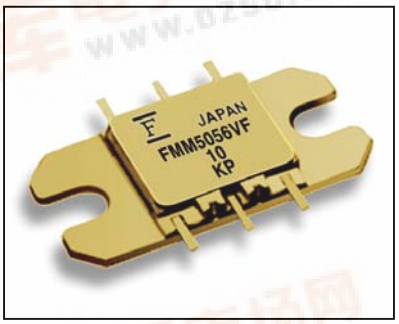
FMM5056VF

5.8-7.2GHz Power Amplifier MMIC



FEATURES

- High Output Power: 34.0dBm(typ.)
- High Linear Gain: 28.0dB(typ.)
- Low VSWR
- Broad Band: 5.8 ~ 7.2GHz
- Impedance Matched Zin/Zout = 50Ω
- Small Hermetic Metal-Ceramic Package(VF)

DESCRIPTION

The FMM5056VF is a MMIC amplifier that contains a four-stage amplifier, internally matched, for standard communications band in the 5.8 to 7.2GHz frequency range.
Fujitsu's stringent Quality Assurance Program assures the highest reliability and consistent performance.

ABSOLUTE MAXIMUM RATINGS (Case Temperature Tc=25℃)

Item	Symbol	Rating	Unit
DC Input Voltage	V_{DD}	12	V
DC Input Voltage	V_{GG}	-7	V
Input Power	P_{in}	12	dBm
Storage Temperature	T_{stg}	-55 to +125	℃

Recommended Operating Condition

Item	Symbol	Condition	Unit
DC Input Voltage at Tc=25℃	V_{DD}	10	V
Input Power at Tc=25℃	P_{in}	10	dBm
DC Input Current at Tc=25℃	I_{DD}	≤1200	mA
Operating Case Temperature	T_c	-40 to +85	℃

ELECTRICAL CHARACTERISTICS (Case Temperature Tc=25℃)

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Frequency Range	f			5.8 - 7.2		GHz
Output Power at 1dB G.C.P.	P_{1dB}	V_{DD}=10V V_{GG}=-5V f=5.8 to 7.2GHz	32.0	34.0	-	dBm
Power Gain at 1dB G.C.P.	G_{1dB}		25.0	28.0	-	dB
Gain Flatness	ΔG		-	2.4	4.0	dB
Input VSWR	$VSWR_i$		-	2 : 1	2.6 : 1	-
Output VSWR	$VSWR_o$		-	2 : 1	-	-
DC Input Current	I_{DD}	V_{DD}=10V,V_{GG}=-5V	-	1100	1200	mA
DC Input Current	I_{GG}		-	5.0	15.0	mA
Channel Temperature Rise	ΔT_{ch}		-	50	-	℃

G.C.P.:Gain Compression Point

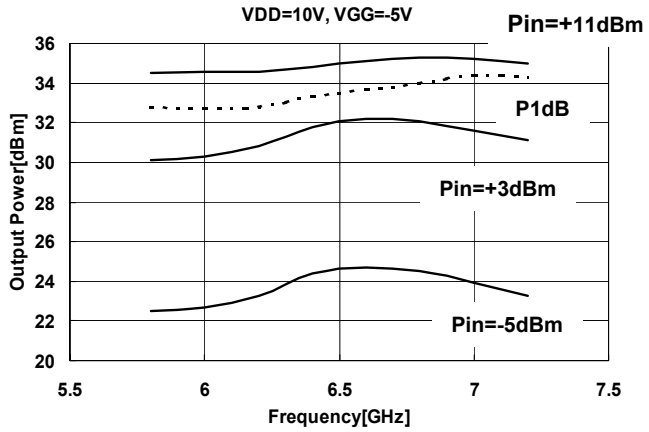
CASE STYLE: VF

Note: G_{1dB} is referenced to Linear Gain measured at Pin=-5dBm

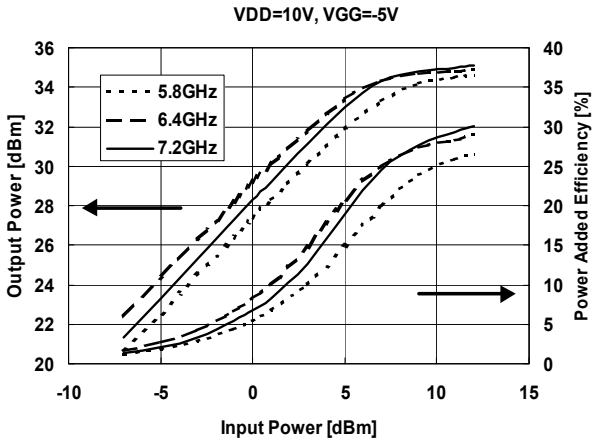
ESD	Class 0	~ 199 V

Note : Based on EIAJ ED-4701 C-111A(C=100pF, R=1.5kΩ)

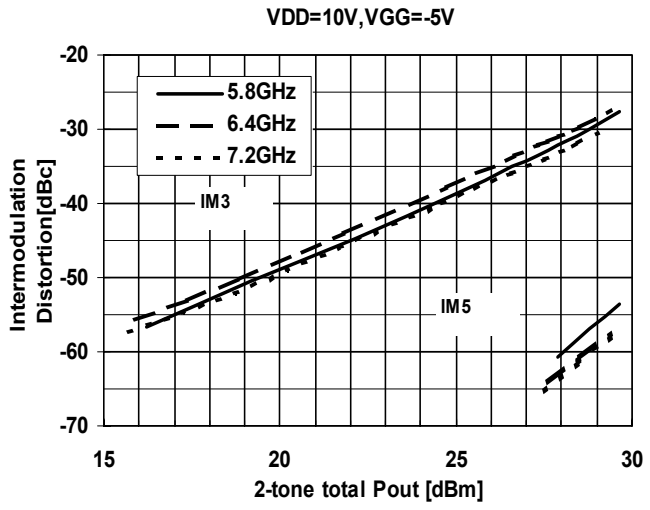
OUTPUT POWER vs. FREQUENCY



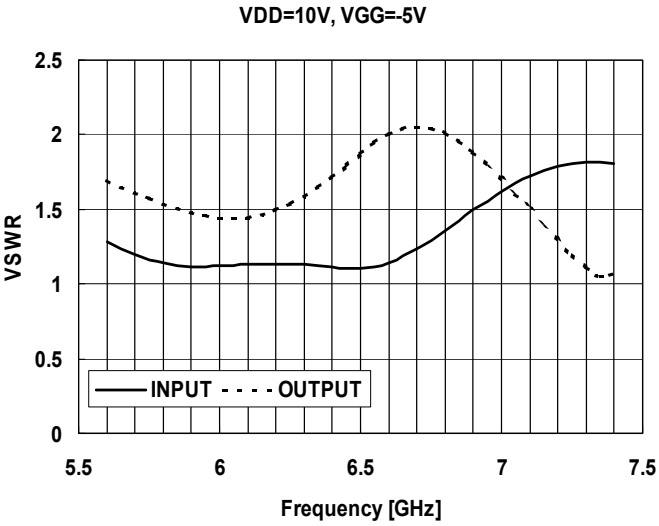
OUTPUT POWER , POWER ADDED EFFICIENCY vs. INPUT POWER



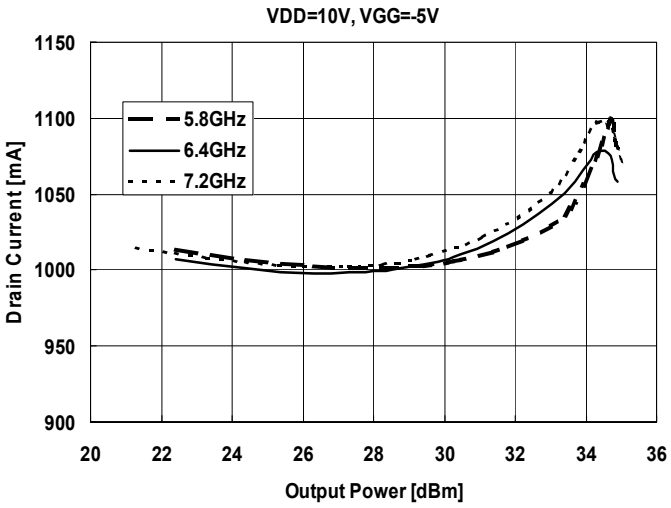
IMD vs OUTPUT POWER(S.C.L.)



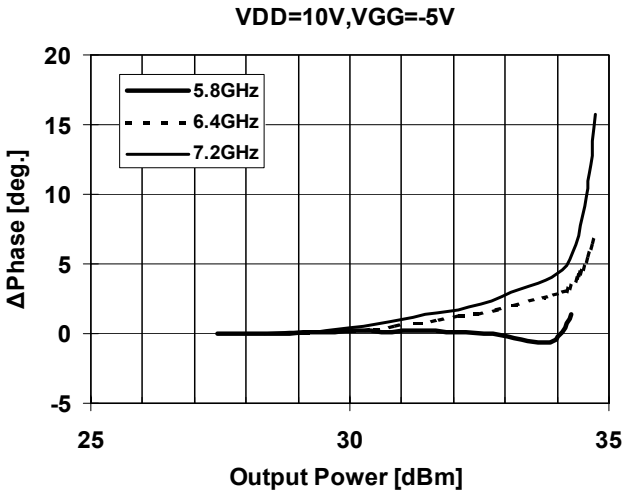
VSWR vs. FREQUENCY



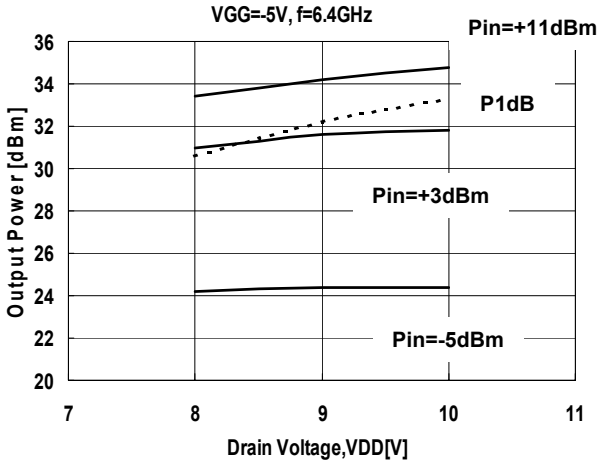
DRAIN CURRENT vs OUTPUT POWER



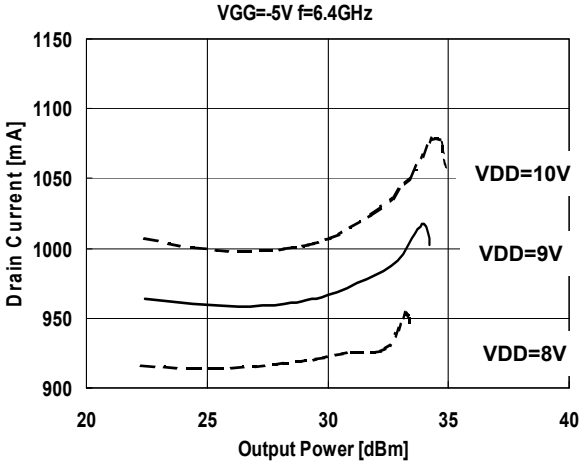
AMPM vs OUTPUT POWER



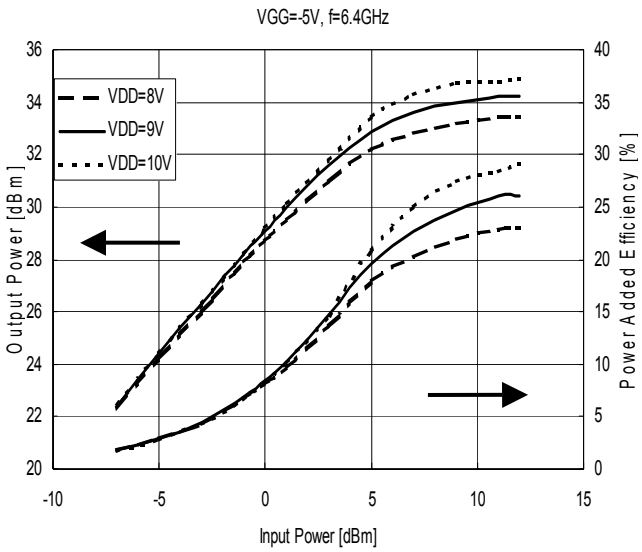
OUTPUT POWER vs. DRAIN VOLTAGE



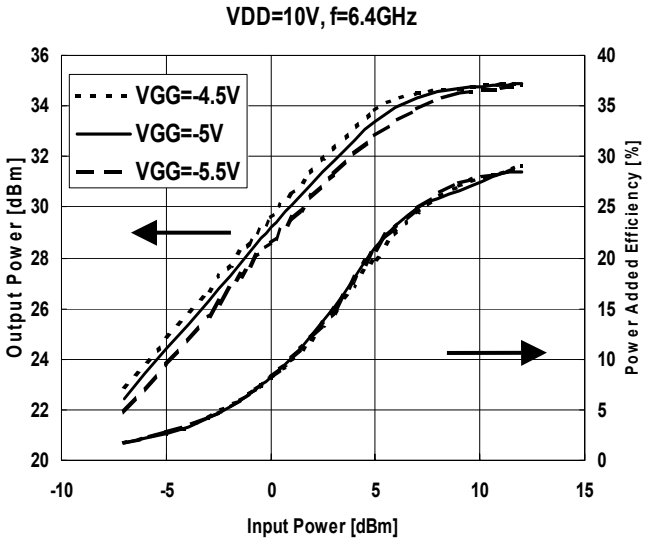
DRAIN CURRENT vs OUTPUT POWER



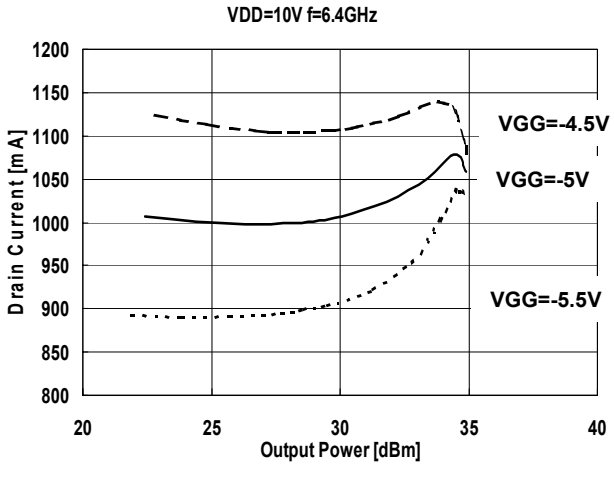
OUTPUT POWER , POWER ADDED EFFICIENCY vs. INPUT POWER



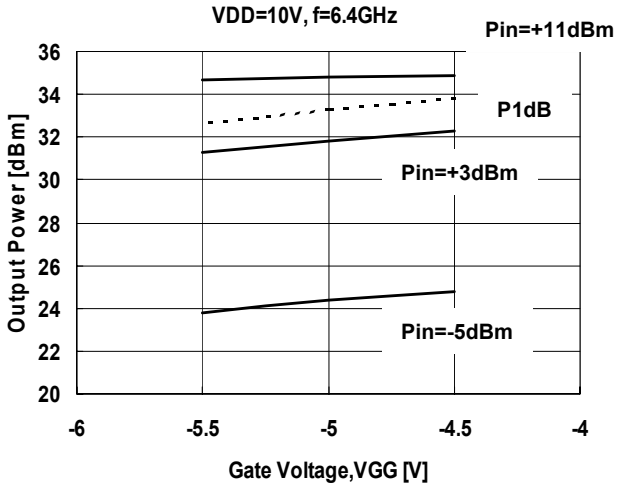
OUTPUT POWER , POWER ADDED EFFICIENCY vs. INPUT POWER



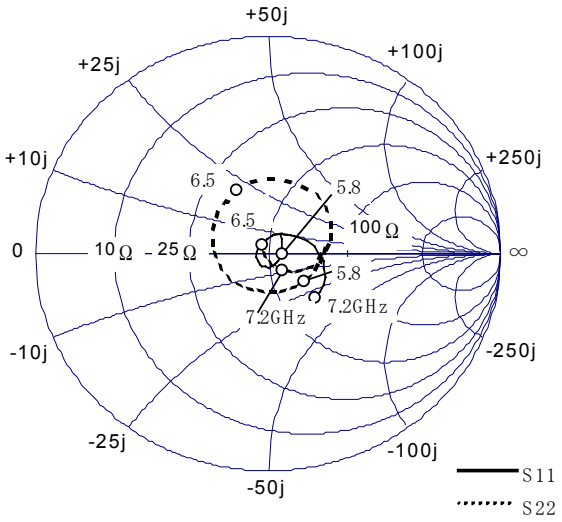
DRAIN CURRENT vs OUTPUT POWER

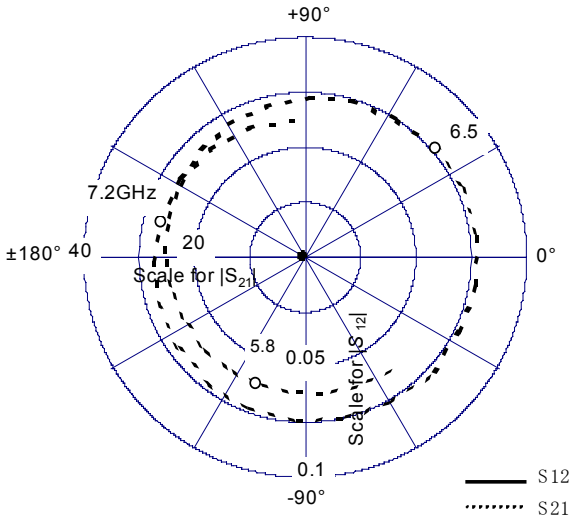


OUTPUT POWER vs. GATE VOLTAGE



■ S-PARAMETER

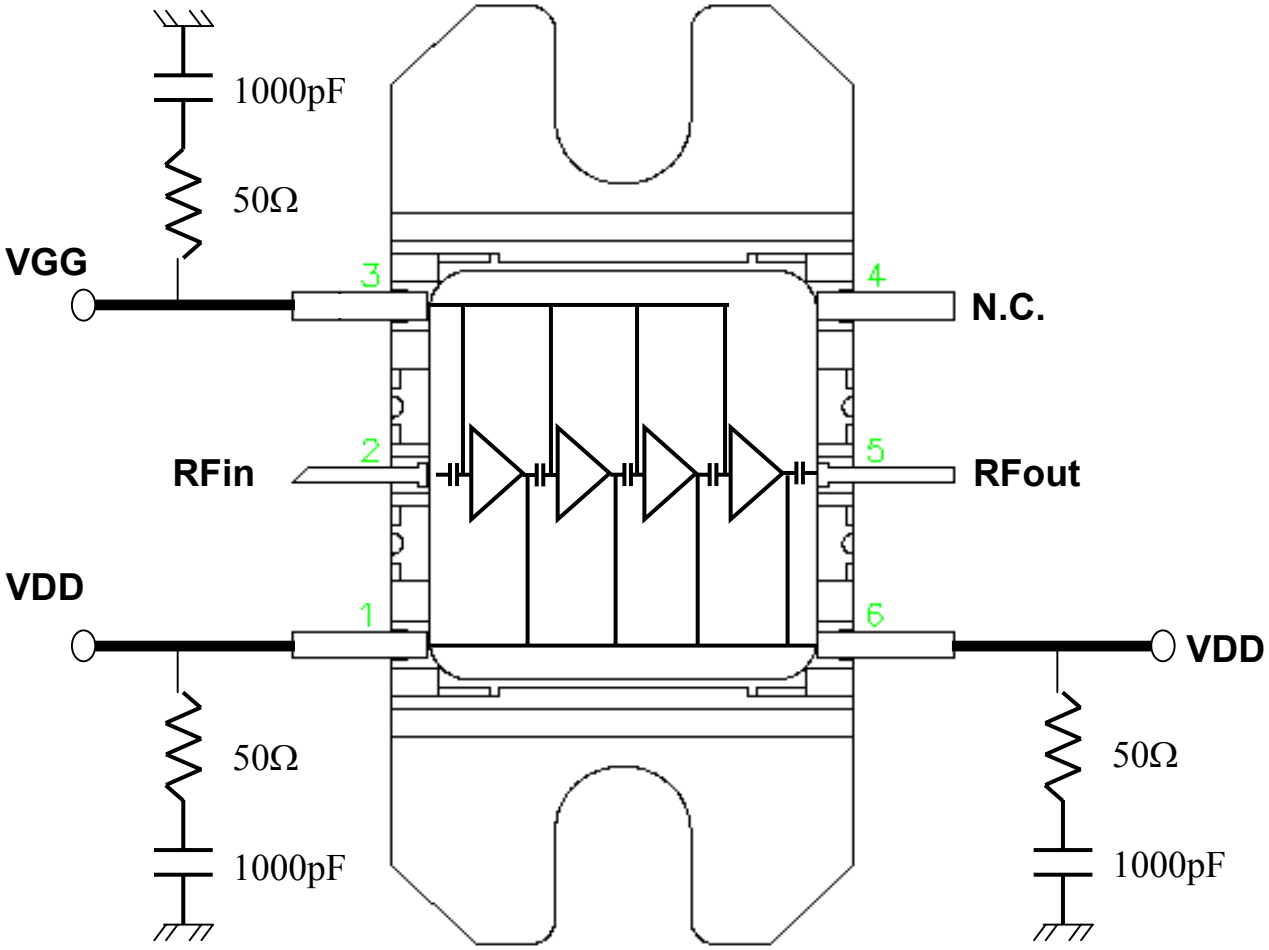




VDD=10.0V, VGG=-5.0V

Frequency	S11		S21		S12		S22	
[GHz]	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
5.6	0.11	60.30	25.75	-53.50	0.0013	-167.09	0.24	3.68
5.7	0.08	36.46	24.87	-83.02	0.0013	-168.43	0.22	-16.53
5.8	0.06	3.99	24.46	-111.49	0.0011	-159.93	0.20	-39.28
5.9	0.05	-32.63	24.49	-139.66	0.0012	-157.97	0.19	-65.48
6	0.06	-63.96	24.97	-167.78	0.0013	-154.12	0.18	-95.80
6.1	0.06	-89.50	25.80	163.81	0.0014	-154.94	0.19	-127.81
6.2	0.06	-113.38	27.01	134.51	0.0016	-156.94	0.21	-159.39
6.3	0.06	-140.43	28.37	104.22	0.0018	-161.66	0.24	170.47
6.4	0.05	178.94	29.70	72.78	0.0021	-170.22	0.28	141.84
6.5	0.05	121.67	30.74	40.05	0.0024	-178.69	0.32	114.82
6.6	0.08	74.14	31.19	6.88	0.0026	169.54	0.34	88.83
6.7	0.13	42.82	31.06	-26.88	0.0026	157.81	0.34	63.73
6.8	0.18	19.89	30.58	-60.37	0.0026	144.13	0.32	40.09
6.9	0.22	0.51	29.67	-93.74	0.0026	132.25	0.29	17.13
7	0.25	-16.23	28.78	-127.22	0.0024	118.43	0.23	-4.92
7.1	0.28	-31.24	27.80	-160.64	0.0020	110.25	0.17	-27.22
7.2	0.29	-45.18	26.86	165.59	0.0017	98.22	0.09	-51.99
7.3	0.29	-58.16	25.84	130.81	0.0014	91.48	0.02	-122.39

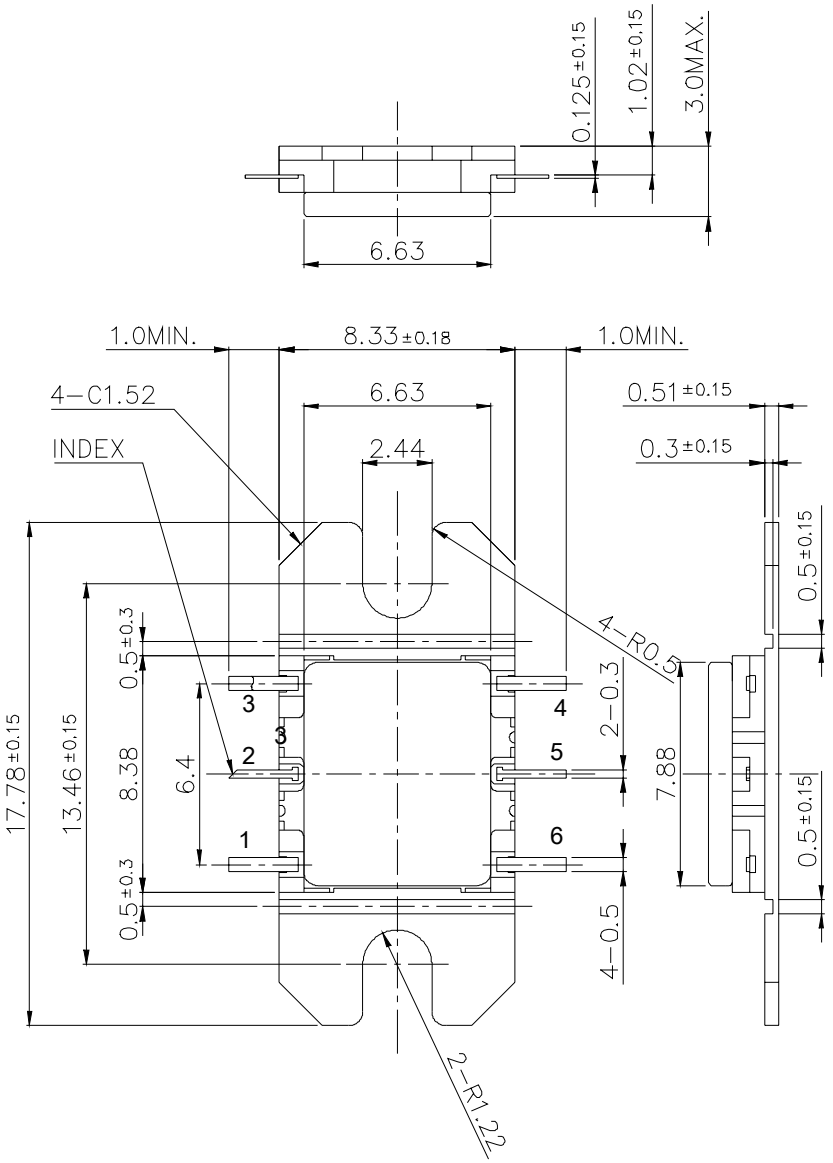
■ **Recommended Bias Circuit and Internal Block Diagram**



Note 1: The RC networks are recommended on the bias supply lines, close to the package, to prevent video oscillations which could damage the module.
Note 2: Bias point VDD can be connected at the input side or at the output. The two pins named VDD are internally connected.

PIN ASSIGMENT
1 : VDD
2 : RF in
3 : VGG
4 : N.C.
5 : RF out
6 : VDD

■ **Package Out Line**



PIN ASSIGMENT
1 : VDD
2 : RF in
3 : VGG
4 : N.C.
5 : RF out
6 : VDD

Unit : mm

FMM5056VF

5.8-7.2GHz Power Amplifier MMIC

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- Do not put these products into the mouth.
- Do not alter the form of this product into a gas, powder, or liquid through burning, crushing, or chemical processing as these by-products are dangerous to the human body if inhaled, ingested, or swallowed.
- Observe government laws and company regulations when discarding this product. This product must be discarded in accordance with methods specified by applicable hazardous waste procedures.

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