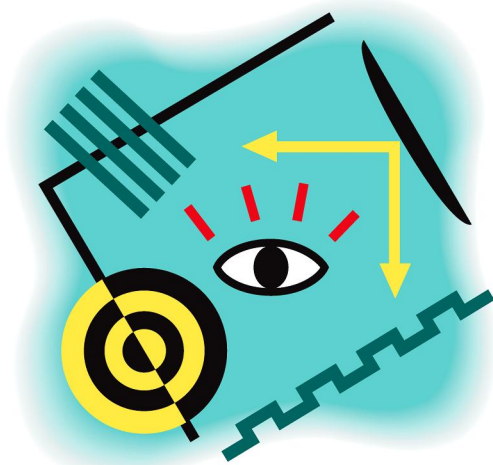


BlisterPak™ Hermetic Chip Scale Packaging



**SILICON
LIGHT
MACHINES**

A **SCREEN** COMPANY

Overview



BlisterPak™ hCSP - hermetic Chip Scale Packaging

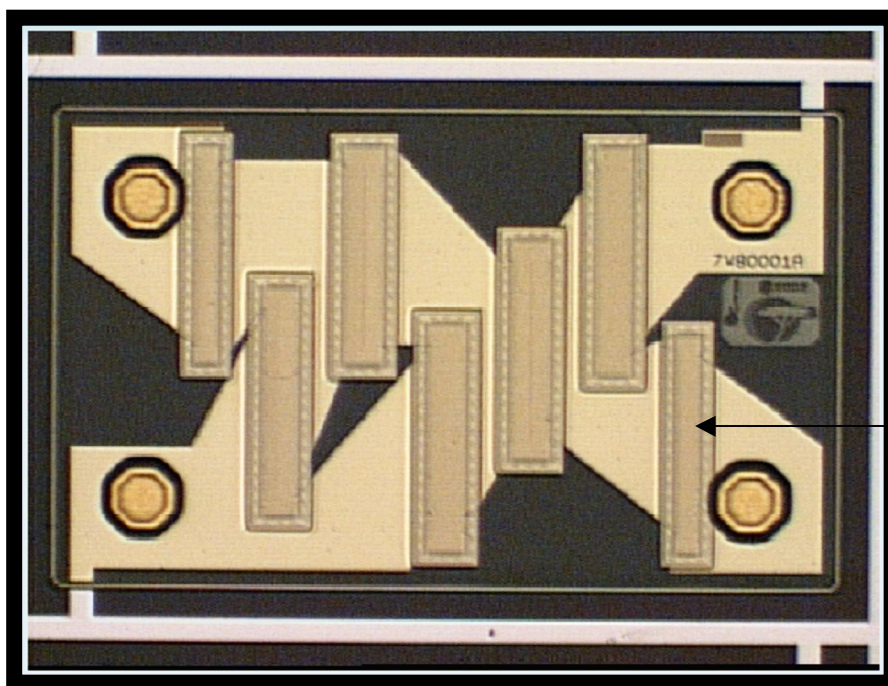
- “ **Initially developed for MEMS.**
- “ **Successfully applied on LiTaO₃**

New packaging technology creates a paradigm shift

- “ **Processed at wafer level**
- “ **Eliminates need for ceramic packages**
- “ **Compatible with Wirebond or Flipchip**
- “ **Smaller and lower profile**
- “ **Enables Plastic Encapsulation**
- “ **PyroFree™ enables higher yield and throughput**

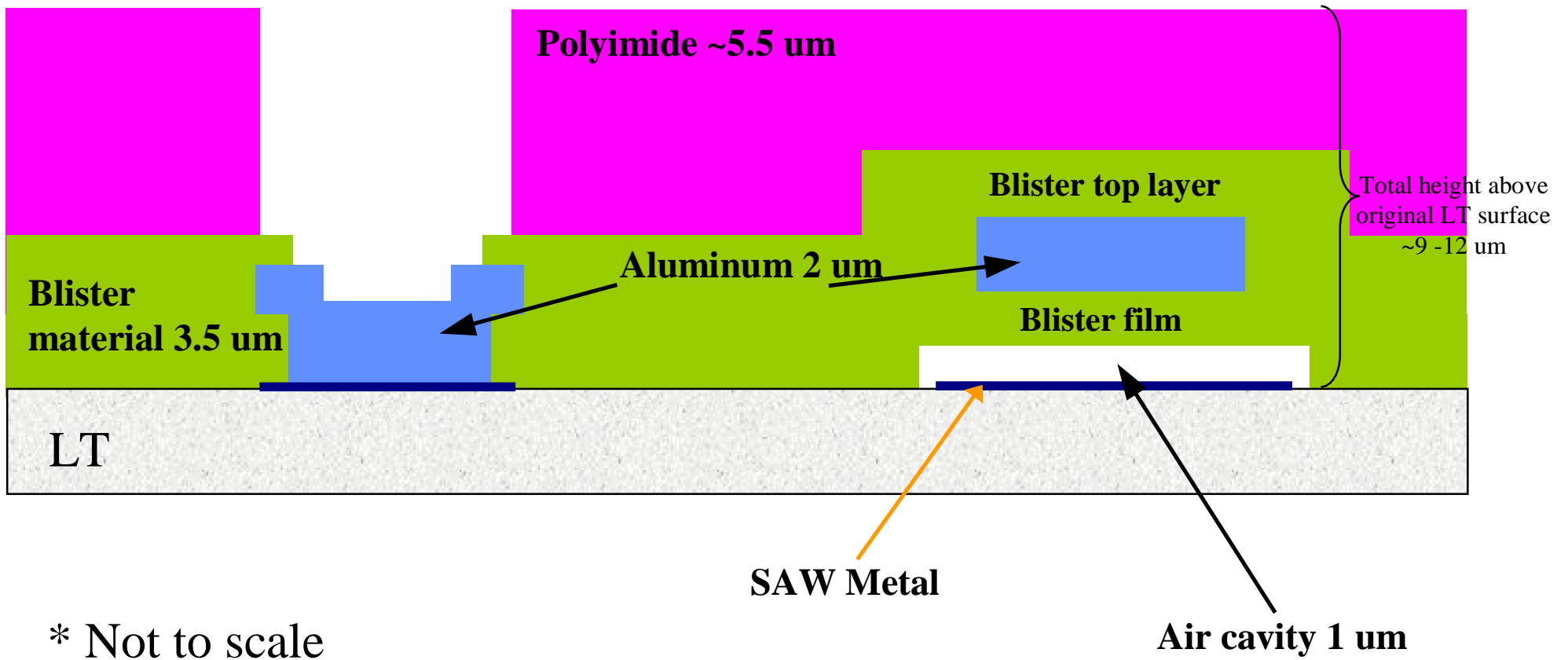
Use of standard CMOS processes

SAW filters with HCSP™

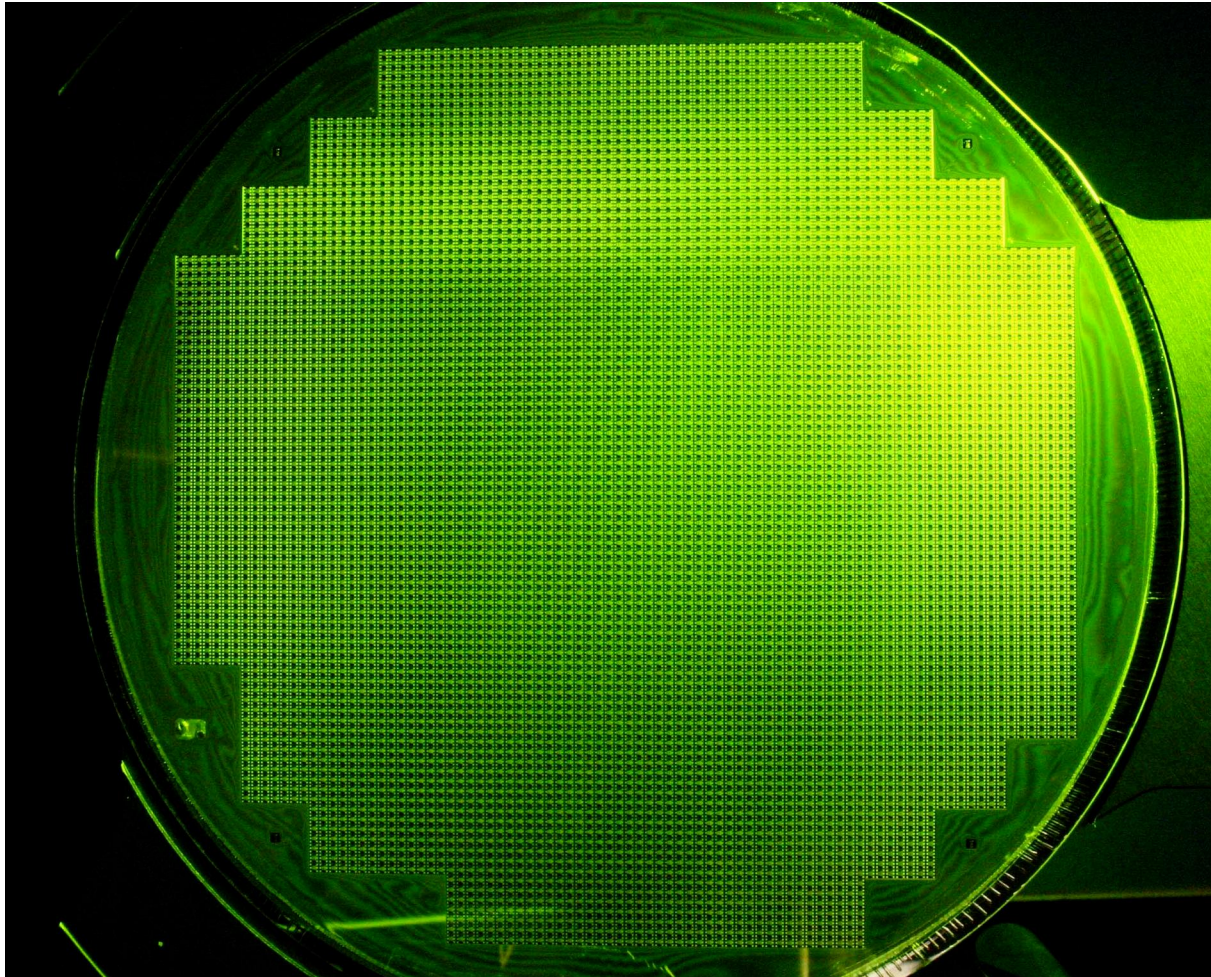


Hermetically sealed resonator

Blister Layout Ę Cross-section Detail



Results



RF Testing of 2Ghz Filters



- Sample Size - 5 wafers
- Devices Tested \bar{E} 144 per wafer
- CF Shifts higher \bar{E} 3.25MHz
- IL testing at probe level only
- Dicing successful
- Packing in progress 180°C, 800psi

	CF Pre	CF Post	Delta	Stdev CF Pre	Stdev CF Post	Delta
Wafer #1	1960.32	1963.45	3.13	1.14	1.88	0.74
Wafer #2	1960.18	1963.50	3.32	1.80	2.30	0.50
Wafer #3	1960.30	1963.07	2.77	1.62	1.99	0.37
Wafer #4	1960.21	1963.66	3.45	1.45	2.53	1.08
Wafer #5	1960.48	1964.06	3.58	1.18	1.89	0.71
AVG			3.25	1.44	2.12	0.68