



# SAW Components

## BAW Duplexer

**Series/Type: B7692**

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B39202B7692A710		2012-12-21	2013-12-31	2014-02-28

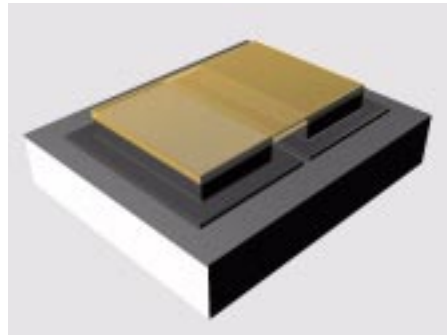
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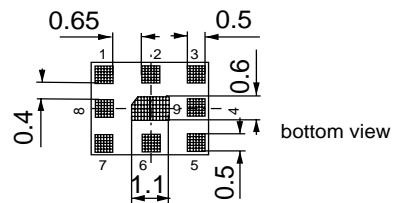
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**Application**

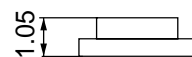
- Low-loss BAW duplexer for mobile telephone WCDMA Band II systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 60 MHz


**Features**

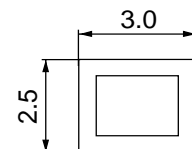
- Package size 3.0 x 2.5 mm<sup>2</sup>, max. height 1.15 mm
- RoHS compatible
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- Fully matched by integrated matching network
- **Electrostatic Sensitive Device (ESD)**



bottom view



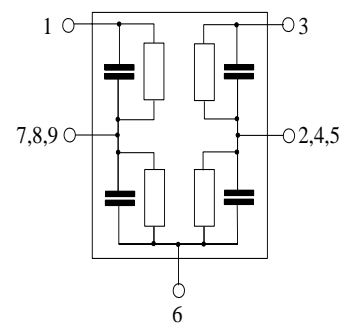
side view



top view

**Pin configuration**

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



**Data Sheet**

**Characteristics**

Temperature range for specification:	T = -10 °C to +85 °C
ANT terminating impedance:	Z <sub>ANT</sub> = 50 Ω
RX terminating impedance:	Z <sub>RX</sub> = 50 Ω
TX terminating impedance:	Z <sub>TX</sub> = 50 Ω

Characteristics TX - ANT	min.	typ. @ 25°C	max.	
<b>Center frequency</b> $f_c$		1880.0		MHz
<b>Maximum insertion attenuation</b>				
@f <sub>Carrier</sub> 1852.4 ... 1907.6MHz $\alpha_{WCDMA}^{1)}$	-	2.2	3.0 <sup>2)</sup>	dB
@f <sub>Carrier</sub> 1852.4 ... 1907.6MHz $\alpha_{WCDMA}^{1)}$	-	2.2	3.2 <sup>3)</sup>	dB
<b>Amplitude ripple (p-p)</b>				
@f <sub>Carrier</sub> 1852.4 ... 1907.6MHz $\alpha_{WCDMA}^{1)}$	-	1.0	2.0	dB
<b>Error Vector Magnitude</b>				
@f <sub>Carrier</sub> 1852.4 ... 1907.6MHz EVM <sup>4)</sup>	-	1.2	3.8	%
<b>Input VSWR (TX port)</b>				
1850.0 ... 1910.0MHz	-	1.7	2.1 <sup>2)</sup>	
1850.0 ... 1910.0MHz	-	1.7	2.2 <sup>3)</sup>	
<b>Output VSWR (ANT port)</b>				
1850.0 ... 1910.0MHz	-	1.8	2.2	
<b>Attenuation</b> $\alpha$				
50.0 ... 1574.0MHz	30	34	-	dB
1574.4 ... 1576.5MHz	36	41	-	dB
1770.0 ... 1830.0MHz	10	22	-	dB
@f <sub>Carrier</sub> 1932.4 ... 1987.6MHz $\alpha_{WCDMA}^{1)}$	45	55	-	dB
2110.0 ... 2155.0MHz	20	38	-	dB
2400.0 ... 2500.0MHz	20	28	-	dB
3700.0 ... 3820.0MHz	14	20	-	dB
3820.0 ... 6000.0MHz	5	8	-	dB

1) Attenuation of WCDMA signal ("Powertransferfunction"). Please refer to annotation on page (6).

2) -10 to +55 °C

3) +55 to +85 °C

4) 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
ANT terminating impedance:	Z <sub>ANT</sub> = 50 Ω
RX terminating impedance:	Z <sub>RX</sub> = 50 Ω
TX terminating impedance:	Z <sub>TX</sub> = 50 Ω

Characteristics ANT- RX	min.	typ. @ 25°C	max.	
<b>Center frequency</b> $f_C$		1960.0		MHz
<b>Maximum insertion attenuation</b> @f <sub>Carrier</sub> 1932.4 ... 1987.6MHz α <sub>WCDMA</sub> <sup>1)</sup>	-	2.6	3.5	dB
<b>Amplitude ripple (p-p)</b> @f <sub>Carrier</sub> 1932.4 ... 1987.6MHz α <sub>WCDMA</sub> <sup>1)</sup>	-	1.3	2.0	dB
<b>Error Vector Magnitude</b> @f <sub>Carrier</sub> 1932.4 ... 1987.6MHz EVM <sup>2)</sup>	-	2.0	3.8 <sup>3)</sup>	%
@f <sub>Carrier</sub> 1932.4 ... 1987.6MHz EVM <sup>2)</sup>	-	2.0	6.0 <sup>4)</sup>	%
<b>Input VSWR (ANT port)</b> 1930.0 ... 1990.0MHz	-	1.8	2.2	
<b>Output VSWR (RX port)</b> 1930.0 ... 1990.0MHz	-	1.8	2.2	
<b>Attenuation</b> α	-			
0.3 ... 1770.0MHz	30	35	-	dB
1770.0 ... 1850.0MHz	38	44	-	dB
@f <sub>Carrier</sub> 1852.4 ... 1907.6MHz α <sub>WCDMA</sub> <sup>1)</sup>	48	55	-	dB
2075.0 ... 2400.0MHz	15	40	-	dB
2400.0 ... 2500.0MHz	35	48	-	dB
3860.0 ... 3980.0MHz	30	50	-	dB
5620.0 ... 5820.0MHz	15	40	-	dB

1) Attenuation of WCDMA signal ("Powertransferfunction"). Please refer to annotation on page (6).

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

3) +10 °C to +85 °C.

4) -10 °C to +10 °C.

**Data Sheet**

**Characteristics**

Temperature range for specification:	T = -10 °C to +85 °C
Antenna terminating impedance:	Z <sub>ANT</sub> = 50 Ω
RX terminating impedance:	Z <sub>RX</sub> = 50 Ω
TX terminating impedance:	Z <sub>TX</sub> = 50 Ω

IMD Product Level Limits at Rx frequencies and at Rx port <sup>1)</sup> (1930 ... 1990 MHz):		min.	typ. @ 25 °C	max.	
Blocker 1	80.0MHz	-	-112	-	dBm
Blocker 2	1770.0 ... 1830.0MHz	-	-110	-	dBm
Blocker 3	3840.0MHz	-	-86	-	dBm

<sup>1)</sup> IMD product level limits for power levels P<sub>TX</sub> = 21 dBm (antenna port output power) and P<sub>Blocker</sub> = -15 dBm (antenna port input power).

Characteristics TX - RX		min.	typ. @ 25 °C	max.	
<b>Isolation</b>	α				
@f <sub>Carrier</sub> 1852.4 ... 1907.6 MHz	α <sub>WCDMA</sub> <sup>1)</sup>	50	54	-	dB
@f <sub>Carrier</sub> 1932.4 ... 1987.6 MHz	α <sub>WCDMA</sub> <sup>1)</sup>	48	54	-	dB

<sup>1)</sup> Attenuation of WCDMA signal ("Powertransferfunction"). Please refer to annotation on page (6).


**Maximum ratings**

Temperature range for specification	T	-10/+85	°C	
Operable temperature range <sup>1)</sup>	T	-30/+85	°C	
Storage temperature range	T <sub>stg</sub>	-40/+85	°C	
DC voltage	V <sub>DC</sub>	3	V	
ESD voltage	V <sub>ESD</sub>	100 <sup>2)</sup>	V	machine model, 10 pulses
Input power at 1850.0 ... 1910.0 MHz	P <sub>IN</sub>	30	dBm	} source and load impedance 50 Ω continuous wave T = 55° C, 50.000 h
elsewhere		10	dBm	

1) Defines the temperature range in which the BAW device keeps its typical characteristics, however the specification values are not guaranteed.

2) acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.

**Annotation for characteristics section**

Attenuation of WCDMA signal ("Powertransferfunction",  $\alpha_{\text{WCDMA}}$ ) is determined by

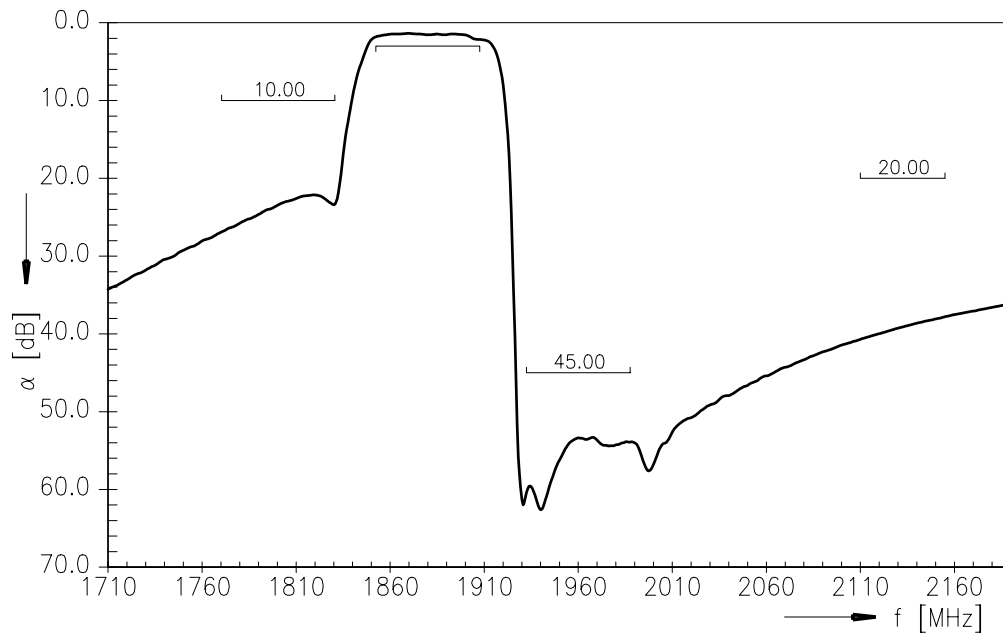
$$\int_{-\infty}^{\infty} |S_{\text{ds21}}(f)H_{\text{RRC}}(f - f_{\text{Carrier}})|^2 df$$

$f_{\text{Carrier}}$  according to 3GPP TS 25.101 (e.g. for UMTS-Passband,  $f_{\text{Carrier}}$  ranges from 882.4 MHz (lowest Tx channel) to 912.6 MHz (highest Tx channel)).  $H_{\text{RRC}}(f)$  is the transfer function of the root-raised cosine transmit pulse shaping filter according to 3GPP TS 25.101 with the following normalization:

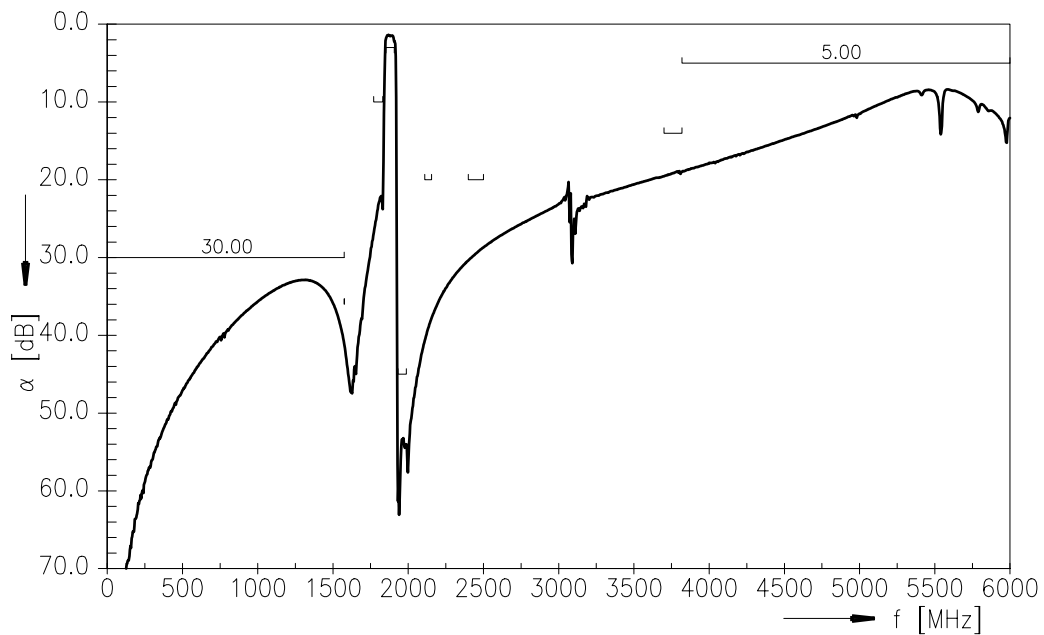
$$\int_{-\infty}^{\infty} |H_{\text{RRC}}(f)|^2 df = 1$$



Frequency Response TX-ANT (PTF)

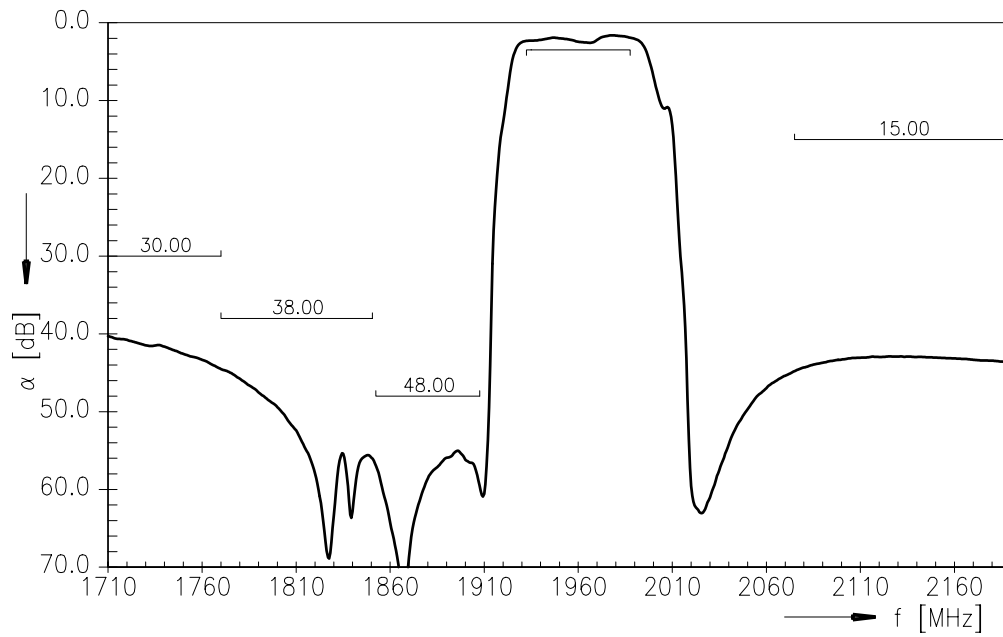


Frequency Response TX-ANT (wideband)

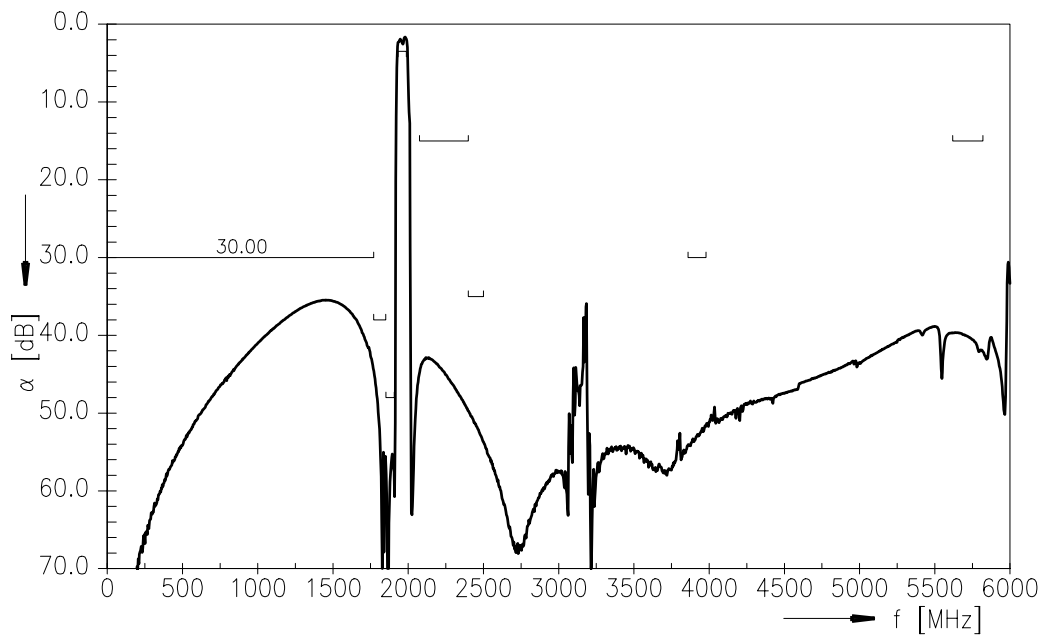




Frequency Response ANT-RX (PTF)



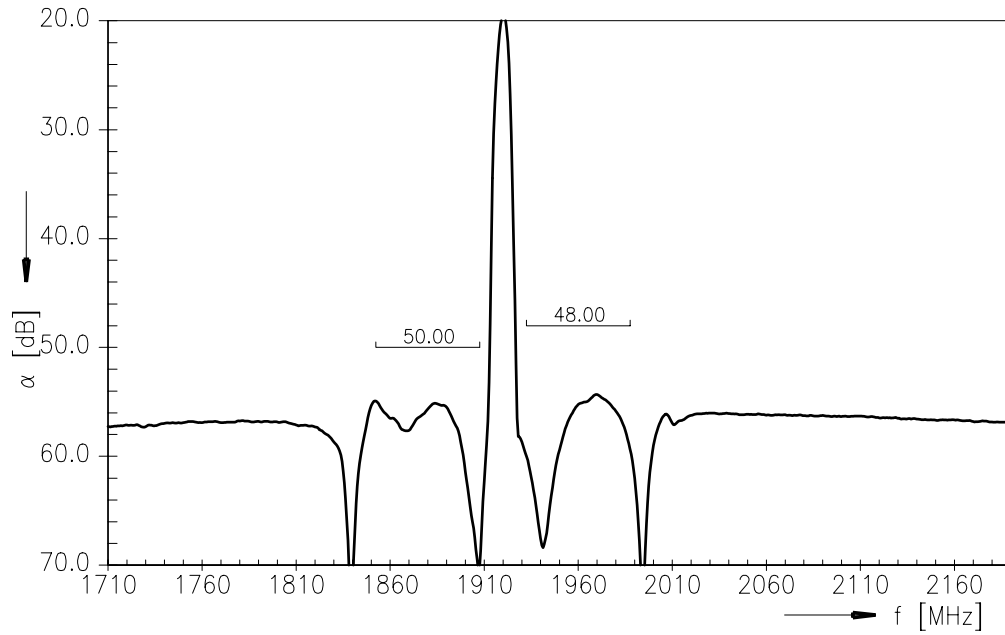
Frequency Response ANT-RX (wideband)







Frequency Response TX-RX (PTF)




**References**

<b>Type</b>	B7692
<b>Ordering code</b>	B39202B7692A710
<b>Marking and package</b>	C61157-A3-A47
<b>Packaging</b>	F6107-V8211-Z000
<b>Date codes</b>	L_1126
<b>S-parameters</b>	B7692_NB.s3p B7692_WB.s3p See file header for pin/port assignment
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	defined as compatible with the following documents: "DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment."

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**Published by EPCOS AG**  
**Surface Acoustic Wave Components Division**  
**P.O. Box 80 17 09, 81617 Munich, GERMANY**

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