

RF360 Europe GmbH

A Qualcomm – TDK Joint Venture



SAW Components

SAW IF filter

Satellite radio

| | |
|----------------|-------------------|
| Series/type: | B1728 |
| Ordering code: | B39725B1728H810 |
| Date: | December 19, 2012 |
| Version: | 2.2 |

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SAW Components

SAW IF filter

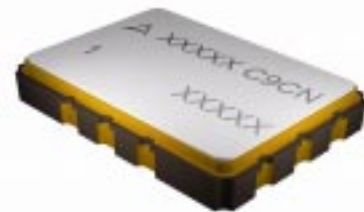
Satellite radio

| | |
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| Series/type: | B1728 |
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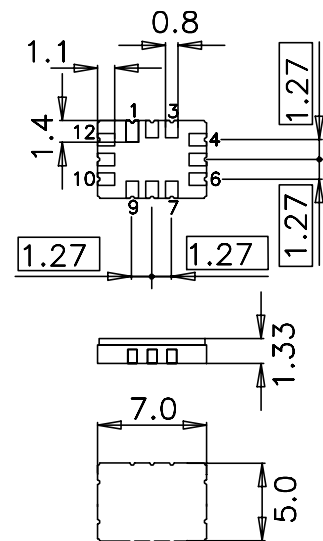
Data sheet

Application

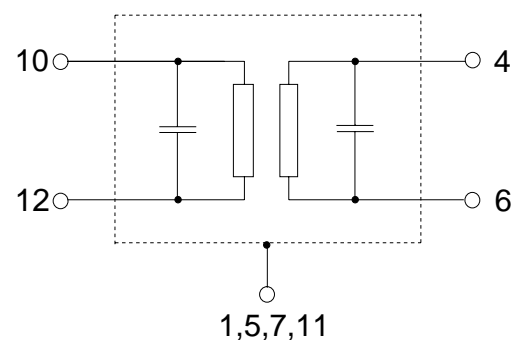
- IF filter for digital radio
- Usable bandwidth 3.7 MHz
- Low insertion attenuation
- Constant group delay
- Unbalanced or balanced operation


Features

- Package size 7.0 x 5.0 x 1.33 mm³
- Package code QCC12E
- Maximum package height 1.48 mm
- RoHS compatible
- Approximate weight 0.25 g
- Ceramic package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- AEC-Q200 qualified component family
- **Electrostatic Sensitive Device (ESD)**


Pin configuration

- 4 Balanced input or input ground
- 6 Input
- 10 Balanced output or output ground
- 12 Output
- 1,5,7,11 Case – ground
- 2,3,8,9 To be grounded



SAW Components
B1728
SAW IF filter
72.54 MHz
Data sheet

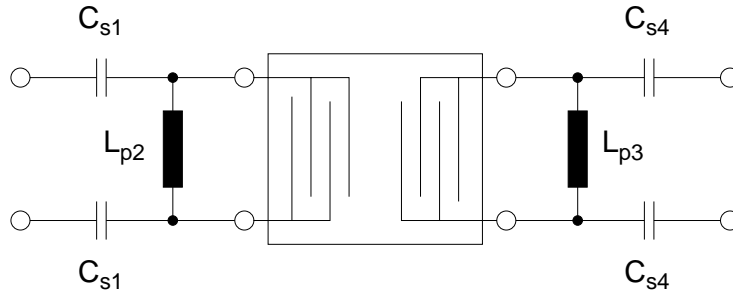
Characteristics

Temperature range for specification: $T = -40\text{ }^{\circ}\text{C}$ to $(+85\text{ }^{\circ}\text{C}) +105\text{ }^{\circ}\text{C}$
 Terminating source impedance: $Z_S = 27\text{ }\Omega$ and matching network
 Terminating load impedance: $Z_L = 1\text{ k}\Omega$ and matching network

| | | min. | typ. @ 25 °C | max. | |
|--|------------------------|------|-----------------|-----------|-------|
| Nominal frequency | f_N | — | 72.54 | — | MHz |
| Minimum insertion attenuation¹⁾ | α_{\min} | — | 14.5 | 16.0 | dB |
| Maximum voltage gain source – load (V_L/V_S) | α_{vgsI} | –4.2 | –2.7 | — | dB |
| Amplitude ripple (p-p) $f_N \pm 1.85\text{ MHz}$ | $\Delta\alpha$ | — | 1.0 | (1.3) 1.5 | dB |
| Pass bandwidth | | | | | |
| $\alpha_{\text{rel}} \leq 1.5\text{ dB}$ | $B_{1.5\text{dB}}$ | — | 4.0 | — | MHz |
| $\alpha_{\text{rel}} \leq 3\text{ dB}$ | $B_{3\text{dB}}$ | — | 4.3 | — | MHz |
| $\alpha_{\text{rel}} \leq 15\text{ dB}$ | $B_{15\text{dB}}$ | — | 5.7 | 5.9 | MHz |
| $\alpha_{\text{rel}} \leq 30\text{ dB}$ | $B_{30\text{dB}}$ | — | 6.6 | 7.0 | MHz |
| Mean attenuation (relative to α_{\min}) | α_{rel} | | | | |
| Upper sidelobe 86.47 ... 91.53 MHz | | 48.0 | 53.0 | — | dB |
| Relative attenuation (relative to α_{\min}) | α_{rel} | | | | |
| Lower sidelobe 50.00 ... 65.00 MHz | | 40.0 | 44.0 | — | dB |
| 65.00 ... 66.48 MHz | | 33.0 | 38.0 | — | dB |
| 66.48 ... 68.08 MHz | | 32.0 | 36.0 | — | dB |
| Upper sidelobe 77.30 ... 78.60 MHz | | 32.0 | 36.0 | — | dB |
| 78.60 ... 86.47 MHz | | 36.0 | 41.0 | — | dB |
| 86.47 ... 91.53 MHz | | 44.0 | 48.0 | — | dB |
| 91.53 ... 95.21 MHz | | 44.0 | 48.0 | — | dB |
| 95.21 ... 100.00 MHz | | 46.0 | 50.0 | — | dB |
| Group delay ripple (p-p) | $\Delta\tau$ | | | | |
| Aperture 50 kHz $f_N \pm 1.85\text{ MHz}$ | | — | 210 | — | ns |
| Temperature coefficient of frequency | TC_f | — | –18 | — | ppm/K |

¹⁾ Including losses in the matching network

Matching network¹⁾ (based on four port measurement, quality factors $Q_L = 40$, $Q_C = 90$)



$$C_{s1} = 20 \text{ pF}$$

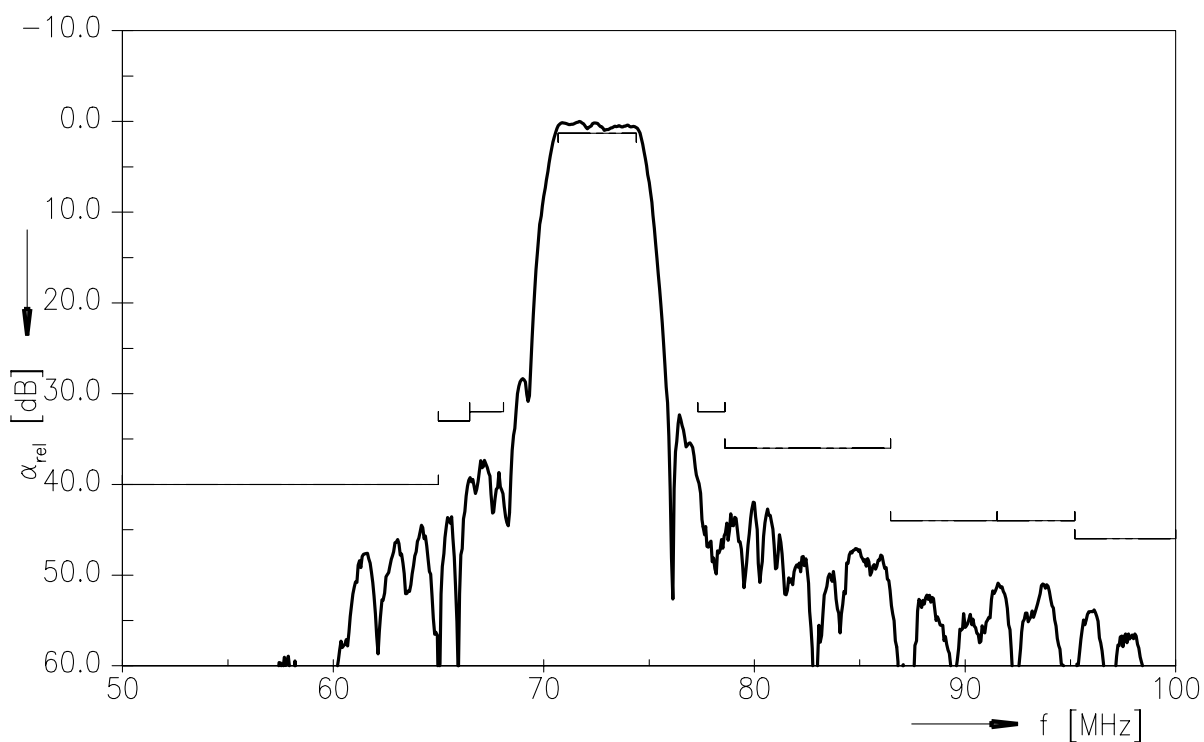
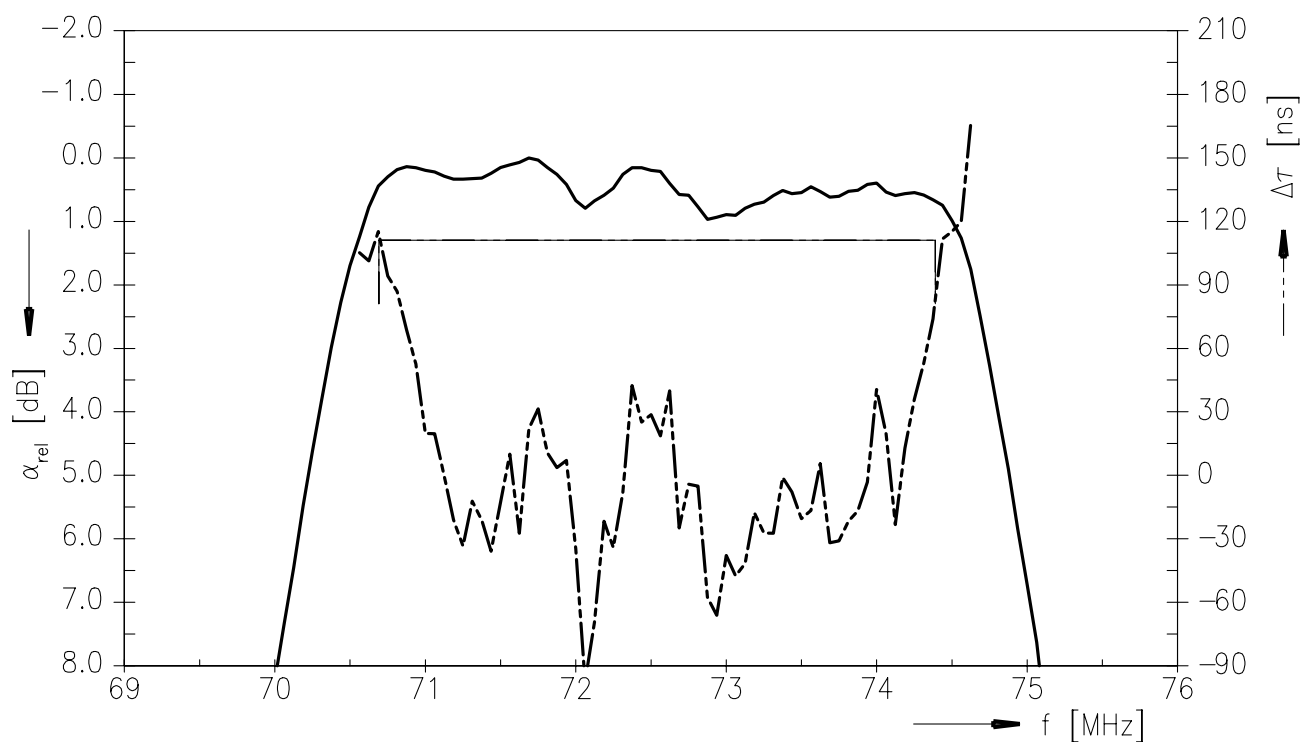
$$L_{p2} = 220 \text{ nH}$$

$$L_{p3} = 620 \text{ nH}$$

$$C_{s4} = 3.6 \text{ pF}$$

1) The input matching circuit has been designed as a power match of the filter's input port to 175 Ω . In a second step it has been optimized in a narrow range in order to operate at 27 Ω with optimum filter performance.

Data sheet

Transfer function

Transfer function (pass band)


SAW Components
B1728
SAW IF filter
72.54 MHz
Data sheet

Characteristics

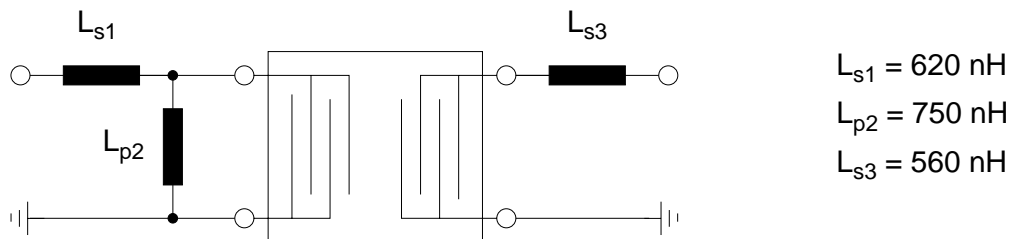
Temperature range for specification: $T = -40\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$
 Terminating source impedance: $Z_S = 50\text{ }\Omega$ (single ended) and matching network
 Terminating load impedance: $Z_L = 50\text{ }\Omega$ (single ended) and matching network

| | | min. | typ. @ 25 °C | max. | |
|--|---------------------------|------|-----------------|------|-------|
| Nominal frequency | f_N | — | 72.54 | — | MHz |
| Minimum insertion attenuation¹⁾ | α_{\min} | — | 12.9 | 14.4 | dB |
| Amplitude ripple (p-p) | $\Delta\alpha$ | | | | |
| | $f_N \pm 1.85\text{ MHz}$ | — | 1.2 | 1.5 | dB |
| Pass bandwidth | | | | | |
| $\alpha_{\text{rel}} \leq 1.5\text{ dB}$ | $B_{1.5\text{dB}}$ | — | 4.0 | — | MHz |
| $\alpha_{\text{rel}} \leq 3\text{ dB}$ | $B_{3\text{dB}}$ | — | 4.4 | — | MHz |
| $\alpha_{\text{rel}} \leq 15\text{ dB}$ | $B_{15\text{dB}}$ | — | 5.8 | 6.0 | MHz |
| $\alpha_{\text{rel}} \leq 30\text{ dB}$ | $B_{30\text{dB}}$ | — | 6.7 | 7.0 | MHz |
| Mean attenuation (relative to α_{\min}) | α_{rel} | | | | |
| Upper sidelobe 86.47 ... 91.53 MHz | | 48.0 | 52.0 | — | dB |
| Relative attenuation (relative to α_{\min}) | α_{rel} | | | | |
| Lower sidelobe 50.00 ... 65.00 MHz | | 34.0 | 38.0 | — | dB |
| 65.00 ... 66.48 MHz | | 36.0 | 42.0 | — | dB |
| 66.48 ... 68.08 MHz | | 34.0 | 38.0 | — | dB |
| Upper sidelobe 77.30 ... 78.60 MHz | | 28.0 | 32.0 | — | dB |
| 78.60 ... 86.47 MHz | | 34.0 | 39.0 | — | dB |
| 86.47 ... 91.53 MHz | | 42.0 | 46.0 | — | dB |
| 91.53 ... 95.21 MHz | | 44.0 | 48.0 | — | dB |
| 95.21 ... 100.00 MHz | | 48.0 | 53.0 | — | dB |
| Group delay ripple (p-p) | $\Delta\tau$ | | | | |
| Aperture 50 kHz $f_N \pm 1.85\text{ MHz}$ | | — | 190 | — | ns |
| Temperature coefficient of frequency | TC_f | — | -18 | — | ppm/K |

¹⁾ Including losses in the matching network

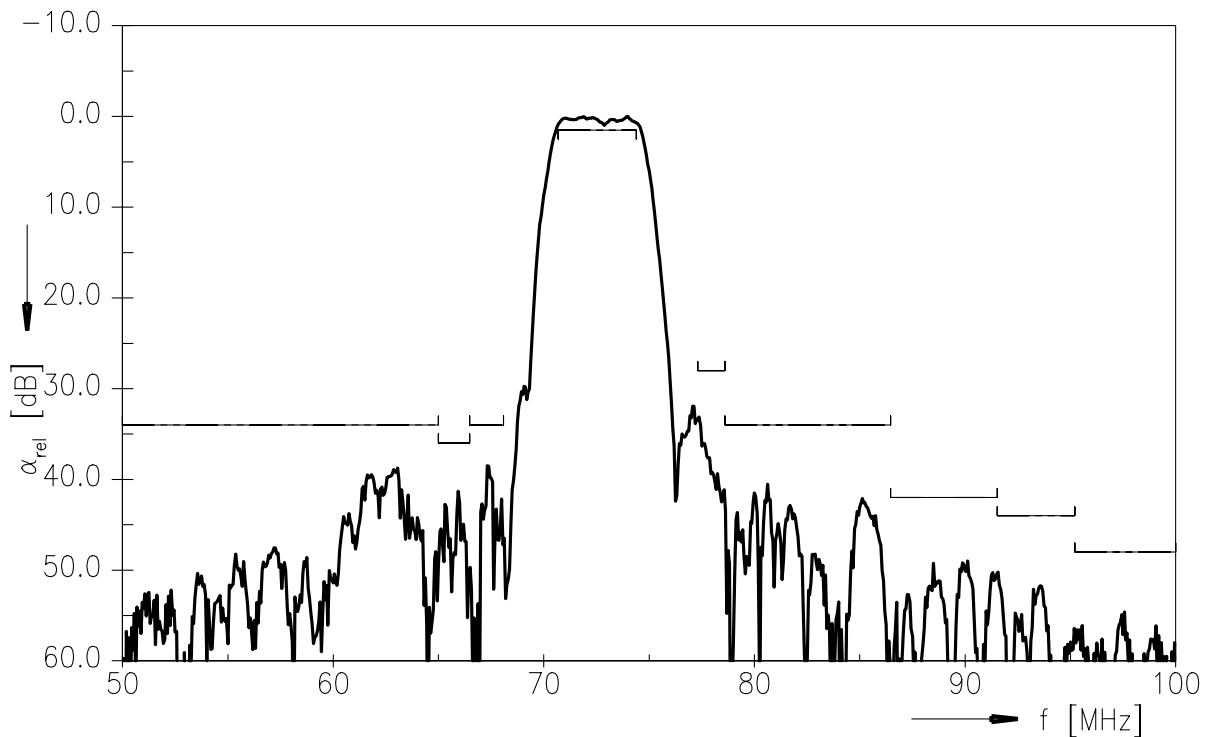
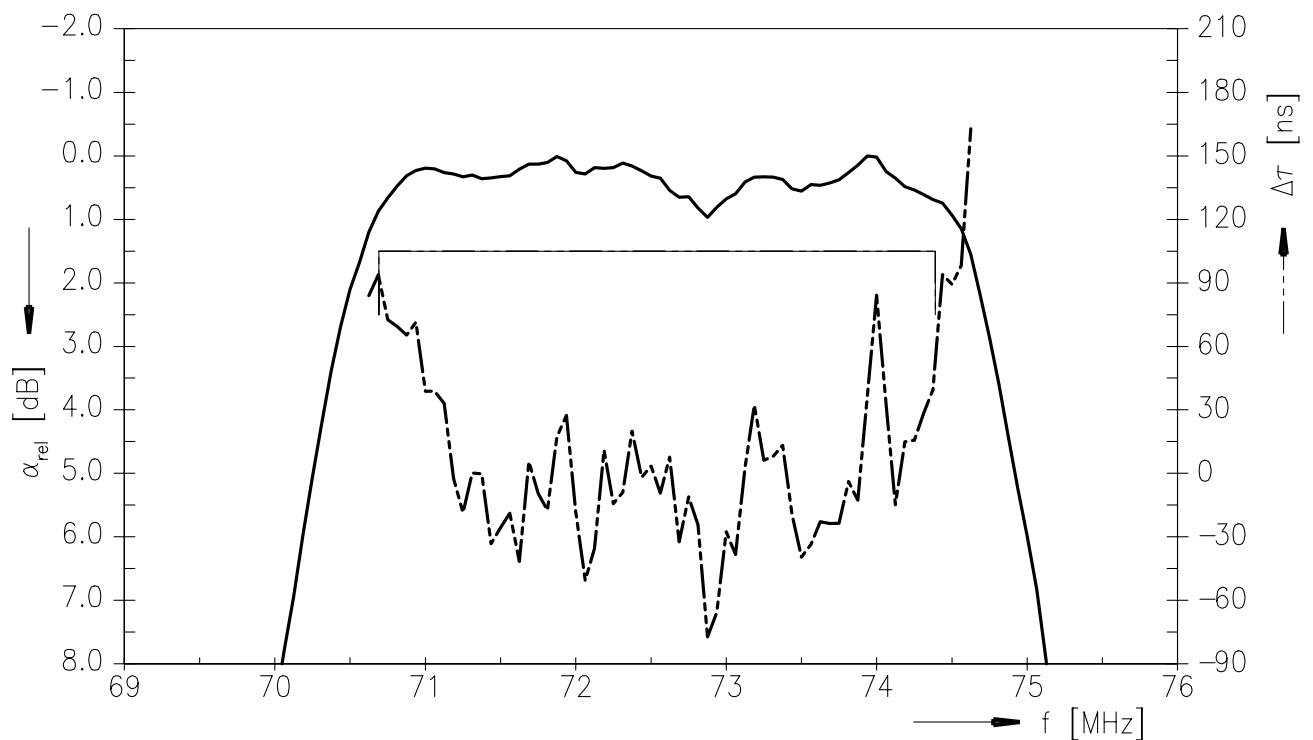
Data sheet


Matching network (based on four port measurement, quality factors $Q_L = 40$, $Q_C = 90$)


Maximum ratings

| | | | | |
|----------------------------|------------------|------------|-----|------------------------------|
| Operable temperature range | T | -40 / +105 | °C | |
| Storage temperature range | T_{stg} | -40 / +105 | °C | |
| DC voltage | V_{DC} | 6 | V | |
| Source power | P_S | 10 | dBm | source impedance 50 Ω |

Data sheet

Transfer function

Transfer function (pass band)


SAW Components
B1728
SAW IF filter
72.54 MHz

Data sheet


References

| | |
|----------------------------|---|
| Type | B1728 |
| Ordering code | B39725B1728H810 |
| Marking and package | C61157-A7-A103 |
| Packaging | F61074-V8170-Z000 |
| Date codes | L_1126 |
| S-parameters | B1728_NB_UN.s4p See file header for port/pin assignment table. |
| Soldering profile | S_6001 |
| RoHS compatible | RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8 th , 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases. |
| Matching coils | See Inductor pdf-catalog http://www.tdk.co.jp/tefe02/coil.htm#aname1 and Data Library for circuit simulation http://www.tdk.co.jp/etvcl/index.htm for a large variety of matching coils. |

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