

# FMM5051VF

## 13.75-14.5GHz Power Amplifier MMIC

### FEATURES

- High Output Power: 31.5dBm (typ.)
- High Linear Gain: 31.5dB (typ.)
- Low Input VSWR
- Broad Band: 13.75 ~ 14.5GHz
- Impedance Matched  $Z_{in}/Z_{out} = 50\Omega$
- Small Hermetic Metal-Ceramic Package (VF)



### DESCRIPTION

The FMM5051VF is a MMIC amplifier that contains a three-stage amplifier, internally matched, for standard communications in the 13.75 to 14.5GHz frequency range. This product is well suited for VSAT applications as it offers high power, high gain, and low VSWR.

Fujitsu's stringent Quality Assurance Program assures the highest reliability and consistent performance.

### ABSOLUTE MAXIMUM RATINGS (Ambient Temperature $T_a=25^\circ\text{C}$ )

Item	Symbol	Rating	Unit
Drain-Source Voltage	$V_{DD}$	8	V
Gate-Source Voltage	$V_{GG}$	-3	V
Input Power	$P_{in}$	8	dBm
Storage Temperature	$T_{stg}$	-65 to +175	$^\circ\text{C}$
Operating Case Temperature	$T_{op}$	-40 to +85	$^\circ\text{C}$

Fujitsu recommends the following conditions for the reliable operation of GaAs modules:

1. The drain operating voltage ( $V_{DD}$ ) should not exceed 5 volts.
2. The gate operating voltage ( $V_{GG}$ ) should not exceed 0 volts.

### ELECTRICAL CHARACTERISTICS (Case Temperature $T_a=25^\circ\text{C}$ )

Item	Symbol	Test Conditions	Limit			Unit
			Min.	Typ.	Max.	
Frequency Range	f		13.75-14.5			GHz
Output Power ( $P_{in}=3\text{dBm}$ )	$P_{out}$	$V_{DD} = 5\text{V}$ $V_{GG} = 0\text{V}$ $f = 13.75 \text{ to } 14.5\text{GHz}$	30.8	31.5	-	dBm
Linear Gain	GL		30.0	31.5	-	dB
Gain Flatness	$\Delta G$		-	1.5	2	dB
Input VSWR	VSWR <sub>i</sub>		-	2:1	3:1	-
Output VSWR	VSWR <sub>o</sub>		-	2:1	3:1	-
DC Input Current	$I_{DD}$		$V_{DD} = 5\text{V}, V_{GG} = 0\text{V}$	-	800	1000

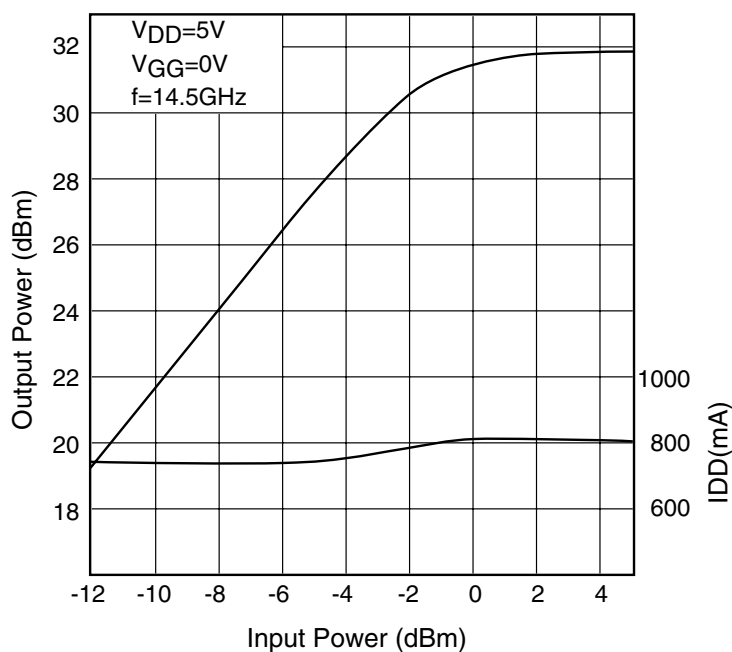
CASE STYLE: VF

G.C.P.: Gain Compression Point

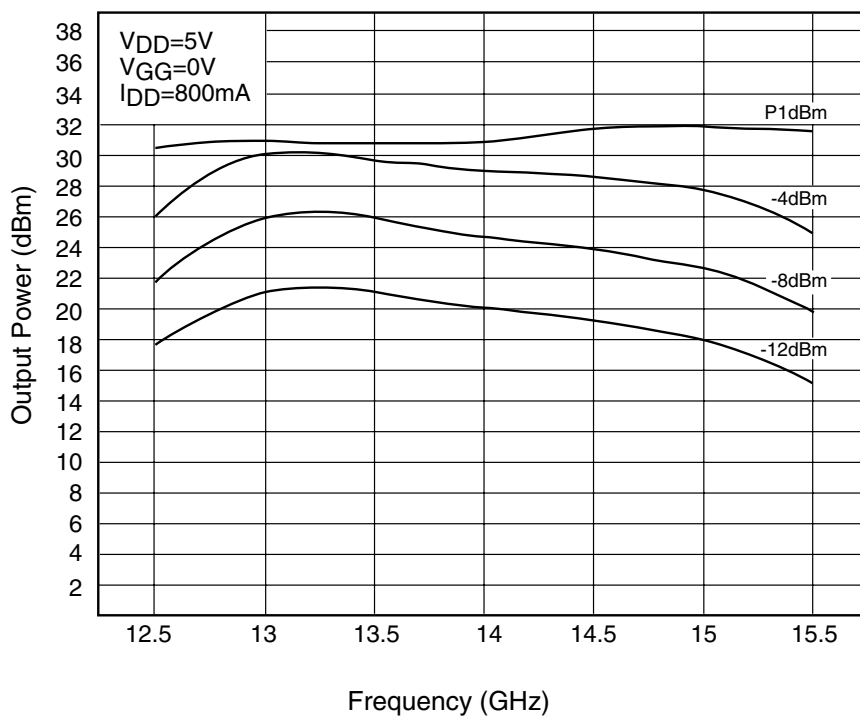
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### OUTPUT POWER vs. INPUT POWER

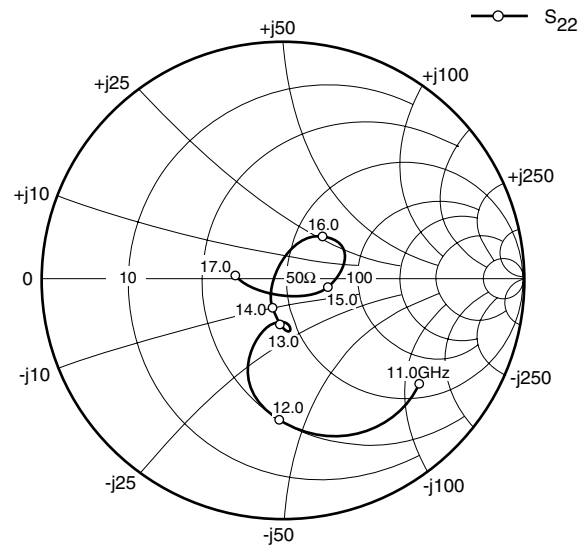
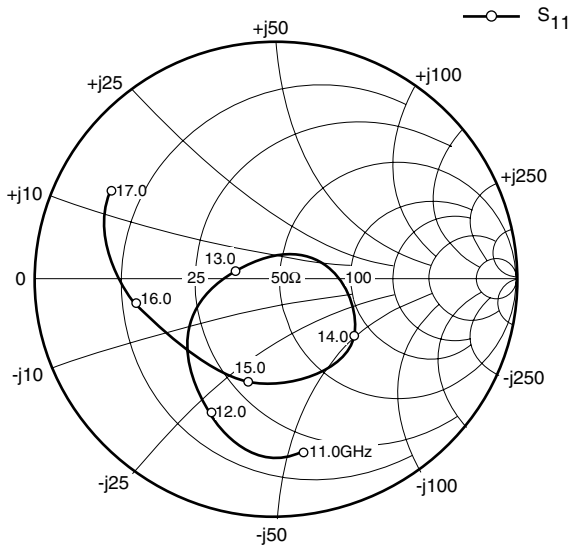


### OUTPUT POWER vs. FREQUENCY



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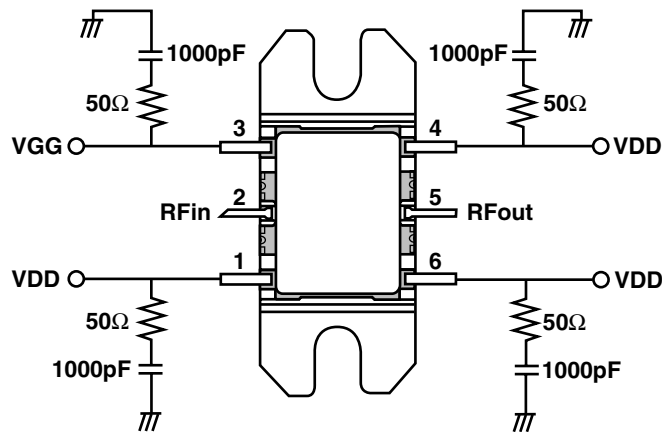


### S-PARAMETERS

$V_{DD} = 5V, V_{GG} = 0V$

FREQUENCY (MHZ)	S11		S21		S12		S22	
	MAG	ANG	MAG	ANG	MAG	ANG	MAG	ANG
11000	.740	-81.857	13.457	177.785	.003	157.794	.709	-37.611
11500	.739	-101.149	18.257	141.305	.001	0.176	.701	-71.027
12000	.627	-116.071	24.049	104.138	.003	-126.024	.584	-91.825
12500	.518	-139.881	32.716	57.683	.002	-102.594	.386	-114.205
13000	.178	168.355	39.042	2.669	.002	-122.226	.182	-96.445
13500	.239	6.386	39.41	-56.752	.003	-137.041	.206	-84.57
14000	.400	-37.02	36.17	-109.235	.003	-154.964	.122	-112.619
14500	.406	-70.73	31.57	-164.016	.003	-143.88	.093	92.18
15000	.450	-105.697	24.022	140.215	.003	-152.991	.247	49.713
15500	.467	-149.353	17.462	88.766	.001	-176.233	.273	22.654
16000	.600	-170.36	11.478	39.618	.004	-175.798	.182	-10.138
16500	.711	167.121	7.015	-6.136	.005	-172.492	.069	-112.219
17000	.785	150.759	4.078	-44.014	.009	174.247	.210	174.86

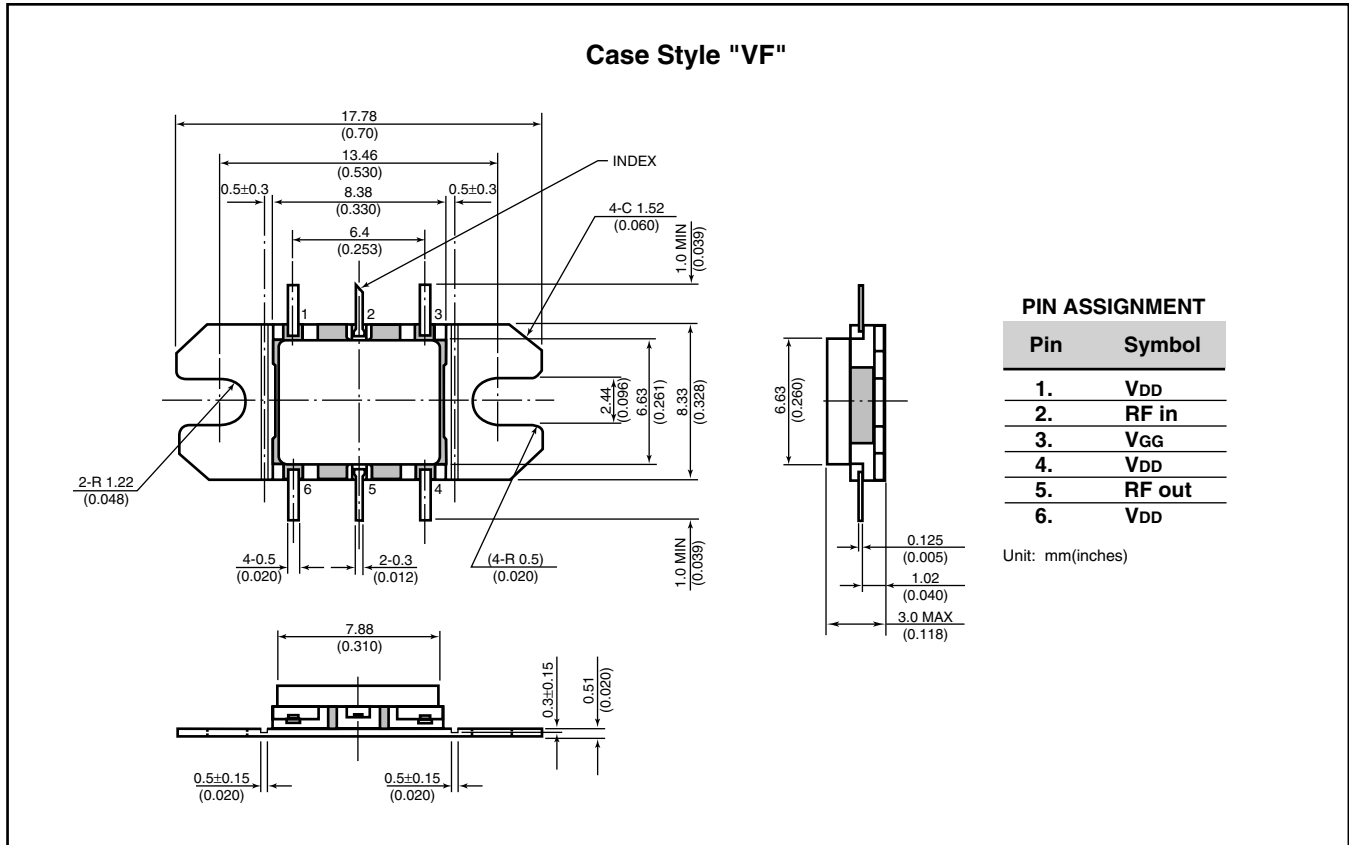
### RECOMMENDED BIAS CIRCUIT



Note: The R/C networks are recommended on the bias supply lines, close to the package, to prevent video oscillations which could damage the module.

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### CAUTION

Fujitsu Compound Semiconductor Products contain **gallium arsenide (GaAs)** which can be hazardous to the human body and the environment. For safety, observe the following procedures:

- 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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 Printed in U.S.A. FCSI0501M200

