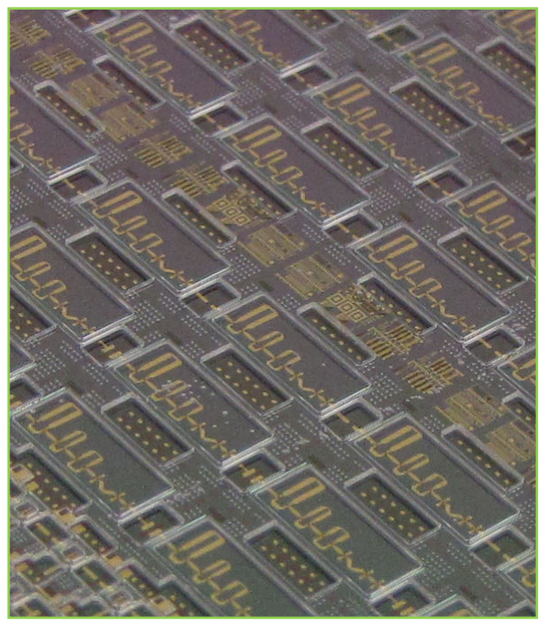
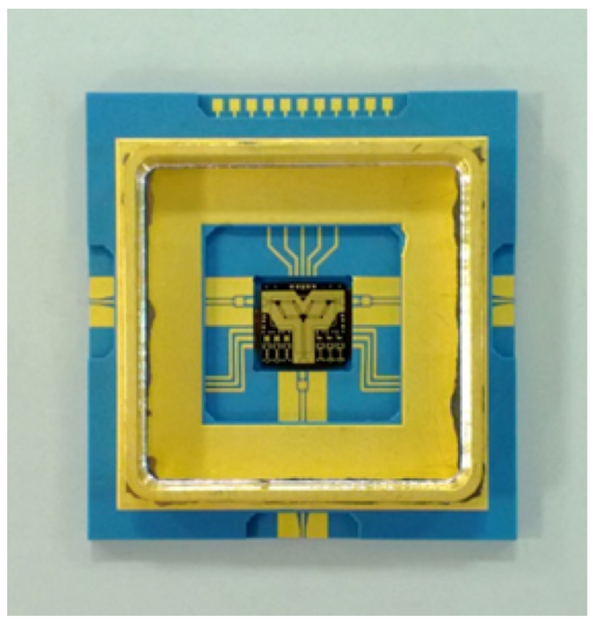
FONDAZIONE BRUNO KESSLER

FUTURE BUILT ON KNOWLEDGE

RF MEMS devices for Telecommunication systems





The photographs show two different strategies for RF MEMS packaging:

- *A fabrication batch of MEMS RF devices with quartz semi-hermetic low cost capping*
- *A fully hermetic LTCC package.*

STATUS

FBK RF MEMS technology high lights:

- More than 10 years of experience in RF MEMS
- Experience in R&D of industrial products
- Established technology platforms
- Prototyping capabilities
- Current TRL level = 4
- A patent.

RIFERIMENTI E LINK

Jacopo Iannacci

FBK-CMM "Bruno Kessler" Foundation - Center for Materials and Microsystems

Via Sommarive, 18 38123 Trento

Tel. +39 0461 314 441

e-mail iannacci@fbk.eu

DESCRIPTION

RF MEMS is a flexible RF switch technology for the monolithic integration of ohmic and capacitive RF switches together with high performance passive circuit elements (TRL 3-4), representing a feasible solution to obtain very low power dissipation and insertion loss, very high isolation and linearity switch respect to “solid state” technologies.
FBK has developed technology solutions to fully integrate the process fabrication of RF-MEMS switches in CMOS compatible manufacturing steps.

SPECIFICATIONS

MEMS SPDT Switch

RF Connectors	Coplanar Pads
Package	0-level package based on Quartz Cap
Impedance	50 ohm
Frequency band	0-35 GHz
Insertion loss	< 1.3 dB up to 35GHz
Return loss	> 20 dB up to 35GHz
Isolation	> 35 dB up to 35GHz
Input power	< 2.5 W
Controlling Voltage	0-50 V
Die dimension	3 x 3 x 0.5 mm

ADVANTAGES & APPLICATIONS

Electro-mechanical-Systems (MEMS) is an attractive alternative to solid state technologies for RF device (micro-switch, antenna, phase shifter, RF filters) fabrication in telecommunications for satellites, ground stations, mobile phones, steerable antenna systems.
Main advantage are in:

- High linearity
- Low resistance (low loss)
- Low power consumption
- Improved RF performance
- High miniaturization
- Low cost