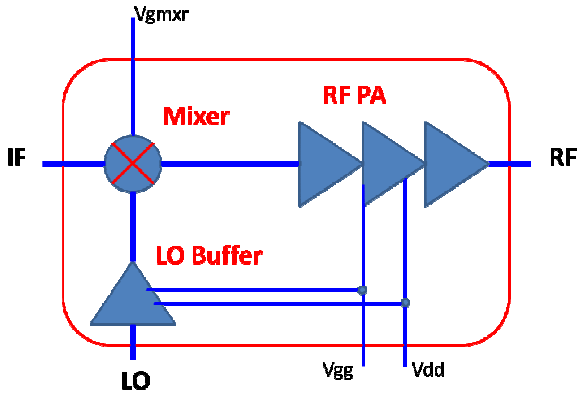
MECXKaUPConv

X-band to Ka-band UP-Converter



Main Features

- RF Output Frequency: 30 -31 GHz
- LO Input Frequency: 22 GHz
- IF Input Frequency: 8 -9 GHz
- More than 11 dB Conversion Gain
- 29 dBm OTOI
- 30 dBc LO Isolation
- Bias: Vd = 2.8 V, Idq = 320 mA, Vg = -0.4 V Typical
- Technology: 0.25 µm GaAs pHEMT
- Chip Dimensions: 3.03 x 2.73 x 0.1mm

Product Description

MECXKaUPConv is an up-converter with RF output frequencies in the band from 30 to 31 GHz. It contains a frequency mixer, a local oscillator (LO) buffer amplifier and a RF power amplifier. It operates at fixed LO input frequency of 22 GHz and IF input frequencies from 8 to 9 GHz. It is designed using a standard 0.25 µm GaAs pHEMT process.

MECXKaUPConv provides more than 11 dB Conversion Gain over the full RF output band, when operated with LO inputs from -2 to 0 dBm. It also achieves more than 30 dBc of LO isolation at the RF output port. Its high 1 dB compression point of more than 19 dBm besides its high OTOI of more than 29 dBm makes it very suitable to drive Ka band High Power Amplifiers in very linear operating condition.

MECXKaUPConv is particularly suited for Satcom On The Move applications

Applications

- Satcom On The Move
- Telecom

Main Characteristics

Test Conditions: T_{base_plate} = 25°C

Parameter	Min	Typ	Max	Unit
RF Output Frequency	30		31	GHz
IF Input Frequency	8		9	GHz
LO Input Frequency		22		GHz
IF Input Power		-5	8	
LO Input Power	-2	-1	0	dBm
Conversion Gain	11		12.5	dB
Output Power at 1 dB Gain compression	19.2		19.8	dBm
Output Third Order Itercept	29		31	dBm
LO - RF Isolation		30		dBc
RF Matching		-15		dB
IF Matching		-20		dB
LO Matching		-15		dB
Drain Voltage		2.8		V
Supply Quiescent Drain Current		320		mA
Gate Voltage		-0.4		V
Gate Voltage (mixer)		-0.9		V

* Performances described in this document are based on preliminary test fixture characterization.

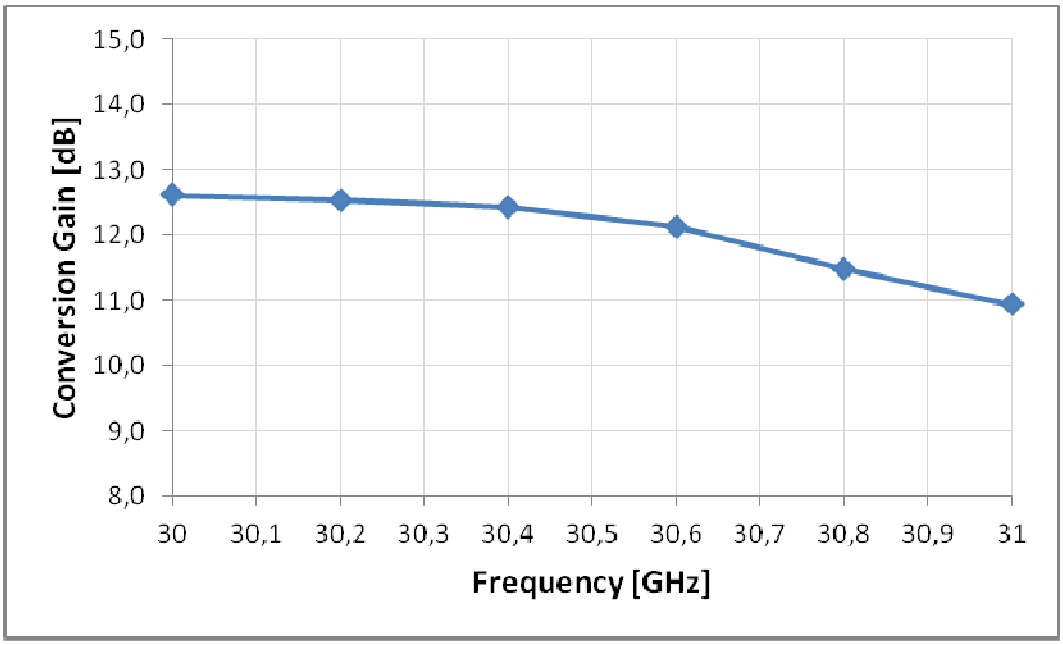
Typical Measured Performances

Unless otherwise stated the following typical performances have been measured at ambient temperature (25 °C) and with the following bias conditions:

- **Vdd = 3.2 V;**
- **Id = 320 mA (Vgg = -0.4 V typical);**
- **Vgmxr = -0.9 V**

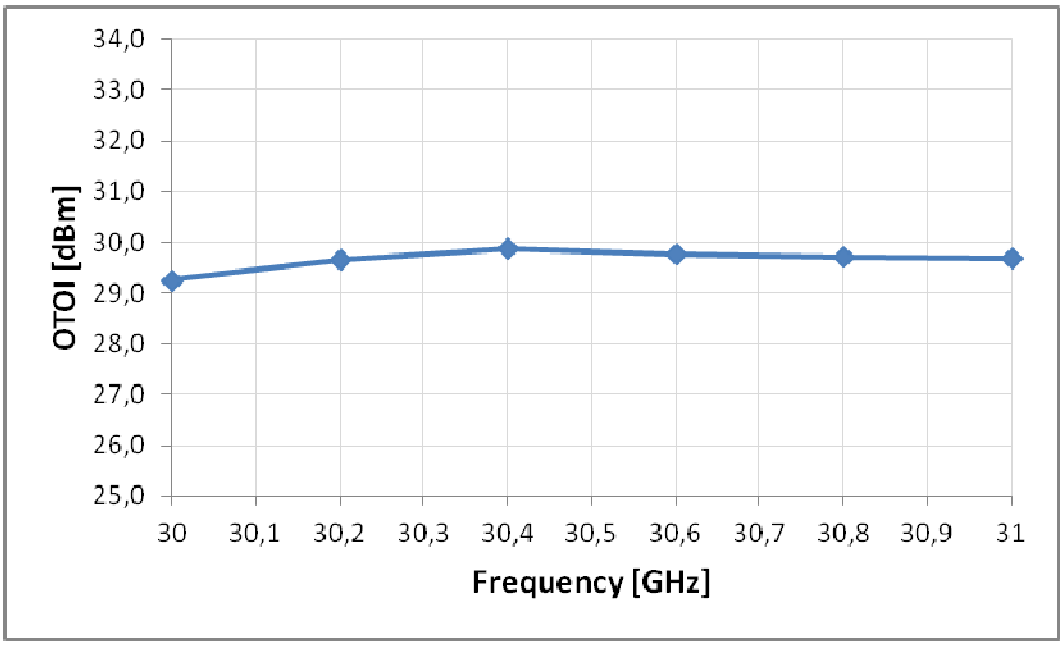
Conversion Gain Vs. Frequency

IF Input Power = -5 dBm @ Freq. = [8 - 9] GHz, LO Input Power = -1 dBm @ 22 GHz



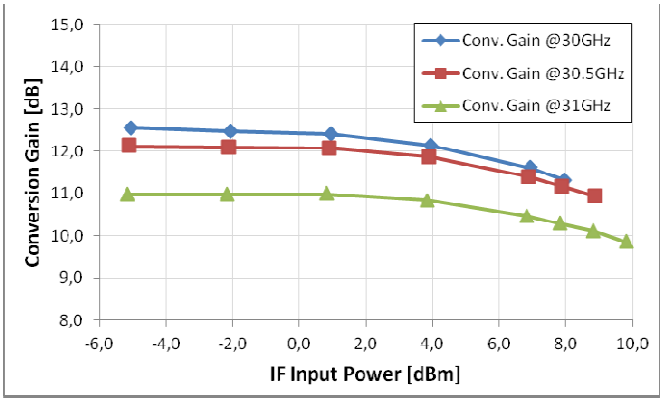
Output Third Order Intercept Vs. Frequency

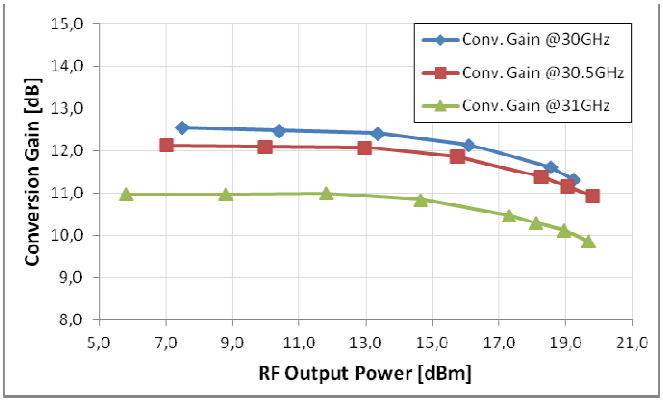
IF Input Power = -8 dBm/tone @ Freq. = [8 - 9] GHz +- 1 MHz, LO Input Power = -1 dBm @ 22 GHz



Conversion Gain Vs. Swept IF Input Power

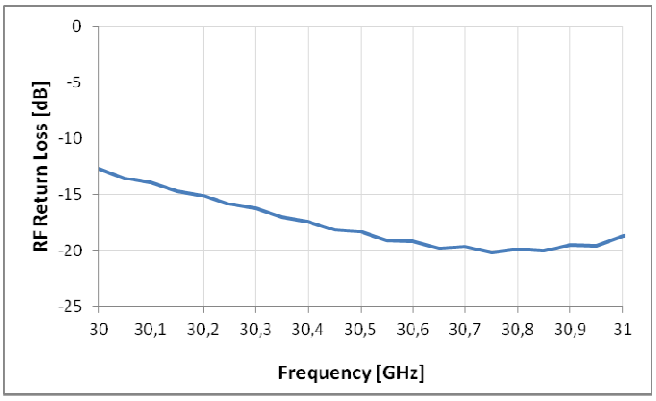
IF Frequency of 8.0, 8.5 and 9.0 GHz, LO Input Power = -1 dBm @ 22 GHz

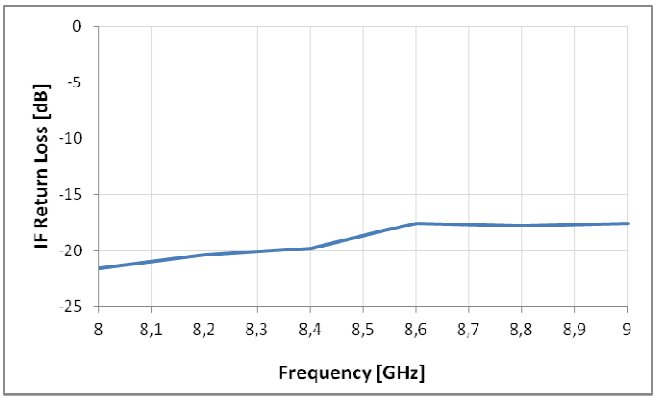


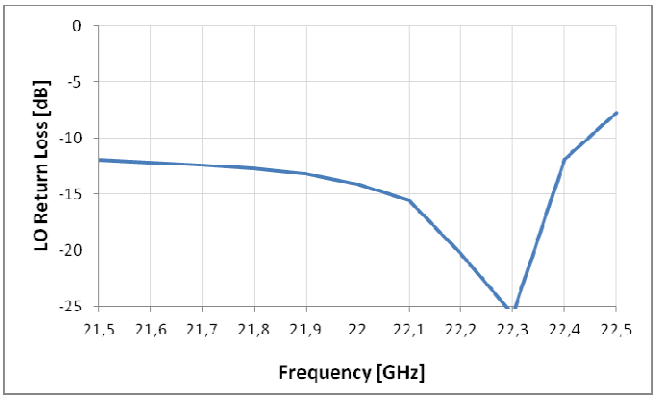


Port Return Loss Vs. Frequency

IF Input Power = -20 dBm @ Freq. = [8 - 9] GHz, LO Input Power = -1 dBm @ 22 GHz







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