

TOSHIBA Rf Power Amplifier Module

**S-AV38**

Orf power amplifier module for vhf band

· for digital use

**Absolute Maximum Ratings (Tc = 25°C)**

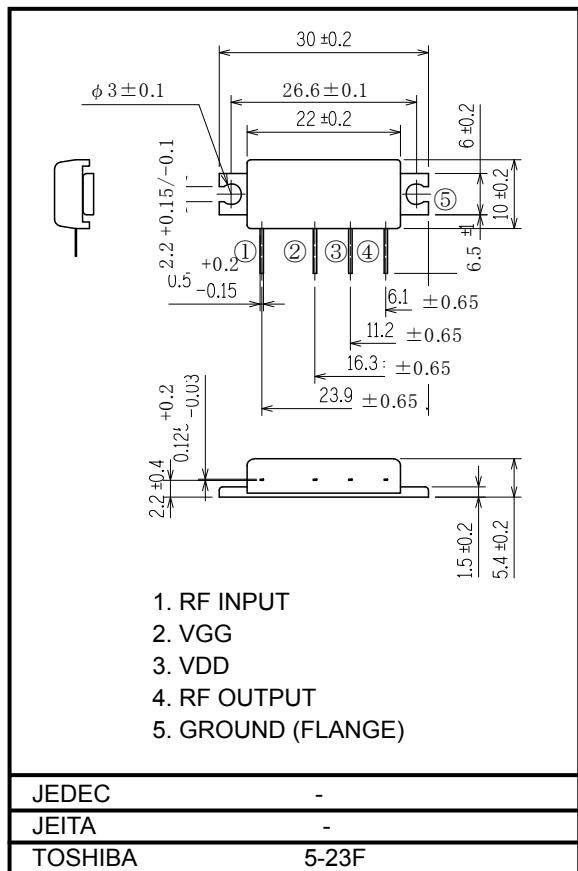
CHARACTERISTIC	SYMBOL	RATING	UNIT
DC Supply Voltage	V <sub>DD</sub>	17	V
DC Supply Voltage	V <sub>GG</sub>	7	V
Input Power	P <sub>i</sub>	17	dBmW
Operating Case Temperature Range	T <sub>c</sub> (opr)	-30~100	°C
Storage Temperature Range	T <sub>stg</sub>	-40~110	°C

Note: Using continuously under heavy loads (e.g. the application of high temperature/current/voltage and the significant change in temperature, etc.) may cause this product to decrease in the reliability significantly even if the operating conditions (i.e. operating temperature/current/voltage, etc.) are within the absolute maximum ratings and the operating ranges.

Please design the appropriate reliability upon reviewing the Toshiba Semiconductor Reliability Handbook ("Handling Precautions"/"Derating Concept and Methods") and individual reliability data (i.e. reliability test report and estimated failure rate, etc.).

**Package Outline**

Unit in mm



Weight:3.5g (type.)

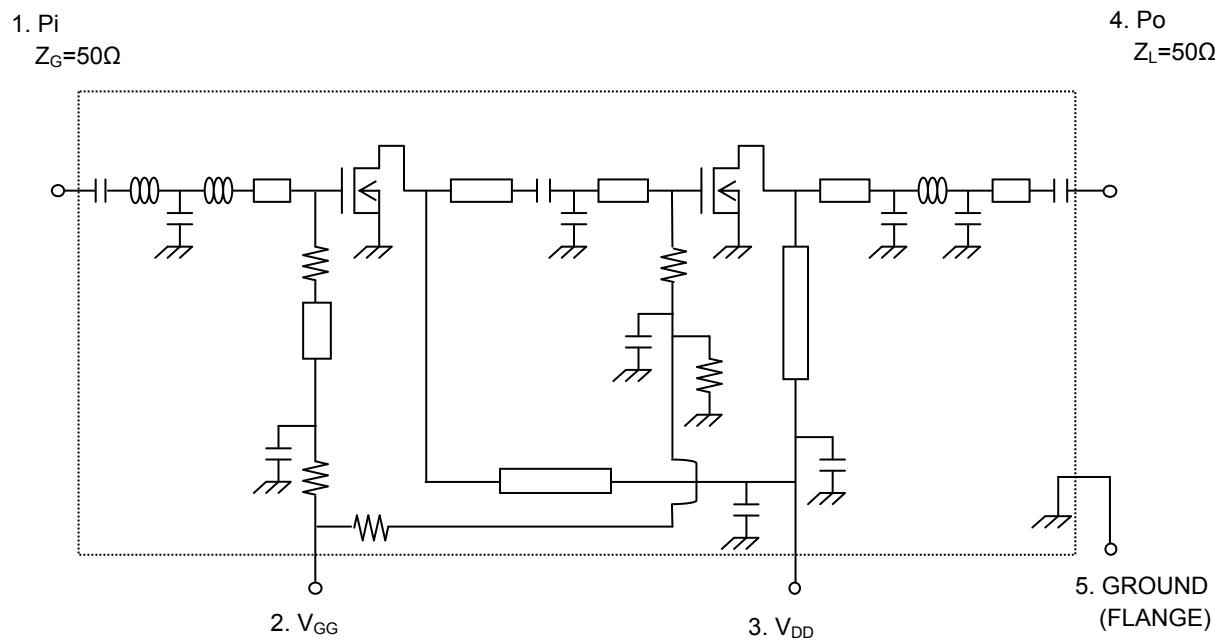
Electrical Characteristics ( $T_c = 25^\circ\text{C}$ ,  $Z_G = 50\Omega$ )

CHARACTERISTIC	SYMBOL	TEST CONDITION	MIN.	TYP.	MAX.	UNIT
Frequency Range	$f_{\text{range}}$	—	260	—	266	MHz
Output Power	$P_o$	$V_{DD} = 7.2V$ , $P_o = 35\text{dBmW}$ ( $P_i = \text{adjust}$ ) $I_{DD} = 1.7A$ ( $V_{GG} = \text{adjust}$ ), $Z_L = 50\Omega$ After that $P_i = 15\text{dBmW}$	38.8	—	—	$\text{dBmW}$
Input Power	$P_i$	$V_{DD} = 7.2V$ , $I_{DD} = 1.7A$ ( $V_{GG} = \text{adjust}$ ) $P_o = 35\text{dBmW}$ ( $P_i = \text{adjust}$ ), $Z_L = 50\Omega$	—	—	5	$\text{dBmW}$
Gate Bias Voltage	$V_{GG}$	$V_{DD} = 7.2V$ , $I_{DD} = 1.7A$ ( $V_{GG} = \text{adjust}$ ) $P_o = 35\text{dBmW}$ ( $P_i = \text{adjust}$ ), $Z_L = 50\Omega$	2.5	—	3.5	V
Gate Bias Current	$I_{GG\text{Bias}}$	$V_{DD} = 7.2V$ , $I_{DD} = 1.7A$ ( $V_{GG} = \text{adjust}$ ) $P_o = 35\text{dBmW}$ ( $P_i = \text{adjust}$ ), $Z_L = 50\Omega$ After that $P_i$ OFF	—	—	1	mA
Adjacent-Channel Power Ratio	$ACP$	$V_{DD} = 7.2V$ , $I_{DD} = 1.7A$ ( $V_{GG} = \text{adjust}$ ) $P_o = 35\text{dBmW}$ ( $P_i = \text{adjust}$ ), $Z_L = 50\Omega$ Modulated Wave : $\pi/4\text{-DQPSK}$ ( $\alpha = 0.5$ , 32kbps) Band Width : 16kHz Frequency Offset : 25kHz	—	—	-35	dB
Second Harmonic	2nd HRM	$V_{DD} = 7.2V$ , $I_{DD} = 1.7A$ ( $V_{GG} = \text{adjust}$ ) $P_o = 35\text{dBmW}$ ( $P_i = \text{adjust}$ ), $Z_L = 50\Omega$	—	—	-27	dB
Third Harmonic	3rd HRM		—	—	-30	dB
Harmonic	HRM		—	—	-35	dB
Rate of Adjustment for Input Load	$VSWR_{in}$	Input VSWR ( When RF output pin connects 50Ω Load )	—	—	3	—
Rate of Adjustment for Output Load	$VSWR_{out}$	Input VSWR ( When RF input pin connects 50Ω Load )	—	—	2.5	—
Relative Phase Variation	—	$V_{DD} = 7.2V$ , $I_{DD} = 1.7A$ ( $V_{GG} = \text{adjust}$ ) $P_o = 5$ to $35\text{dBmW}$ ( $P_i = \text{adjust}$ ) $Z_L = 50\Omega$ (@ $P_o = 35\text{dBmW}$ )	—	—	±12	°
Load Mismatch	—	$V_{DD} = 7.2V$ , $I_{DD} = 1.7A$ ( $V_{GG} = \text{adjust}$ ) $P_o = 35\text{dBmW}$ ( $P_i = \text{adjust}$ , $Z_L = 50\Omega$ ) VSWR LOAD 20:1 ALL PHASE	No Degradation			—
Stability	—	$V_{DD} = 6.0$ to $9.0V$ , $V_{GG} = 1$ to $5V$ $P_i = -40$ to $13\text{dBmW}$ VSWR LOAD 3:1 ALL PHASE	All spurious output than $60\text{dB}$ below desired signal			—

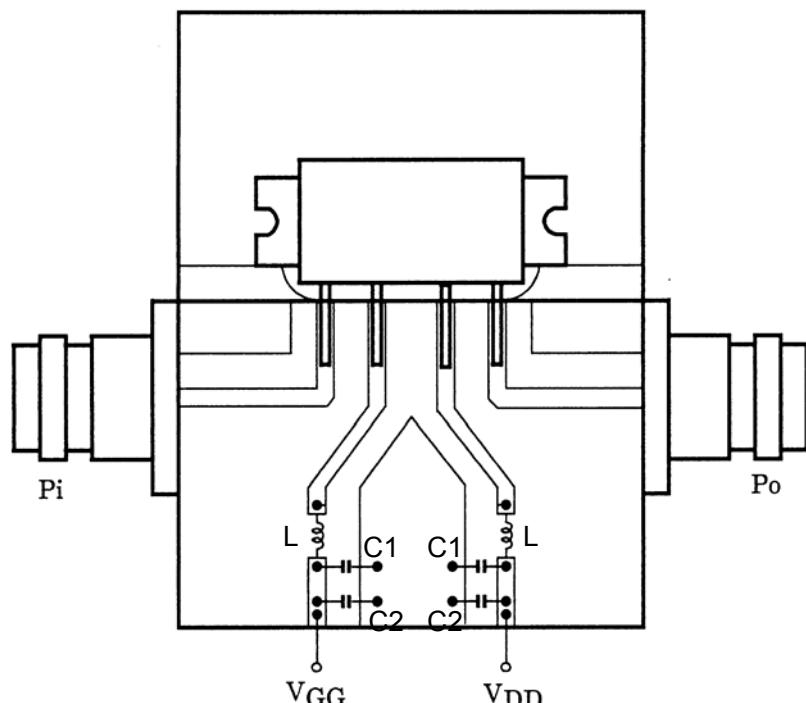
## Caution

- This product has intersetting cap. Please pay attention for exceeding stress and foreign matter in your application. And not to take away the cap.
- Do not break, cut, crush or dissolve chemically. Dispose of this product properly according to law. Do not intermingle with normal industrial or domestic waste.
- This product is electrostatic sensitivity, please handle with caution.

## Schematic



## Test Fixture



C1 : 10000pF

C1 : 1000pF  
C2 : 10  $\mu$  F

L :  $\phi$  0.8 ENAMEL WIRE 8T 5ID

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