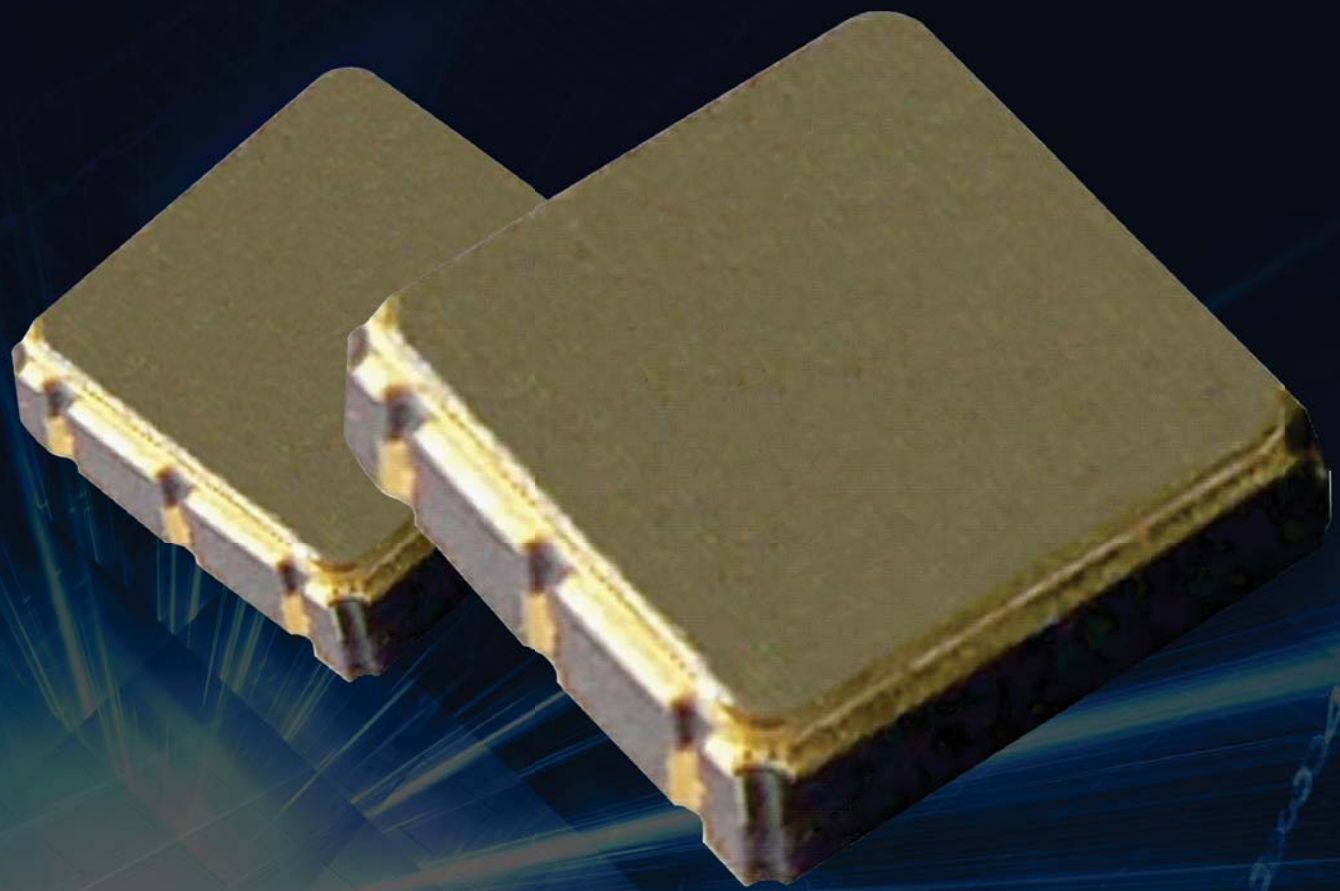
Advanced crystal technology

# SAW product selection guide



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# Our new SAW product selection guide

ACT have been supporting the Frequency control market since 1986 and we have established an extensive product portfolio. We have compiled an easy-to-use SAW based product selection guide to assist you in identifying the best SAW product for your application.

Our new guide gives you an overview of the frequencies that have been developed within the SAW filter, Duplexer and Resonator product range which are available to order in sample quantities or mass production quantities on a quick turnaround time. Please visit our website for a full specification - **www.actcrystals.com**

As well as standard frequencies, we have the ability to support new frequency requirements. For more information please contact info@actcrystals.com.

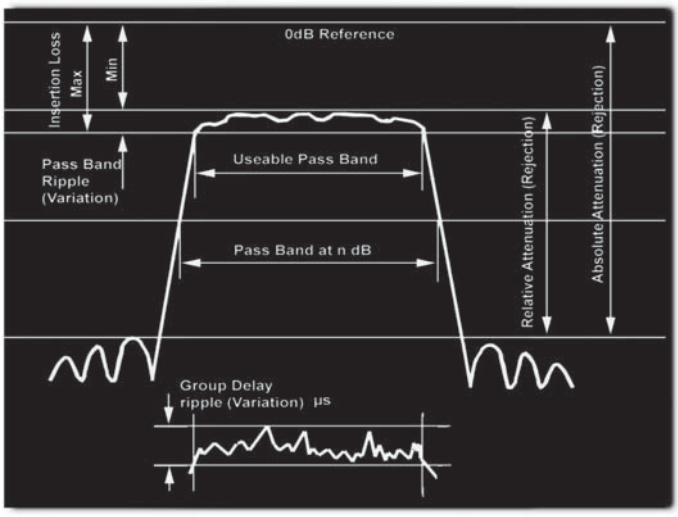
Our complete range of SAW products are specifically designed for:

- Low power radio/remote and wireless applications
- Mobile communications
- Base stations
- Satellite communications
- Data transmission systems
- RF identification systems

**How to specify key filter parameters:**

- **Nominal or centre frequency**
  The value of the middle frequency in the pass band F0, usually in MHz.
- **Pass bandwidth**
  The region through which the signal passes relatively un-attenuated. Usually measured at 3dB from the minimum insertion loss.
- **Insertion loss**
  The difference of attenuation when the filter is and is not inserted, in dB. The minimum value is the reference level from which attenuation characteristics are specified. The constant loss is the insertion loss at the nominal frequency, in dB. It is affected by substrate material.
- **Pass band ripple**
  The difference between minimum and maximum peak attenuation in the pass band.
- **Group delay ripple**
  The difference between minimum and maximum value of the group delay in the specified pass band width.
- **Terminating impedance**
  The impedance presented to filter by the source or load.

**Typical filter response plot**



## SAW filter

| Frequency (MHz) | Package type | Main application |
|---|---|---|
| 70 | SMP-53 | IF SAW filter |
| 139 | F11 - TH | Wireless comms |
| 140 | SMP03 | IF SAW filter |
| 140 | SMP-53 | IF SAW filter |
| 147 | F11 - TH | Wireless comms |
| 147 | QCC8C | Wireless comms |
| 155 | F11 - TH | Wireless comms |
| 155 | QCC8C | Wireless comms |
| 159 | QCC8C | IF SAW filter |
| 163 | F11 - TH | Wireless comms |
| 163 | QCC8C | Wireless comms |
| 169.48125 | SMP03 | FM receiver |
| 171 | F11 - TH | Wireless comms |
| 171 | QCC8C | Wireless comms |
| 211 | SMP-53 | GSM |
| 240 | SMP03 | IF SAW filter |
| 280 | F11 - TH | Wireless comms |
| 280 | QCC8C | Wireless comms |
| 281 | QCC8C | Wireless comms |
| 303.825 | TO-39 | ISM |
| 303.875 | TO-39 | ISM |
| 315 | F11 - TH | ISM |
| 315 | TO-39 | ISM |
| 315 | QCC8C | ISM |
| 315.5 | TO-39 | ISM |
| 318 | TO-39 | ISM |
| 395 | QCC8C | Communication |
| 403.5 | DCC6C | ISM |
| 406 | DCC6 | Cospas-sarsat |
| 410 | F11 - TH | Wireless comms |
| 410 | QCC8C | Wireless comms |
| 410 | DCC6 | Wireless comms |
| 415 | DCC6 | Communication |
| 418 | TO-39 | ISM |
| 418 | QCC8C | ISM |
| 419.2 | QCC8C | Communication |
| 422 | DCC6 | Communication |
| 422.5 | DCC6 | Communication |
| 422.925 | DCC6 | Communication |
| 426 | F11 - TH | Wireless comms |
| 426 | QCC8C | Wireless comms |
| 426 | DCC6 | Wireless comms |
| 433.42 | QCC8C | ISM |
| 433.92 | TO-39 | ISM |
| 433.92 | F11 - TH | ISM |
| 433.92 | QCC8C | ISM |
| 433.92 | QCC8B | ISM |
| 433.92 | DCC6 | ISM |
| 433.92 | DCC6C | ISM |
| 434 | DCC6 | Wireless comms |

## SAW filter

| Frequency (MHz) | Package type | Main application |
|---|---|---|
| 446 | F11 - TH | Wireless comms |
| 446 | QCC8C | Wireless comms |
| 447 | QCC8B | Wireless comms |
| 448 | DCC6 | Wireless comms |
| 448 | QCC8C | Wireless comms |
| 450 | DCC6 | Wireless comms |
| 450 | F11 - TH | Wireless comms |
| 457.5 | DCC6 | Mobile comms |
| 458 | F11 - TH | Wireless comms |
| 460 | QCC8C | Wireless comms |
| 462.5625 | QCC8C | Wireless comms |
| 465 | F11 - TH | Wireless comms |
| 465 | DCC6 | Wireless comms |
| 465 | QCC8C | Wireless comms |
| 479.5 | TO-39 | Tuner |
| 479.5 | QCC8C | Tuner |
| 480 | TO-39 | Tuner |
| 480 | QCC8C | Tuner |
| 707 | DCC6C | Wireless comms |
| 742.5 | QCC8B | Wireless comms |
| 746 | QCC8B | Wireless comms |
| 751.5 | DCC6C | Wireless comms |
| 815 | DCC6C | Wireless comms |
| 836.5 | DCC6C | Wireless comms |
| 847 | DCC6C | Wireless comms |
| 860.5 | DCC6C | Wireless comms |
| 864 | DCC6C | Audio transmit |
| 865 | QCC8C | Wireless comms |
| 866 | DCC6C | Wireless comms |
| 866 | DCC6 | Wireless comms |
| 866 | QCC8C | Wireless comms |
| 866.5 | DCC6C | Wireless comms |
| 868 | QCC8C | ISM |
| 868.3 | QCC8C | ISM |
| 868.3 | DCC6C | ISM |
| 868.3 | QCC8B | ISM |
| 868.35 | TO-39 | ISM |
| 868.35 | F11 - TH | ISM |
| 868.35 | QCC8C | ISM |
| 868.35 | DCC6 | ISM |
| 868.6 | DCC6 | Wireless comms |
| 868.69 | QCC8C | ISM |
| 868.95 | QCC8C | ISM |
| 869 | DCC6 | Wireless comms |
| 869 | DCC6C | Wireless comms |
| 869 | 1.4 x 1.1mm | Wireless comms |
| 869.69 | QCC8C | Wireless comms |
| 872.5 | DCC6C | Wireless comms |
| 878 | DCC6C | Wireless comms |
| 879 | DCC6C | Wireless comms |

## SAW filter

| Frequency (MHz) | Package type | Main application |
|---|---|---|
| 881.5 | DCC6C | Wireless comms |
| 881.5 | 1.4 x 1.1mm | Wireless comms |
| 892 | DCC6C | Mobile comms |
| 897.5 | DCC6 | Mobile comms |
| 897.5 | DCC6C | Mobile comms |
| 899 | DCC6C | Wireless comms |
| 900 | DCC6 | Wireless comms |
| 902.5 | DCC6C | Wireless comms |
| 903.65 | DCC6 | Wireless comms |
| 913 | 1.4 x 1.1mm | Wireless comms |
| 915 | QCC8C | ISM |
| 915 | DCC6 | ISM |
| 915 | DCC6C | ISM |
| 916.5 | QCC8C | ISM |
| 916.5 | F11 - TH | ISM |
| 916.5 | TO-39 | ISM |
| 918.8 | DCC6C | Wireless comms |
| 922.5 | DCC6C | Wireless comms |
| 926.25 | DCC6 | Mobile comms |
| 930.5 | F11 - TH | Wireless comms |
| 930.5 | QCC8C | Wireless comms |
| 942.5 | DCC6C | Mobile comms |
| 947.5 | DCC6C | Mobile comms |
| 959.5 | DCC6 | Wireless comms |
| 1090 | QCC8B | Wireless comms |
| 1120 | DCC6C | Wireless comms |
| 1220 | QCC8B | Wireless comms |
| 1542 | DCC6C | Wireless comms |
| 1568 | DCC6C | GPS + Compass |
| 1568 | 1.4 x 1.1mm | GPS + Compass |
| 1575.42 | DCC6C | GPS |
| 1575.42 | 1.4 x 1.1mm | GPS |
| 1580 | 1.4 x 1.1mm | GPS/Glonass/Beiodu |
| 1588.655 | 1.4 x 1.1mm | GPS + Glonass |
| 1643.5 | DCC6C | Wireless comms |
| 1747.5 | DCC6C | Mobile comms |
| 1795 | 1.4 x 1.1mm | Wireless comms |
| 1842.5 | DCC6C | Mobile comms |
| 1855 | DCC6C | Wireless comms |
| 1880 | DCC6C | Wireless comms |
| 1950 | DCC6C | Wireless comms |
| 1962.5 | DCC6C | Mobile comms |
| 2140 | DCC6C | Mobile comms |
| 2345 | DCC6C | Wireless comms |
| 2441.8 | DCC6C | Bluetooth |
| 2442 | 1.4 x 1.1mm | WiFi |
| 2535 | DCC6C | Wireless comms |
| 2655 | DCC6C | Wireless comms |

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## SAW resonator - one port

| Frequency (MHz) | Package type | Main application |
|---|---|---|
| 303.825 | F11 - TH | ISM |
| 303.825 | TO39 | ISM |
| 303.825 | QCC4A | ISM |
| 303.825 | QCC8C | ISM |
| 303.875 | F11 - TH | ISM |
| 303.875 | QCC4A | ISM |
| 303.875 | QCC8C | ISM |
| 303.875 | TO39 | ISM |
| 304.3 | QCC4A | ISM |
| 304.3 | TO39 | ISM |
| 310 | QCC4A | ISM |
| 310 | QCC8C | ISM |
| 310 | TO39 | ISM |
| 311 | QCC8C | Wireless comms |
| 312 | TO39 | Wireless comms |
| 314.5 | F11 - TH | ISM |
| 314.5 | QCC8A | ISM |
| 314.5 | TO39 | ISM |
| 315 | QCC2A | ISM |
| 315 | F11 - TH | ISM |
| 315 | QCC4A | ISM |
| 315 | QCC8C | ISM |
| 315 | TO39 | ISM |
| 315 | DCC6C | ISM |
| 315.5 | QCC4A | ISM |
| 315.5 | QCC8C | ISM |
| 315.5 | TO39 | ISM |
| 316.8 | F11 - TH | ISM |
| 316.8 | TO39 | ISM |
| 318 | F11 - TH | ISM |
| 318 | QCC4A | ISM |
| 318 | QCC8C | ISM |
| 318 | TO39 | ISM |
| 345 | QCC4A | ISM |
| 345 | QCC8C | ISM |
| 345 | TO39 | ISM |
| 350 | QCC8C | Wireless comms |
| 350 | TO39 | Wireless comms |
| 390 | F11 - TH | ISM |
| 390 | TO39 | ISM |
| 392.85 | QCC8C | Wireless comms |
| 403.55 | QCC8C | ISM |
| 403.966 | QCC8C | Wireless comms |
| 418 | F11 - TH | ISM |
| 418 | QCC4A | ISM |
| 418 | QCC8C | ISM |
| 418 | TO39 | ISM |
| 423.22 | F11 - TH | ISM |
| 423.22 | QCC4A | ISM |
| 423.22 | QCC8C | ISM |

## SAW resonator - one port

| Frequency (MHz) | Package type | Main application |
|---|---|---|
| 423.22 | TO39 | ISM |
| 430.5 | F11 - TH | Wireless comms |
| 430.5 | TO39 | Wireless comms |
| 432.92 | QCC2A | ISM |
| 432.92 | QCC8C | ISM |
| 432.92 | TO39 | ISM |
| 433.42 | DCC6C | ISM |
| 433.42 | QCC8C | ISM |
| 433.42 | TO39 | ISM |
| 433.92 | DCC6 | ISM |
| 433.92 | DCC6C | ISM |
| 433.92 | F11 - TH | ISM |
| 433.92 | QCC4A | ISM |
| 433.92 | QCC8C | ISM |
| 433.92 | TO39 | ISM |
| 433.92 | TO39 | ISM |
| 434.42 | QCC8C | ISM |
| 434.42 | QCC4A | ISM |
| 434.42 | QCC8C | ISM |
| 434.42 | TO39 | ISM |
| 435.8 | TO39 | Wireless comms |
| 622.08 | TO39 | Wireless comms |
| 868 | TO39 | ISM |
| 868 | DCC6C | ISM |
| 868 | QCC8C | ISM |
| 868.3 | DCC6C | ISM |
| 868.3 | QCC8C | ISM |
| 868.3 | TO39 | ISM |
| 868.35 | DCC6C | ISM |
| 868.35 | QCC4A | ISM |
| 868.35 | QCC8C | ISM |
| 868.35 | F11 - TH | ISM |
| 868.35 | TO39 | ISM |
| 868.75 | QCC8C | Wireless comms |
| 868.95 | QCC8C | Wireless comms |
| 868.98 | DCC6C | Wireless comms |
| 910 | QCC8C | Wireless comms |
| 912 | TO39 | ISM |
| 915 | QCC4A | ISM |
| 915 | TO39 | ISM |
| 916.5 | QCC4A | ISM |
| 916.5 | QCC8C | ISM |
| 916.5 | TO39 | ISM |
| 927 | DCC6 | Wireless comms |
| 930.5 | TO39 | Wireless comms |
| 934.6 | DCC6C | Wireless comms |
| 952 | DCC6C | Wireless comms |
| 980 | QCC4A | Wireless comms |
| 999 | TO39 | Wireless comms |

## SAW resonator - two port

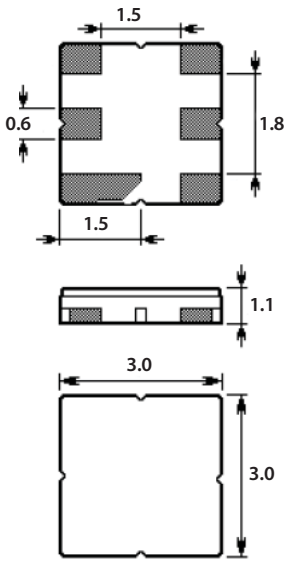
| Frequency (MHz) | Package type | Main application |
|---|---|---|
| 310 | TO39 | ISM |
| 315 | F11 - TH | ISM |
| 315 | TO39 | ISM |
| 315 | QCC8C | ISM |
| 380 | TO39 | Wireless comms |
| 384.05 | TO39 | Wireless comms |
| 403.55 | TO39 | ISM |
| 418 | QCC8C | ISM |
| 418 | TO39 | ISM |
| 433.42 | TO39 | ISM |
| 433.92 | F11 - TH | ISM |
| 433.92 | QCC8C | ISM |
| 433.92 | TO39 | ISM |
| 824.25 | TO39 | Wireless comms |
| 868 | QCC8C | ISM |
| 868.3 | TO39 | ISM |
| 868.3 | QCC8C | ISM |
| 868.35 | QCC8C | ISM |
| 873 | QCC8C | Wireless comms |
| 915 | QCC8C | ISM |
| 916.5 | QCC8C | ISM |
| 1000 | DCC6 | Wireless comms |
| 1090 | DCC6 | Wireless comms |

## SAW Duplexer

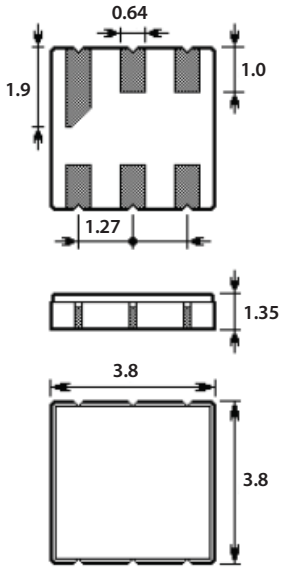
| Frequency (MHz) | Package type | Main application |
|---|---|---|
| 903.75/926.25 | TO39 | Cordless phone |
| 903.75/926.25 | QCC8C | Cordless phone |
| 914.50/959.50 | TO39 | Cordless phone |
| 914.50/959.50 | QCC8C | Cordless phone |
| 897.50/942.50 | 2.0 x 1.6mm | WCDMA B8 |
| 836.50/881.50 | 2.0 x 1.6mm | WCDMA B5 |
| 1950/2140 | 2.0x1.6mm | WCDMA B1 |

# Package dimensions

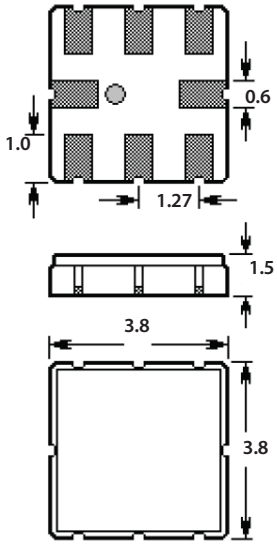
## DCC6C



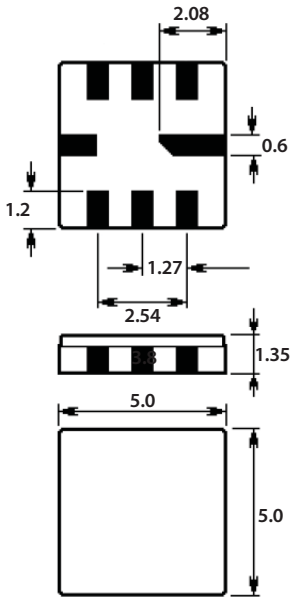

## DCC6



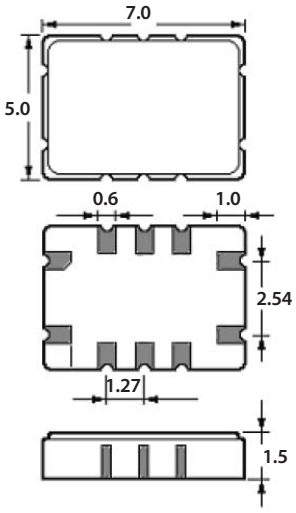

## QCC8B



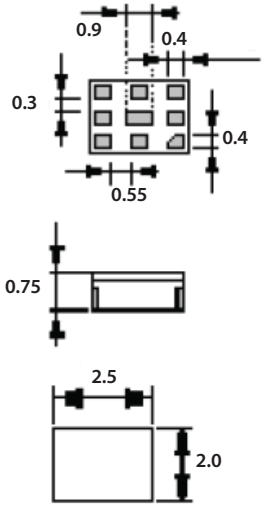

## QCC8C



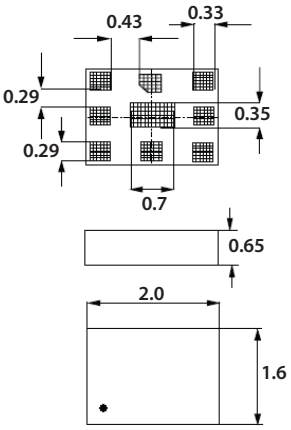

## SMP-03



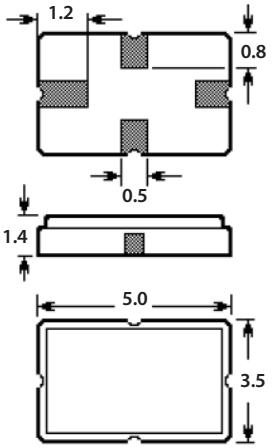

## 2.5 x 2.0mm



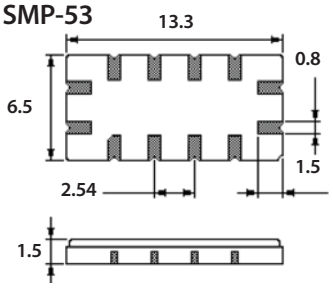

## 2.0 x 1.6mm



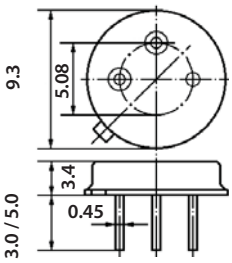

## QCC4A



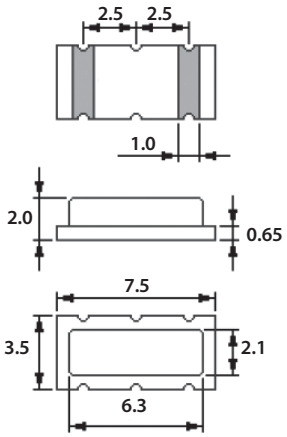

## SMP-53



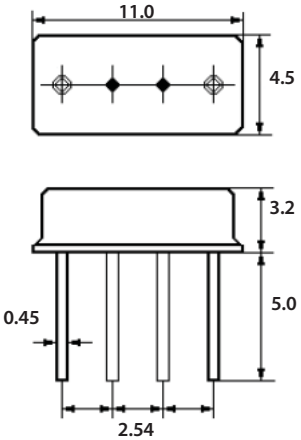

## TO-39



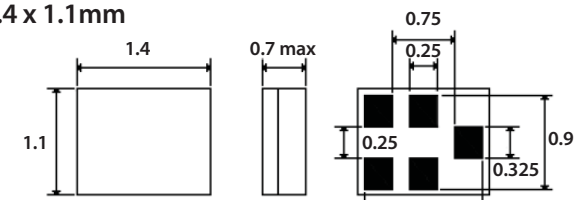

## QCC2A




## F11 - TH




## 1.4 x 1.1mm




Advanced crystal technology

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## Company background

**Advanced Crystal Technology are a leading supplier of frequency control products covering a comprehensive range of quartz, ceramic and SAW-based devices.**

Established in 1986, our primary aims are to offer our customers a broad and innovative range of products with a high emphasis on quality. We have an experienced team of customer service and technical professionals, committed to achieving the highest levels of customer satisfaction in the following areas:

- Technical and design support / assistance
- Continuous new product introduction
- Production control
- Logistics support
- Inventory management / just-in-time scheduling

We offer full support to customers throughout their design processes and we can also help with custom products. Our goal is to help our customers choose the best cost / performance ratio products, and to fully meet their project and design requirements.

When a customer's application suggests the need for a customised device, we can help define the specification.

Our standard terms and conditions of sale are available at www.actcrystals.com

## Quality

Advanced Crystal Technology were again recently re-approved and accredited with ISO9001 for the supply of frequency control components (certificate details can be found on our website).

Additionally, the company has been independently audited and approved by many major customers.

## Information, data and RoHS compatibility

**Information and full data sheets relating to both through hole and surface mount devices, latest available packages and RoHS data can be accessed on our website.**

ACT products are compatible with EU RoHS Directive 2002/95/EC. In certain circumstances, the following exemptions may apply:

(Contains Pb85% high melting point solder exempted by RoHS directive)
(Contains Pb in ceramic parts exempted by RoHS directive)
(Contains Pb in sealing glass exempted by RoHS directive)

## Distribution

Advanced Crystal Technology have a global distribution network that can support the customer with technical expertise and commercial experience.

For contact information regarding your local distributor, please visit our website or email / fax / phone our head office.

NOTE:

Advanced Crystal Technology offer their products for general sale for all consumer, commercial, industrial and instrumentation applications.
If it is intended to use them in extremely high reliability applications such as satellites and critical automotive, aircraft, shipping, train, life support, weaponry and other applications which require similar high reliability testing and construction then written permission from Advanced Crystal Technology must be obtained in advance of their use for such purposes.

Advanced crystal technology

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Wokingham, Berkshire RG41 2EY, England

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