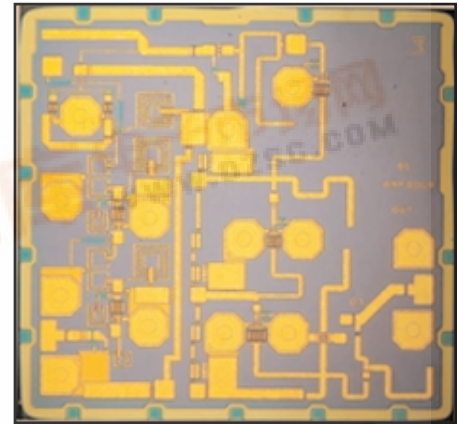


FEATURES

- Integrated Monolithic Doubler
- High Harmonic Rejection
- Single Supply Voltage
- High Reliability

DESCRIPTION

The FMM5118X is a doubler, consisting of an X2 multiplier followed by a buffer amplifier for applications with an output frequency of 20 to 32 GHz. This doubler is uniquely suited for point-to-point radios, local multi-point distribution systems (LMDS) and satellite communications, as it offers a high dynamic range over a large bandwidth.

**ABSOLUTE MAXIMUM RATINGS (Ambient Temperature Ta=25°C)**

Parameter	Symbol	Rating	Unit
DC Supply Voltage	$V_{DD1,2}$	8	V
Input Power	P_{in}	10	dBm
Storage Temperature	T_{stg}	-65 to +175	°C

RECOMMENDED OPERATING CONDITIONS

Item	Symbol	Recommend			Unit
		Min.	Typ.	Max.	
DC Supply Voltage	$V_{DD1,2}$	3.0	-	6.0	V
Input Drive Power	P_{in}	0.0	3.0	5.0	dBm
Operating Backside Temperature	T_{bs}	-45	25	110	°C

Note 1: This product should be hermetically packaged.

ELECTRICAL CHARACTERISTICS (Ambient Temperature Ta=25°C)

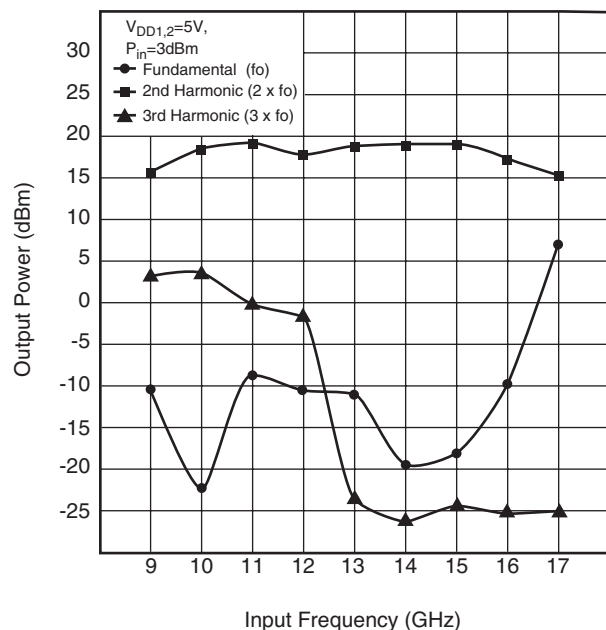
Item	Symbol	Conditions	Limits			Unit
			Min.	Typ.	Max.	
Input Frequency Range	f_{in}	$V_{DD1,2}=5V$, $P_{in}=3dBm$	10	-	16	GHz
Output Frequency Range	f_{out}		20	-	32	GHz
Output Power	P_{out}		14	18	20	dBm
Conversion Gain	G_c		11	14	17	dB
Conversion Gain Flatness	ΔG		-	2.5	-	dB
Input Return Loss	RL_{in}		-	15	-	dB
Fundamental Rejection	RJ_{1st}		-	25	-	dB
3rd Harmonic Rejection	RJ_{3rd}		-	30	-	dB
DC Current Consumption	I_{DC}		-	100	150	mA
RF Current Consumption	I_{RF}		-	140	200	mA

Note 1: The electrical characteristics are measured on a sample basis at 10pcs./wafer. Criteria: (accept/reject)=(0/1)

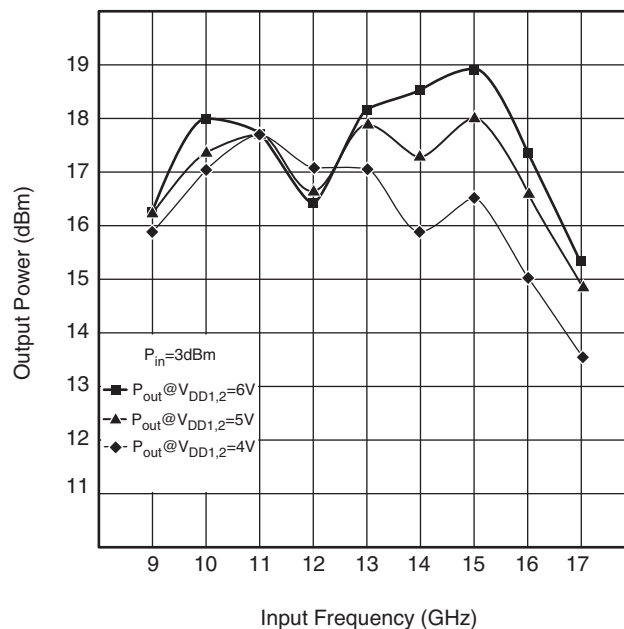
FMM5118X

20-32GHz Doubler MMIC

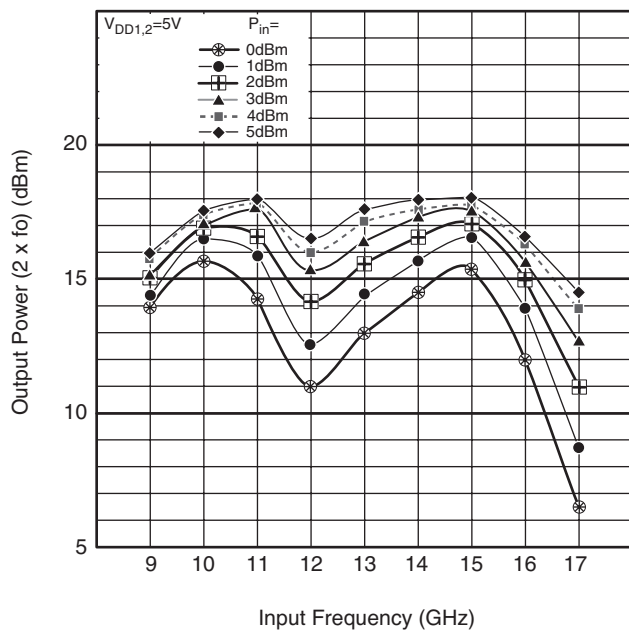
OUTPUT POWER vs. FREQUENCY



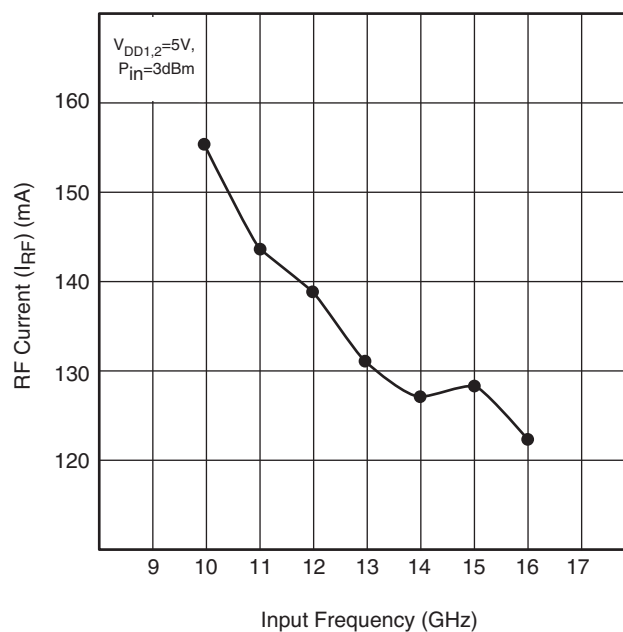
V_{DD} -Output Power Dependency



OUTPUT POWER vs. FREQUENCY



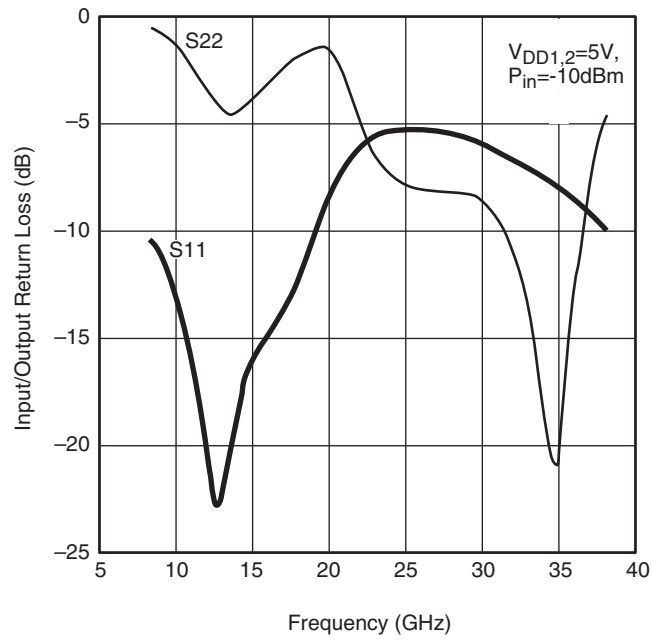
RF CURRENT vs. FREQUENCY



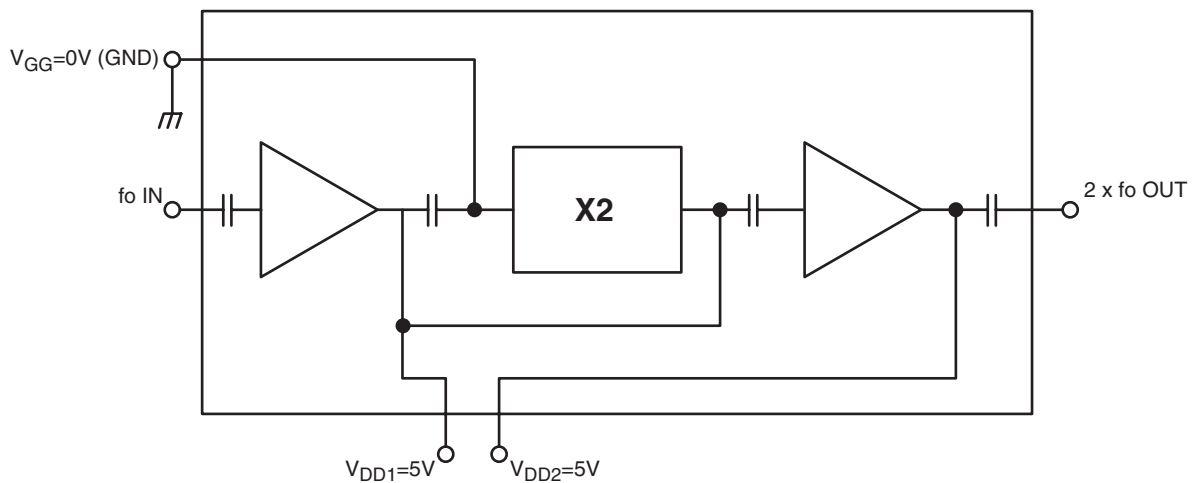
FMM5118X

20-32GHz Doubler MMIC

SMALL SIGNAL RETURN LOSS vs. FREQUENCY



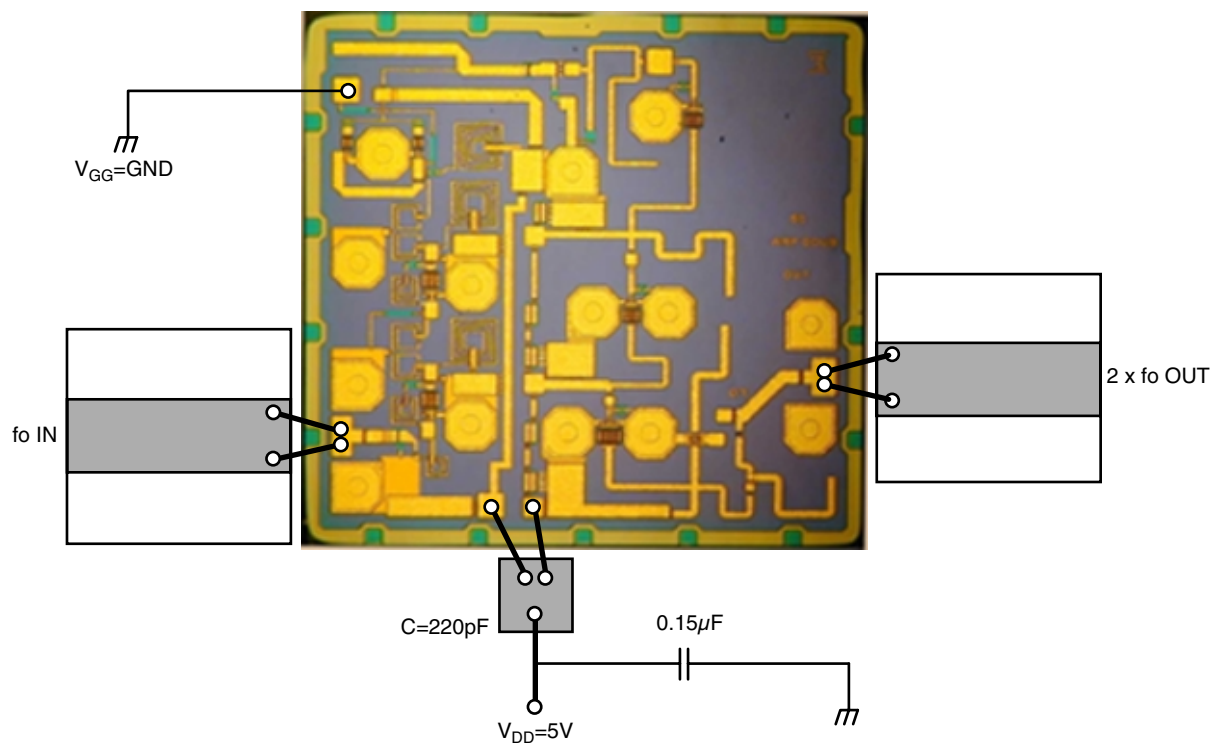
Block Diagram



FMM5118X

20-32GHz Doubler MMIC

Bonding Diagram



FMM5118X

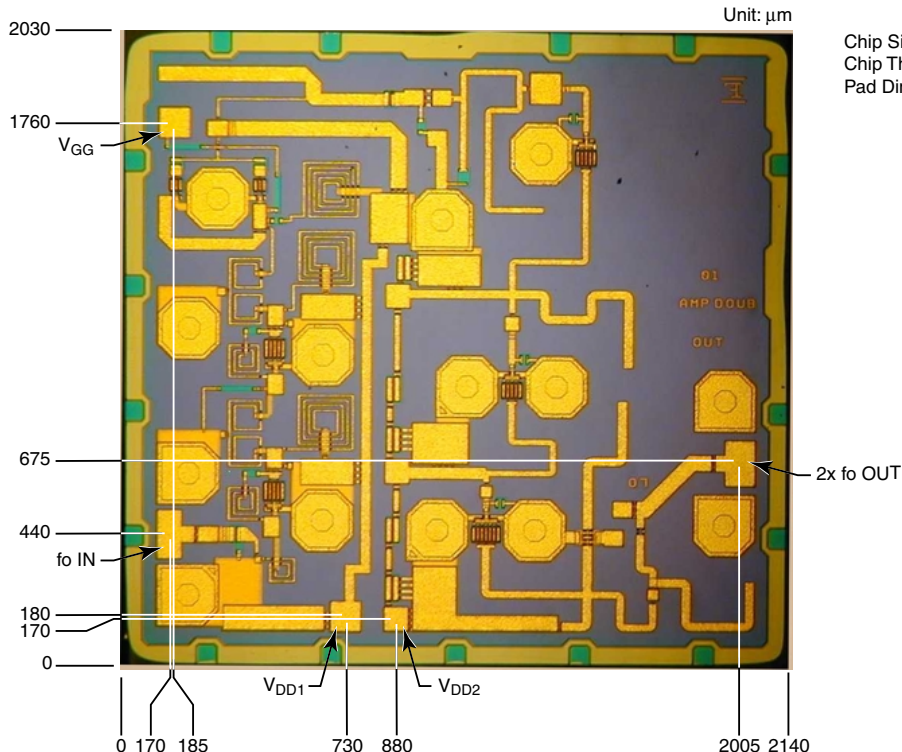
20-32GHz Doubler MMIC

Notes:

FMM5118X

20-32GHz Doubler MMIC

CHIP OUTLINE



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For safety, observe the following procedures:

- Do not put this product 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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