EPCOS Product Brief 2015

Surface Acoustic Wave Components

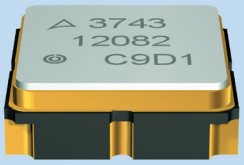
for RF Control Systems

What are SAW components used for?

SAW components are key elements for wireless transmission. Front-end filters eliminate interference from the incoming RF signals in receivers, thus increasing selectivity and sensitivity of short-range devices. Resonators provide stable frequencies for the RF carrier signals of remote control applications, or for local oscillators of superhet receivers.
TDK is responding to the requirements of the automotive industry with a steadily growing portfolio of cutting-edge RF components. Challenge us with the specifications for your application!

Benefits

- Long product life cycles according to automotive requirements
- Component qualification according to AEC-Q200
- SAW components in SMD ceramic and automotive CSSP™ packages
- SAW resonators with tight frequency tolerances down to ±25 kHz
- Patented passivation technologies for enhanced reliability
- Unique production know-how and economies of scale from the world market leader in SAW components
- RoHS-compatible
- Lead-free soldering
- Operating temperature range from –40 °C up to +125 °C
- 100% final testing
- Full support for level 3 PPAP



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Applications

Automotive

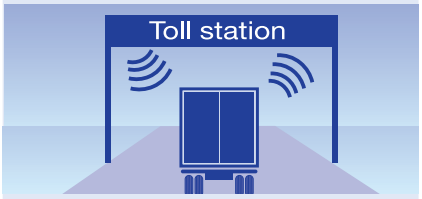
Remote keyless entry

Navigation

Digital audio transmission

Tire-pressure monitoring

2G/ 3G/ 4G communication

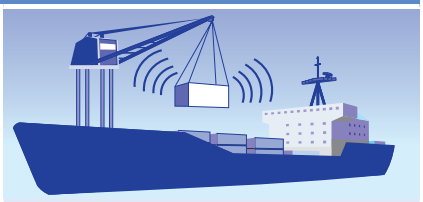


Toll systems

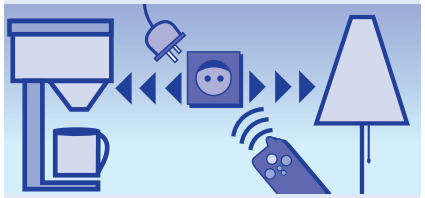
Industrial and home

Advanced metering infrastructure

Fire alarm, burglar alarm

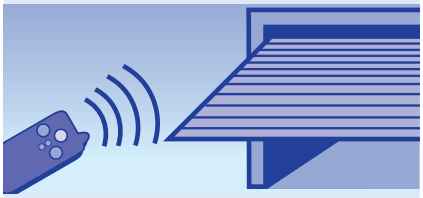


Container tagging



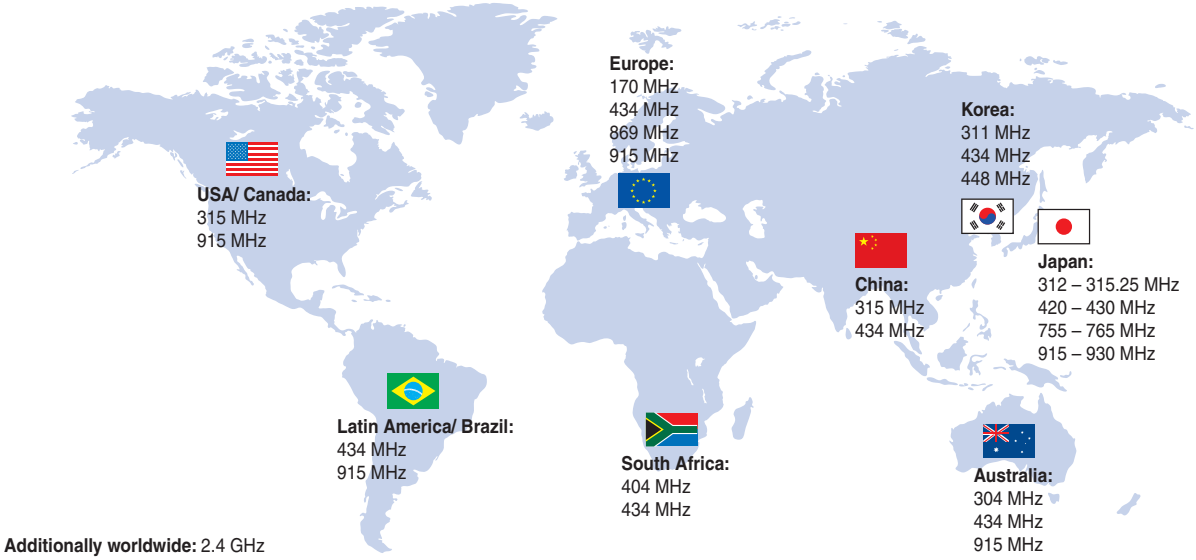
Wireless control

Remote controls



Garage-door openers

Worldwide frequency regulations for ISM bands (simplified)



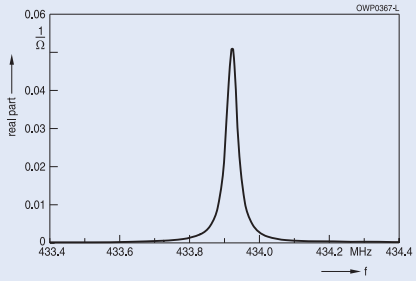
Additionally worldwide: 2.4 GHz

For further information please contact your local sales office.

ISM Bands

Resonators

Example for R1920



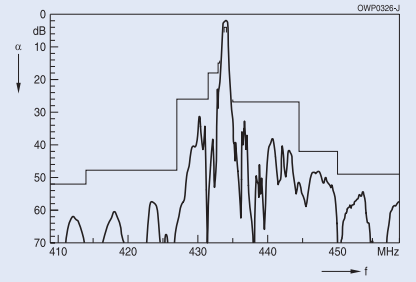
- **Center frequency tolerance:** down to ±25 kHz
- **Insertion loss:** < 1.5 dB (typ.)
- **Substrate:** Quartz

Representatives

f_c MHz	Frequency tolerance kHz	Type	Package size mm²
314.90	±25	B39311R 994H110	3.0 × 3.0
315.00	±50	B39321R1901A310	3.0 × 3.0
315.00	±25	B39321R1921A310	3.0 × 3.0
315.05	±50	B39321R1902A310	3.0 × 3.0
433.92	±75	B39431R 920H110	3.0 × 3.0
433.92	±75	B39431R 820H110	5.0 × 3.5
433.92	±50	B39431R1900A310	3.0 × 3.0
433.92	±25	B39431R1920A310	3.0 × 3.0
868.35	±150	B39871R1950A310	3.0 × 3.0
915.00	±250	B39921R2906H110	3.0 × 3.0
1176.00	±300	B39122R 959H110	3.0 × 3.0

Narrowband Filters

Example for B3743



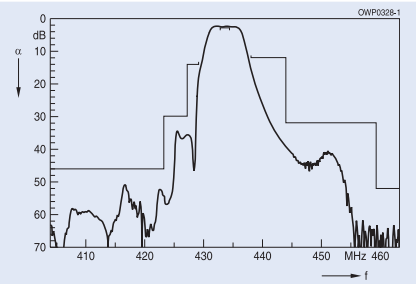
- **Usable bandwidth:** Typically 0.1 … 4.6 MHz
- **Substrate:** Quartz
- **Input/output impedance:** > 50 Ω
- **Selectivity:** Excellent nearby rejection

Representatives

313.15 314.00 314.925	0.20 0.20 0.39	B39311B3534A410	3.8 × 3.8
313.85 315.00	0.36 0.36	B39321B3786Z810	3.8 × 3.8
315.00	0.36	B39321B3741H110	3.0 × 3.0
433.20 433.92 434.64	0.18 0.26 0.18	B39431B3532A410	3.8 × 3.8
433.20 434.64	0.18 0.18	B39431B3533A410	3.8 × 3.8
433.92	0.34	B39431B3743H110	3.0 × 3.0
433.92	0.12	B39431B3933H110	3.0 × 3.0
433.92	1.06	B39431B3935H110	3.0 × 3.0
433.92	0.55	B39431B3936H110	3.0 × 3.0
868.30	0.60	B39871B3962B210	2.5 × 2.0
902.875	1.55	B39901B3934H110	3.0 × 3.0

Wideband Filters

Example for B3721



- **Usable bandwidth:** Typically 0.6 … 97 MHz
- **Substrate:** Lithium tantalate
- **Input/output impedance:** 50 Ω
- **Selectivity:** High ultimate rejection

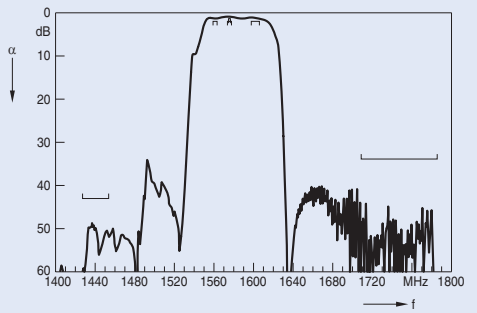
Representatives

313.60	3.3	B39311B3917U410	3.0 × 3.0
315.00	1.0	B39321B3722U410	3.0 × 3.0
433.92	1.6	B39431B3721U410	3.0 × 3.0
433.92	0.4	B39431B3900U410	3.0 × 3.0
760.00	8.3	B39761B3929U410	3.0 × 3.0
869.00	2.0	B39871B3440U410	3.0 × 3.0
869.00	2.0	B39871B3903U510	3.0 × 3.0
869.00	2.0	B39871B4316P810	1.4 × 1.1
915.00	26.0	B39921B3588U410	3.0 × 3.0
915.00	10.0	B39921B3726U410	3.0 × 3.0
915.00	26.0	B39921B4301F210	1.4 × 1.1
2448.50	97.0	B39242B3912U410	3.0 × 3.0

Telematics

Wideband Filters for Telematics – more details in separate Product Brief for Telematics

Example for B4327



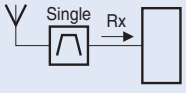
- **Substrate:** Lithium tantalate
- **Input/output impedance:** 50/50 Ω, 50/100 Ω, 50/150 Ω
- **Selectivity:** High ultimate rejection
- **Remarks:** Parts for navigation and 2G/3G/4G communication are available in CSSP package, qualified acc. to AEC-Q200 Grade 3

Representatives

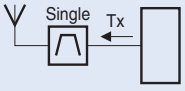
Category	f_c MHz	Type	Package size mm²	Features
B5 DPx	833/878	B39881**B4405**P810	2.0 × 1.6	50 Ω se ANT IN / 100 Ω Rx bal OUT
B5 Rx	878	B39881**B4324**P810	1.4 × 1.1	50 Ω se IN / 100 Ω bal OUT
B5 Tx	836.5	B39841**B4311**P810	1.4 × 1.1	50 Ω se IN / 50 Ω se OUT
B38 Rx	2595	B39262**B4342**P810	1.4 × 1.1	50 Ω se IN / 100 Ω bal OUT
B38 Tx, post-PA	2595	B39262**B4343**P810	1.4 × 1.1	50 Ω se IN / 50 Ω se OUT
GSM 1800/ 1900	1842.5/ 1960	B39202**B3515**H910	3.0 × 2.5	2 in 1; 50 Ω se IN / 150 Ω bal OUT
		B39202**B4383**P810	1.5 × 1.1	
GPS/Galileo	1575.42	B39162**B3923**U410	3.0 × 3.0	50 Ω se, low IA
GPS/Galileo/ Glonass/BeiDou	1582.40	B39162**B4327**P810	1.4 × 1.1	50 Ω se IN / 50 Ω se OUT
GPS/Glonass extractor	1575/ 1602	B39162**B3405**H910	3.0 × 2.5	50 Ω se ANT / 50 Ω se phone / 50 Ω se GNSS
SDARS	2332.5	B39232**B3442**U410	3.0 × 3.0	50 Ω se IN / 50 Ω se OUT
DAB	1472	B39152**B4325**P810	1.4 × 1.1	50 Ω se IN / 50 Ω se OUT

Filter types

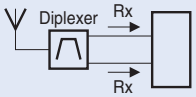
Single filter



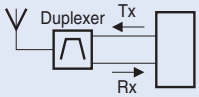
Single filter



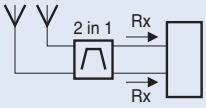
Diplexer



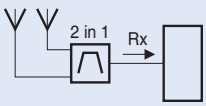
Duplexer



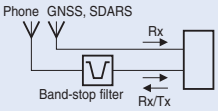
2 in 1 filter



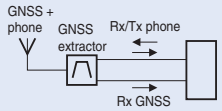
2 in 1 filter with diplexed output



Band-stop filter



GPS/Glonass/BeiDou extractor



Outline drawings

QCS5M, QCS5P, QCU9L ord. code: F210/P810  1.4 × 1.1 mm² h = 0.45 mm	QCU9L, QCW9K, ... ord. code: P810  2.0 × 1.6 mm² h = 0.45 mm	DCC6F ord. code: B210  2.5 × 2.0 mm² h = 0.86 mm	DCC6C/DCC6D ord. code: U410/U510  3.0 × 3.0 mm² h = 1.1 mm	QCC8B ord. code: Z810  3.8 × 3.8 mm² h = 1.5 mm
QCS10W ord. code: P810  1.5 × 1.1 mm² h = 0.45 mm	DCC4A/DCC4B ord. code: B710/B910  2.5 × 2.0 mm² h = 0.86 mm	QCC10G ord. code: H910  3.0 × 2.5 mm² h = 0.98 mm	DCC6E/DCC6G ord. code: H110/A310  3.0 × 3.0 mm² h = 1.0 mm	QCC8C ord. code: U310  5.0 × 5.0 mm² h = 1.35 mm

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