

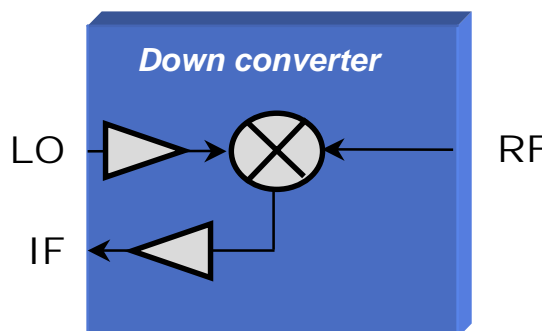
36-44GHz Multifunction (MFC) Down-Converter

GaAs Monolithic Microwave IC

target

Description

The CHR2297 is a multifunction chip (MFC) which integrates a LO buffer amplifier, an IF amplifier and a single cold FET mixer. It is usable for down-conversion. It is designed for a wide range of applications, from military to commercial communication systems. The backside of the chip is both RF and DC grounds. This helps simplify the assembly process. The circuit is manufactured with a PM-HEMT process, 0.25µm gate length, via holes through the substrate, air bridges and electron beam gate lithography. It is available in chip form.



Main Features

- Broadband performance : 36-44 GHz RF
- 2.5dB conversion gain
- 0dBm LO input power
- +8dBm input power (1dB gain comp.)
- DC power consumption, 60mA @ 4.25V
- Chip size : 1.43 x 1.89 x 0.10 mm

Main Characteristics

Tamb. = 25°C

| | Parameter | Min | Typ | Max | Unit |
|----------|--------------------|-----|-----|-----|------|
| F_{RF} | RF frequency range | 36 | | 44 | GHz |
| F_{LO} | LO frequency range | 30 | | 39 | GHz |
| F_{IF} | IF frequency range | 2 | | 6 | GHz |
| G_c | Conversion Gain | | 2.5 | | dB |

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

Electrical Characteristics

T_{amb} = +25°C, V_d = 4.25V

| Symbol | Parameter | Min | Typ | Max | Unit |
|------------------|---|-----|-------|-----|------|
| F _{RF} | RF frequency range | 36 | | 44 | GHz |
| F _{LO} | LO frequency range | 30 | | 39 | GHz |
| F _{IF} | IF frequency range | 2 | | 6 | GHz |
| G _c | Conversion Gain | | 2.5 | | dB |
| P _{LO} | LO Input power | | 0 | | dBm |
| LO_IF Lk | LO Leakage on IF (for P _{LO} =0dBm) | | -20 | | dBm |
| LO_RF Lk | LO Leakage on RF (for P _{LO} =0dBm) | | -25 | | dBm |
| RF_IF Lk | RF Leakage on IF (for P _{RF} =-5dBm) | | -50 | | dBm |
| P _{1dB} | Input power at 1dB gain compression | | +8 | | dBm |
| LO Match | LO Matching | | 2.0:1 | | |
| RF Match | RF Matching | | 2.0:1 | | |
| IF Match | IF Matching | | 2.0:1 | | |
| I _d | Bias current | | 80 | | mA |

A wire bond of typically 0.1 to 0.15 nH will improve the input and output matching.

Absolute Maximum Ratings

T_{amb} = +25°C

| Symbol | Parameter | Values | Unit |
|------------------|-----------------------------|-------------|------|
| V _d | Drain bias voltage | 4.5 | V |
| I _d | Drain bias current | 80 | mA |
| T _a | Operating temperature range | -40 to +85 | °C |
| T _{stg} | Storage temperature range | -55 to +125 | °C |

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

target

Ordering Information

Chip form : CHR2297-99F/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.**

