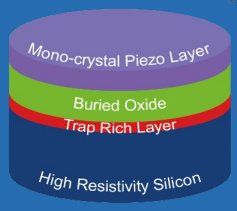
Connect POI Product Overview



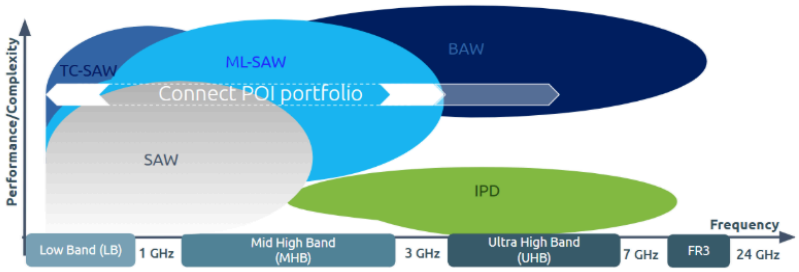
Using acoustics makes the filter smaller than a dielectric one, with cavity modes or with **I**ntegrated **P**assive **D**evices. Multiple Acoustic **W**ave technology variants have emerged. **S**urface **A**coustic **W**ave filters propagate frequency waves laterally, while **B**ulk **A**coustic **W**ave filters use the verticality of their structure.
No cavity to be etched with SAW filters : **I**nter**D**igita**t**ed **T**ransducers-electrodes are deposited on piezoelectric wafers, either atop bare bulk, or atop a MultiLayer substrate that confines and boosts the energy within the surface ! Filter-manufacturing process is thus qualified easier, compared to other technologies.

Soitec has fused its acoustic expertise with its Smartcut™ technology to provide an advanced and engineered **M**ulti**L**ayer **Connect POI** wafer/substrate, compatible with easy-manufacturable transducers, boosting the SAW filter technology/performances.
The **M**ulti**L**ayer Connect POI substrate demonstrates flexibility and versatility: various filter skirts can be tailored to address the required speed, selectivity, data rate, and coexistence criteria of the evolving 5G NR & NRU.
Indeed, it offers options to adjust:

- the addressed frequencies, from its reachable phase velocity
- the selectivity, from the Quality factor and the filter band edges it offers
- the bandwidth, from its coupling factor k^2
- the stability over temperature, from its TCF
- the power handling, from its thermal dissipation power

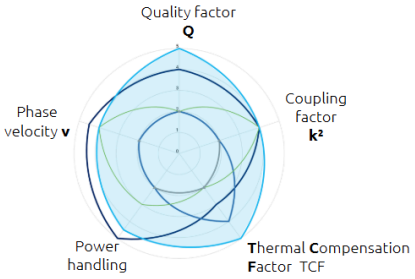
Bringing up, with its Si handle, the safe mechanical robustness and a pure crystal lattice. All this with excellent reliability performances.
Moreover the Soitec **M**ulti**L**ayer POI substrates opens up a very promising field of possibilities in term of filter architecture and design evolution.

Connect POI portfolio within the RF filter technology landscape

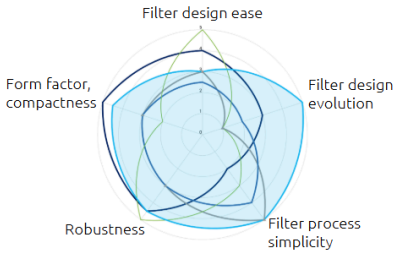


Connect POI portfolio within the RF filter technology landscape

RF filter Figures of Merit comparison



RF filter industrial criteria comparison



Key **F**igures **o**f **M**erit and industrial criteria have been compared for the main RF filter technologies, currently used to cover bands from 400MHz to above 3GHz: BAW, SAW, TC-SAW, ML-SAW on Connect POI, IPD. This highlights the performances of the **Soitec Connect POI** solution to sort out the signal of interest.

Key references :

- Pioneering in shear wave guide for RF Filters, thanks to the Smart Cut™ technology

High-Frequency Surface Acoustic Waves Excited on Thin-Oriented LiNbO3 Single-Crystal Layers Transferred Onto Silicon, T. Pastureaud et al., IEEE Transactions on Ultrasonics, Ferroelectrics, and Frequency Control, vol. 54, no. 4, april 2007

- The Smart Cut™ POI substrate, leveraging the high performances RF filters

A Single Smart Cut POI Substrate Design for UHF, L and S Band Filters, E. Butaud et al., Soitec, EuMW2020

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