

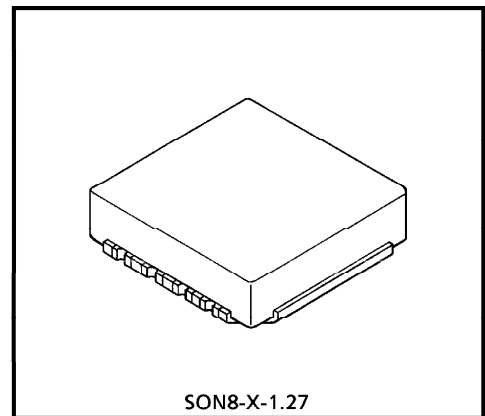
TOSHIBA HIGH FREQUENCY POWER AMPLIFIER MODULE

# TG2002V

## 1.9GHz BAND POWER AMPLIFIER MODULE (PHS DIGITAL CORDLESS TELEPHONE)

**FEATURES**

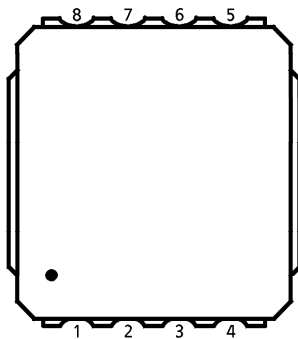
- $V_{DD} = 3V$ ,  $I_{DD} = 250mA$  (MAX.)
- $P_o = 22dBmW$  (MIN.),  $G_p = 30dB$  (MIN.)
- GaAs MMIC MODULE
- Leadless Surface Mount Package (SON8)



SON8-X-1.27

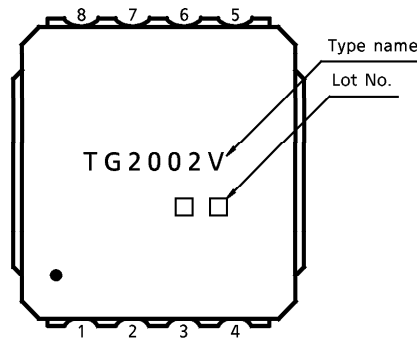
Weight : 0.17g (Typ.)

**PIN CONNECTION**  
(Top view)



- 1.  $V_{DD1}$     5.  $V_{GC}$
- 2. GND        6. Output
- 3. Input      7. GND
- 4.  $V_{GG}$      8.  $V_{DD2}$

**MARKING**



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- The information contained herein is subject to change without notice.

**MAXIMUM RATINGS** (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V <sub>DD</sub>	5	V
	V <sub>GG</sub>	-4	V
Control Voltage	V <sub>GC</sub>	5	V
Input Power	P <sub>i</sub>	2	mW
Operating Temperature Range	T <sub>opr</sub>	-10~60	°C
Storage Temperature Range	T <sub>stg</sub>	-40~110	°C

(Note) V<sub>DD</sub> = V<sub>DD1</sub> = V<sub>DD2</sub>

**CAUTION**

This device is electrostatic sensitivity. Please handle with caution.

Do not use the chemical for removing flux. Please mount with no clean solder.

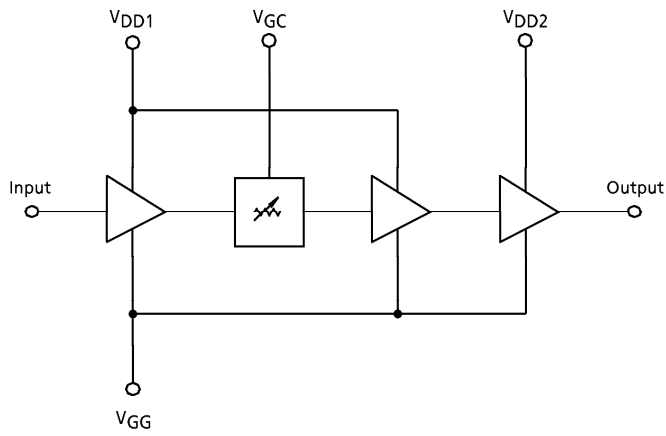
**ELECTRICAL CHARACTERISTICS (Ta = 25°C)**

CHARACTERISTIC	SYMBOL	TEST CIRCUIT	TEST CONDITION	MIN.	TYP.	MAX.	UNIT	
Frequency Range	$f_{range}$	—	—	1895	—	1918	MHz	
Output Power	$P_O$	1	$V_{DD} = 3V, V_{GG} = -2V,$ $V_{GC} = 0.5V$ $P_i = -8dBmW, Z_g = Z_l = 50\Omega$	22	24	—	dBmW	
Power Gain	$G_p$			30	32	—	dB	
Gain Control Ratio	$G_c$	1	$P_i = -8dBmW, V_{DD} = 3V,$ $V_{GG} = -2V$ $V_{GC} = 2.5V, Z_g = Z_l = 50\Omega$	-17	-20	-23	dB	
Input VSWR	$VSWR_{in}$	1	$V_{DD} = 3V, V_{GG} = -2V,$ $V_{GC} = 0.5V$ $P_O = 22dBmW, P_i = \text{Adjustment}$	—	—	2.5	—	
Gate Current	IGG	—		—	—	-5	mA	
Gain Control Current	IGC			—	—	0.1	mA	
Total Current	$I_T$			—	225	250	mA	
Harmonics	$2f_0$			—	—	—	-30	dB
	$3f_0$			—	—	—	-30	dB
Adjacent Channel Leakage Power Ratio	Padj (1)	1	$V_{DD} = 3V,$ $V_{GG} = -2V,$ $V_{GC} = 0.5V,$ $Z_g = Z_l = 50\Omega$ $P_O = 22dBmW,$ $P_i = \text{Adjustment}$ (Note 2)	$\Delta f = 600kHz$	—	—	-58	dB
	Padj (2)			$\Delta f = 900kHz$	—	—	-63	dB
Load Mismatch	—	—	$V_{DD} = 4.5V, V_{GG} = -2V,$ $V_{GC} = 0.5V$ $P_O = 22dBmW, P_i = \text{Adjustment},$ $Z_g = 50\Omega$ $VSWR \text{ Load} = 20 : 1 \text{ all phase}$	No Degradation			—	
Stability	—	—	$V_{DD} = 2.5\sim 4.5V,$ $V_{GG} = -2V, V_{GC} = 0.5V$ $P_i = 0mW\sim -6dBmW, Z_g = 50\Omega$ $VSWR \text{ Load} = 6 : 1 \text{ all phase}$	All spurious output than 60dB below desired signal			—	

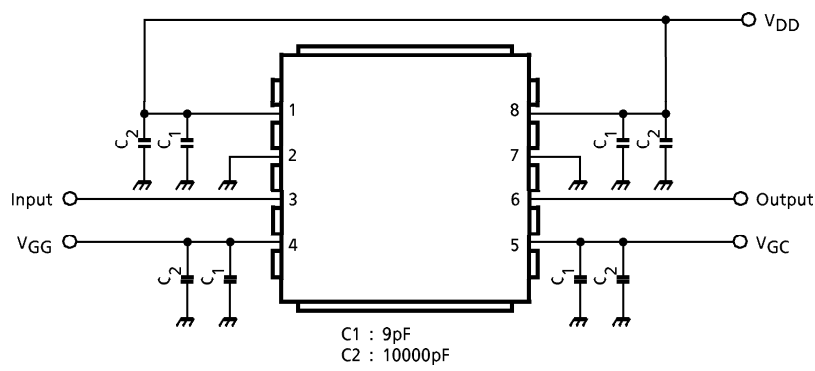
(Note 1)  $V_{DD} = V_{DD1} = V_{DD2}$

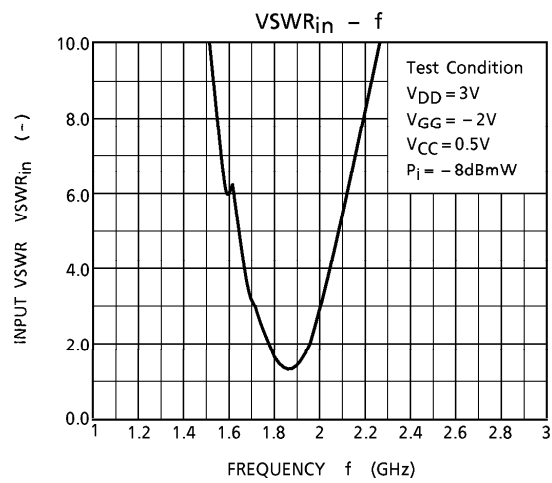
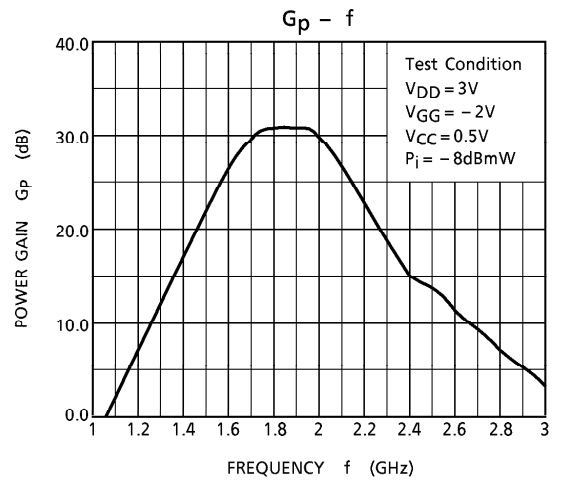
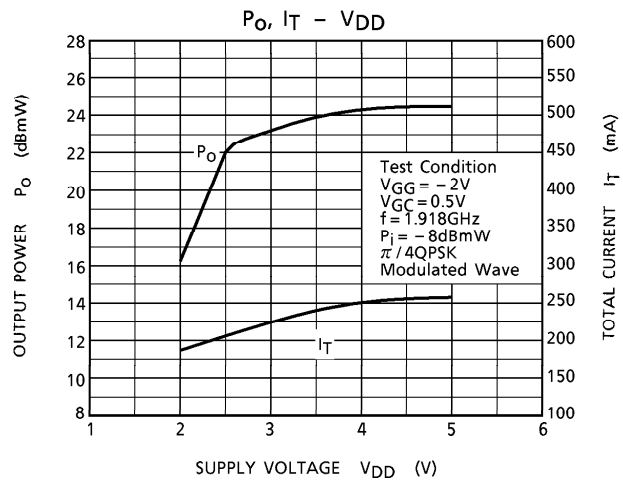
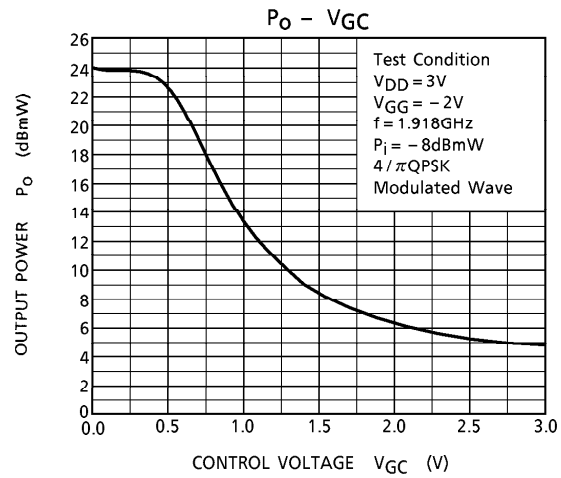
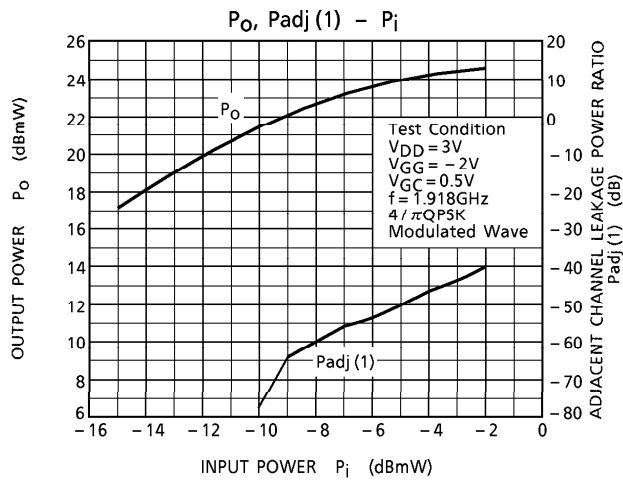
(Note 2) Input signal is modulated to  $\pi / 4QPSK (\alpha = 0.5)$ . Bit rate is 384kbps.

EQUIVALENT CIRCUIT



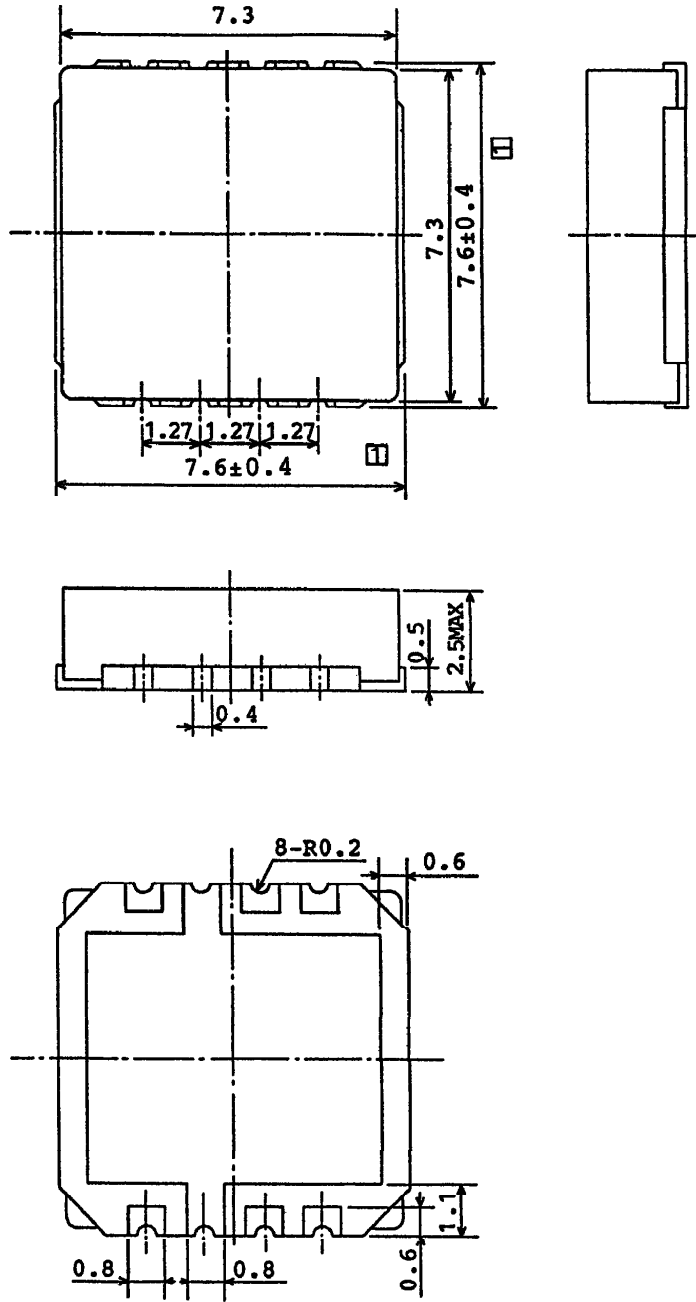
TEST CIRCUIT 1 (RF TEST CIRCUIT)





OUTLINE DRAWING  
SON8-X-1.27

Unit : mm



Weight : 0.17g (Typ.)