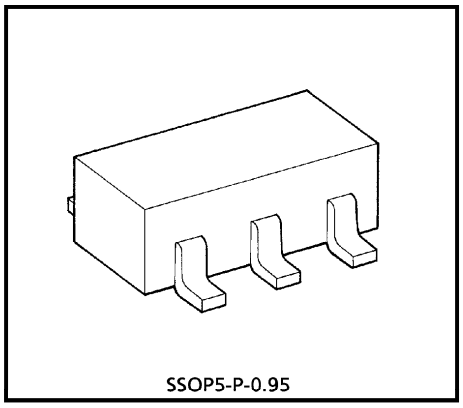
TOSHIBA BIPOLAR LINEAR INTEGRATED CIRCUIT SILICON MONOLITHIC

TA4003F

VHF~UHF WIDE BAND AMPLIFIER

FEATURES

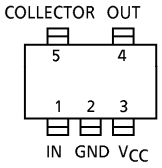
- Band Width 1.5 CHz (Typ.) (3 dB down, V_{CC} = 2 V)
- High Gain : $|S_{21}|^2$ = 11dB (Typ.), (f = 500 MHz, V_{CC} = 2 V)
- Operating Supply Voltage : V_{CC} = 2~3 V
- Low Current Operation : I_{CC} = 3.5 mA (Typ.) (V_{CC} = 2 V)
- Small Package



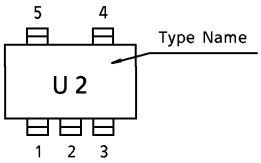
SSOP5-P-0.95

Weight : 0.014 g (Typ.)

PIN ASSIGNMENT (TOP VIEW)



MARKING



MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V_{CC}	4	V
Total Power Dissipation	P_D (*)	300	mW
Operating Temperature	T_{opr}	– 40~85	°C
Storage Temperature	T_{stg}	– 55~125	°C

(*) : When mounted glass epoxy of 2.5 cm^2 × 1.6 t

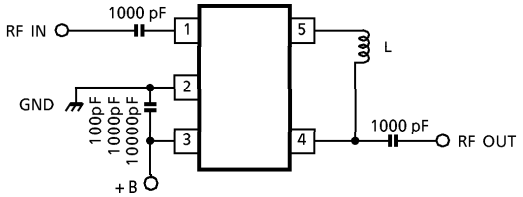
980910EBA1

ELECTRICAL CHARACTERISTICS (Ta = 25°C) (Note 1)

CHARACTERISTIC	SYMBOL	TEST CIR-CUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Circuit Current	I_{CC}	—	V_{CC} = 2 V, Non carrier	2.5	3.5	4.5	mA
Insertion Gain	$\|S_{21}\|^2$	1	V_{CC} = 2 V, f = 500 MHz	9	11	14	dB
Band Width	BW	1	V_{CC} = 2 V (Note 2)	1.2	1.5	—	GHz
Noise Figure	NF	1	V_{CC} = 2 V, f = 500 MHz	—	5.2	7	dB
Input Return Loss	$\|S_{11}\|^2$	1	V_{CC} = 2 V, f = 500 MHz	—	−7.5	—	dB
Output Return Loss	$\|S_{22}\|^2$	1	V_{CC} = 2 V, f = 500 MHz	—	−7.5	—	dB
Isolation	$\|S_{12}\|^2$	1	V_{CC} = 2 V, f = 500 MHz	—	−24	—	dB
Maximum Output Level	P_O	1	V_{CC} = 2 V, f = 500 MHz, Pin = 0 dBmW	—	0	—	dBmW

(Note 1) : Have use for connect inductance between terminal 4 and 5 8 nH at V_{CC} = 2 V
(Note 2) : BW is frequency of 3 dB down from $|S_{21}|^2$ at 500 MHz.

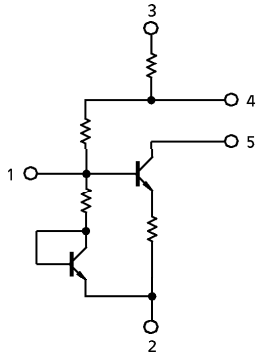
TEST CIRCUIT 1 (TOP VIEW)



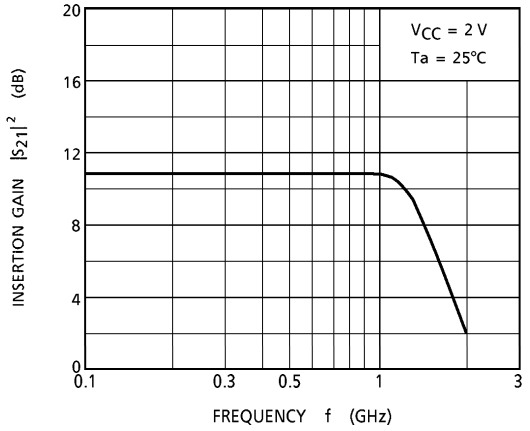
NOTICE

The circuits and measurements contained in this document are given only in the context of as examples of applications for these products.
Moreover, these example application circuits are not intended for mass production, since the high-frequency characteristics (the AC characteristics) of these devices will be affected by the external components which the customer uses, by the design of the circuit and by various other conditions.
It is the responsibility of the customer to design external circuits which correctly implement the intended application, and to check the characteristics of the design.
TOSHIBA assume no responsibility for the integrity of customer circuit designs or applications.

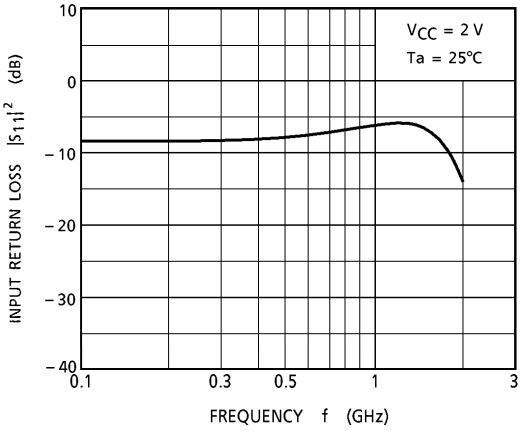
EQUIVALENT CIRCUIT



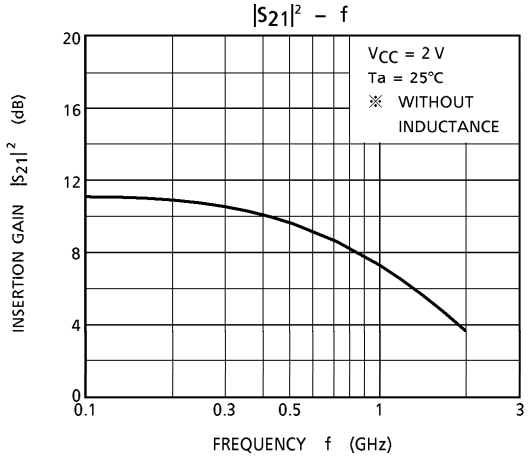
$|S_{21}|^2$ – f



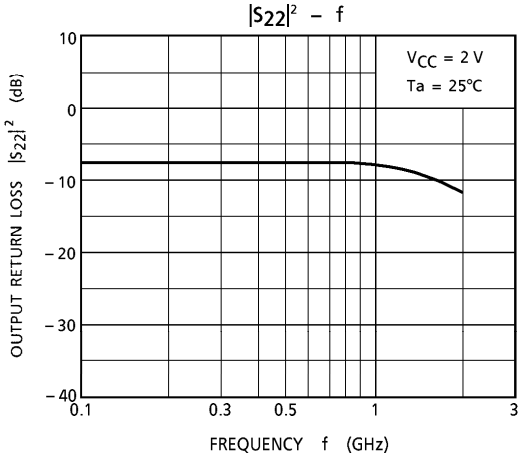
$|S_{11}|^2$ – f



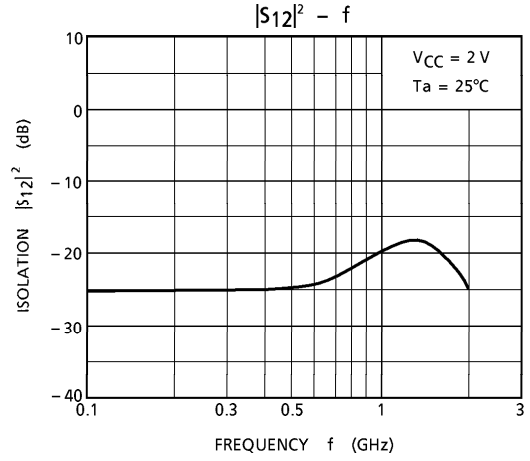
$|S_{21}|^2$ – f



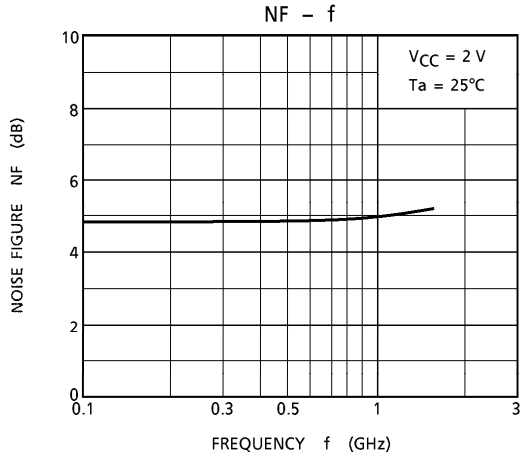
$|S_{22}|^2$ – f



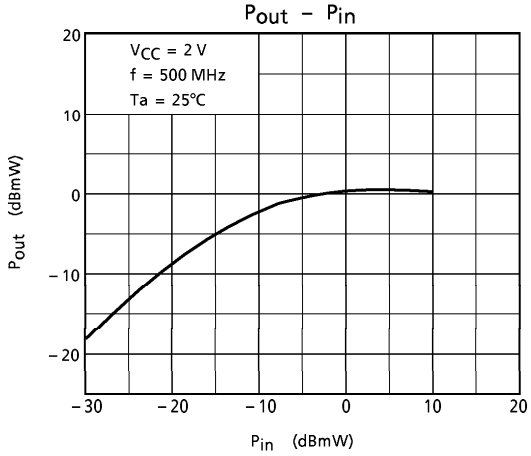
$|S_{12}|^2$ – f



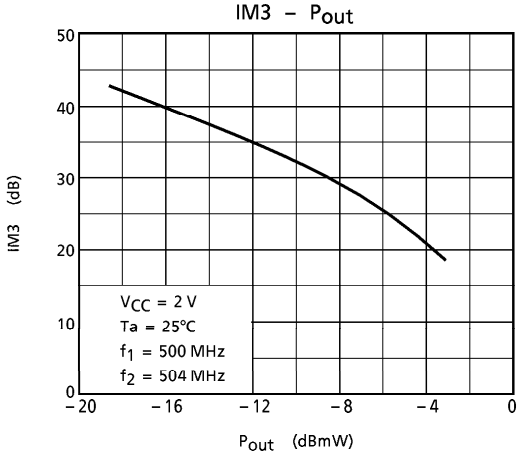
NF – f



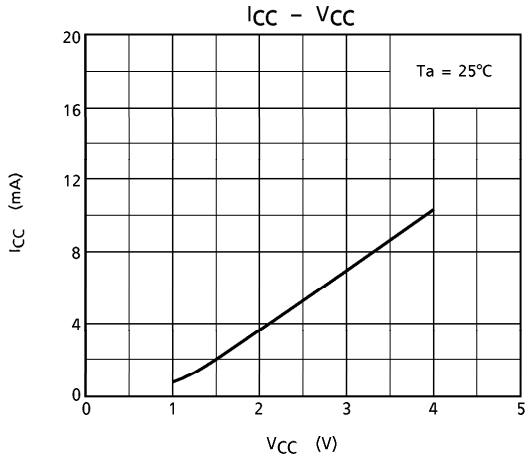
P_{out} – P_{in}



IM3 – P_{out}

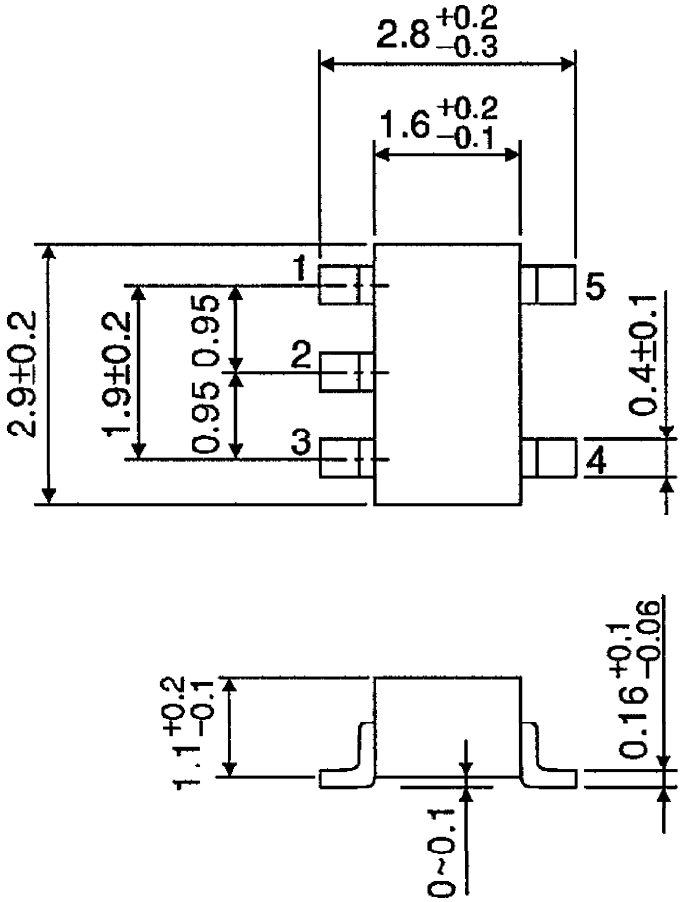


I_{CC} – V_{CC}



PACKAGE DIMENSIONS

SSOP5-P-0.95 Unit : mm



Weight : 0.014 g (Typ.)