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

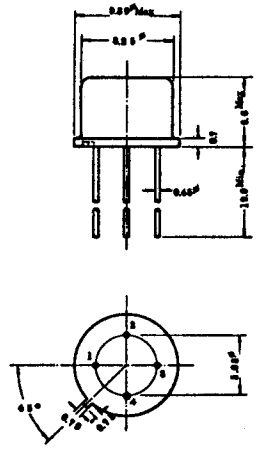
2SC1574

通信工業用
INDUSTRIAL APPLICATIONS

- ○ UHF帯低雑音増幅用
- ○ 超高速スイッチング用
- ○ UHF Band Low Noise Amplifier Applications
- ○ High Speed Switching Applications

- NF=1.2dB (f=500MHz)
- S21=15dB (f=500MHz)
- f_T=4.5GHz

Unit in mm



1. EMITTER
2. BASE
3. COLLECTOR
4. CASE

JEDEC	TO-39
EIAJ	TC-5, TB-5B
TOSHIBA	2-8D1A

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}	20	V
エミッタ・ベース間電圧	V_{EBO}	2.0	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	400	mW
接合温度	T_j	175	℃
保存温度	T_{stg}	−65～175	℃

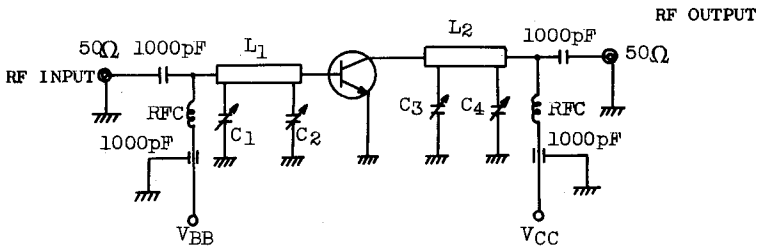
高周波特性 RF CHARACTERISTICS (Ta = 25 ℃)

CHARACTERISTIC	SYMBOL	CONDTION	MIN.	TYP.	MAX.	UNIT
雑音指数 Fig. 1	NF	V_{CE}=10V, I_C=3mA f = 500MHz	—	1.2	2.0	dB
		V_{CE}=10V, I_C=3mA f = 1000MHz	—	2.0	—	dB
挿入電力利得	$\|S_{21}\|^2$	V_{CE}=10V, I_C=10mA f = 500MHz	13.0	15.0	—	dB
		V_{CE}=10V, I_C=10mA f = 1000MHz	—	9.5	—	dB
トランジション周波数	f_T	V_{CE}=10V, I_C=10mA	3.5	4.5	—	GHz

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

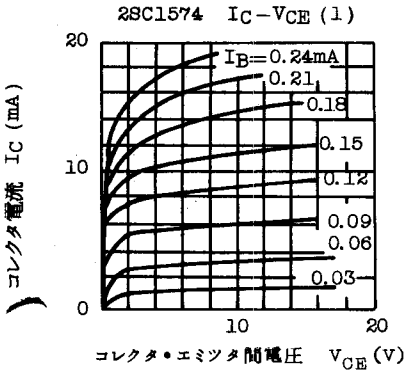
CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
コレクタしや断電流	I_{CBO}	V_{CB}=10V, I_E=0	–	–	0.1	μA
エミッタしや断電流	I_{EBO}	V_{EB}=1.0V, I_E=0	–	–	1.0	μA
直流電流増幅率	h_{FE}	V_{CE}=10V, I_C=5mA	30	–	–	
コレクタ出力容量	C_{ob}	V_{CE}=10V, I_E=0	–	1.15	–	pF
帰還容量	C_{re}	V_{CB}=10V, I_E=0 (Note 1)	–	0.45	0.60	pF

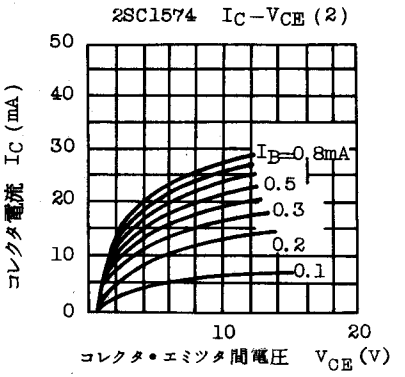
Fig. 1 雑音指数測定回路
NOISE FIGURE TEST CIRCUIT

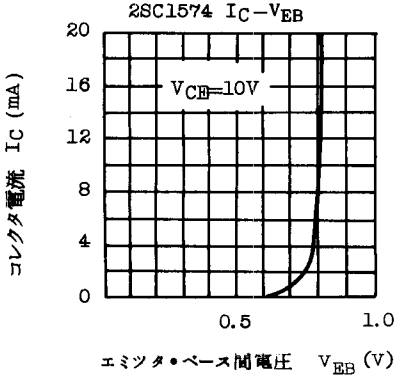


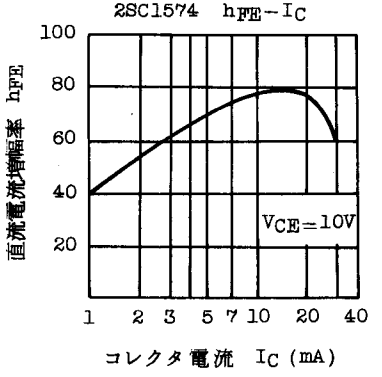
C_1, C_2, C_3, C_4, : 0.8 ~ 10pF AIR TRIMMER

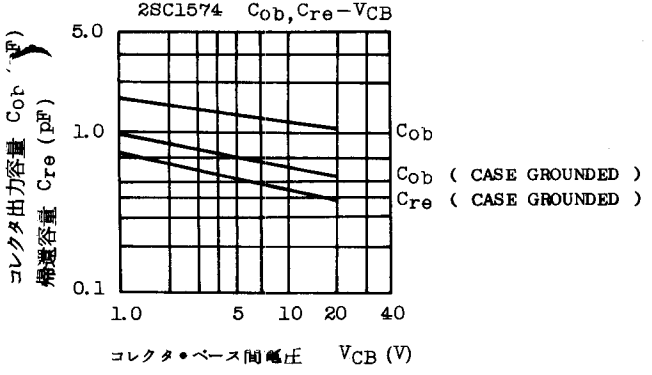
L_1, L_2, : 4×10×0.03mm COPPER RIBBON

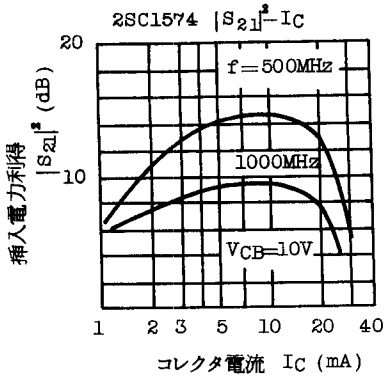

2SC1574 IC−VCE (1)
IB=0.24mA
0.21
0.18
0.15
0.12
0.09
0.06
0.03
コレクタ電流 IC (mA)
コレクタ・エミッタ間電圧 VCE (V)

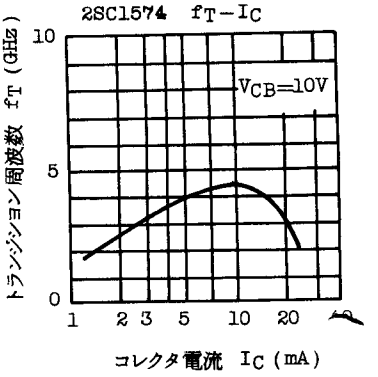

2SC1574 IC−VCE (2)
IB=0.8mA
0.5
0.3
0.2
0.1
コレクタ電流 IC (mA)
コレクタ・エミッタ間電圧 VCE (V)

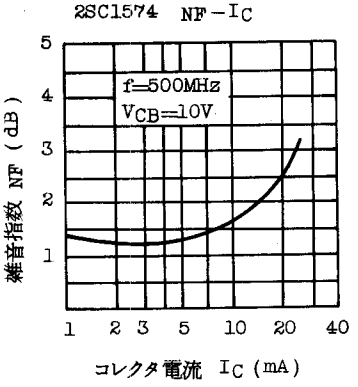

2SC1574 IC−VEB
VCE=10V
コレクタ電流 IC (mA)
エミッタ・ベース間電圧 VEB (V)

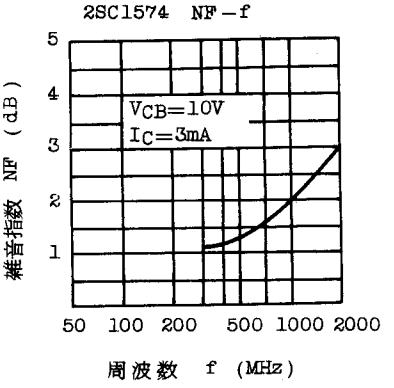

2SC1574 hFE−IC
VCE=10V
直流電流増幅率 hFE
コレクタ電流 IC (mA)


2SC1574 Cob,Cre−VCB
Cob
Cob (CASE GROUNDED)
Cre (CASE GROUNDED)
コレクタ出力容量 Cob (pF)
帰還容量 Cre (pF)
コレクタ・ベース間電圧 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 bridge.

2 ; 飽和出力（電力利得が 1dB 低下する点での出力）は、コレクタ電流がが 10mA の時に 5dBm 以上あります。

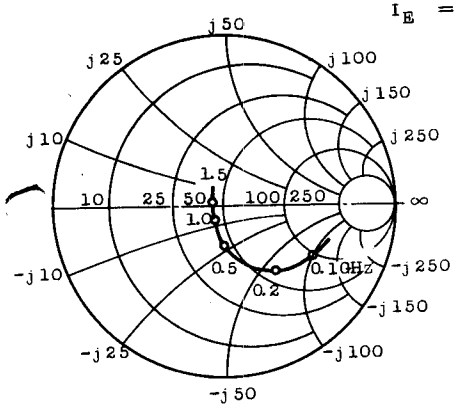
Output power (at 1dB gain compression point) is more than 5dBm at I_C=10mA.

2SC1574 のエミッタ接地，小信号 S パラメータ

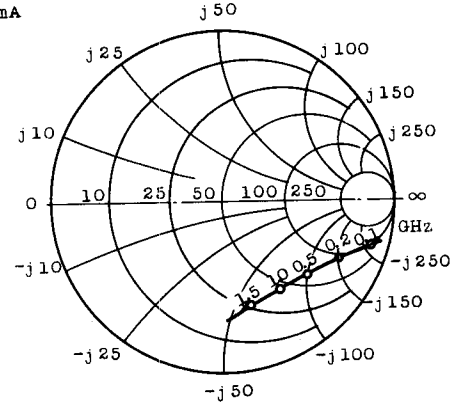
COMMON EMITTER SMALL SIGNAL S-PARAMETERS OF 2SC1574

V_{CB} = 10V

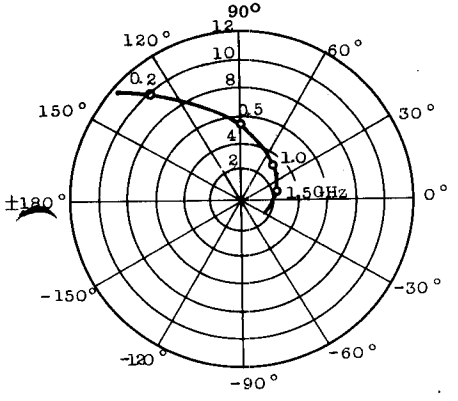
I_E = 10mA



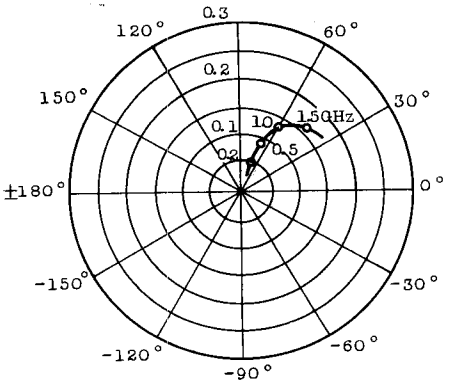
S 11
(Unit in Ω)



S 22
(Unit in Ω)



S 21



S 12