



RF360 Europe GmbH

A Qualcomm – TDK Joint Venture

SAW Components

SAW Duplexer for Smallcell

Band 17 (3G/LTE)

| | |
|----------------|-------------------|
| Series/type: | B8017 |
| Ordering code: | B39741B8017P810 |
| Date: | February 25, 2015 |
| Version: | 2.3 |

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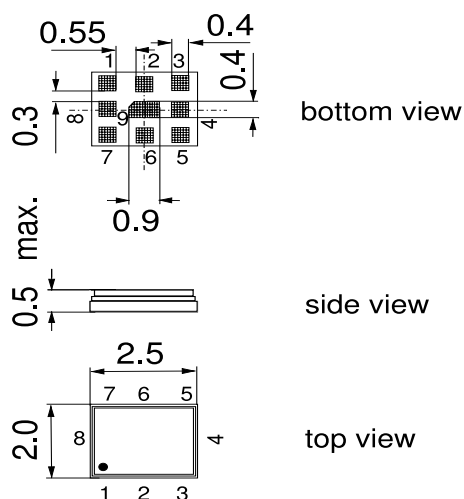
Data sheet


Application

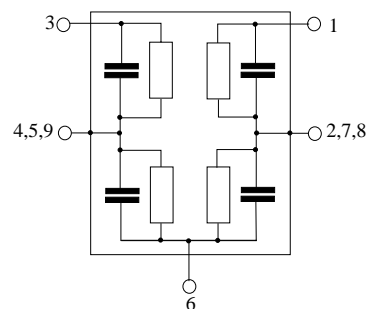
- Low-loss SAW duplexer for 3G/LTE smallcell systems (Band 17)
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 12 MHz
- High power durability
- Industrial qualification
- Rx = Uplink = 704-716 MHz
- Tx = Downlink = 734-746 MHz


Features

- Package size 2.5 * 2.0 mm²
- max. Package height 0.5 mm
- RoHS compatible
- Package for **Surface Mount Technology (SMT)**
- Ni, Au-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- Moisture Sensitivity Level 3


Pin configuration

- 3 RX output
- 1 TX input
- 6 Antenna
- 2, 4, 5, 7, 8, 9 To be grounded



Data sheet


Characteristics

Temperature range for specification: $T = -10\text{ °C to }+85\text{ °C}$
 Antenna terminating impedance: $Z_{ANT} = 50\ \Omega \parallel 30\text{ nH}$
 RX terminating impedance: $Z_{RX} = 50\ \Omega$
 TX terminating impedance: $Z_{TX} = 50\ \Omega$

| Characteristics ANT - RX | | min. | typ. @ 25 °C | max. | |
|--------------------------------------|-------------------|------|-----------------|------|-----|
| Center frequency | f_C | — | 710.0 | — | MHz |
| Maximum insertion attenuation | α_{max} | — | 2.0 | 3.2 | dB |
| 704.0 ... 716.0 MHz | | | | | |
| Amplitude ripple (p-p) | $\Delta\alpha$ | — | 0.6 | 2.0 | dB |
| 704.0 ... 716.0 MHz | | | | | |
| Error Vector Magnitude | EVM ¹⁾ | — | 2.3 | 3.8 | % |
| @ $f_{carrier}$ 706.5 ... 713.5 MHz | | | | | |
| Input VSWR (ANT port) | | — | 1.5 | 1.7 | |
| 704.0 ... 716.0 MHz | | | | | |
| Output VSWR (RX port) | | — | 1.6 | 1.8 | |
| 704.0 ... 716.0 MHz | | | | | |
| Attenuation | α | | | | |
| 10.0 ... 600.0 MHz | | 40 | 55 | — | dB |
| 693.25 ... 697.75 MHz | | 10 | 20 | — | dB |
| 699.0 ... 700.0 MHz | | 1.5 | 12 | — | dB |
| 700.0 ... 704.0 MHz | | 1 | 2 | — | dB |
| 716.0 ... 722.2 MHz | | 1 | 2 | — | dB |
| 722.2 ... 724.0 MHz | | 7 | 16 | — | dB |
| 724.0 ... 728.0 MHz | | 15 | 17 | — | dB |
| 729.0 ... 734.0 MHz | | 35 | 55 | — | dB |
| 734.0 ... 746.0 MHz | | 50 | 55 | — | dB |
| 746.0 ... 756.0 MHz | | 48 | 56 | — | dB |
| 758.0 ... 768.0 MHz | | 45 | 49 | — | dB |
| 869.0 ... 894.0 MHz | | 40 | 50 | — | dB |
| 1408.0 ... 1432.0 MHz | | 50 | 60 | — | dB |
| 1930.0 ... 1990.0 MHz | | 45 | 56 | — | dB |
| 2110.0 ... 2170.0 MHz | | 45 | 56 | — | dB |
| 2400.0 ... 2500.0 MHz | | 45 | 56 | — | dB |
| 2816.0 ... 2864.0 MHz | | 45 | 57 | — | dB |
| 3000.0 ... 6000.0 MHz | | 15 | 26 | — | dB |

1) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141

Data sheet


Characteristics

| | |
|--------------------------------------|----------------------------------|
| Temperature range for specification: | T = -10 °C to +85 °C |
| Antenna terminating impedance: | Z _{ANT} = 50 Ω 30 nH |
| RX terminating impedance: | Z _{RX} = 50 Ω |
| TX terminating impedance: | Z _{TX} = 50 Ω |

| Characteristics TX - ANT | | min. | typ. @ 25 °C | max. | |
|--|-------------------|------|-----------------|------|-----|
| Center frequency | f _C | — | 740.0 | — | MHz |
| Maximum insertion attenuation 734.0 ... 746.0 MHz | α _{max} | — | 1.6 | 2.2 | dB |
| Amplitude ripple (p-p) 734.0 ... 746.0 MHz | Δα | — | 0.5 | 1.1 | dB |
| Error Vector Magnitude @f _{carrier} 736.5 ... 743.5 MHz | EVM ¹⁾ | — | 1.7 | 3.8 | % |
| Input VSWR (TX port) 734.0 ... 746.0 MHz | | — | 1.5 | 1.8 | |
| Output VSWR (ANT port) 734.0 ... 746.0 MHz | | — | 1.3 | 1.7 | |
| Attenuation | α | | | | |
| 10.0 ... 600.0 MHz | | 30 | 43 | — | dB |
| 699.0 ... 704.0 MHz | | 50 | 54 | — | dB |
| 704.0 ... 716.0 MHz | | 50 | 54 | — | dB |
| 777.0 ... 787.0 MHz | | 40 | 55 | — | dB |
| 788.0 ... 798.0 MHz | | 40 | 50 | — | dB |
| 824.0 ... 849.0 MHz | | 40 | 46 | — | dB |
| 1468.0 ... 1492.0 MHz | | 40 | 52 | — | dB |
| 1574.0 ... 1606.0 MHz | | 45 | 53 | — | dB |
| 1710.0 ... 1755.0 MHz | | 40 | 52 | — | dB |
| 1850.0 ... 1915.0 MHz | | 40 | 48 | — | dB |
| 2202.0 ... 2238.0 MHz | | 30 | 43 | — | dB |
| 2400.0 ... 2500.0 MHz | | 35 | 42 | — | dB |
| 2936.0 ... 2984.0 MHz | | 20 | 40 | — | dB |
| 3000.0 ... 5000.0 MHz | | 10 | 21 | — | dB |
| 5000.0 ... 6000.0 MHz | | 10 | 15 | — | dB |

1) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141

Data sheet

Characteristics

| | |
|--------------------------------------|----------------------------------|
| Temperature range for specification: | T = -10 °C to +85 °C |
| Antenna terminating impedance: | Z _{ANT} = 50 Ω 30 nH |
| RX terminating impedance: | Z _{RX} = 50 Ω |
| TX terminating impedance: | Z _{TX} = 50 Ω |

| Characteristics TX-RX | | | | min. | typ. @ 25 °C | max. | |
|-----------------------|---------------------|---|--|------|-----------------|------|----|
| Attenuation | | | | | | | |
| | 704.0 ... 716.0 MHz | α | | 53 | 58 | — | dB |
| | 734.0 ... 746.0 MHz | | | 53 | 58 | — | dB |

Maximum Ratings

| | | | | |
|---|------------------|------------------|-----|---|
| Storage temperature range | T _{stg} | -40/+85 | °C | |
| DC voltage | V _{DC} | 0 | V | |
| ESD voltage | V _{ESD} | 50 ¹⁾ | V | machine model, 1 pulse source and load impedance 50 Ω Pin 28 dBm average - 39 dBm peak } LTE 5 MHz downlink T = 55 °C, 100.000 h |
| Input power at pin 1 | | | | |
| 734.0 ... 746.0 MHz | P _{in} | 28 ²⁾ | dBm | |
| elsewhere | P _{in} | 10 | dBm | source and load impedance 50 Ω Continuous wave T=55 °C, 100khrs |
| Operating lifetime with Output power at antenna | | | | |
| 734.0 ... 746.0 MHz | P _{out} | 24 ³⁾ | dBm | |

¹⁾ According to JESD22-A115A (machine model), 1 negative and 1 positive pulses.

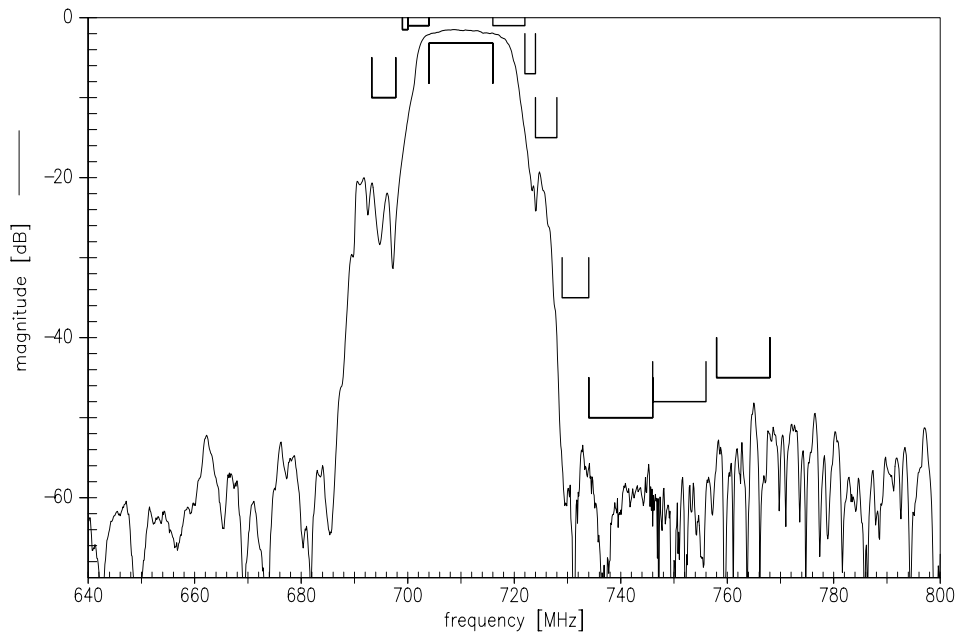
²⁾ Time to failure (TTDF) according to accelerated power durability tests, and wear out models.

³⁾ according to accelerated High Temperature Operating Life (HTOL) test.

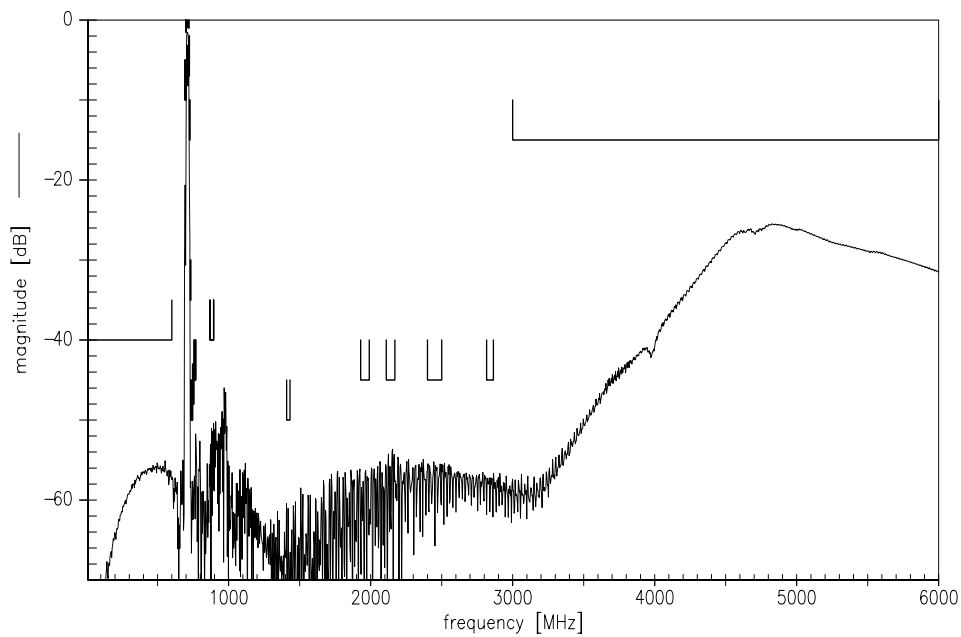
Data sheet



Frequency Response ANT-RX



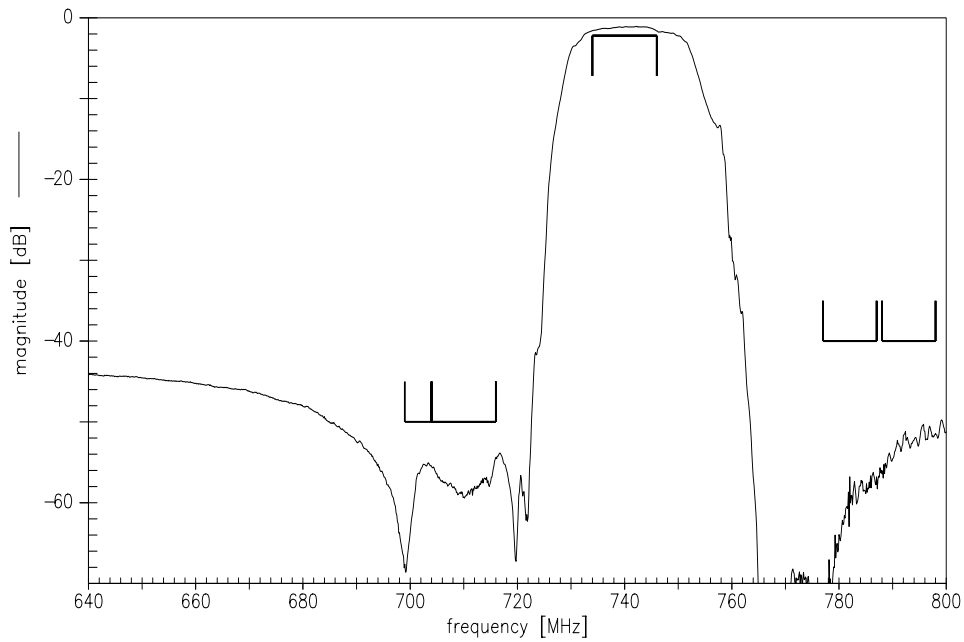
Frequency Response ANT-RX



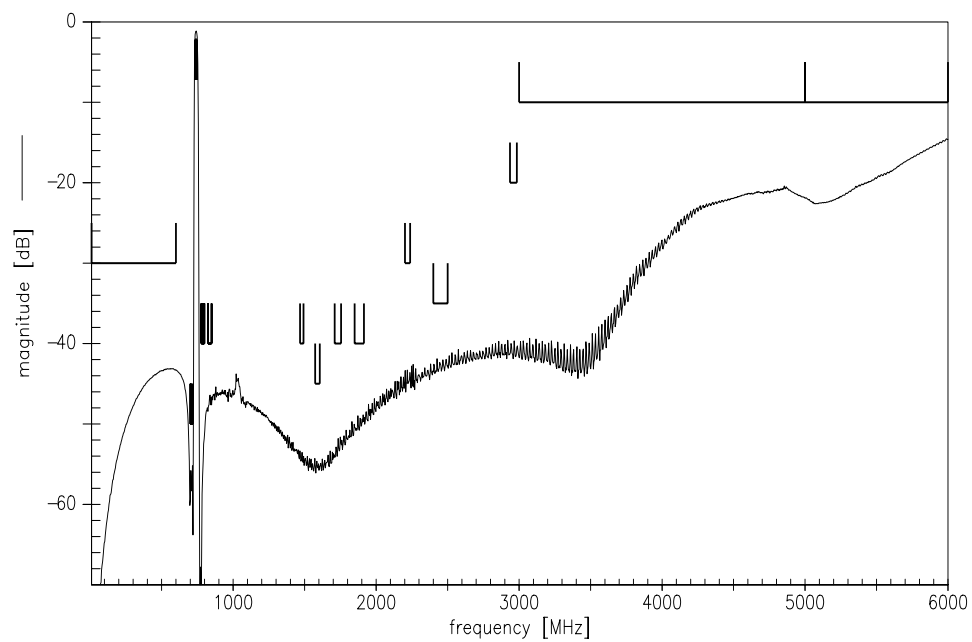
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Frequency Response TX-ANT



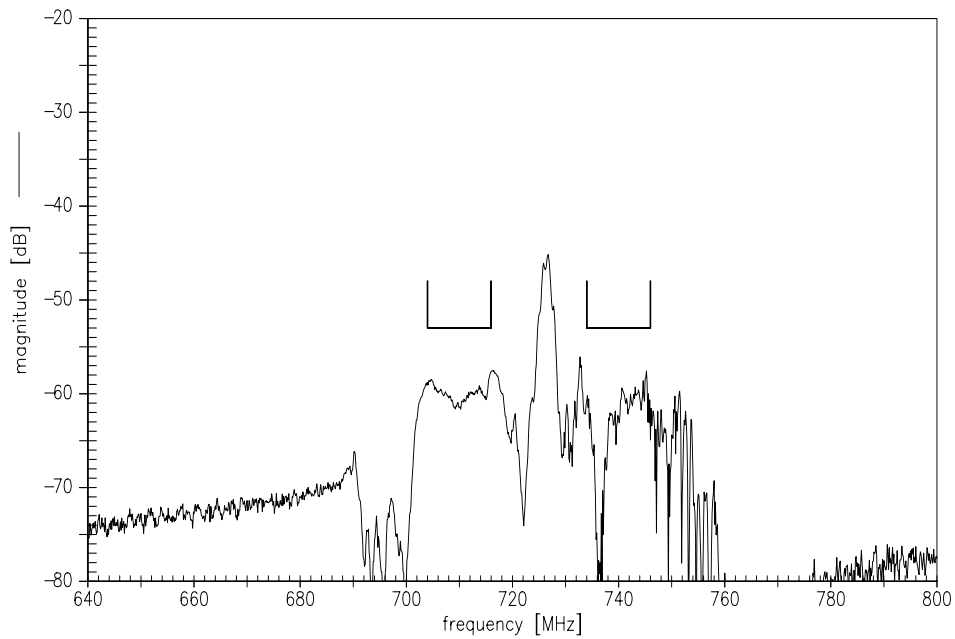
Frequency Response TX-ANT



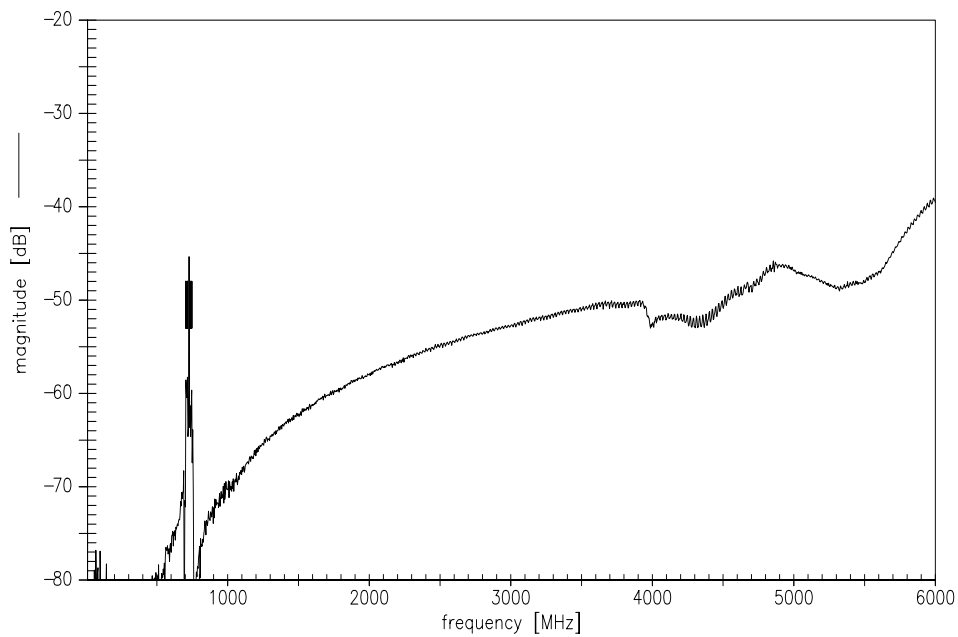
Data sheet



Frequency Response TX-RX



Frequency Response TX-RX

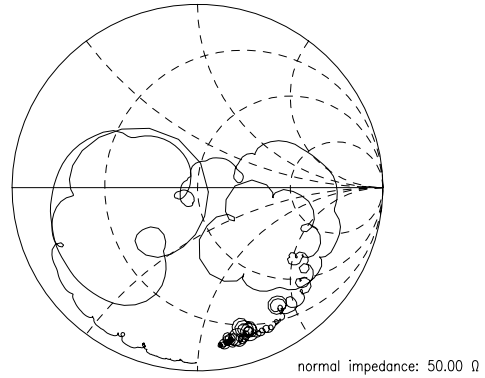
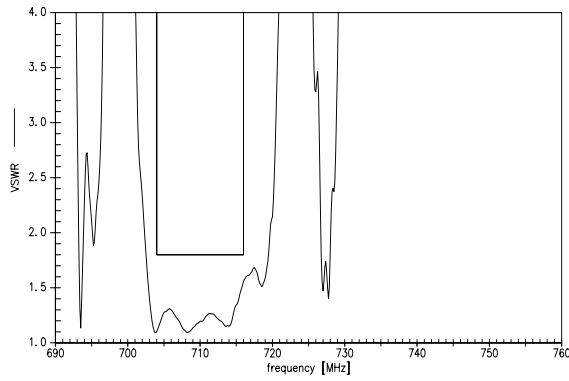


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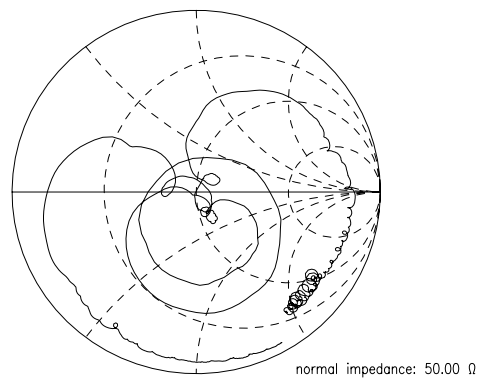
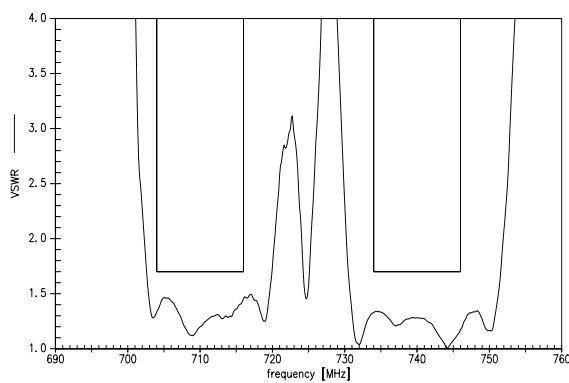
Data sheet



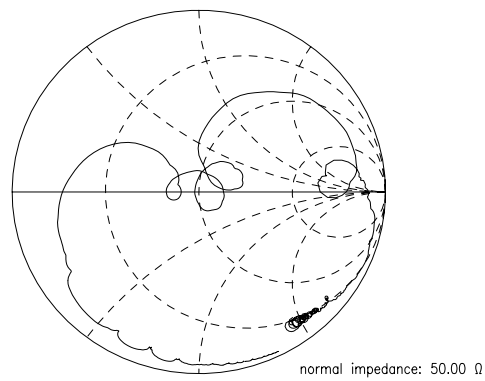
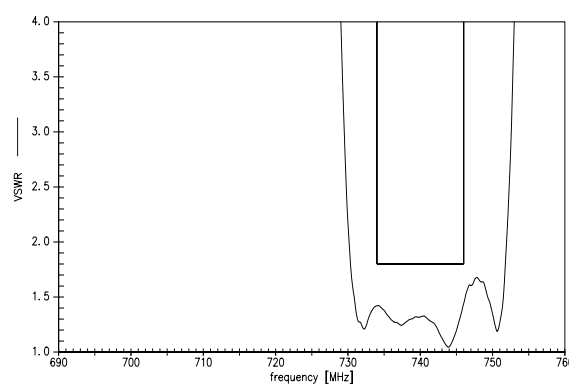
S11 VSWR (RX)



S22 VSWR (ANT)



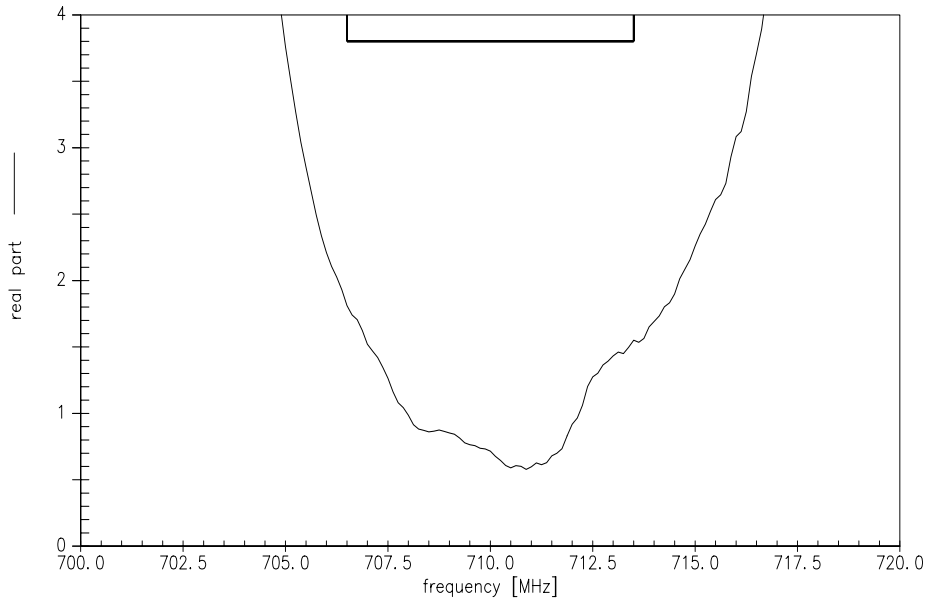
S33 VSWR (TX)



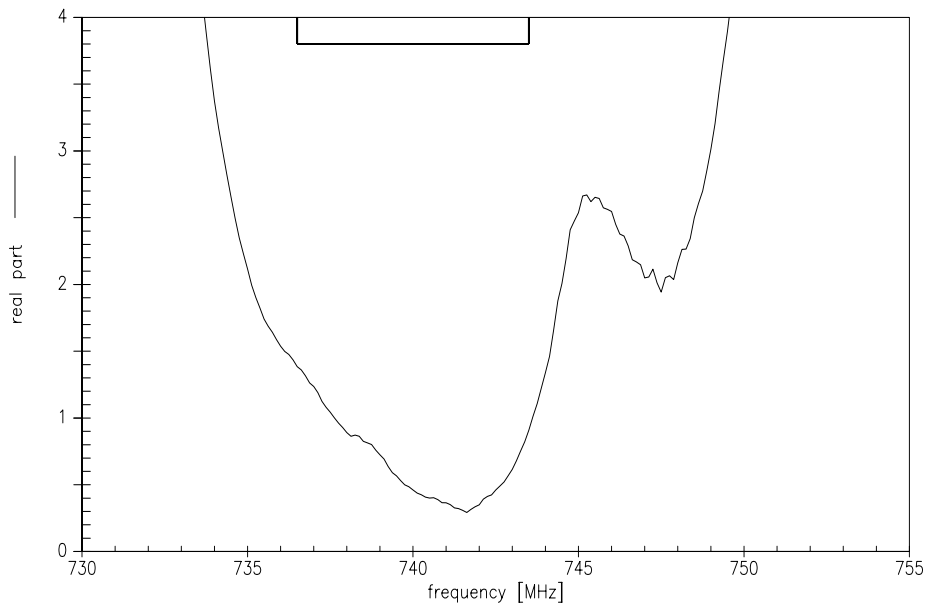
Data sheet



EVM RX



EVM TX



Please read *cautions and warnings and important notes* at the end of this document.

| | |
|-----------------------|--------------------------|
| SAW Components | B8017 |
| SAW Duplexer | 710.0 / 740.0 MHz |

Data sheet



References

| | |
|----------------------------|---|
| Type | B8017 |
| Ordering code | B39741B8017P810 |
| Marking and package | C61157-A3-A27 |
| Packaging | F61074-V8232-Z000 |
| Date codes | L_1126 |
| S-parameters | B8017_NB.s3p, B8017_WB.s3p 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. |
| Moldability | Before using in overmolding environment, please contact your EPCOS sales office. |
| 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 |

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Published by EPCOS AG
Systems, Acoustics, Waves Business Group
P.O. Box 80 17 09, 81617 Munich, GERMANY

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