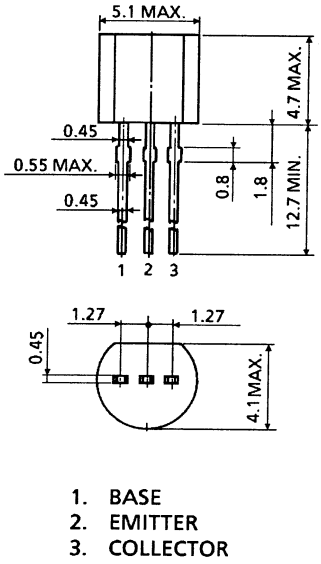
TOSHIBA Transistor Silicon NPN Epitaxial Planar Type

2SC2644

VHF~UHF Band Wideband Amplifier Applications

- High gain
- Low IMD
- f_T = 4 GHz (typ.)

Unit: mm



JEDEC	TO-92
JEITA	SC-43
TOSHIBA	2-5F1E

Weight: 0.21 g (typ.)

Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Collector-base voltage	V_{CBO}	25	V
Collector-emitter voltage	V_{CEO}	12	V
Emitter-base voltage	V_{EBO}	3.0	V
Collector current	I_C	120	mA
Emitter current	I_B	40	mA
Collector power dissipation	P_C	0.5	W
Junction temperature	T_j	125	°C
Storage temperature range	T_{stg}	−55~125	°C

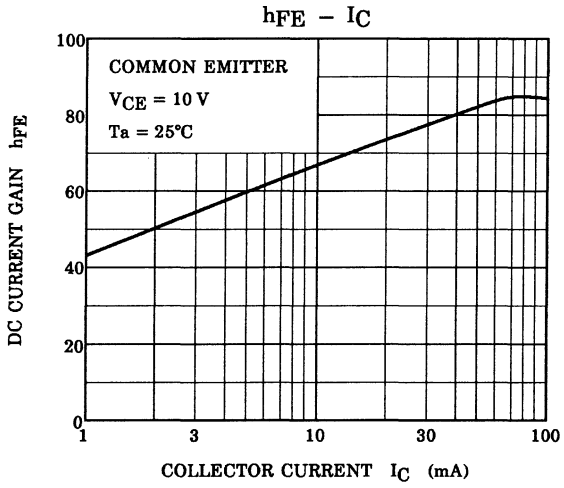
Microwave Characteristics (Ta = 25°C)

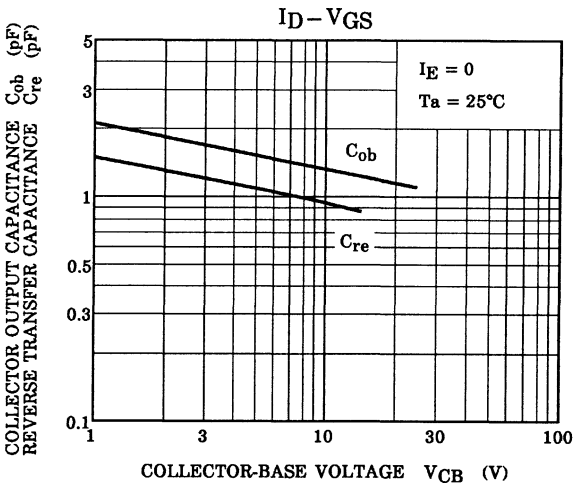
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Transition frequency	f_T	V_{CE} = 10 V, I_C = 30 mA	—	4.0	—	GHz
Insertion gain	$\|S_{21e}\|^2$ (1)	V_{CE} = 10 V, I_C = 30 mA, f = 0.5 GHz	—	14.0	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = 10 V, I_C = 30 mA, f = 1 GHz	—	8.5	—	
Noise figure	NF (1)	V_{CE} = 10 V, I_C = 10 mA, f = 0.5 GHz	—	2.3	—	dB
	NF (2)	V_{CE} = 10 V, I_C = 10 mA, f = 1 GHz	—	3.0	—	

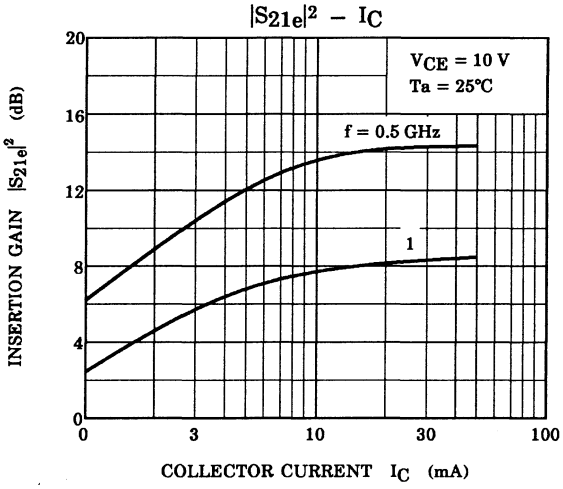
Electrical Characteristics (Ta = 25°C)

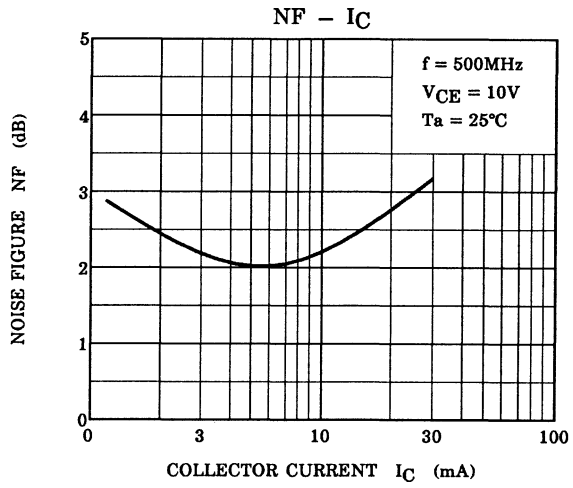
Characteristics	Symbol	Test Condition	Min	Typ.	Max	Unit
Collector cut-off current	I_{CBO}	V_{CB} = 10 V, I_E = 0	—	—	1	μA
Emitter cut-off current	I_{EBO}	V_{EB} = 1.0 V, I_C = 0	—	—	10	μA
DC current gain	h_{FE}	V_{CE} = 5 V, I_C = 50 mA	20	50	—	
Collector output capacitance	C_{ob}	V_{CB} = 10 V, I_E = 0, f = 1 MHz (Note)	—	1.6	—	pF
Reverse transfer capacitance	C_{re}		—	1.1	—	pF

Note: C_{re} is measured by 3 terminal method with capacitance bridge.


hFE – IC
COMMON EMITTER
VCE = 10 V
Ta = 25°C
DC CURRENT GAIN hFE
COLLECTOR CURRENT IC (mA)
100
80
60
40
20
0
1
3
10
30
100

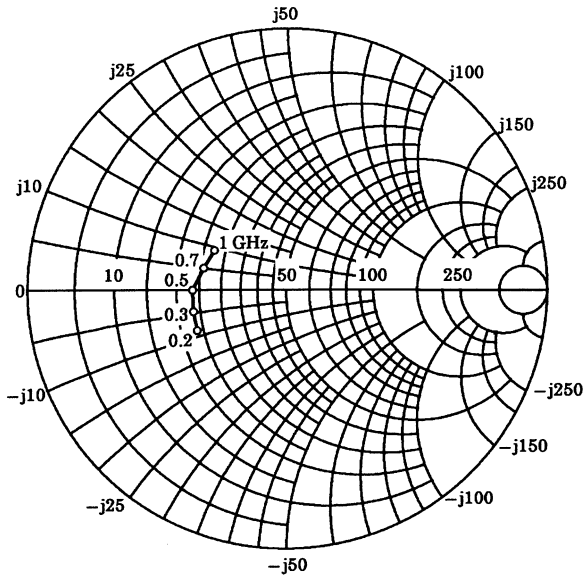

ID – VGS
IE = 0
Ta = 25°C
Cob
Cre
COLLECTOR OUTPUT CAPACITANCE Cob (pF)
REVERSE TRANSFER CAPACITANCE Cre (pF)
COLLECTOR-BASE VOLTAGE VCB (V)
5
3
1
0.5
0.3
0.1
1
3
10
30
100


|S21e|2 – IC
VCE = 10 V
Ta = 25°C
f = 0.5 GHz
1
INSERTION GAIN |S21e|2 (dB)
COLLECTOR CURRENT IC (mA)
20
16
12
8
4
0
0
3
10
30
100

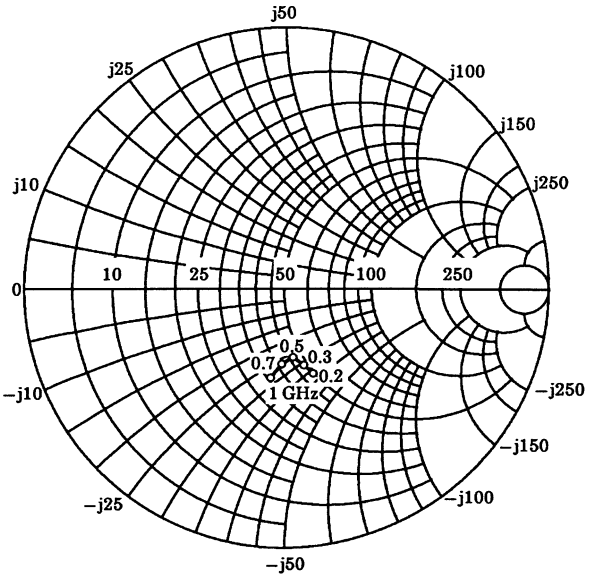

NF – IC
f = 500MHz
VCE = 10V
Ta = 25°C
NOISE FIGURE NF (dB)
COLLECTOR CURRENT IC (mA)
5
4
3
2
1
0
0
3
10
30
100

Common Emitter Small S-Parameters of 2SC2644

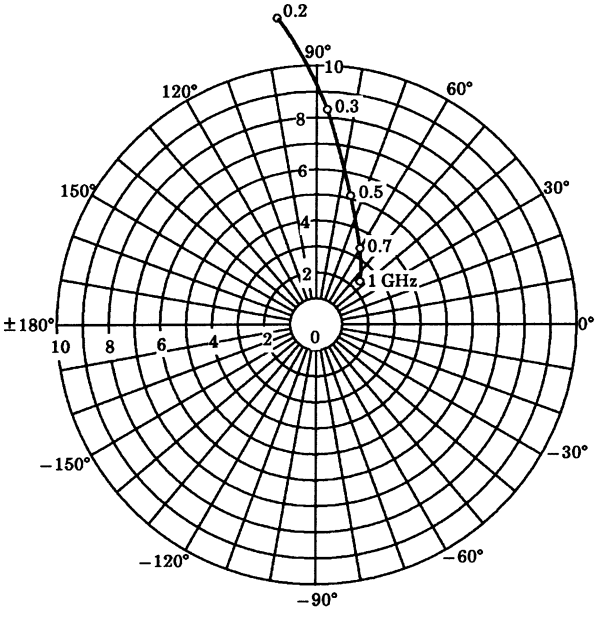
V_{CE} = 10 V, I_C = 30 mA



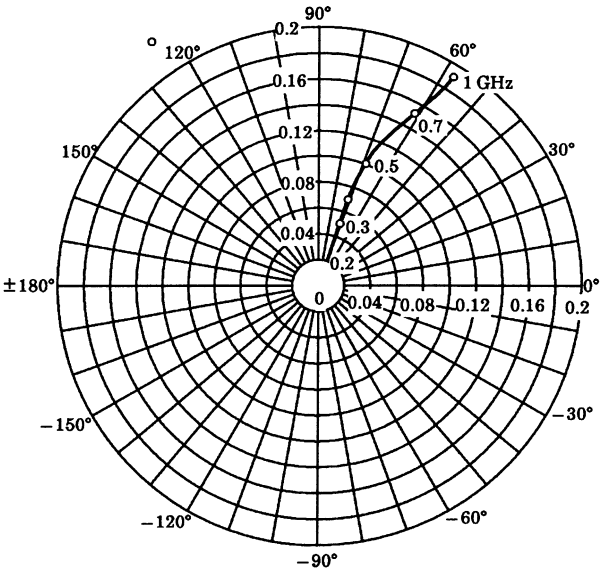
S_{11e} (UNIT : Ω)



S_{22e} (UNIT : Ω)



S_{21e}



S_{12e}

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