Types of SAW Devices

- Precision Bidirectional, High Loss
- TCRF Transversely-Coupled Resonator Filter
- SPUDT Single Phase Unidirectional Transducer
- LCRF Longitudinally-Coupled Resonator Filter
- SFIT Slanted Finger Interdigital Transducer
- IEF Impedance Element Filter
- Resonator SAW Resonator

The transducer converts electromagnetic energy from an electronic circuit to acoustic energy (and vice-versa) in the form of a travelling wave on the surface of the crystal. Highly polished piezoelectric crystal cuts for SAW filters are non-dispersive in frequency. The frequency response of a SAW filter is determined by its properties both transduction and reflection and the interaction of the transducer.

- Some SAW filters, especially IF filters, require matching networks. These include TCRF, SPUDT, SFIT.
- Other SAW filters, such as the LCRF, may or may not require matching.
- The IEF type does not generally require matching.
- Precision filters that are narrow bandwidth will quite often require matching to flatten the passband.
  The wider bandwidth filters seldom require matching.
- Whether the filter is driven balanced or single ended, has no effect on whether it should be matched or not.
- Impedance matching for single-ended driven SAW filters generally require two components on each input and output.

High Power SAW Filters

Increased signal power level is a key approach when good signal-to-noise ratio in RF transmission systems or outstanding noise floor in oscillator signals is required. While small size is one of the key advantages of Surface Acoustic Wave (SAW) filters compared to competing technologies, the combination of high power levels and small size results in high power densities and therefore risk of premature failure for highly miniaturized solutions. Vectron's innovative solutions allow realizations of SAW filters with substantially improved power handling capabilities and therefore help system designers to achieve their performance goals.

Vectron's White Paper can be obtained to understand the capabilities and limitations of SAW technology with regards to high RF power levels, power-related failure modes and Vectron's capabilities to realize SAW component solutions with substantially increased power handling compared to standard SAW solutions.