EPCOS

SAW

Surface Acoustic Wave Components for RF Control Systems

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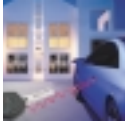
Applications



Automotive

- Remote keyless entry

- Tire-pressure monitoring

- Automotive telematics

Security and Access

- Fire alarm, burglar alarm

- Access control and tagging

Home Convenience

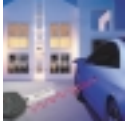
- Wireless switches

- Meter reading

- Garage-door openers

- Wireless audio

Introduction

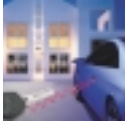


What are SAW components used for?

In remote control applications, **SAW resonators** provide stable frequencies for the RF carrier signal to **transmit** data over a range of 10 to 300 m or for the local oscillators of superhet receivers.
The **front-end filter** in the **receiver** eliminates interference from the incoming RF signal, thus increasing selectivity and sensitivity in short-range devices.

Benefits

- SAW resonators with tight frequency tolerances: ±100/±75/±50 kHz
- Identical pinning for all standard frequencies in each package size
- Hermetically sealed SMD packages allow the SAW components to operate even in extremely hostile environments:
  - Extended operating temperature range from –40 °C up to +125 °C
  - Improved shock and vibration strength thanks to stress-free cold seam-welding of the metal lid
- Enhanced reliability (particle protection) and reduced aging by patented PROTEC® and ELPAS® technologies
- 100% final examination
- All EPCOS factories are certified to automotive standard ISO/TS 16949
- Component qualification to automotive test procedure AEC-Q200
- Full level 3 PPAP available
- Unique production know-how and volume benefits from the world market leader in SAW components:
  “No less than three million SAW components leave our factories every day”



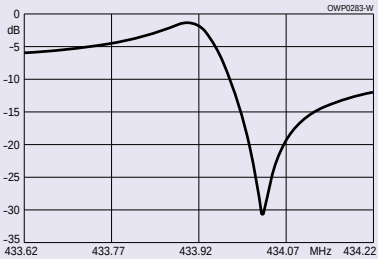
Resonators

General characteristics

■ **Center frequency tolerance**	± 50 kHz; ± 75 kHz; ± 100 kHz
■ **Insertion loss**	< 1.5 dB (typ.)
■ **Substrate**	Quartz
■ **Passivation**	PROTEC®, ELPAS®
■ **Package**	DCC6C, QCC4A, QCC8C

Example for R900

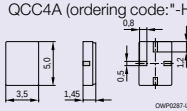
Transfer function



Outline drawings

DCC6C (ordering code:"-U410"):

QCC4A (ordering code:"-H210"):

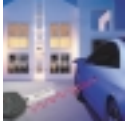


QCC8C (ordering code:"-U310"):

Main representatives

f_C [MHz]	f_C tolerance [kHz]	Ordering code	Market
1-port configuration			
315.02	± 50	B39321**R851**H210	USA
315.00	± 75	B39321**R901**U410	USA
315.00	± 100	B39321**R981**U410	USA
315.50	± 75	B39321**R903**U410	China
433.94	± 50	B39431**R850**H210	Europe
433.92	± 75	B39431**R900**U410	Europe
433.92	± 100	B39431**R980**U410	Europe
868.30	± 75	B39871**R858**H210	Europe
2-port configuration			
433.92	± 75	B39431**R2701**U310	Europe
868.30	± 100	B39871**R2711**U310	Europe
915.00	± 350	B39921**R2706**U310	USA

Wideband Filters

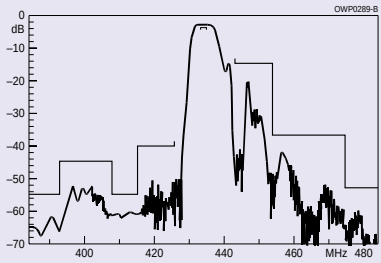


General characteristics

Usable bandwidth	Typically 1 to 3 MHz
Substrate	Lithium tantalate
Passivation	ELPAS®
Input/output impedance	50 Ω matched
Selectivity	Suitable for systems with IF=10.7 MHz
Remarks	Excellent for fixed frequency and channelized systems
Package	DCC6C, QCC8B

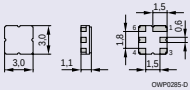
Example for B3710

Transfer function

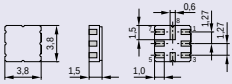


Outline drawings

DCC6C (ordering code:"-U410"):



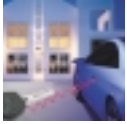
QCC8B (ordering code:"-Z810"):



Main representatives

f_C [MHz]	Usable band-width [MHz]	Ordering code	Market
312.20	2.0	B39311**B3712**U410	Japan
315.00	1.0	B39321**B3711**U410	USA
433.92	1.7	B39431**B3710**U410	Europe
864.00	3.0	B39861**B3563**U410	Europe (wireless audio)
869.00	2.0	B39871**B3715**U410	Europe
915.00	26.0	B39921**B3588**U410	USA
1575.00	2.4	B39162**B3521**U410	GPS worldwide
2450.00	97.0	B39252**B4041**U410	worldwide

Narrowband Filters

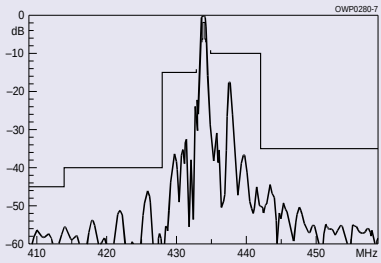


General characteristics

Usable bandwidth	Approximately 0.3 to 0.6 MHz
Substrate	Quartz
Passivation	PROTEC®, ELPAS®
Input/output impedance	> 50 Ω
Selectivity	Excellent, especially close to the carrier frequency
Remarks	Well suited for Europe – avoids interference caused by the Tetra system
Package	QCC8B, QCC8C

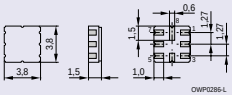
Example for B3760

Transfer function

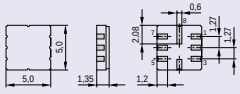


Outline drawings

QCC8B (ordering code:"-Z810"):



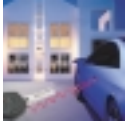
QCC8C (ordering code: "-U310"):



Main representatives

f_C [MHz]	Usable band-width [MHz]	Ordering code	Market
312.20	0.36	B39311**B3766**Z810	Japan
315.00	0.36	B39321**B3761**Z810	USA
315.15	0.36	B39321**B3763**Z810	China
315.50	0.36	B39321**B3765**Z810	China
433.92	0.36	B39431**B3760**Z810	Europe
447.73	0.36	B39451**B3767**Z810	Korea
868.30	0.60	B39871**B3762**Z810	Europe

Ultra-Narrowband Filters

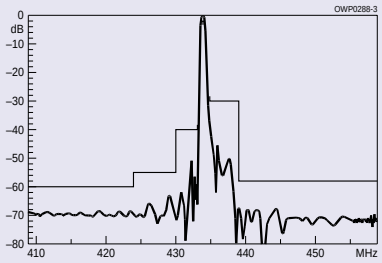


General characteristics

Usable bandwidth	Approximately 0.1 to 0.3 MHz
Substrate	Quartz
Passivation	PROTEC®, ELPAS®
Input/output impedance	> 50 Ω
Selectivity	Very steep skirts close to the carrier frequency
Remarks	Excellent image-frequency rejection; needs external coupling coil
Package	QCC8B, QCC8C

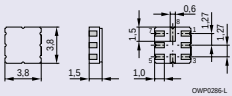
Example for B3575

Transfer function

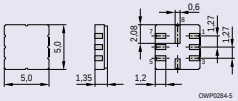


Outline drawings

QCC8B (ordering code:"-Z810"):



QCC8C (ordering code:"-U310"):



Main representatives

f_C [MHz]	Usable band-width [MHz]	Ordering code	Market
315.00	0.20	B39321**B3576**U310	USA
433.42	0.22	B39431**B3567**U310	Europe
433.92	0.12	B39431**B3790**Z810	Europe
433.92	0.22	B39431**B3575**U310	Europe
868.30	0.28	B39971**B3574**U310	Europe

Contacts

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Further product information

- Automotive SAW Application (Toolkit)
  CD ROM, English: EPC:20002-7600
- Data sheets for complete product range:
  www.epcos.com/rke

EPCOS at a Glance

EPCOS is the successor to Siemens Matsushita Components and manufactures some 40,000 electronic components, such as capacitors, ceramic components, surface acoustic wave (SAW) components and ferrites. The company serves the fastest growing and technologically most demanding markets: information + communications, automotive, industrial and consumer electronics. EPCOS, with headquarters in Munich, Germany, is the market leader in Europe and no. 2 worldwide and has R&D locations, production plants and sales centers in over 100 countries.

Published by EPCOS AG · Corporate Communications

Edition 2004 Printed in Germany

Herausgegeben von EPCOS AG
Unternehmenskommunikation, Postfach 80 17 09,
81617 München, DEUTSCHLAND
++49 89 636 09, FAX (0 89) 636-2 26 89

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