



SAW Components

SAW Duplexer for Smallcell

Band 1 (3G/LTE)

| | |
|-----------------------|--------------------------|
| Series/type: | B8092 |
| Ordering code: | B39212B8092P810 |
| Date: | February 25, 2015 |
| Version: | 2.2 |

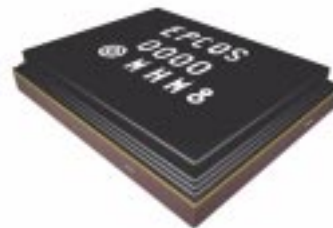
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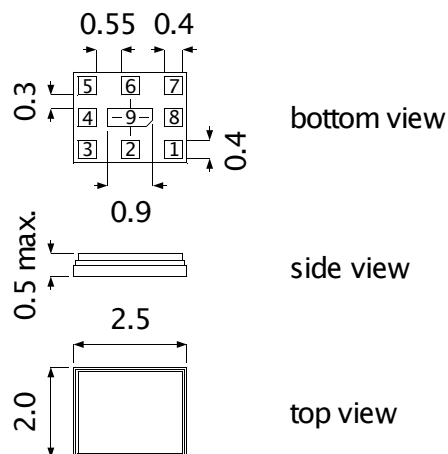
DataSheet

Application

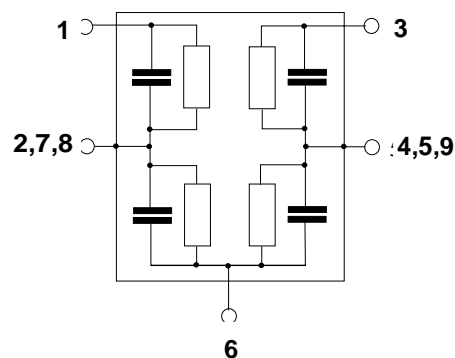
- Low-loss SAW duplexer for 3G/LTE smallcell systems (Band 1)
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 60 MHz
- High power durability
- Industrial qualification
- Rx = uplink = 1920-1980 MHz
- Tx = downlink = 2110-2170 MHz


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



DataSheet

Characteristics

| | |
|--------------------------------------|-----------------------------------|
| Temperature range for specification: | T = -10 °C to +85 °C |
| Antenna terminating impedance: | Z _{ANT} = 50 Ω // 2.2 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 | | 2140.0 | | MHz |
| Maximum insertion attenuation 2110.0 ... 2170.0 MHz | α _{max} | - | 2.0 | 2.5 | dB |
| Amplitude ripple (p-p) 2110.0 ... 2170.0 MHz | Δα | - | 0.8 | 1.6 | dB |
| Error Vector Magnitude 2112.5 ... 2167.5 MHz | EVM ¹⁾ | - | 0.5 | 1.5 | % |
| Input VSWR (TX port) 2110.0 ... 2170.0 MHz | | - | 1.7 | 2.0 | |
| Output VSWR (ANT port) 2110.0 ... 2170.0 MHz | | - | 1.5 | 2.0 | |
| Attenuation | α | | | | |
| 10.0 ... 1574.0 MHz | | 30 | 34 | - | dB |
| 843.0 ... 894.0 MHz | | 30 | 40 | - | dB |
| 1574.0 ... 1606.0 MHz | | 30 | 34 | - | dB |
| 1606.0 ... 1880.0 MHz | | 30 | 34 | - | dB |
| 1805.0 ... 1880.0 MHz | | 30 | 40 | - | dB |
| 1920.0 ... 1980.0 MHz | | 37 | 43 | - | dB |
| 2250.0 ... 2400.0 MHz | | 30 | 48 | - | dB |
| 2400.0 ... 2500.0 MHz | | 30 | 48 | - | dB |
| 2500.0 ... 2700.0 MHz | | 30 | 37 | - | dB |
| 2700.0 ... 3000.0 MHz | | 30 | 37 | - | dB |
| 2620.0 ... 2690.0 MHz | | 30 | 42 | - | dB |
| 3000.0 ... 3800.0 MHz | | 28 | 32 | - | dB |
| 3800.0 ... 4220.0 MHz | | 15 | 20 | - | dB |
| 4220.0 ... 4340.0 MHz | | 10 | 15 | - | dB |
| 4340.0 ... 5000.0 MHz | | 7 | 18 | - | dB |
| 5000.0 ... 6000.0 MHz | | 3 | 7 | - | dB |

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

DataSheet

Characteristics

| | |
|--------------------------------------|-----------------------------------|
| Temperature range for specification: | T = -10 °C to +85 °C |
| Antenna terminating impedance: | Z _{ANT} = 50 Ω // 2.2 nH |
| RX terminating impedance: | Z _{RX} = 50 Ω |
| TX terminating impedance: | Z _{TX} = 50 Ω |

| Characteristics ANT - RX | | min. | typ. @ 25 °C | max. | |
|---|-------------------|------|-----------------|------|-----|
| Center frequency | f _C | | 1950.0 | | MHz |
| Maximum insertion attenuation 1920.0 ... 1980.0 MHz | α _{max} | - | 2.3 | 3.7 | dB |
| Amplitude ripple (p-p) 1920.0 ... 1980.0 MHz | Δα | - | 0.9 | 2.2 | dB |
| Error Vector Magnitude 1922.5 ... 1977.5 MHz | EVM ¹⁾ | - | 1.5 | 3.0 | % |
| Input VSWR (ANT port) 1920.0 ... 1980.0 MHz | | - | 1.9 | 2.2 | |
| Output VSWR (RX port) 1920.0 ... 1980.0 MHz | | - | 2.0 | 2.3 | |
| Attenuation | α | | | | |
| 10.0 ... 1785.0 MHz | | 30 | 36 | - | dB |
| 1785.0 ... 1880.0 MHz | | 20 | 31 | - | dB |
| 1880.0 ... 1900.0 MHz | | 5 | 15 | - | dB |
| 2000.0 ... 2110.0 MHz | | 2.5 | 12 | - | dB |
| 2110.0 ... 2170.0 MHz | | 43 | 48 | - | dB |
| 2255.0 ... 2400.0 MHz | | 30 | 33 | - | dB |
| 2400.0 ... 2500.0 MHz | | 25 | 30 | - | dB |
| 2500.0 ... 3840.0 MHz | | 15 | 20 | - | dB |
| 3840.0 ... 3960.0 MHz | | 20 | 24 | - | dB |
| 3960.0 ... 5000.0 MHz | | 20 | 25 | - | dB |
| 5000.0 ... 5760.0 MHz | | 15 | 30 | - | dB |
| 5760.0 ... 5940.0 MHz | | 15 | 30 | - | dB |

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

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Characteristics

| | |
|--------------------------------------|-----------------------------------|
| Temperature range for specification: | T = -10 °C to +85 °C |
| TX terminating impedance: | Z _{Tx} = 50 Ω |
| ANT terminating impedance: | Z _{Ant} = 50 Ω // 2.2 nH |
| RX terminating impedance: | Z _{Rx} = 50 Ω |

| Characteristics Rx-Tx | | min. | typ. @ 25 °C | max. | |
|-----------------------|-----------------------|------|-----------------|------|----|
| Attenuation | α | | | | |
| | 1920.0 ... 1980.0 MHz | 42 | 48 | - | dB |
| | 2110.0 ... 2170.0 MHz | 47 | 52 | - | dB |

Maximum Ratings

| | | | | |
|---|------------------|------------------|-----|--|
| Storage temperature range | T _{stg} | -40/+85 | °C | |
| DC voltage | V _{DC} | 0 | V | |
| ESD voltage | V _{ESD} | 50 ¹⁾ | V | |
| Input power at pin 1 | | | | machine model, 1 pulse source and load impedance 50 Ω Pin 28dBm average - 39 dBm peak } LTE 5 MHz downlink T = 55 °C, 100.000 h |
| 2110.0 ...2170.0 MHz | P _{in} | 28 ²⁾ | dBm | |
| elsewhere | P _{in} | 10 | dBm | |
| Operating lifetime with Output power at antenna | | | | source and load impedance 50 Ω |
| 2110.0 ...2170.0 MHz | P _{out} | 24 ³⁾ | dBm | Continuous wave T=55 °C, 100khrs |

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

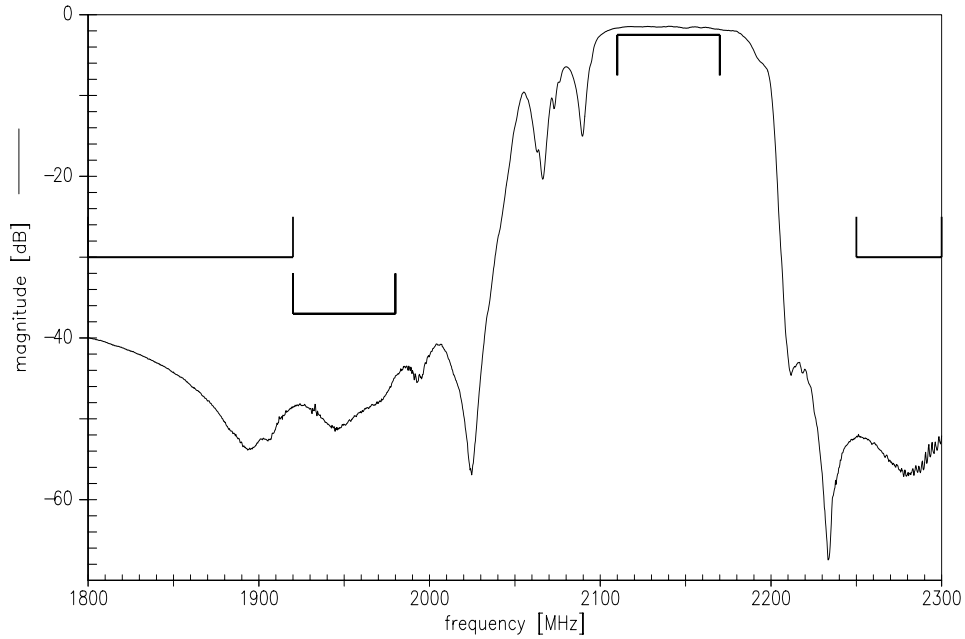
²⁾ Time to failure (TTDF) according to accelerated power durability tests, and wear out models.

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

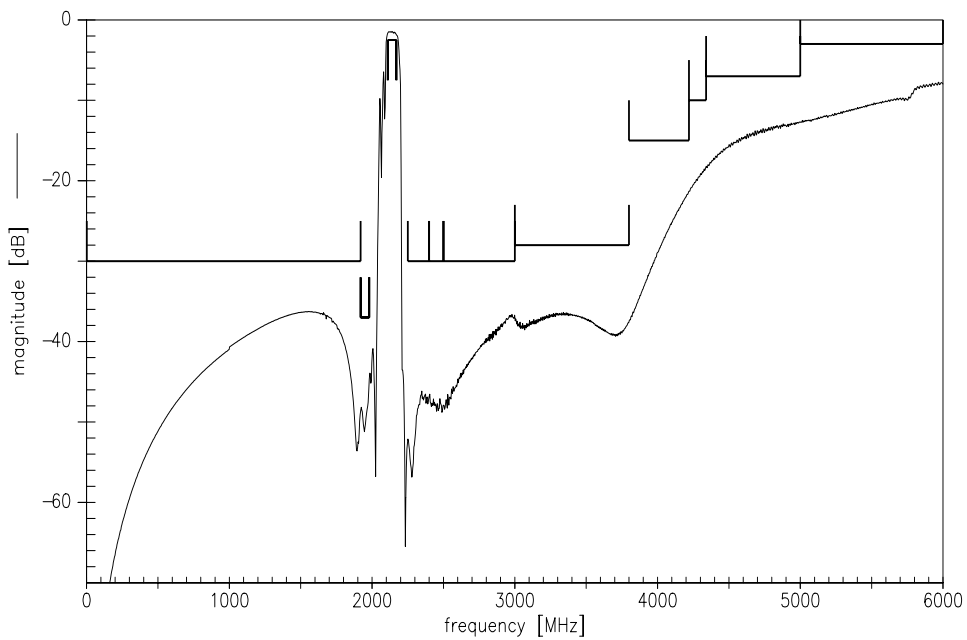
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Frequency Response TX-ANT



Frequency Response TX-ANT

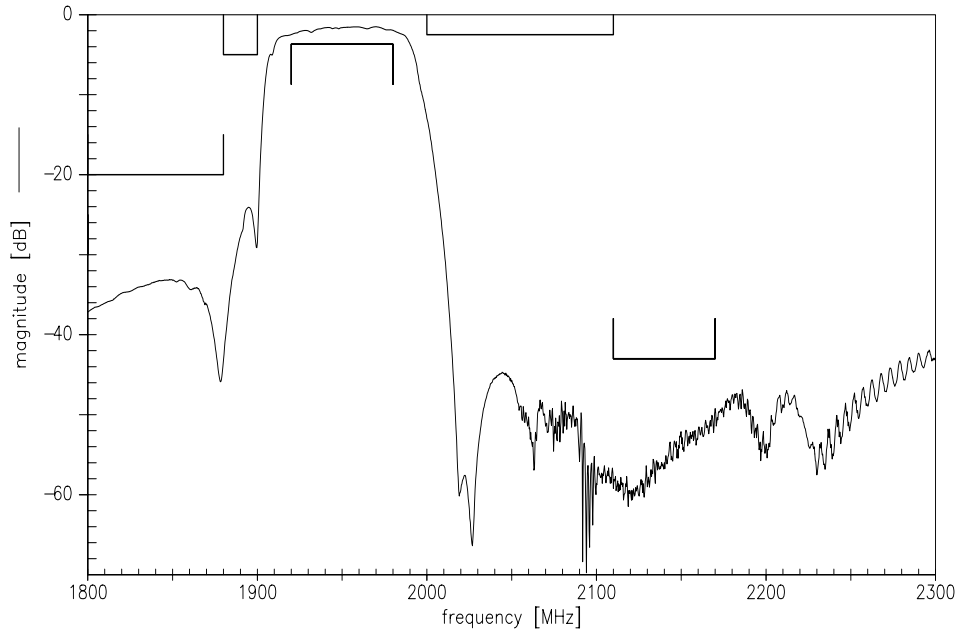


Please read *cautions and warnings* and *important notes* at the end of this document.

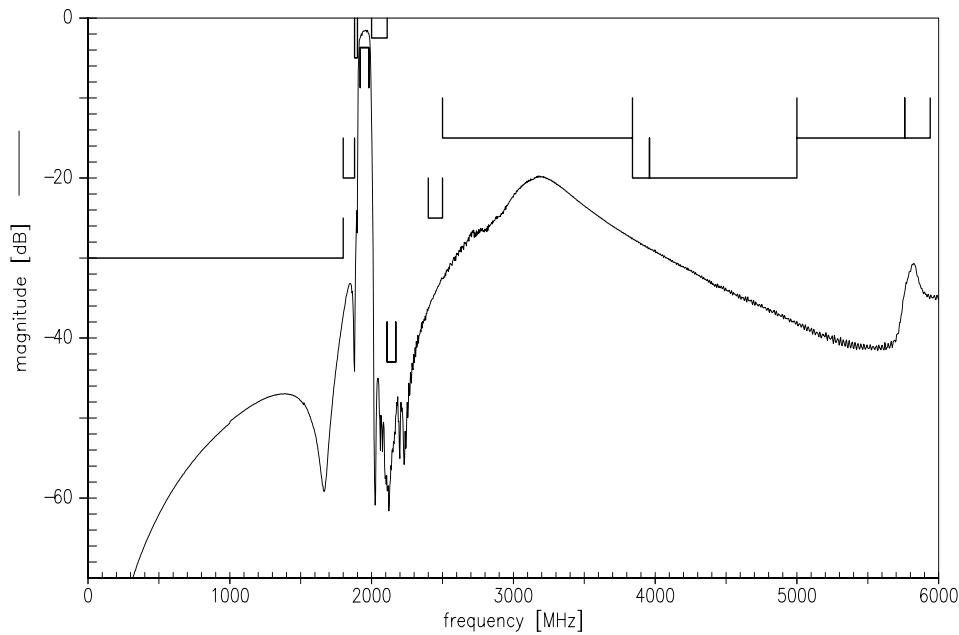
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Frequency Response ANT-RX



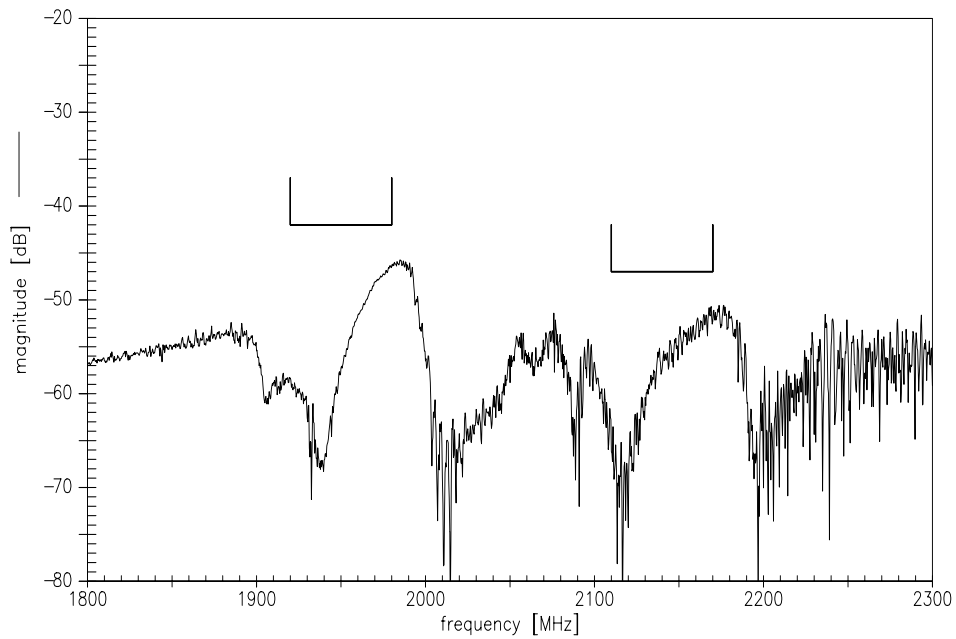
Frequency Response ANT-RX



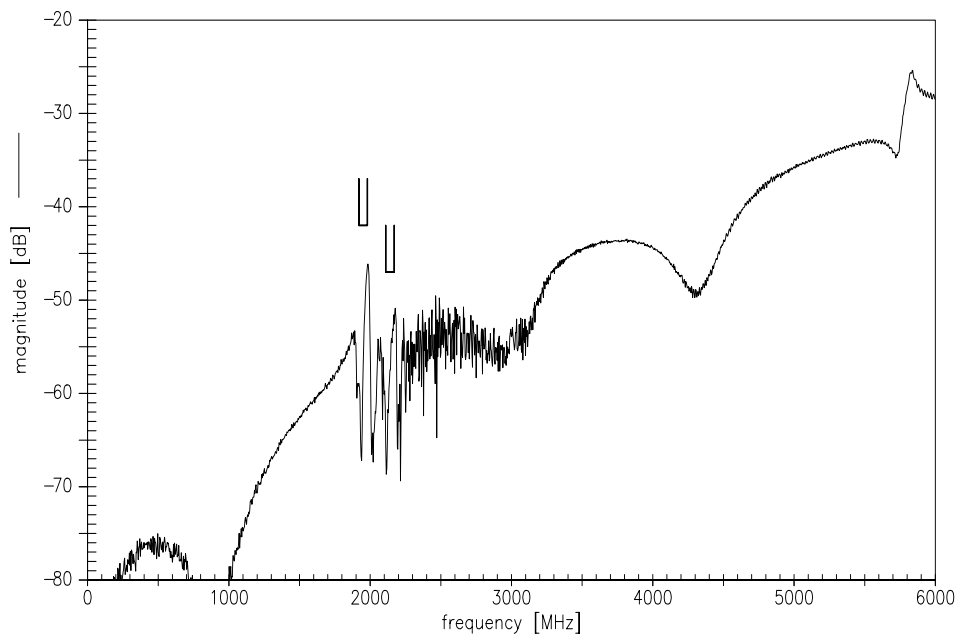
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Frequency Response TX-RX



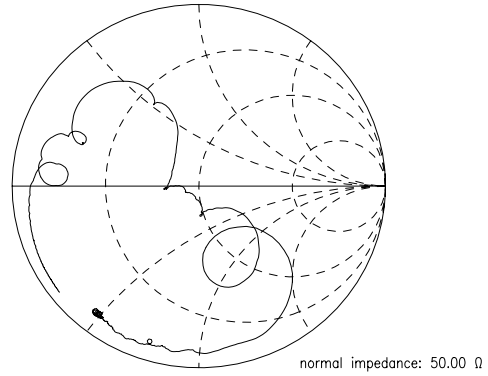
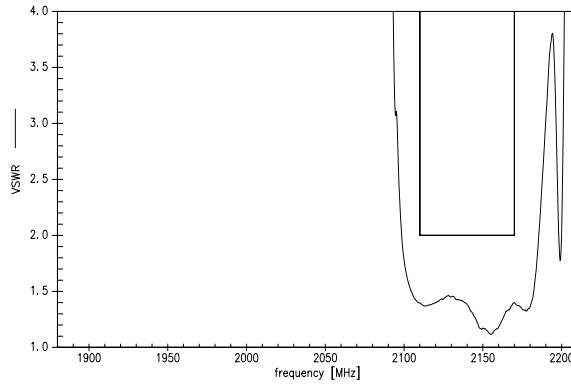
Frequency Response TX-RX



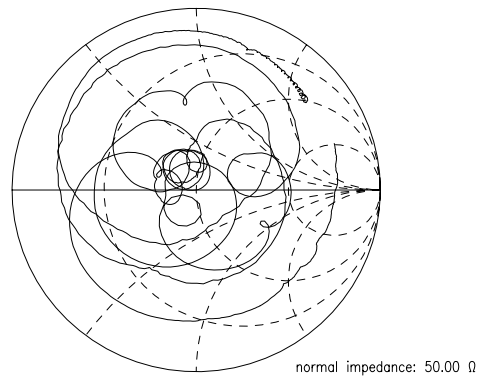
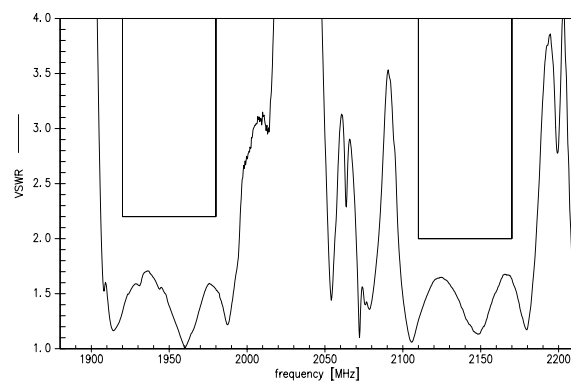
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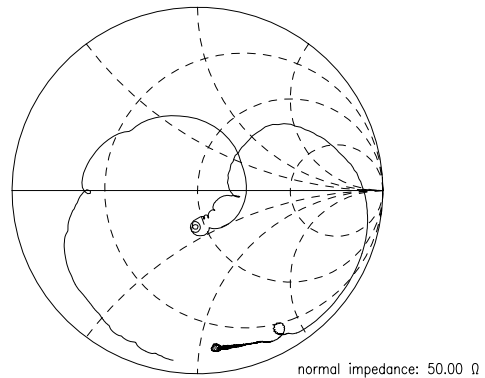
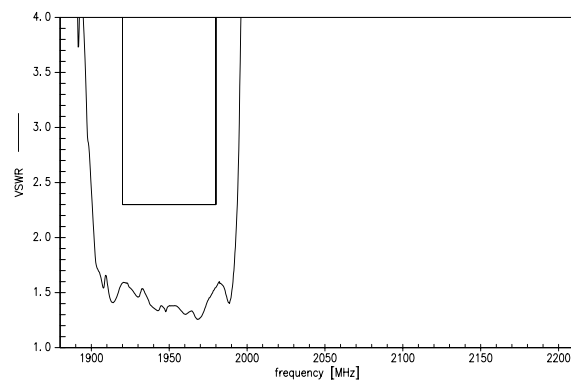
S11 VSWR (TX)



S22 VSWR (ANT)



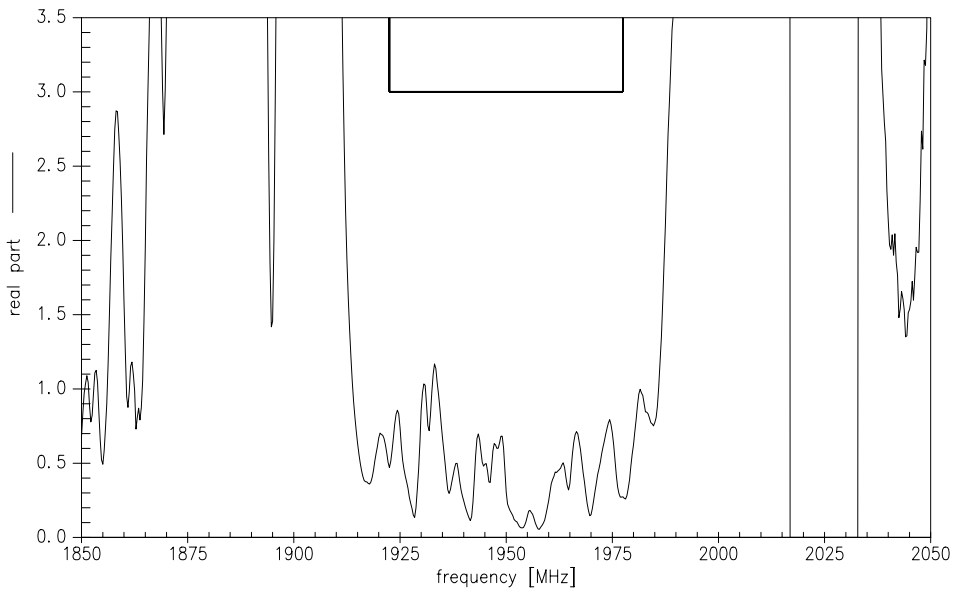
S33 VSWR (RX)



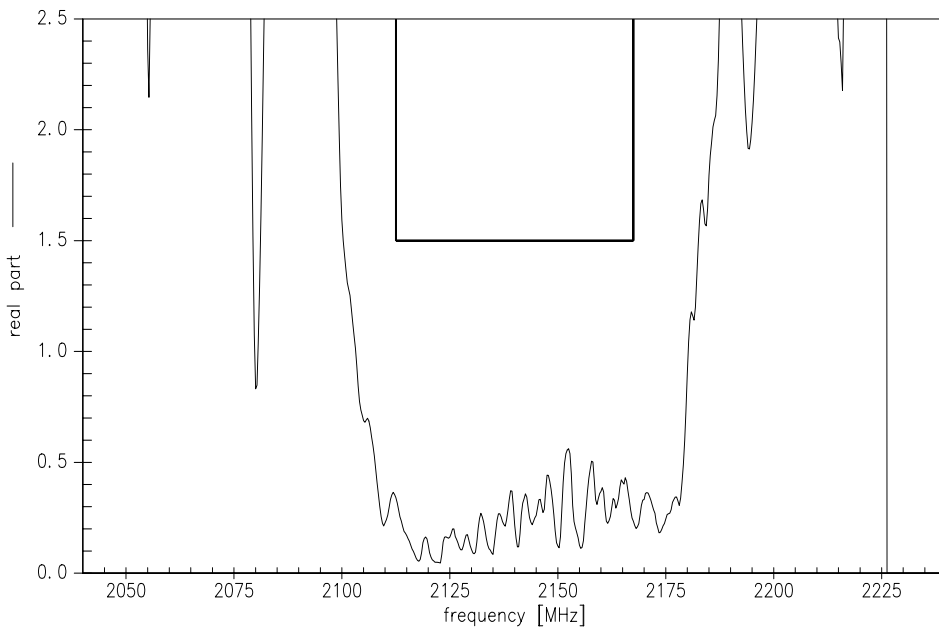
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EVM Rx



EVM Tx



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References

| | |
|----------------------------|---|
| Type | B8092 |
| Ordering code | B39212B8092P810 |
| Marking and package | C61157-A8-A61 |
| Packaging | F61074-V8232-Z000 |
| Date codes | L_1126 |
| S-parameters | B8092_NB.s3p, B8092_WB.s3p see file header for port/pin assignement 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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