2SC1559

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

通信工業用
INDUSTRIAL APPLICATIONS

○ UHF～Cバンド低雑音増幅用

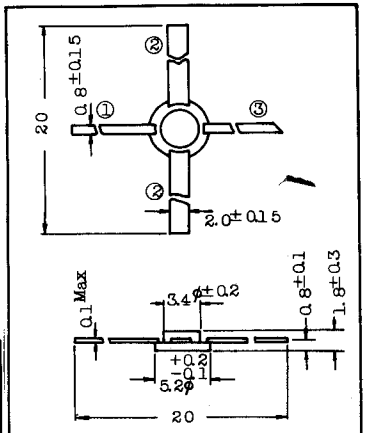
○ 超高速スイッチング用（CML）

○ UHF～C Band Low Noise Amplifier Applications.

○ High Speed Switching Applications.

- f_T = 7 GHz
- G_{pe} = 10 dB (f = 2 GHz)

Unit in mm



1. BASE
2. EMITTER
3. COLLECTOR

JEDEC	–
EIAJ	–
TOSHIBA	2-3C1A

最大定格 MAXIMUM RATINGS (Ta = 25℃)

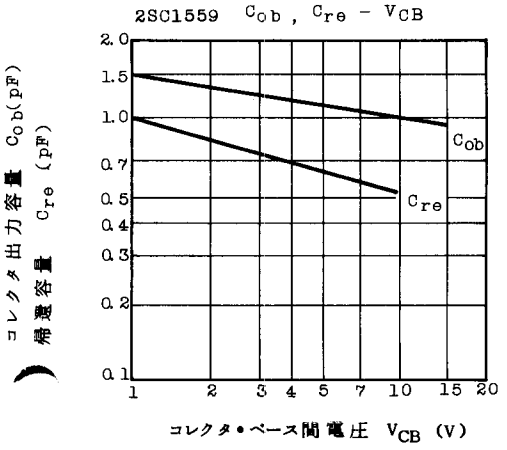
CHARACTERISTIC	SYMBOL	RATING	UNIT
コレクタ・ベース間電圧	V_{CBO}	15	V
コレクタ・エミッタ間電圧	V_{CEO}	8	V
エミッタ・ベース間電圧	V_{EBO}	3.0	V
コレクタ電流	I_C	80	mA
エミッタ電流	I_E	−80	mA
コレクタ損失	P_C	400	mW
接合温度	T_j	175	℃
保存温度	T_{stg}	−65～175	℃

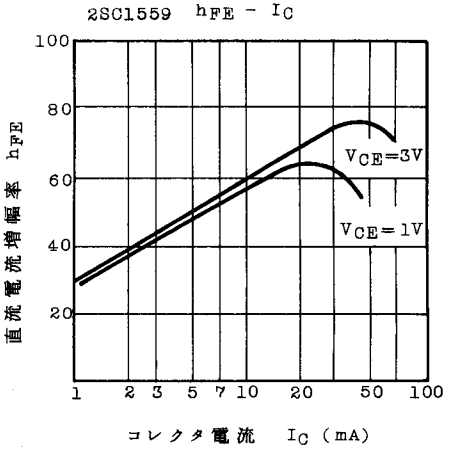
高周波特性 RF CHARACTERISTICS (Ta = 25 ℃)

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
トランジション周波数	f_T	V_{CE}=5V, I_C=30 mA	6.0	7.0	–	GHz
電力利得	G_{pe}	V_{CE}=5V I_C=30 mA, f=2 GHz	8.5	10.0	–	dB
雑音指数	NF	V_{CE}=5V I_{CE}=10 mA, f=2 GHz	–	3.5	4.5	dB
最大発振周波数	f_{Max}	V_{CE}=5V, I_{CE}=30 mA	–	8.0	–	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} = 2.0V, I_C = 0	–	–	1.0	μA
直流電流増幅率	h_{FE}	V_{CE} = 3V, I_C = 50mA	30	75	–	
コレクタ.エミッタ間飽和電圧	V_{CE}(sat)	I_C = 30mA, I_B = 3mA	–	0.25	–	V
ベース.エミッタ間飽和電圧	V_{BE}(sat)	I_C = 30mA, I_B = 3mA	–	0.87	–	V
コレクタ出力容量	C_{ob}	V_{CB} = 5V, I_E = 0	–	1.2	1.5	pF
帰還容量	C_{re}	f = 1MHz (Note 1)	–	0.65	–	pF
入力容量	C_{ib}	V_{EB}=0, I_C=0, f=1MHz	–	1.7	–	pF

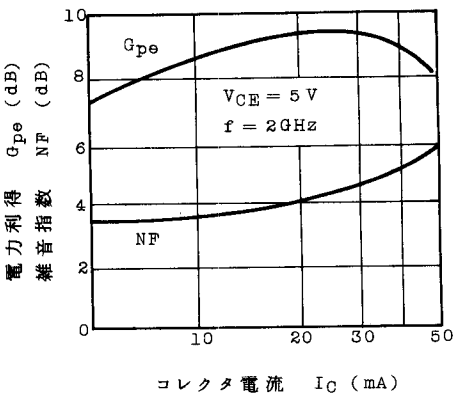




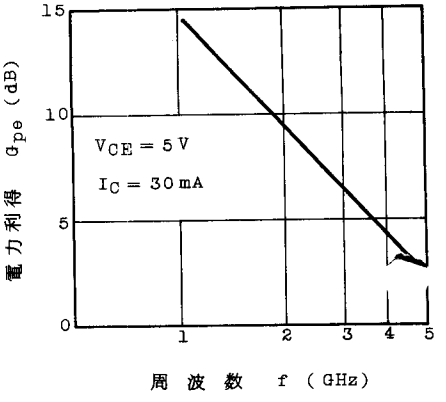
(Note 1): C_{re} は Boonton Electronics Corp. 製 75D Direct Capacitance Bridge によつて三端子法で測定。

C_{re} is measured by 3 terminal method with Boonton Electronics Corporations 75D direct capacitance bridge.

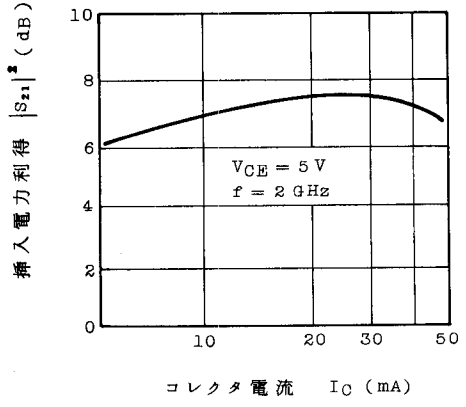
2SC1559 G_{pe}, NF − I_C



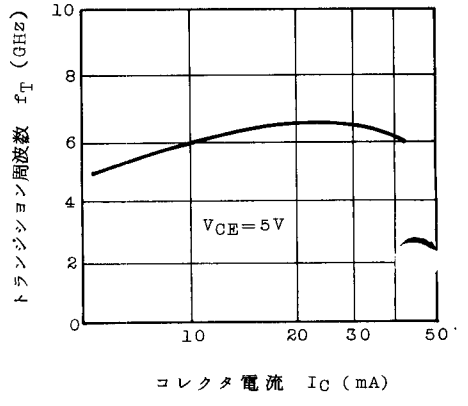
2SC1559 G_{pe} − f



2SC1559 $|S_{21}|^2$ − I_C



2SC1559 f_T − I_C

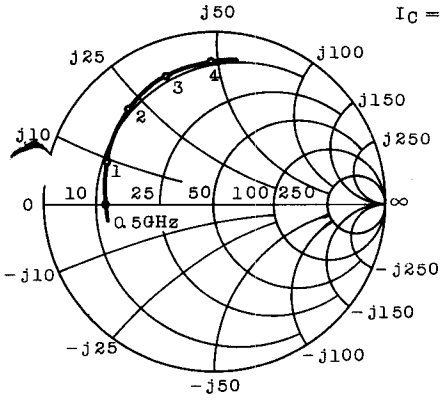


2SC1559 のエミッタ接地小信号Sパラメータ

COMMON EMITTER SMALL SIGNAL S-PARAMETERS OF 2SC1559

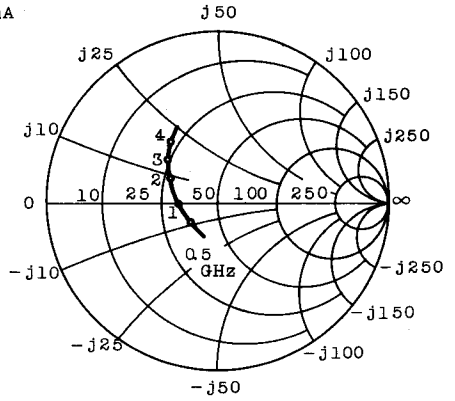
$V_{CB} = 5\,V$

$I_C = 30\,mA$



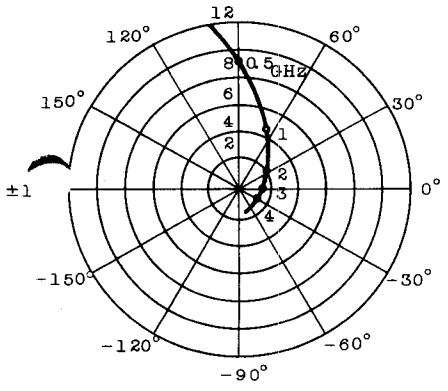
S11

(Unit in Ω)

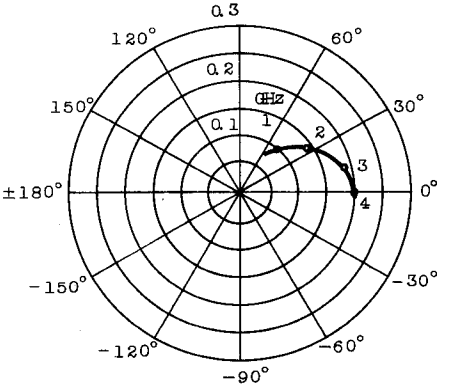


S22

(Unit in Ω)



S21



S12