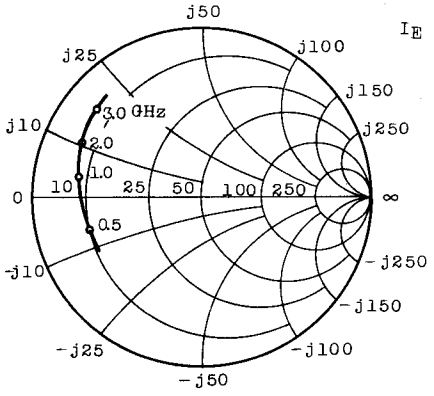
C_{re} is Measured by 3 Terminal method with Boonton Electronics Cord, 75D Direct Capacitance Bridgh.

S2508のエミッタ接地小信号Sパラメータ

Common-Emitter Small Signal S-Parameter of S2508

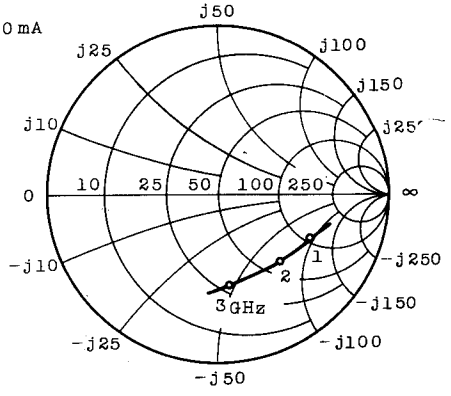
$V_{CB} = 10\,V$

$I_E = 10\,mA$



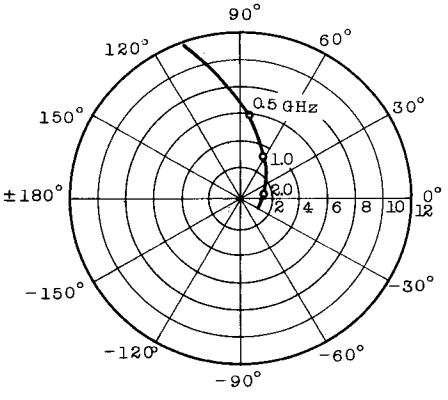
S11

(Unit : Ω)

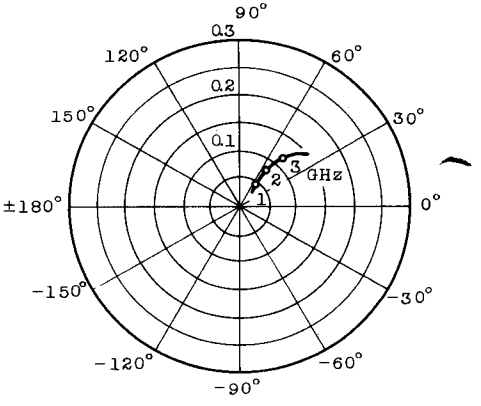


S22

(Unit : Ω)



S21



S12