

21-26.5GHz Integrated Down converter

www.datasheet4u.com

GaAs Monolithic Microwave IC

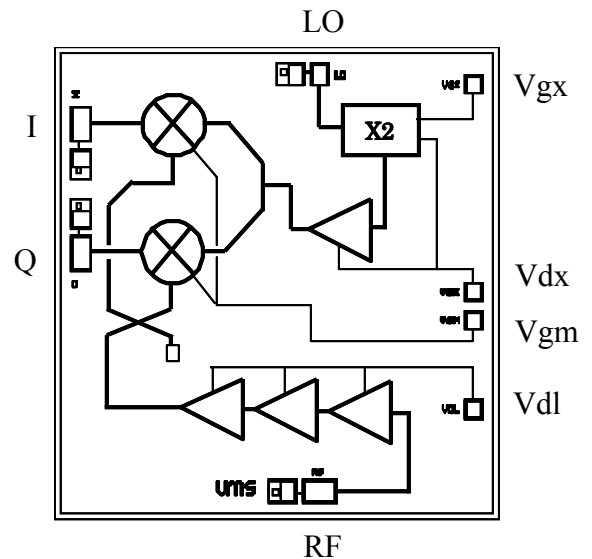
Preliminary

Description

The CHR3693 is a multifunction chip, which integrates a balanced cold FET mixer, a time two multiplier, and a RF self biased LNA. It is designed for a wide range of applications, typically commercial communication systems. The backside of the chip is both RF and DC grounded. This helps to simplify the assembly process.

The circuit is manufactured with a PM-HEMT process, 0.25µm gate length, via holes through the substrate and air bridges.

It is supplied in chip form.

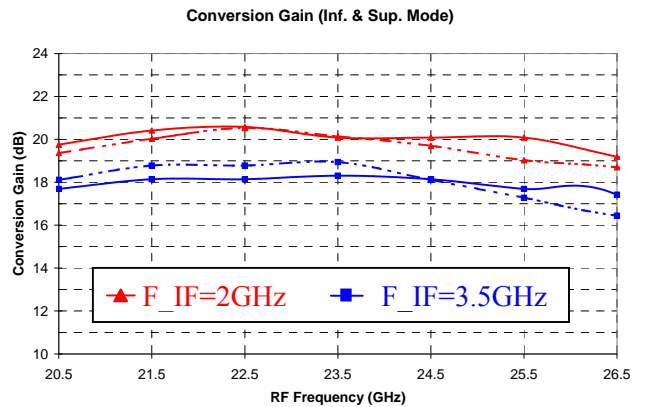


Main Features

- Broadband performance 21-26.5GHz
- 18dB gain
- -7dBm input IP3
- 18dB image rejection
- DC power consumption: 4V, 160mA
- Chip size: 2,45 x 2,45 x 0,1mm

Main Characteristics

Tamb=25°C, Vd=4V



Symbol	Parameter	Min	Typ	Max	Unit
F _{RF}	RF frequency range	21		26.5	GHz
F _{LO}	LO frequency range	9		14	GHz
F _{IF}	IF frequency range	DC		3.5	GHz
G _c	Conversion gain		18		dB

ESD Protection: Electrostatic discharge sensitive device. Observe handling precautions!

Preliminary

Electrical Characteristics

Tamb=25°C, Vdx=Vdl = +4V, Vgx=-0.9V, Vgm=-0.7V

www.datasheet4u.com

Symbol	Parameter	Min	Typ	Max	Unit
F _{RF}	RF frequency range	21		26.5	GHz
F _{LO}	LO frequency range	9		14	GHz
F _{IF}	IF frequency range	DC		3.5	GHz
G _c	Conversion gain		18		dB
NF	Noise Figure		3.2		dB
P _{LO}	LO Input power			+5	dBm
Img Sup	Image Suppression (1)		18		dBc
IIP3	Input IP3		-7		dBm
LO VSWR	Input LO VSWR		2.0:1		
RF VSWR	Input RF VSWR (21 to 23.6GHz) Input RF VSWR (24.5 to 26.5GHz)		2.0:1 2.3:1		
I _d	Bias current (2)		160		mA

(1) With external I/Q 90° hybrid coupler

(2) Typically, I_{dl}= 90mA, I_{dx}=70mA

Absolute Maximum Ratings (1)

Tamb=+25°C

Symbol	Parameter	Values	Unit
V _d	Maximum drain bias voltage	4.5	V
I _d	Maximum drain bias current	230	mA
V _g	Gate bias voltage	-2.0 to +0.4	V
P _{RF}	Maximum RF input power	10	dBm
P _{LO}	Maximum LO input power	10	dBm
T _{ch}	Maximum channel temperature	175	°C
T _a	Operating temperature range	-40 to +85	°C
T _{stg}	Storage temperature range	-55 to +125	°C

(1) Operation of this device above anyone of these parameters may cause permanent damage.

Typical On-Wafer Measured Performance

Tamb=25°C, Vdx=Vdl=4V, Typical Vgx=-0.9V & Vgm=-0.7 V

Preliminary

Conversion Gain (Inf. & Sup. Mode)

www.datasheet4u.com

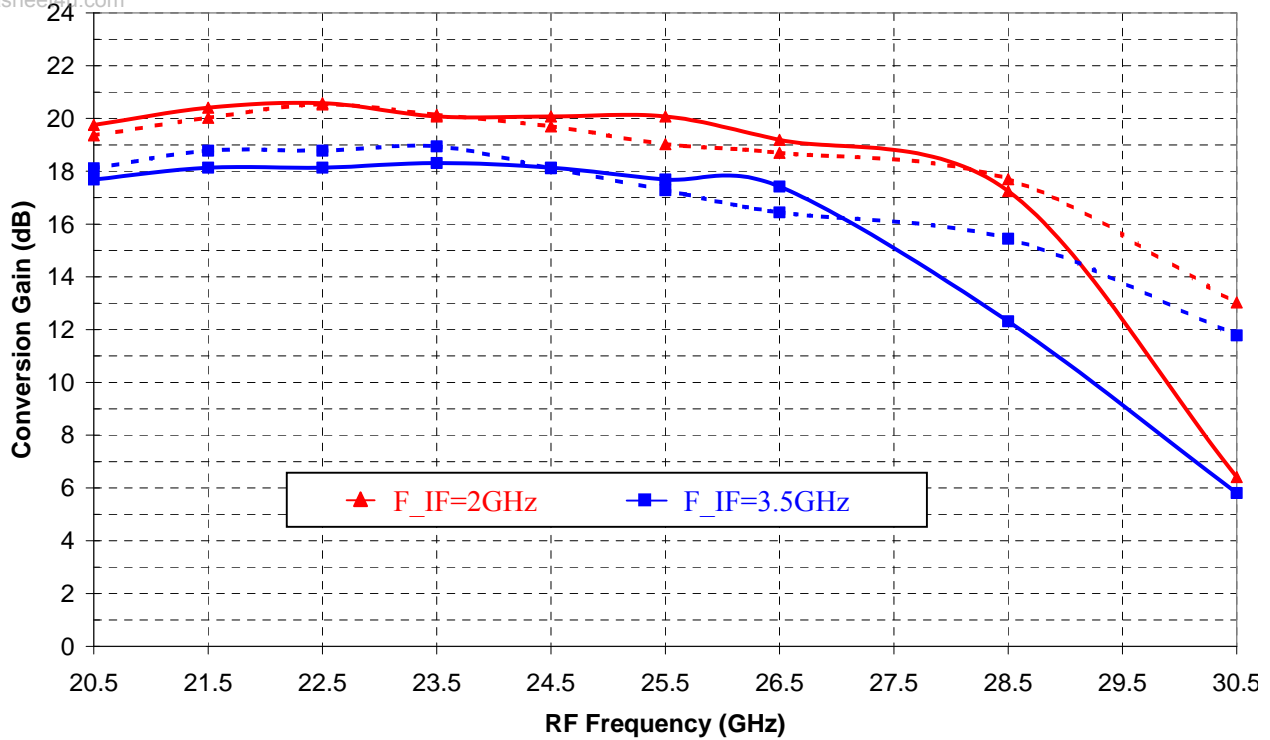
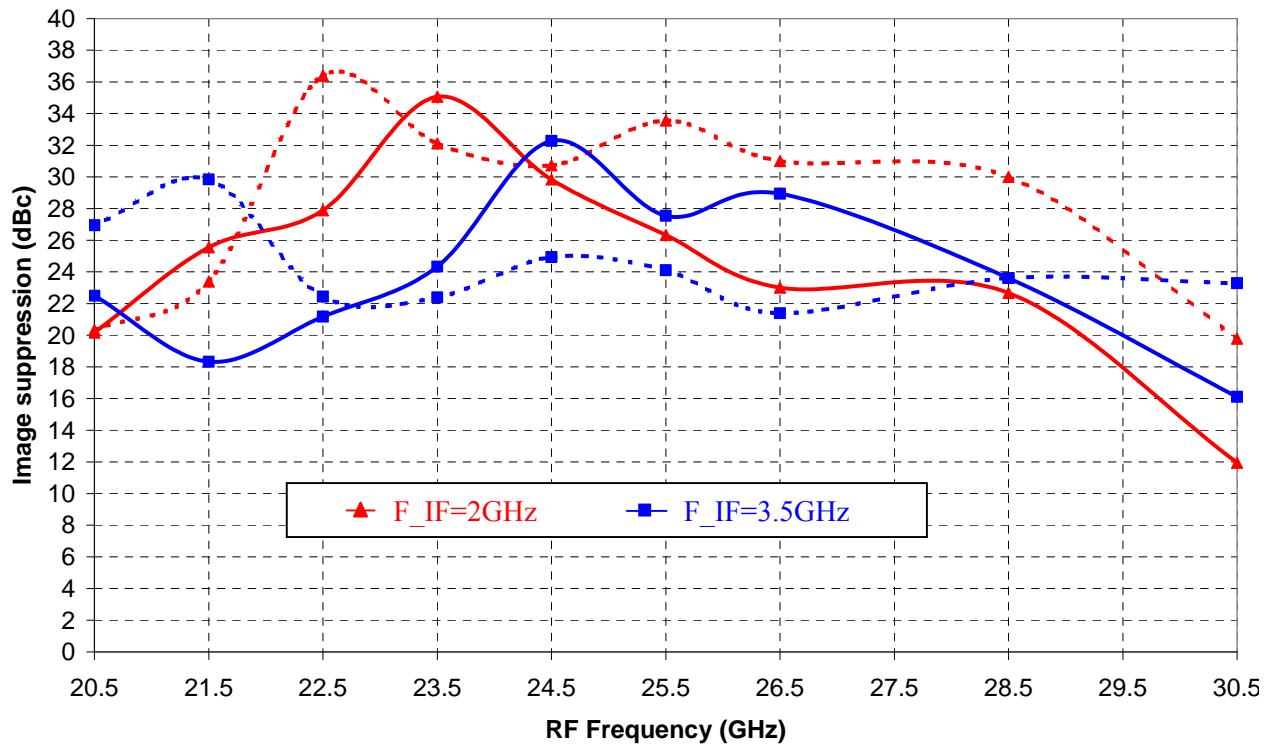
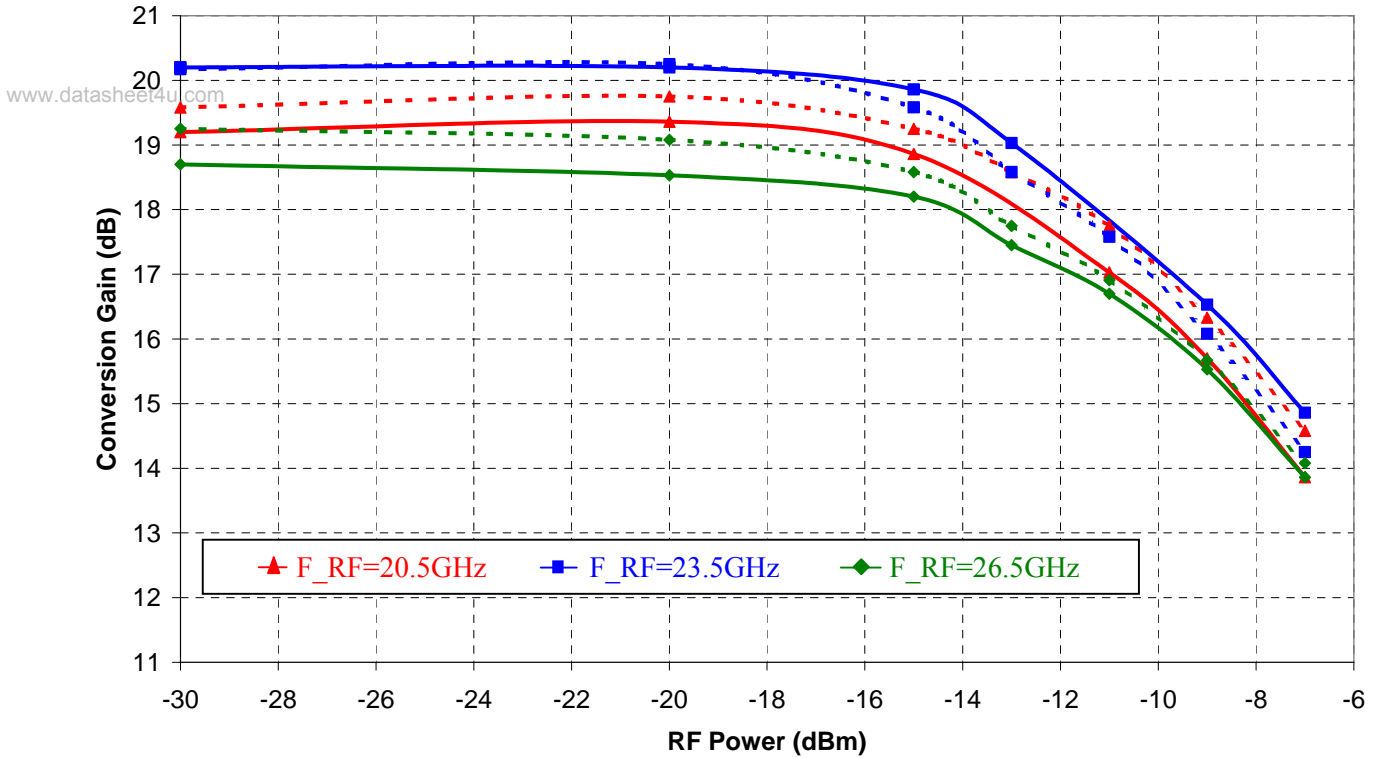


Image Frequency Rejection (Inf. & Sup. Mode)

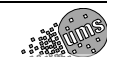
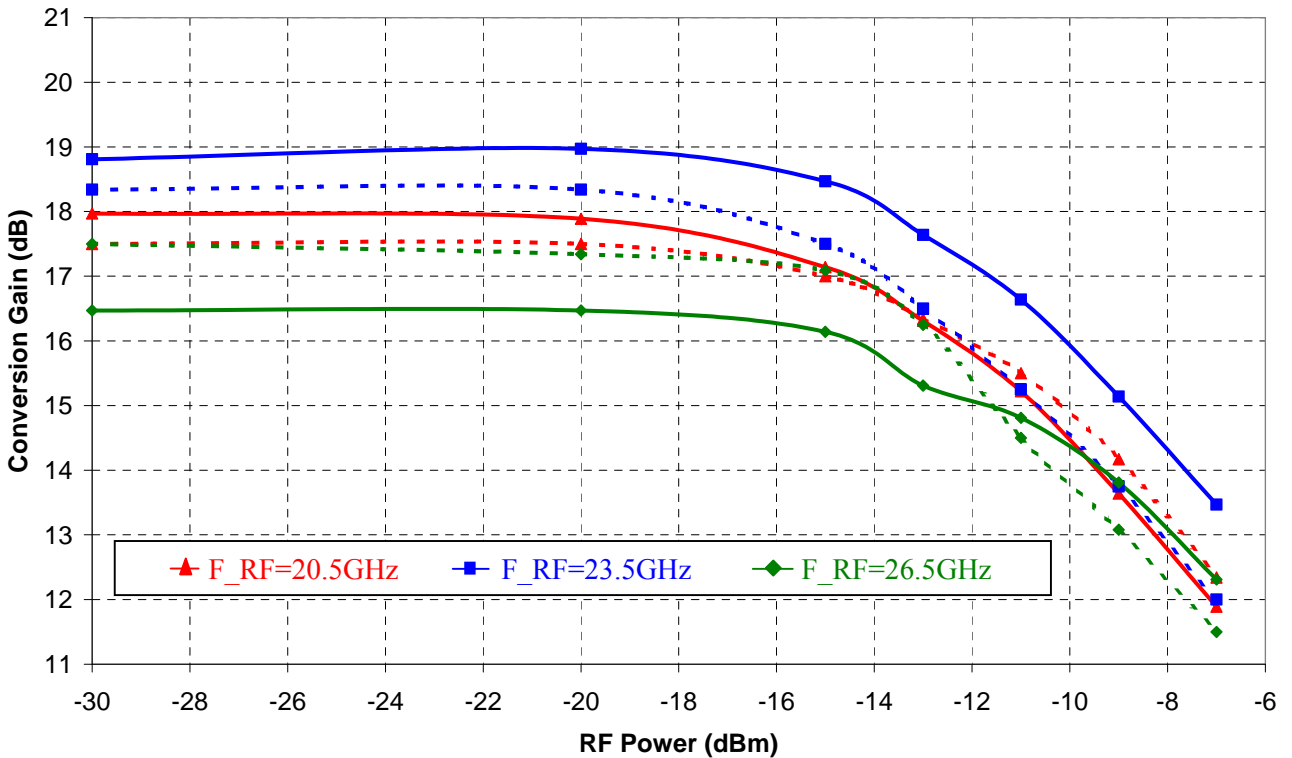


Preliminary

Compression vs RF Power (Inf. & Sup. Mode) @ F_IF=2GHz



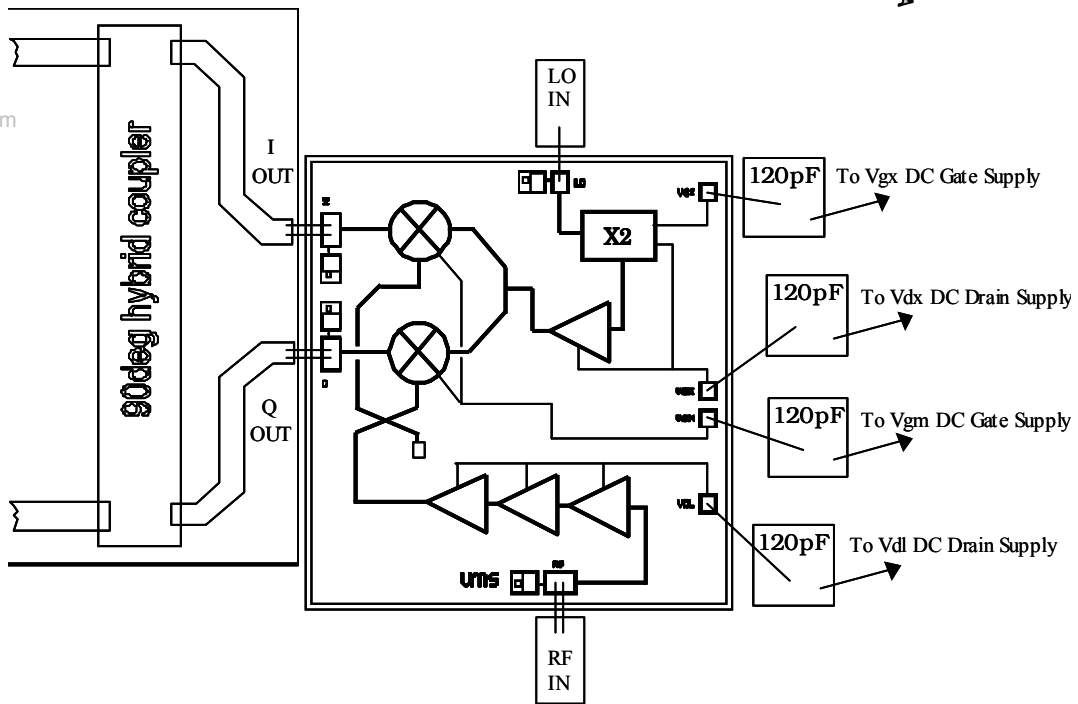
Compression vs RF Power (Inf. & Sup. Mode) @ F_IF=3.5GHz



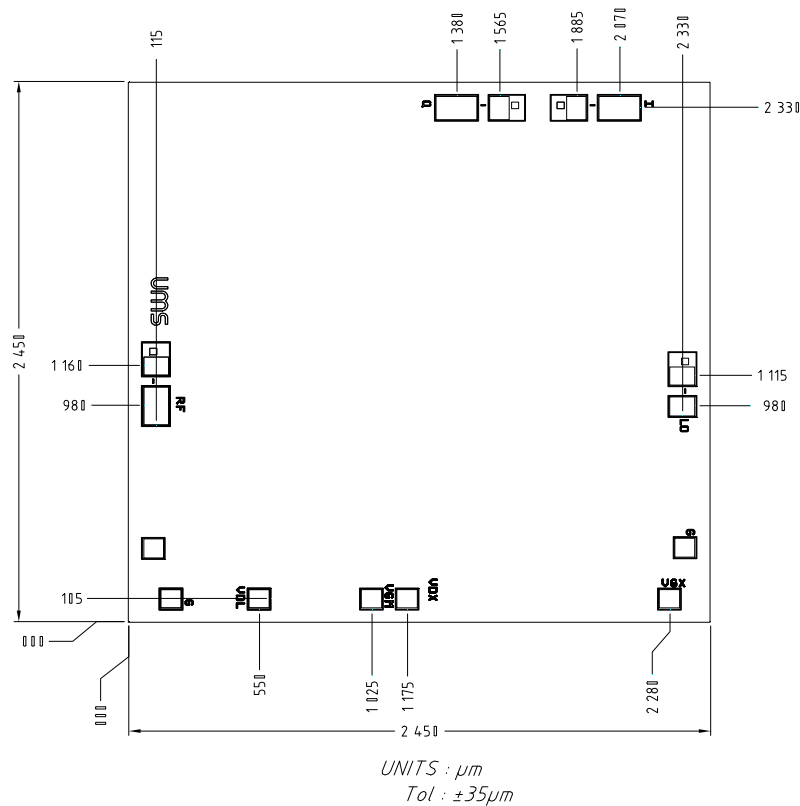
Chip Assembly and Mechanical Data

Preliminary

www.datasheet4u.com



Note:
Supply feed should be capacitively bypassed. 25µm diameter gold wire is recommended.



Bonding pad positions

(Chip thickness: 100µm. All dimensions are in micrometers)

Preliminary

www.datasheet4u.com

Ordering Information

Chip form: CHR3693-99F/00

Information furnished is believed to be accurate and reliable. However **United Monolithic Semiconductors S.A.S.** assumes no responsibility for the consequences of use of such information nor for any infringement of patents or other rights of third parties which may result from its use. No license is granted by implication or otherwise under any patent or patent rights of **United Monolithic Semiconductors S.A.S.** Specifications mentioned in this publication are subject to change without notice. This publication supersedes and replaces all information previously supplied. **United Monolithic Semiconductors S.A.S.** products are not authorised for use as critical components in life support devices or systems without express written approval from **United Monolithic Semiconductors S.A.S.**