

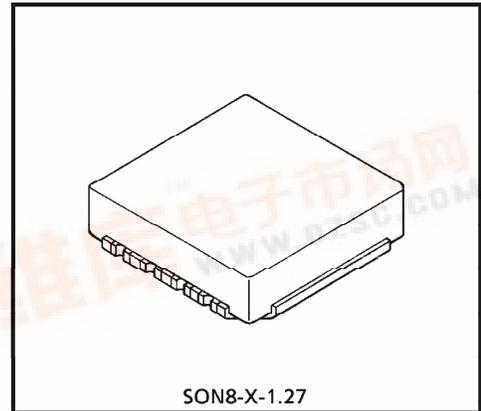
TOSHIBA HIGH FREQUENCY POWER AMPLIFIER MODULE

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)

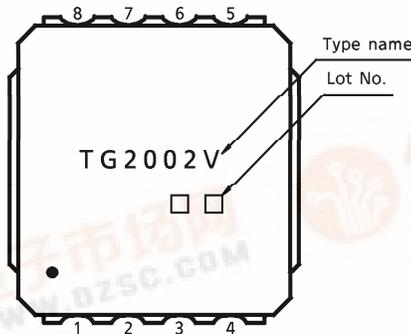
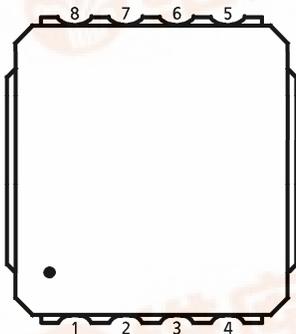


SON8-X-1.27

Weight : 0.17g (Typ.)

PIN CONNECTION (Top view)

MARKING



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

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MAXIMUM RATINGS (Ta = 25°C)

CHARACTERISTIC	SYMBOL	RATING	UNIT
Supply Voltage	V _{DD}	5	V
	V _{GG}	-4	V
Control Voltage	V _{GC}	5	V
Input Power	P _i	2	mW
Operating Temperature Range	T _{opr}	-10~60	°C
Storage Temperature Range	T _{stg}	-40~110	°C

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

CAUTION

This device is electrostatic sensitivity. Please handle with caution.
Do not use the chemical for removing flux. Please mount with no clean solder.

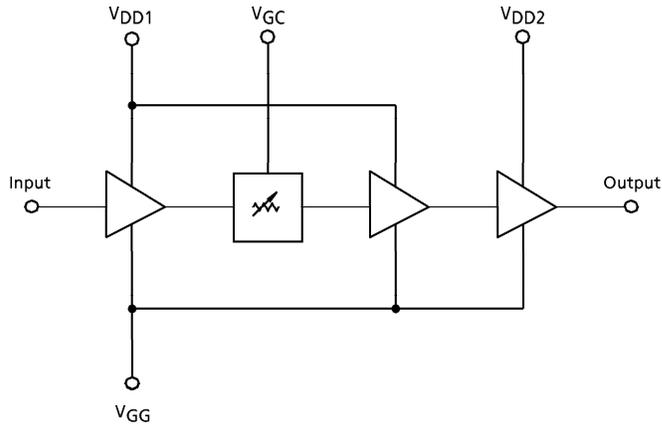
ELECTRICAL CHARACTERISTICS (Ta = 25°C)

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			—		

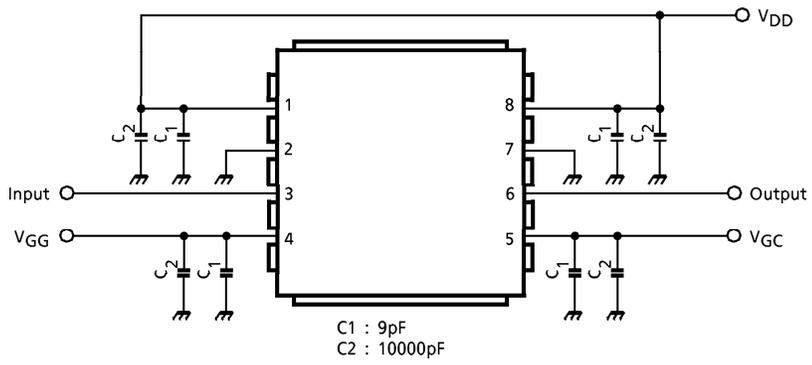
(Note 1) $V_{DD} = V_{DD1} = V_{DD2}$

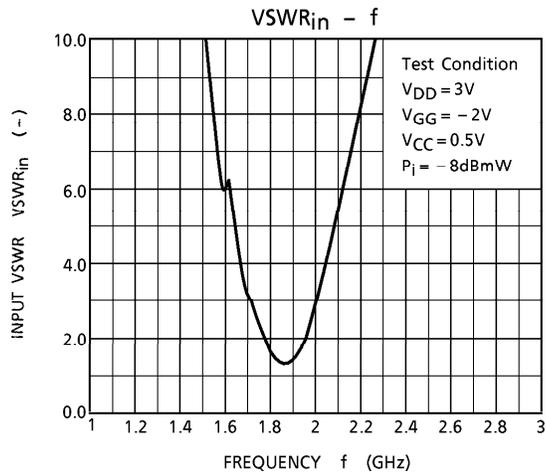
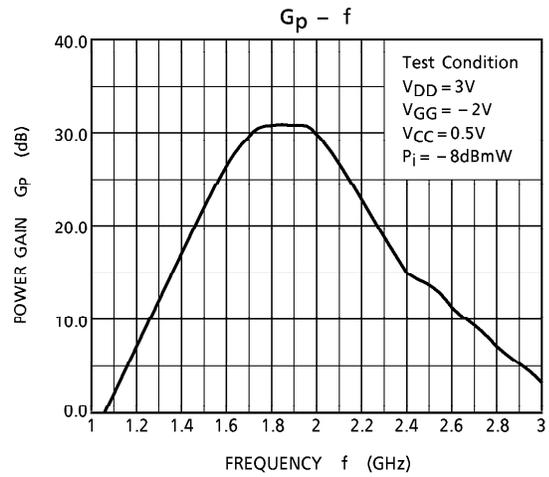
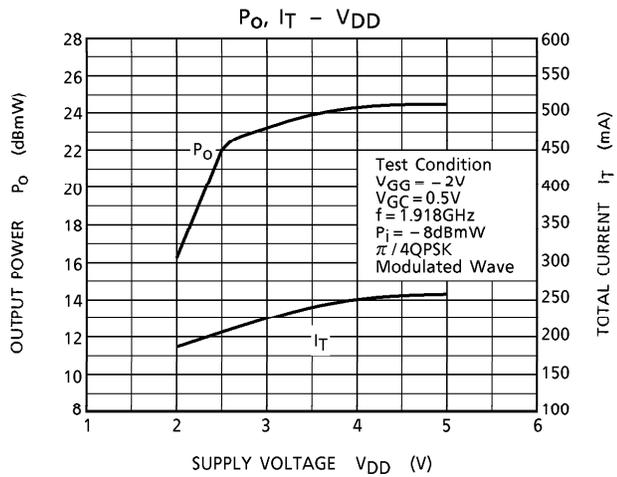
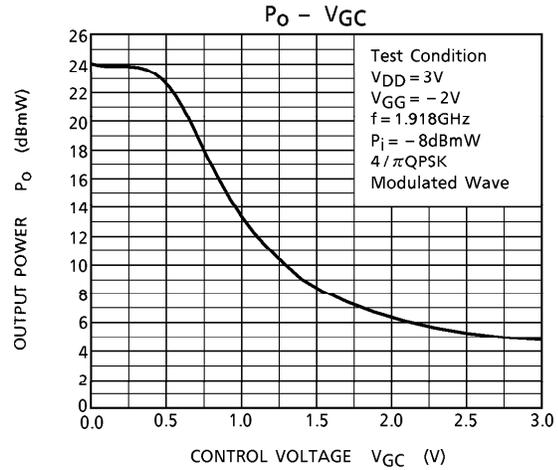
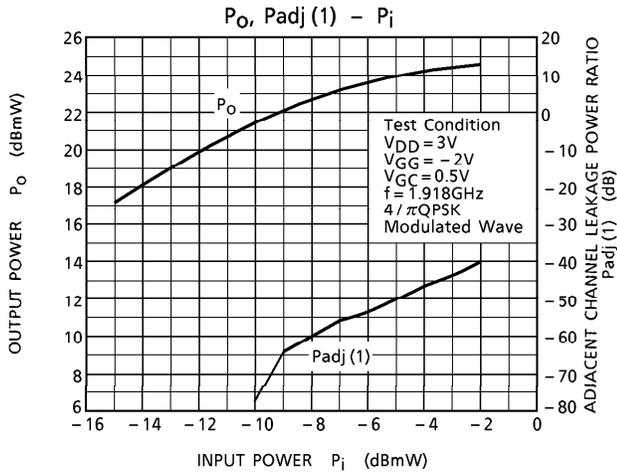
(Note 2) Input signal is modulated to $\pi/4QPSK$ ($\alpha = 0.5$). Bit rate is 384kbps.

EQUIVALENT CIRCUIT



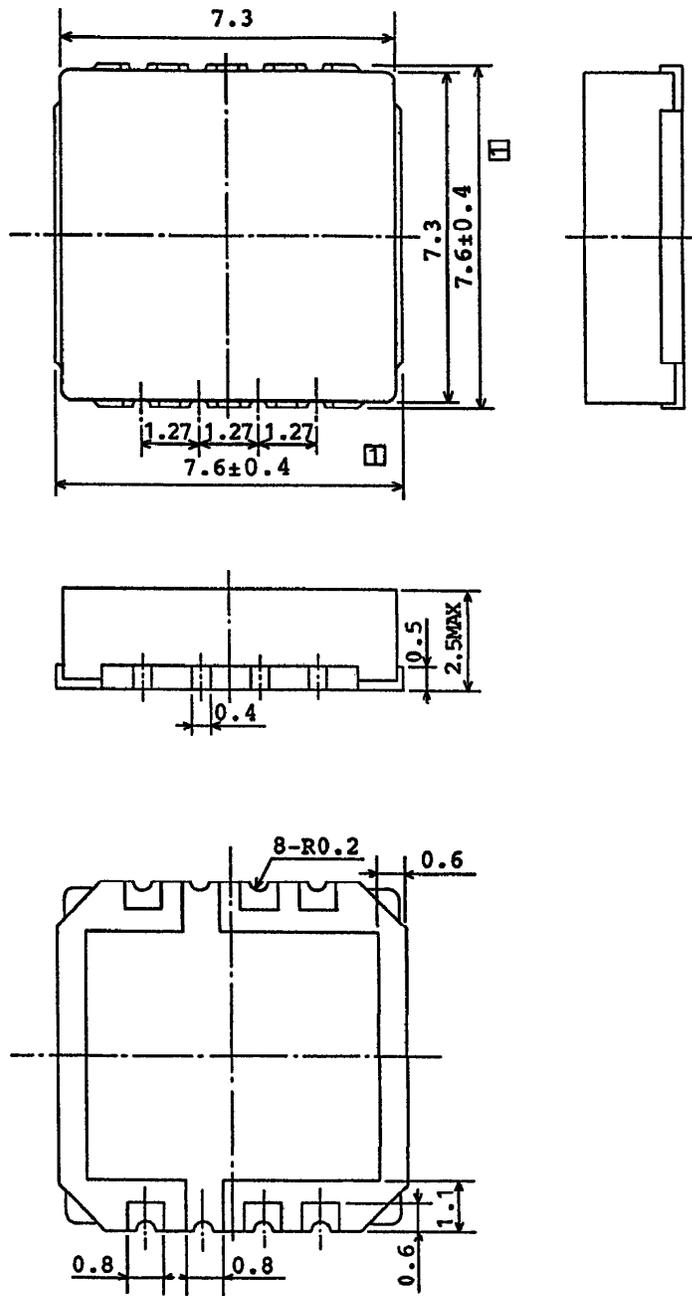
TEST CIRCUIT 1 (RF TEST CIRCUIT)





OUTLINE DRAWING
SON8-X-1.27

Unit : mm



Weight : 0.17g (Typ.)