

2SC1743

9097250 TOSHIBA (DISCRETE/OPTO)

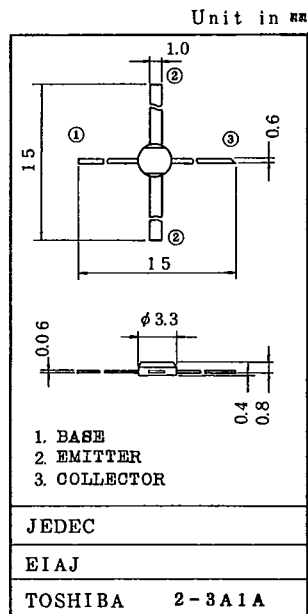
マイクロ波トランジスタ
低雑音増幅/超高速スイッチング用

39C 00453 D T-31-15

- UHF~S バンド低雑音増幅用
- 超高速スイッチング用
- UHF~S Band Low Noise Amplifier Applications
- High Speed Switching Applications
- ・ 低雑音です; $NF = 3.5 \text{ dB}$ ($f = 2 \text{ GHz}$)
- ・ 高電力利得です; $G_{pe} = 10 \text{ dB}$ ($f = 2 \text{ GHz}$)

最大定格 MAXIMUM RATINGS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	RATING	UNIT
コレクタ・ベース間電圧	V_{CB0}	20	V
コレクタ・エミッタ間電圧	V_{CE0}	15	V
エミッタ・ベース間電圧	V_{EB0}	3	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	$^\circ\text{C}$
保存温度	T_{stg}	-65~175	$^\circ\text{C}$



マイクロ波特性 MICROWAVE CHARACTERISTICS ($T_a = 25^\circ\text{C}$)

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
雑音指数 Fig 1	NF	$V_{CE} = 10 \text{ V}, I_C = 5 \text{ mA}, f = 2 \text{ GHz}$	—	3.5	4.0	dB
		$V_{CE} = 10 \text{ V}, I_C = 5 \text{ mA}, f = 4 \text{ GHz}$	—	6.0	—	dB
電力利得 Fig 1	G_{pe}	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}, f = 2 \text{ GHz}$	8.5	10.0	—	dB
		$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}, f = 4 \text{ GHz}$	—	5.0	—	dB
トランジション周波数	f_T	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}, (\text{Note 1})$	3.5	4.5	—	GHz
最大発振周波数	f_{Maxx}	$V_{CE} = 10 \text{ V}, I_C = 10 \text{ mA}$	—	8.0	—	GHz

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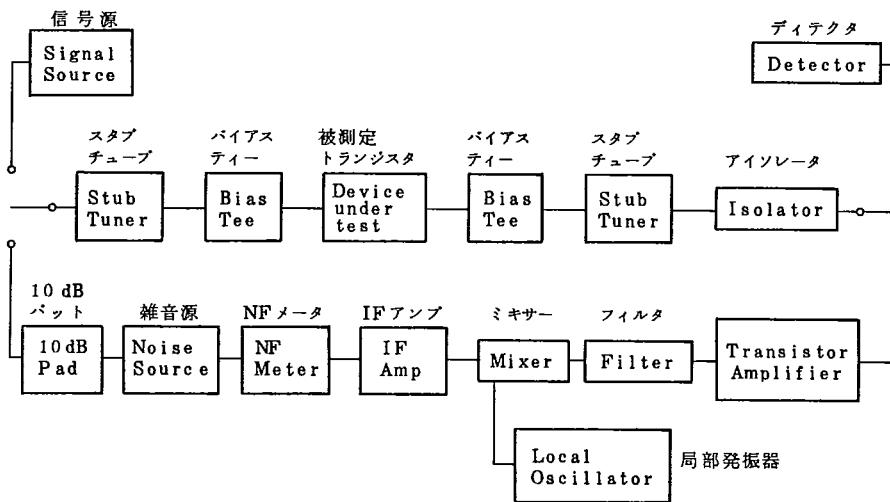
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電気的特性 ELECTRICAL CHARACTERISTICS (Ta=25°C)

CHARACTERISTIC	SYMBOL	CONDITION	MIN.	TYP.	MAX.	UNIT
コレクタシャ断電流	ICBO	V _{CB} =10V, I _E =0	-	-	1.0	μA
エミッタシャ断電流	IEBO	V _{EB} =2.0V, I _C =0	-	-	1.0	μA
直流電流増幅率	h _{FE}	V _{CE} =10V, I _C =10mA	30	70	-	
コレクタ・エミッタ間飽和電圧	V _{CE(sat)}	I _C =10mA, I _B =1mA	-	0.2	-	V
ベース・エミッタ間飽和電圧	V _{BE(sat)}	I _C =10mA, I _B =1mA	-	0.82	-	V
コレクタ出力容量	C _{ob}	V _{CB} =10V, I _E =0 f = 1MHz	-	0.75	1.0	pF
コレクタ・ベース帰還容量	C _{re}	V _{CB} =10V, I _E =0 f = 1MHz (Note 2)	-	0.40	-	pF
エミッタ入力容量	C _{ib}	V _{EB} =0V, I _C =0 f = 1MHz	-	1.7	-	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

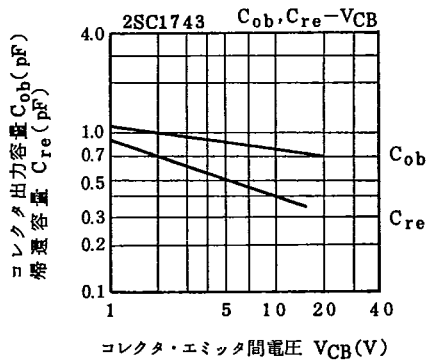
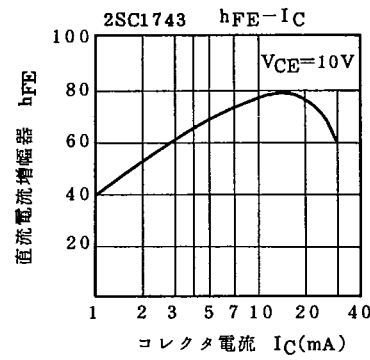
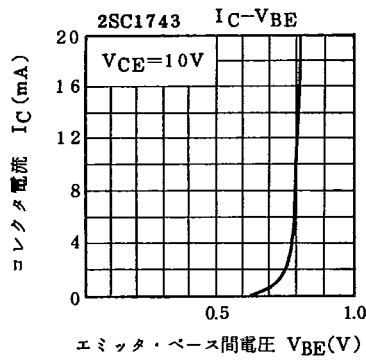
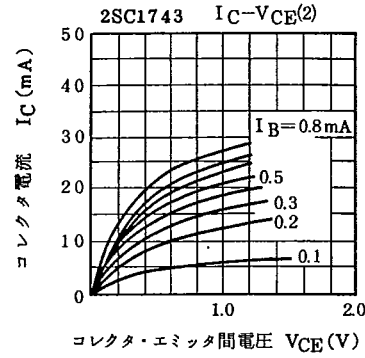
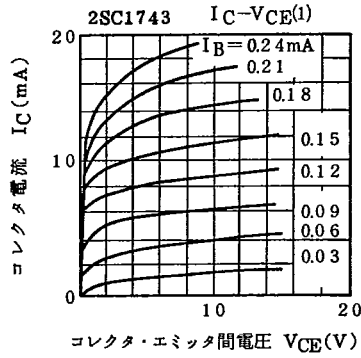
Noise Figure and Power Gain Test Set Block Diagram



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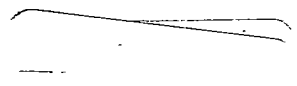
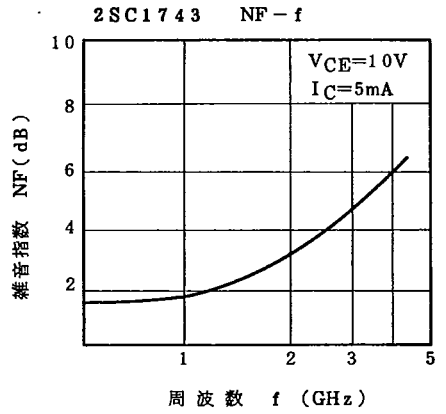
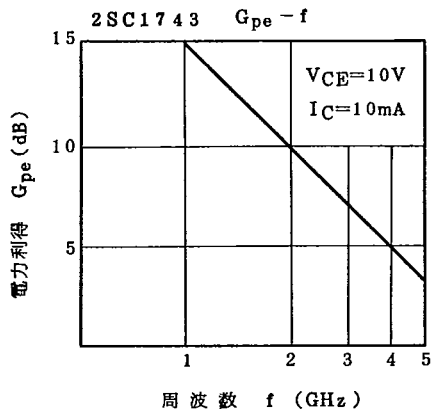
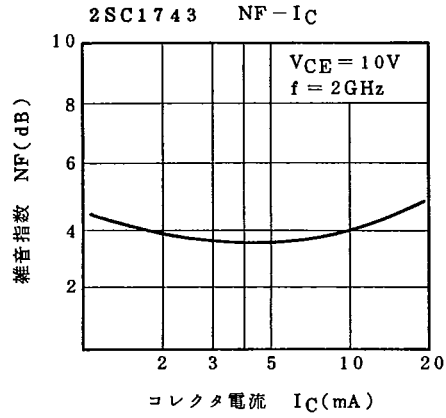
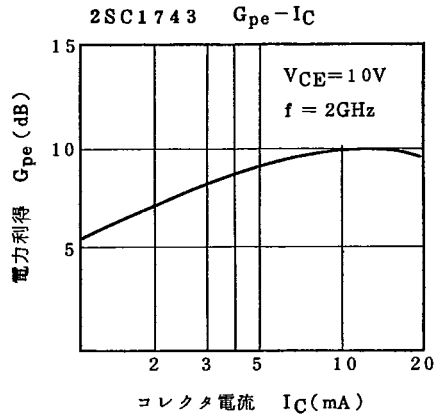
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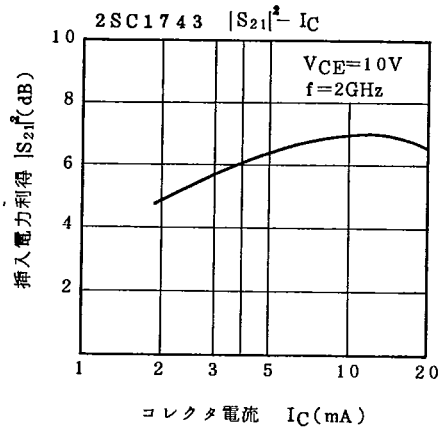
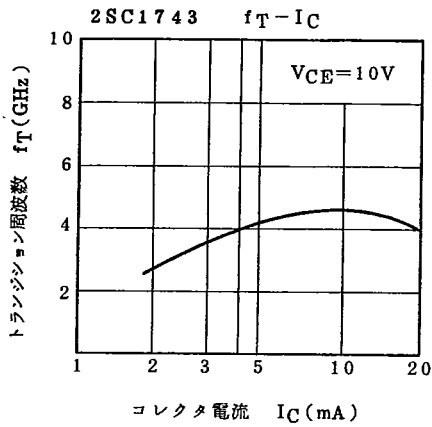


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Note 1 f_T は 2GHz の S パラメータより求めたものです。

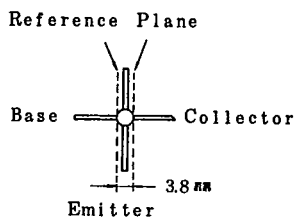
f_T is Calculated from S-Parameter at 2GHz

2 C_{re} は Boonton Electronics Corp. 製 75D Direct Capacitance Bridge によって三端子法で測定

C_{re} is Measured by 3 Terminal Method with Boonton Electronics Corporations 75D Direct Capacitance Bridge.

3 S パラメータ基準面

S-Parameter Reference Plane



4 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 10mA の時に 5 dBm 以上あります。

Saturation Output Power (at 1dB Gain Compression Point) is More than 5dBm $I_C = 10mA$.

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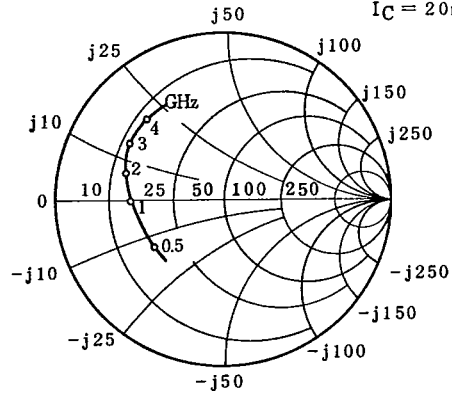
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2SC1743のエミッタ接地, 小信号Sパラメータ

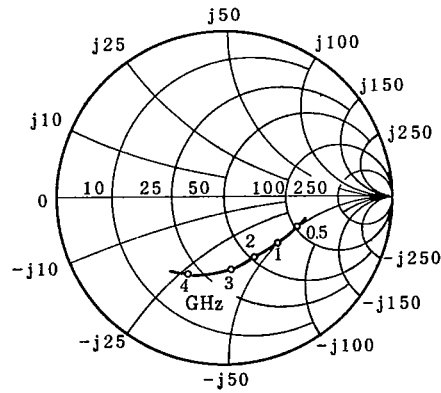
Common Emitter Small Signal S-Parameters of 2SC1743

$V_{CE} = 5\text{ V}$
 $I_C = 20\text{ mA}$



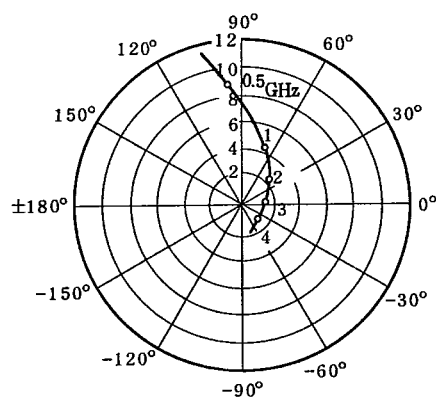
S 1 1

(Unit in Ω)

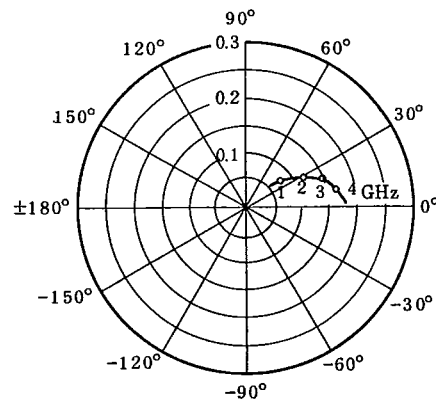


S 2 2

(Unit in Ω)



S 2 1



S 1 2

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