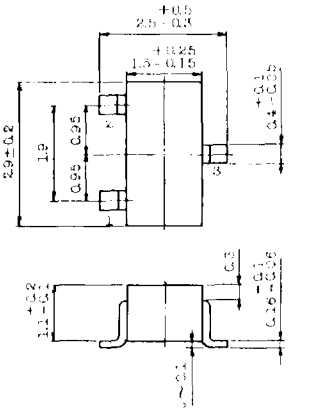
2SA1245 SILICON PNP EPITAXIAL PLANAR TYPE TRANSISTOR

- HIGH FREQUENCY AMPLIFIER AND SWITCHING APPLICATIONS.
- VHF~UHF BAND LOW NOISE AMPLIFIER APPLICATIONS.

Unit in mm



1. EMITTER
2. BASE
3. COLLECTOR

S-MINI

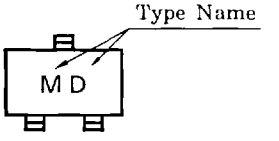
JEDEC	—
EIAJ	SC-59
TOSHIBA	2-3F1A

Weight : 0.012g

MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Collector-Base Voltage	V_{CBO}	−15	V
Collector-Emitter Voltage	V_{CEO}	−8	V
Emitter-Base Voltage	V_{EBO}	−2	V
Collector Current	I_C	−30	mA
Base Current	I_B	−15	mA
Collector Power Dissipation	P_C	150	mW
Junction Temperature	T_j	125	°C
Storage Temperature Range	T_{stg}	−55~125	°C

Marking



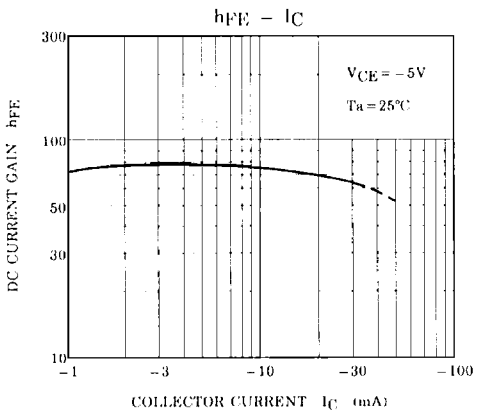
MICROWAVE CHARACTERISTICS (Ta = 25°C)

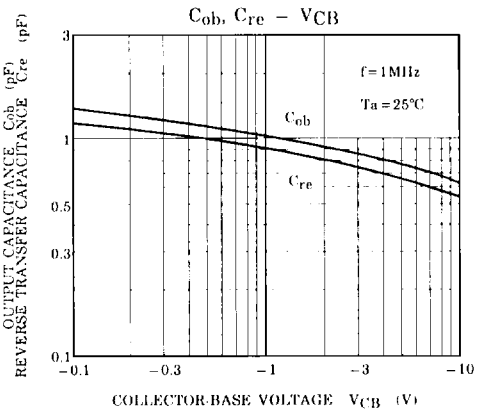
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Transition Frequency	f_T	V_{CE} = −5V, I_C = −10mA	—	4	—	GHz
Insertion Gain	$\|S_{21e}\|^2$ (1)	V_{CE} = −5V, I_C = −10mA, f = 500MHz	—	14	—	dB
	$\|S_{21e}\|^2$ (2)	V_{CE} = −5V, I_C = −10mA, f = 1GHz	—	9.5	—	dB
Noise Figure	NF (1)	V_{CE} = −5V, I_C = −3mA, f = 500MHz	—	2.5	—	dB
	NF (2)	V_{CE} = −5V, I_C = −3mA, f = 1GHz	—	3.0	—	dB

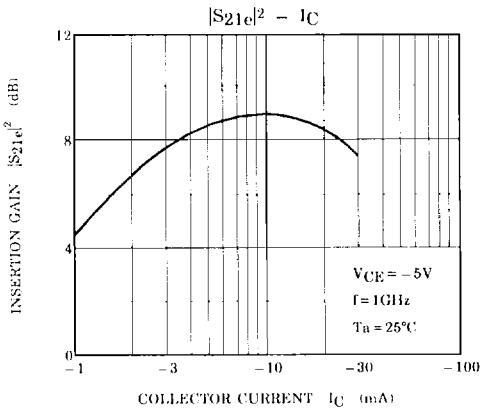
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

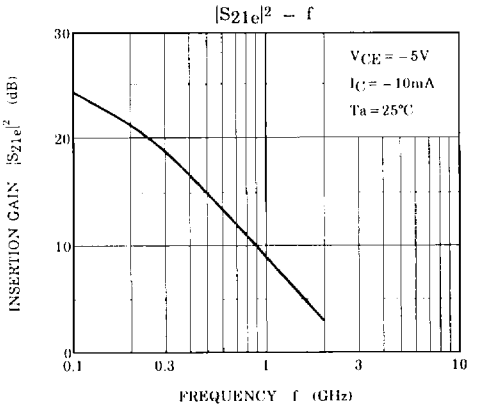
CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Collector Cut-off Current	I_{CBO}	V_{CB} = −5V, I_E = 0	—	—	−0.1	μA
Emitter Cut-off Current	I_{EBO}	V_{EB} = −1V, I_C = 0	—	—	−0.1	μA
DC Current Gain	h_{FE}	V_{CE} = −5V, I_C = −10mA	20	—	—	—
Output Capacitance	C_{ob}	V_{CB} = −5V, I_E = 0, f = 1MHz (Note)	—	0.75	—	pF
Reserve Transfer Capacitance	C_{re}		—	0.60	—	pF

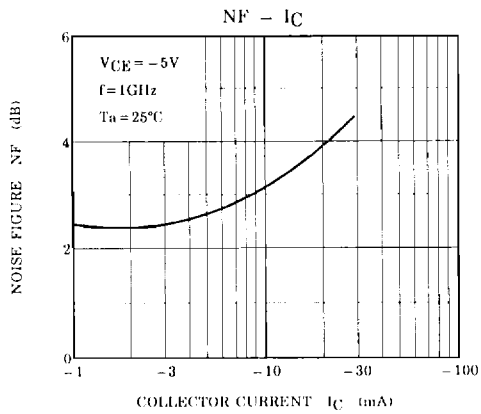
Note : C_{re} is measured by 3 terminal method with Capacitance Bridge.

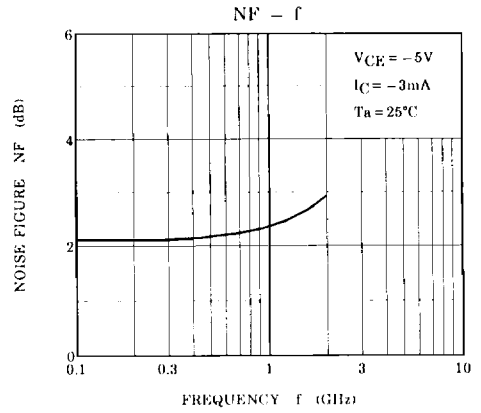

h_{FE} – I_C
DC CURRENT GAIN h_{FE}
300
100
50
30
10
V_{CE} = –5V
Ta = 25°C
–1
–3
–10
–30
–100
COLLECTOR CURRENT I_C (mA)


C_{ob}, C_{re} – V_{CB}
OUTPUT CAPACITANCE C_{ob} (pF)
REVERSE TRANSFER CAPACITANCE C_{re} (pF)
3
1
0.5
0.3
0.1
f = 1MHz
Ta = 25°C
C_{ob}
C_{re}
–0.1
–0.3
–1
–3
–10
COLLECTOR-BASE VOLTAGE V_{CB} (V)

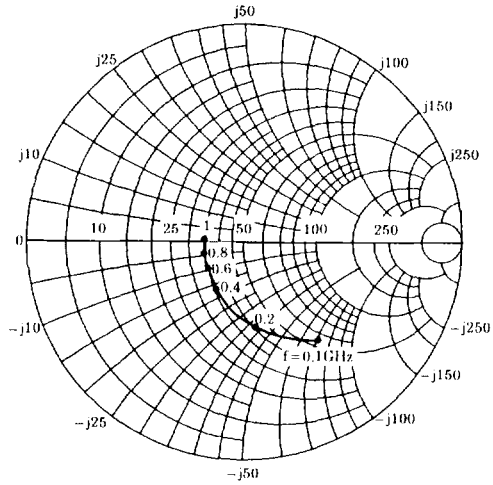

$|S_{21e}|^2$ – I_C
INSERTION GAIN $|S_{21e}|^2$ (dB)
12
8
4
0
V_{CE} = –5V
f = 1GHz
Ta = 25°C
–1
–3
–10
–30
–100
COLLECTOR CURRENT I_C (mA)


$|S_{21e}|^2$ – f
INSERTION GAIN $|S_{21e}|^2$ (dB)
30
20
10
0
V_{CE} = –5V
I_C = –10mA
Ta = 25°C
0.1
0.3
1
3
10
FREQUENCY f (GHz)

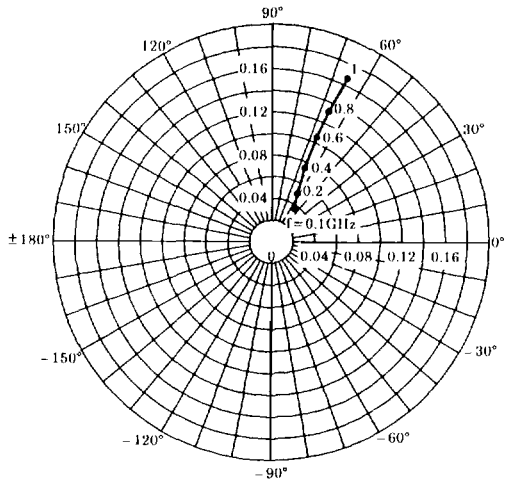

NF – I_C
NOISE FIGURE NF (dB)
6
4
2
0
V_{CE} = –5V
f = 1GHz
Ta = 25°C
–1
–3
–10
–30
–100
COLLECTOR CURRENT I_C (mA)


NF – f
NOISE FIGURE NF (dB)
6
4
2
0
V_{CE} = –5V
I_C = –3mA
Ta = 25°C
0.1
0.3
1
3
10
FREQUENCY f (GHz)

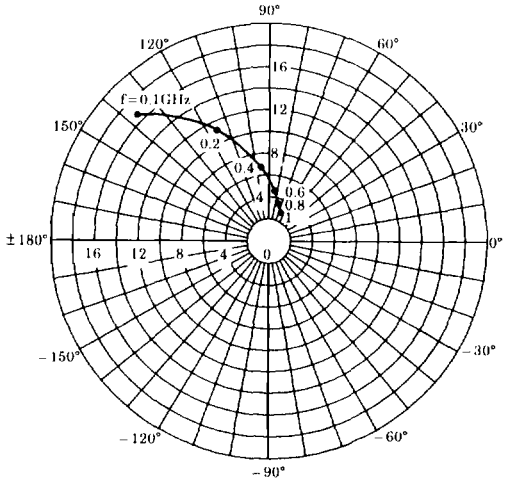
S_{11e}
$V_{CE} = -5V$
$I_C = -10mA$
Ta = 25°C
(UNIT : Ω)



S_{12e}
$V_{CE} = -5V$
$I_C = -10mA$
Ta = 25°C



S_{21e}
$V_{CE} = -5V$
$I_C = -10mA$
Ta = 25°C



S_{22e}
$V_{CE} = -5V$
$I_C = -10mA$
Ta = 25°C
(UNIT : Ω)