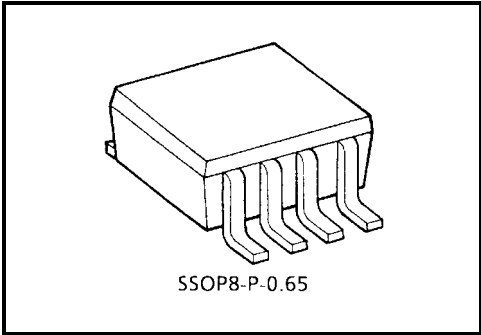


# TA4018F

## VHF Gain Control Amplifier Application

### Features

- High gain:  $|S_{21}|^2 = 11\text{dB}$  (@45 MHz, at Maximum gain)
- Gain control range:  $GR = 37\text{dB}$  (@45 MHz)
- Low distortion:  $IM_3 = 42\text{dB}$  (@45 MHz, at Maximum gain)
- Operating supply voltage:  $V_{CC} = 4.75\text{ V} \sim 5.25\text{ V}$



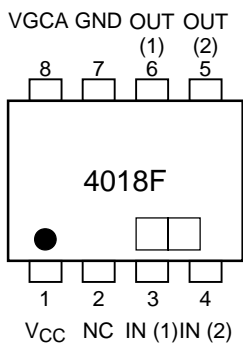
Weight: 0.02g (typ.)

### Maximum Ratings (Ta = 25°C)

Characteristics	Symbol	Rating	Unit
Supply voltage	$V_{CC}$	5.5	V
Total power dissipation	$P_D$ (Note 1)	550	mW
Operating temperature	$T_{opr}$	-40~85	°C
Storage temperature	$T_{stg}$	-55~150	°C

Note 1: When mounted on the glass epoxy of  $2.5\text{ cm}^2 \times 0.4\text{ t}$

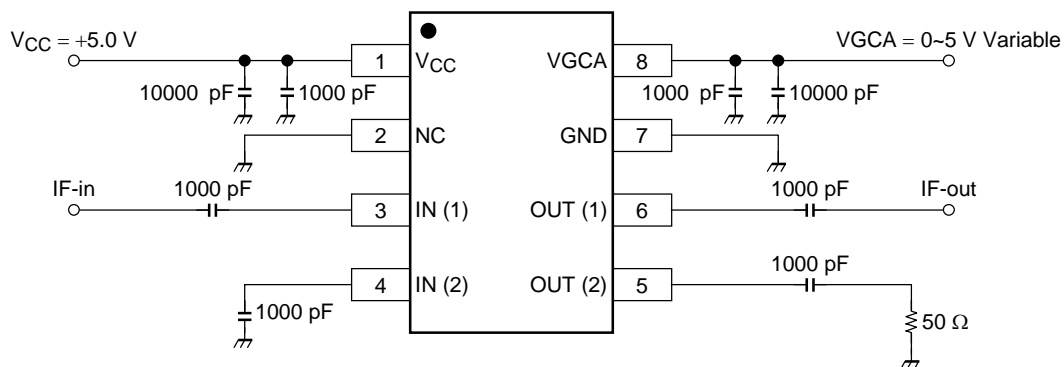
### Pin Assignment



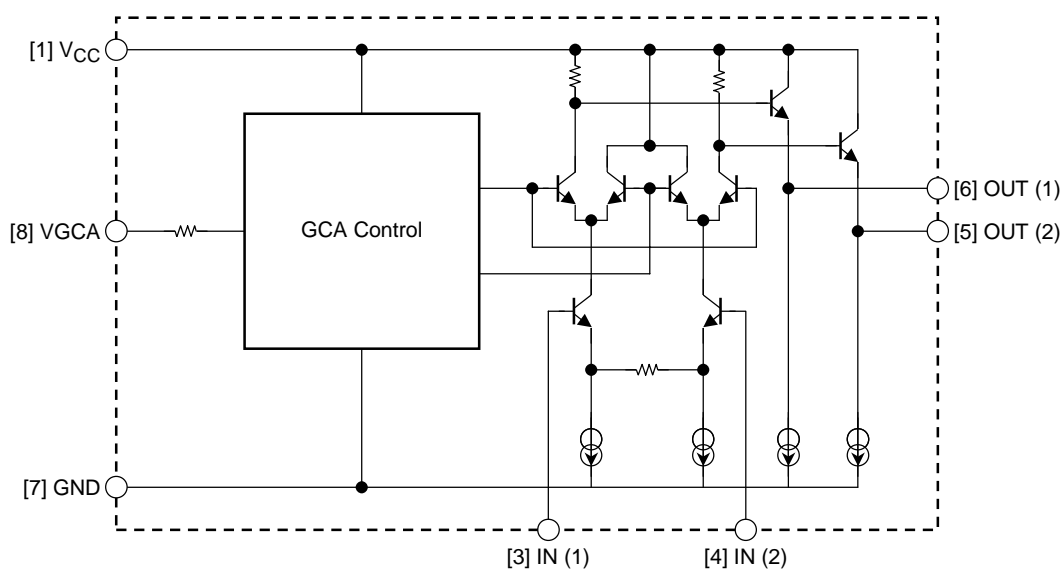
## Electrical Characteristics (Ta = 25°C, VCC = 5 V, Zg = Zl = 50 Ω)

Characteristics	Symbol	Test Circuit	Test Condition	Min	Typ.	Max	Unit
Circuit current	ICC	Fig1	VGCA = 3 V, Non carrier	21	28	35	mA
Input return loss	$ S_{11} ^2$		VGCA = 3 V, f = 45 MHz	—	−0.3	—	dB
Insertion gain (1)	$ S_{21} ^2(1)$		VGCA = 3 V, f = 45 MHz	8	11	—	dB
Insertion gain (2)	$ S_{21} ^2(2)$		VGCA = 1 V, f = 45 MHz	−36	−26	−16	dB
Isolation	$ S_{12} ^2$		VGCA = 3 V, f = 45 MHz	—	−50	—	dB
Output return loss	$ S_{22} ^2$		VGCA = 3 V, f = 45 MHz	—	−5	—	dB
Gain control range	GR		$ S_{21} ^2(2) -  S_{21} ^2(1)$	24	37	—	dB
Noise figure	NF		VGCA = 5 V, f = 45 MHz	—	11.5	15	dB
3 <sup>rd</sup> order Inter Modulation	IM3		VGCA = 3 V, f1 = 45 MHz, f2 = 44 MHz Pin = −20dBmW	32	42	—	dB

CAUTION: This device electrostatic sensitivity. Please handle with caution.



**Figure 1 Measurement circuit**



**Figure 2 Equivalent circuit**

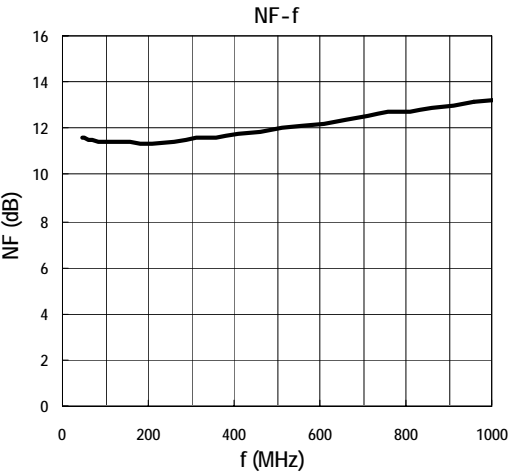
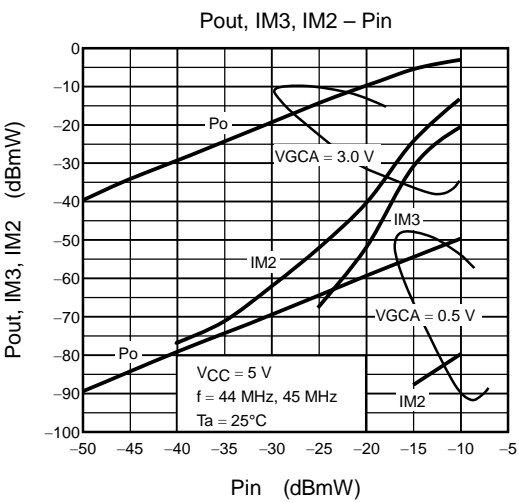
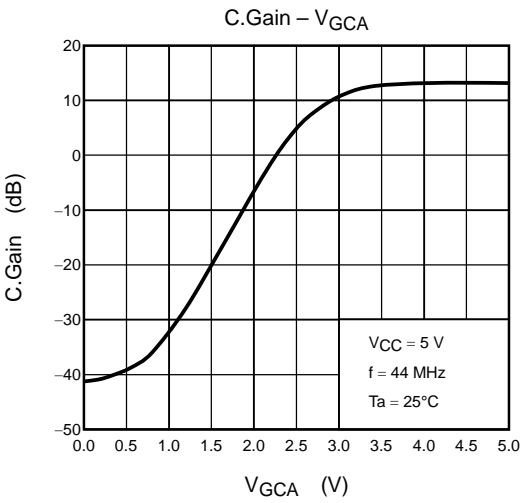
## Notice

The circuits and measurements contained in this document are given only in the context of as examples of applications for these products.

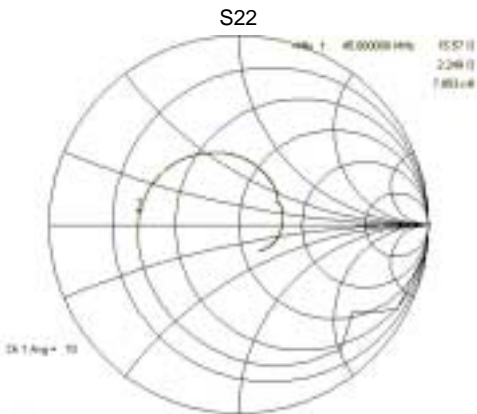
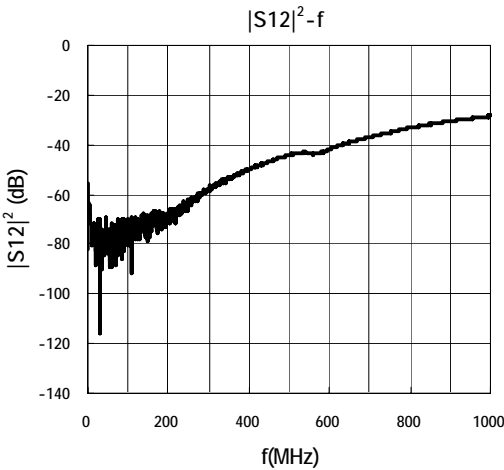
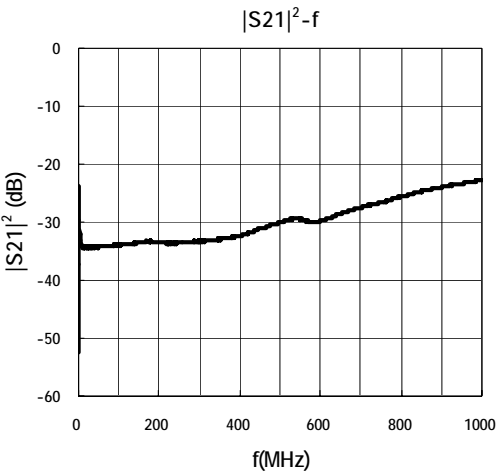
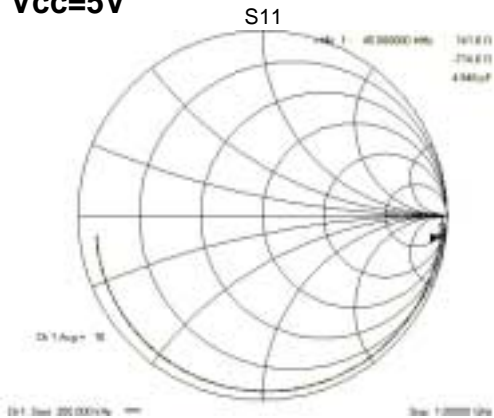
Moreover, these example application circuits are not intended for mass production, since the high-frequency characteristics (the AC characteristics) of these devices will be affected by the external components which the customer uses, by the design of the circuit and by various other conditions.

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.

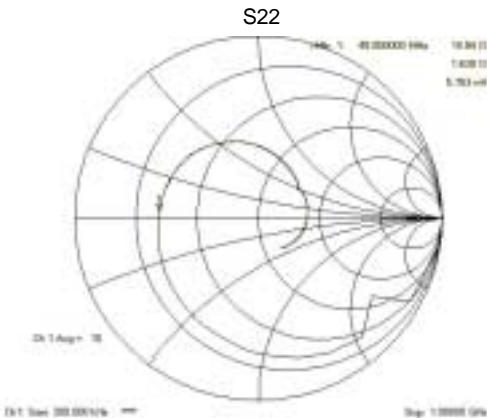
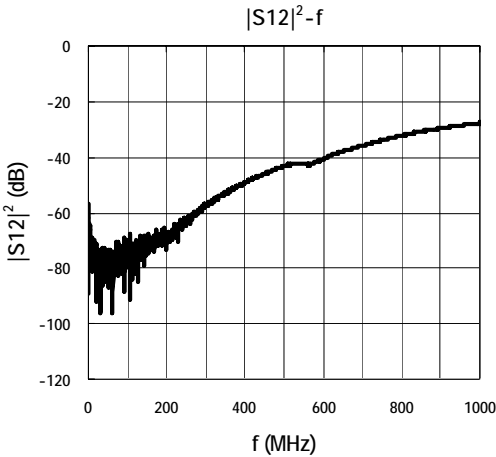
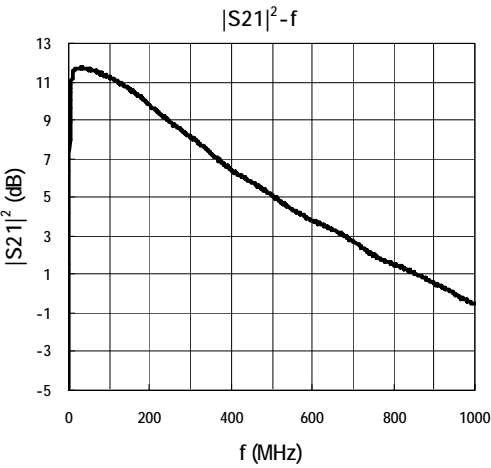
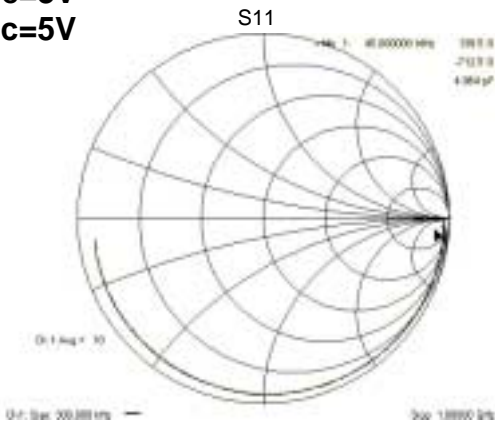
TOSHIBA assume no responsibility for the integrity of customer circuit designs or applications.



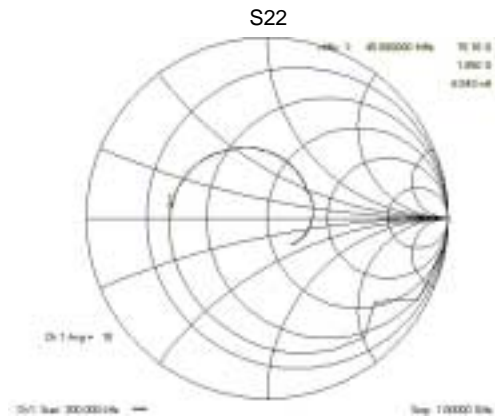
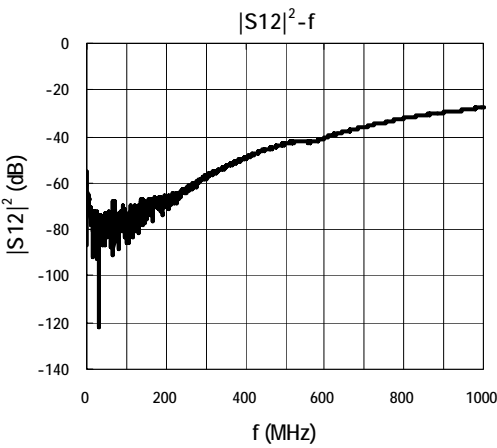
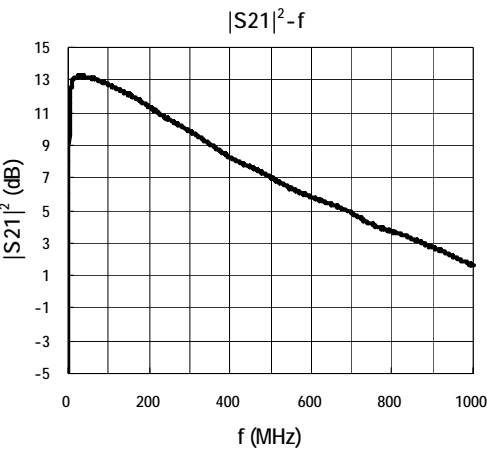
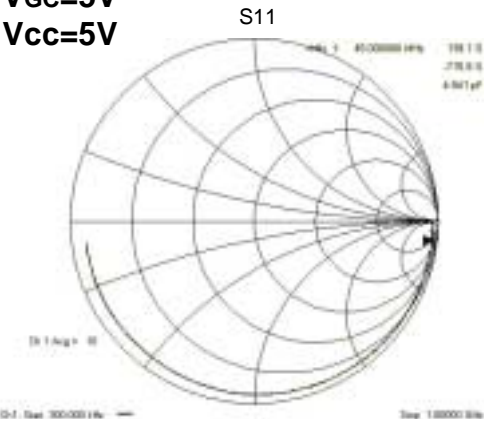
V<sub>GC</sub>=0.5V  
V<sub>CC</sub>=5V



V<sub>GC</sub>=3V  
V<sub>CC</sub>=5V



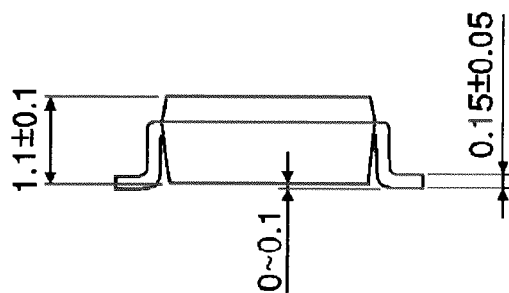
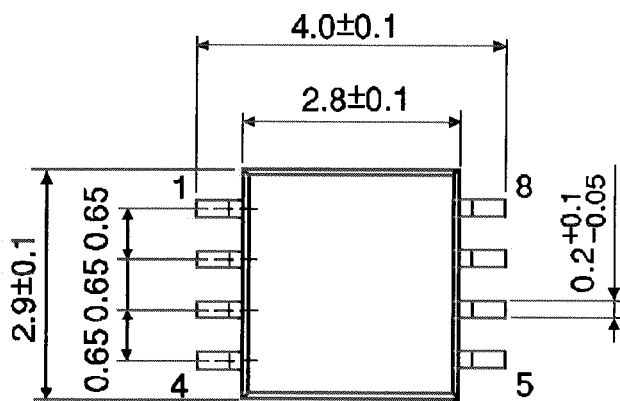
V<sub>GC</sub>=5V  
V<sub>CC</sub>=5V



Package Dimensions

SSOP8-P-0.65

Unit : mm



Weight: 0.02g (typ.)

**RESTRICTIONS ON PRODUCT USE**

000707EBA

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