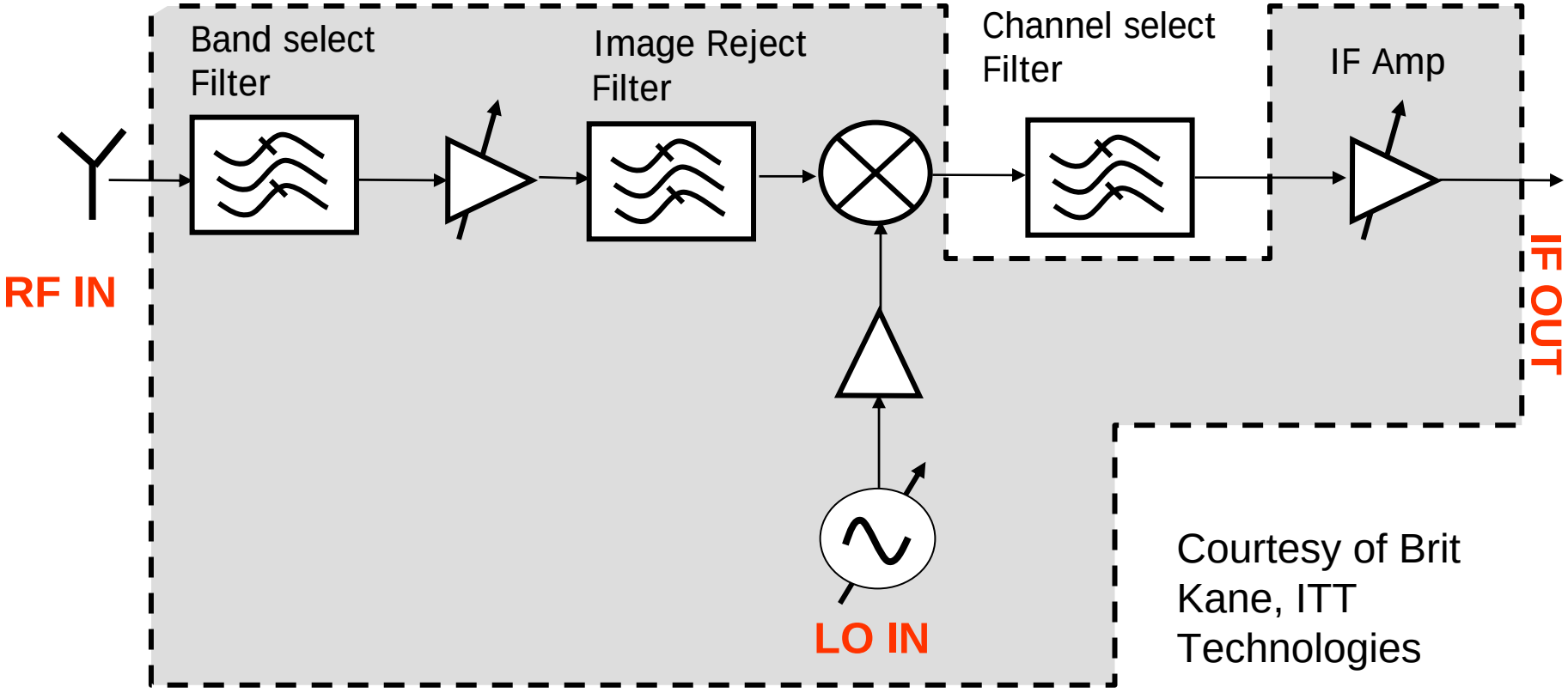
Filters

Filters – Part A

Filters

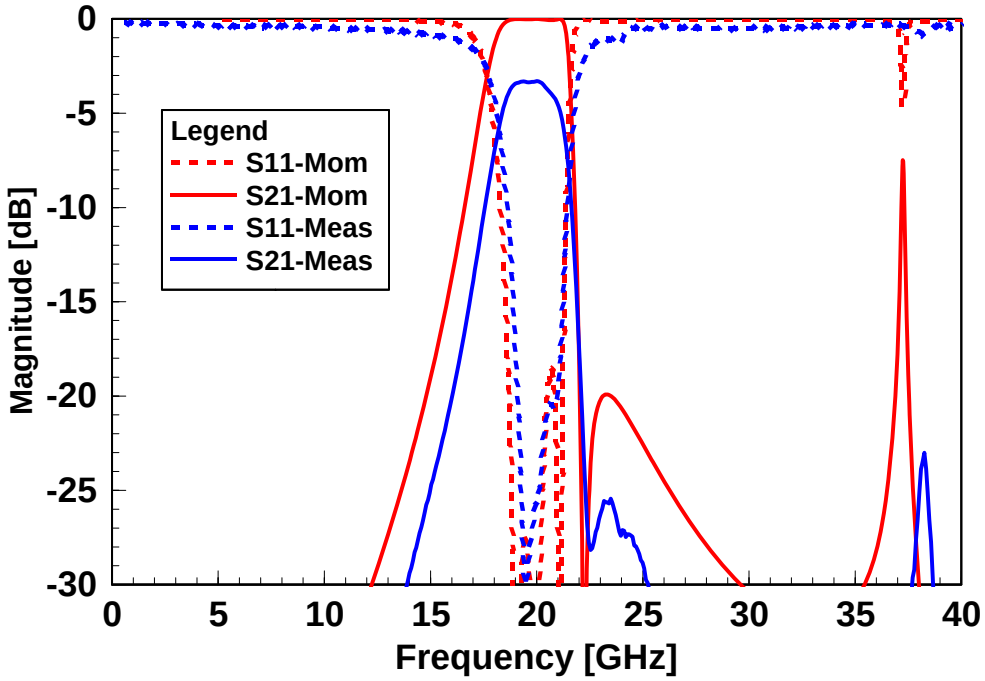
- Overview
- Performance Parameters
- Filter Technologies and Considerations
- Discrete Element Filter Design and Simulation Techniques
- Other Filter Technologies (BAW, MEMS)
- Impact on System Design

Overview



Filters = Critical Parts of Analog Signal Processing Puzzle

Overview


Legend
S11-Mom
S21-Mom
S11-Meas
S21-Meas
Magnitude [dB]
0
-5
-10
-15
-20
-25
-30
0
5
10
15
20
25
30
35
40
Frequency [GHz]

Performance Parameters

For now, let's limit our discussion to the following types of filters:

LOW-PASS HIGH-PASS BAND-PASS

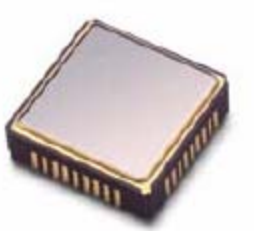
- Insertion Loss
- In-Band Ripple
- Return Loss
- Cut-off Frequency

Performance Parameters (contd.)

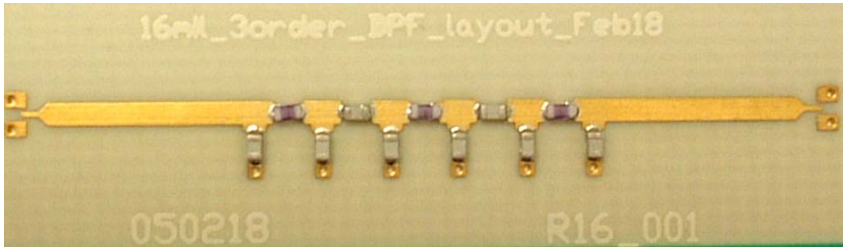
- Bandwidth
- Out-of-Band Rejection
- Group Delay
- Power Handling

Filter Technologies / Considerations

- Main Technologies in Use Today
  - Surface Acoustic Wave
  - Discrete (Lumped) Element
  - Coaxial



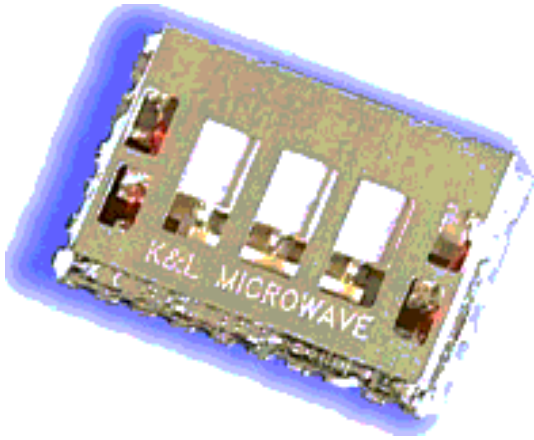
ICS SAW PLL

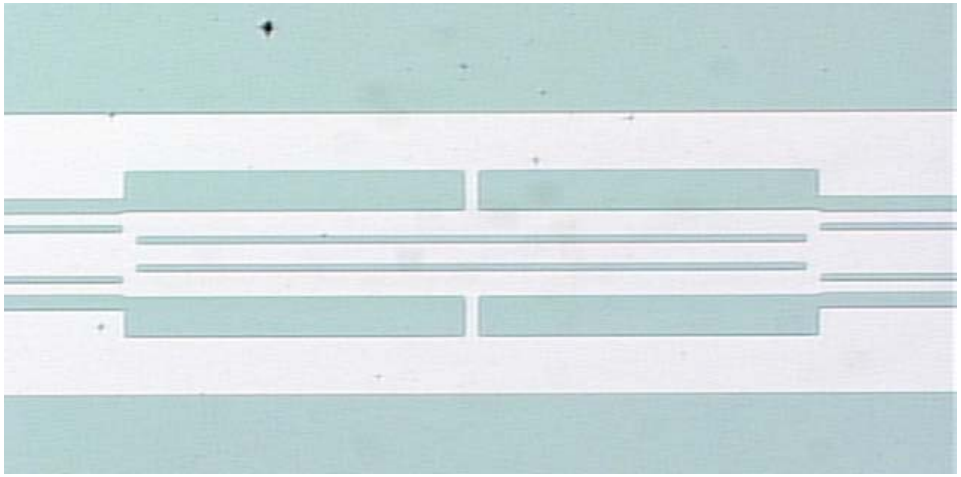


Dc to 1.8GHz

Filter Technologies / Considerations (contd.)

- Main Technologies in Use Today
  - Ceramic
  - Planar



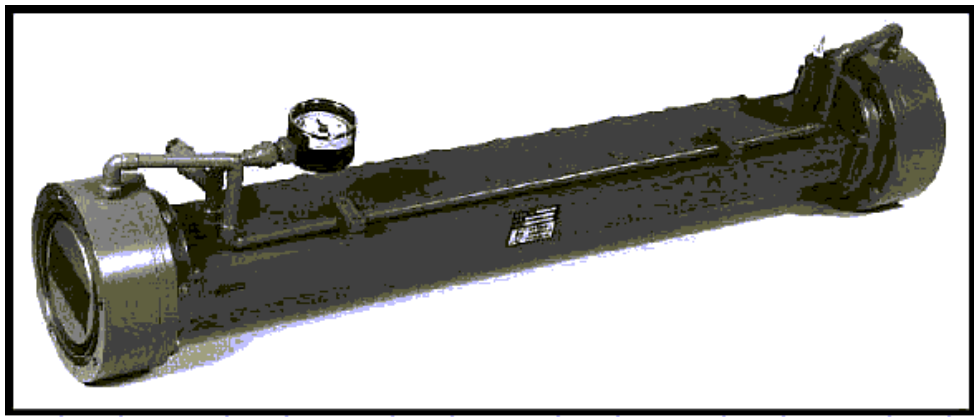


Top View

End View

Filter Technologies / Considerations (contd.)

- Main Technologies in Use Today
  - Waveguide



Filter Technologies / Considerations (contd.)