



SAW Components

BAW Duplexer

WCDMA Band II

Series/type:	B7692
Ordering code:	B39202B7692A710
Date:	December 11, 2008
Version:	2.0



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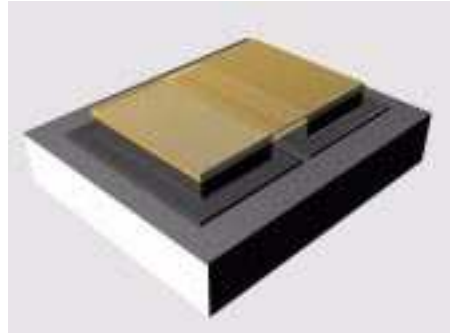
1880.0 / 1960.0 MHz

Data Sheet



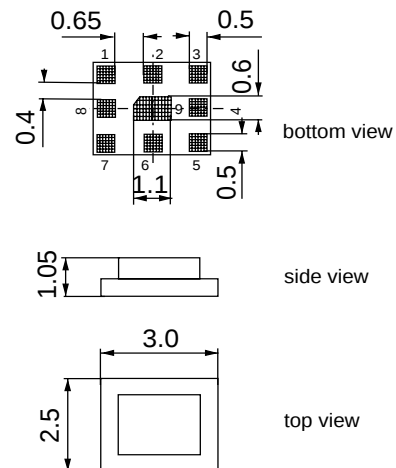
Application

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



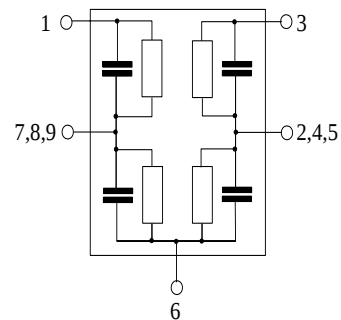
Features

- Package size 3.0 x 2.5 mm², 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)**



Pin configuration

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





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Characteristics

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

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



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

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



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Characteristics

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

IMD Product Level Limits at Rx frequencies and at Rx port ¹⁾ (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

¹⁾ IMD product level limits for power levels P_{TX}= 21dBm (antenna port output power) and P_{Blocker}= -15dBm (antenna port input power).

Characteristics TX - RX	min.	typ. @ 25 °C	max.	
Isolation α				
@f _{Carrier} 1852.4 ... 1907.6 MHz α _{WCDMA} ¹⁾	50	54	-	dB
@f _{Carrier} 1932.4 ... 1987.6 MHz α _{WCDMA} ¹⁾	48	54	-	dB

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



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Maximum ratings

Temperature range for specification	T	-10/+85	°C	
Operable temperature range ¹⁾	T	-30/+85	°C	
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	3	V	
ESD voltage	V _{ESD}	100 ²⁾	V	machine model, 10 pulses
Input power at 1850.0 ... 1910.0 MHz	P _{IN}	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", α_{WCDMA}) is determined by

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

f_{Carrier} according to 3GPP TS 25.101 (e.g. for UMTS-Passband, f_{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:

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



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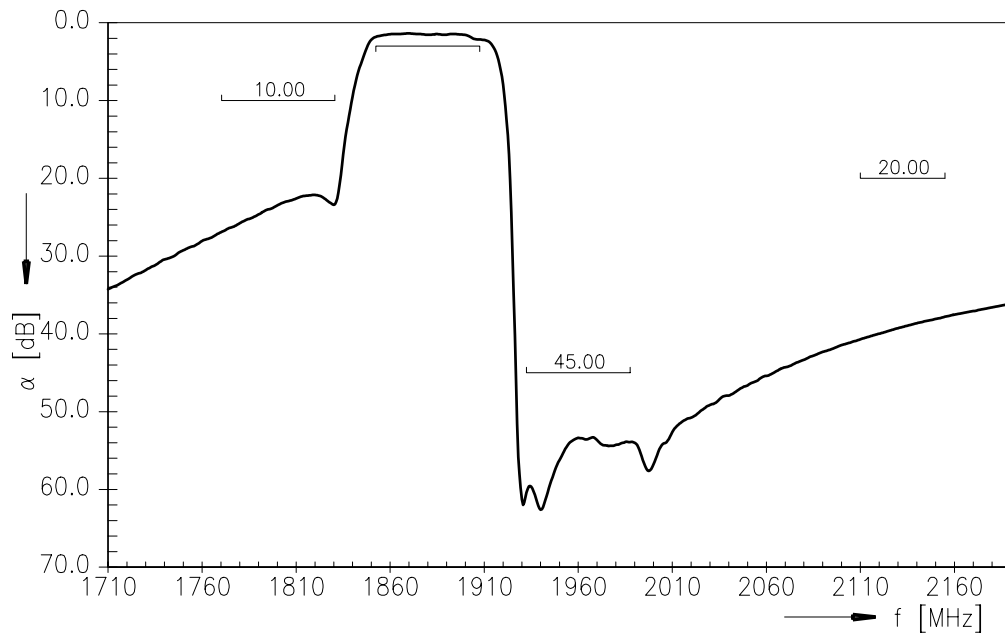
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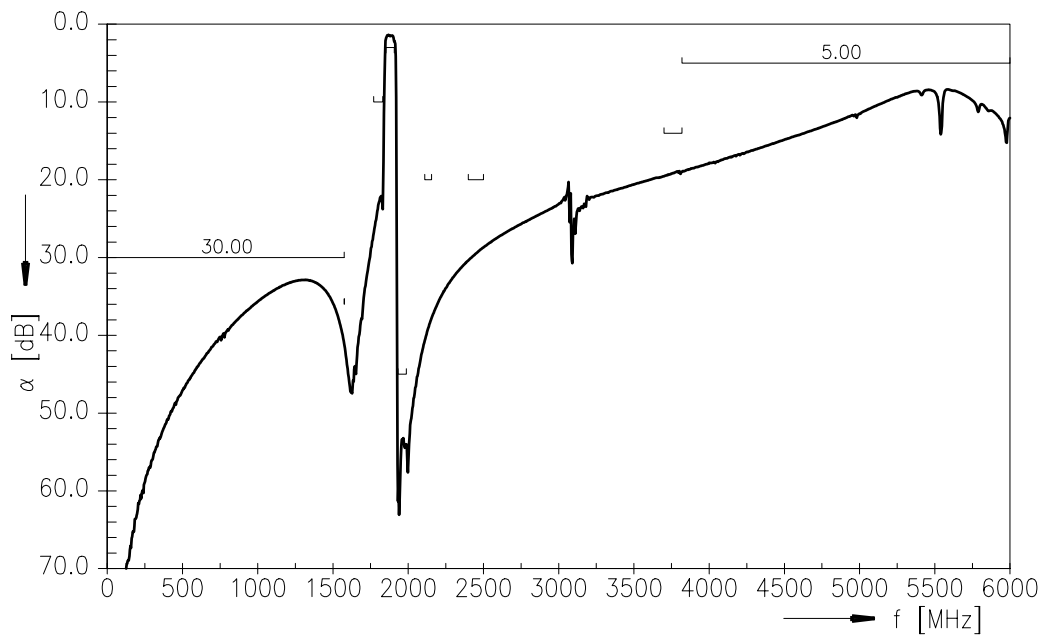
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Frequency Response TX-ANT (PTF)



Frequency Response TX-ANT (wideband)



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



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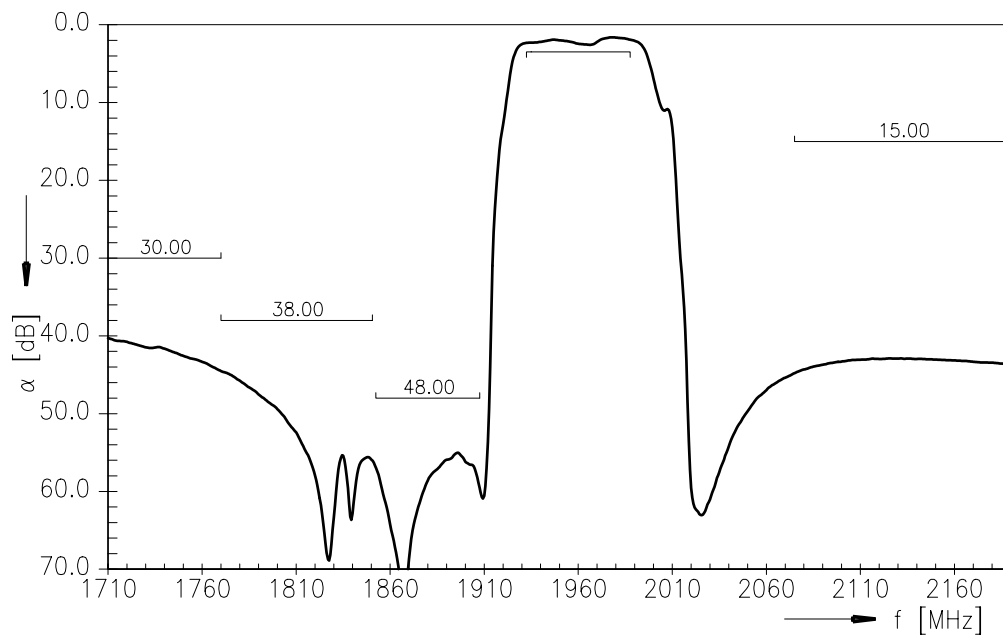
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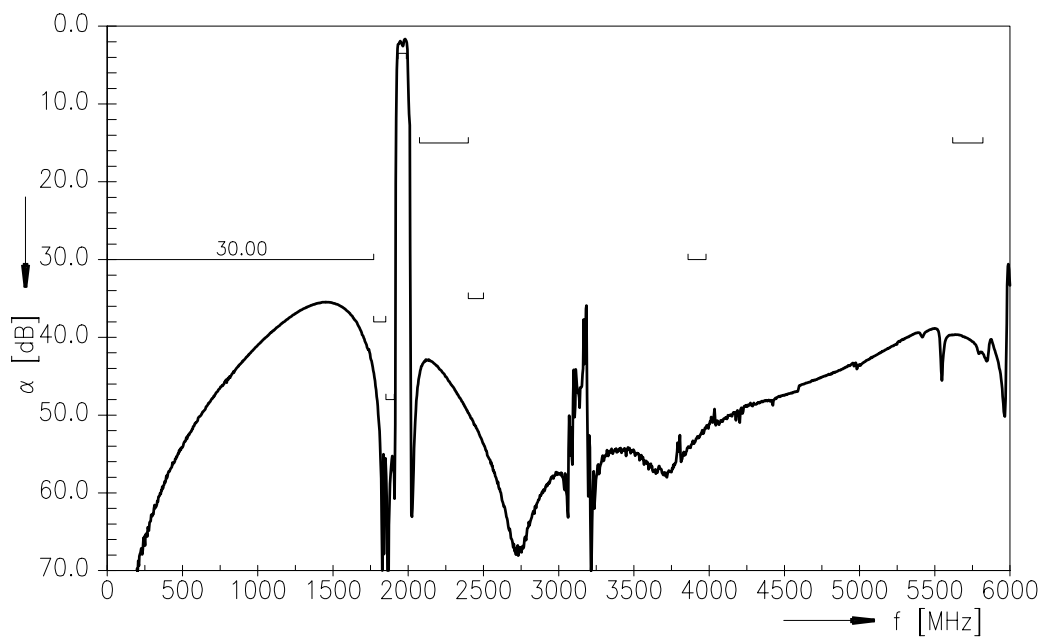
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Frequency Response ANT-RX (PTF)



Frequency Response ANT-RX (wideband)



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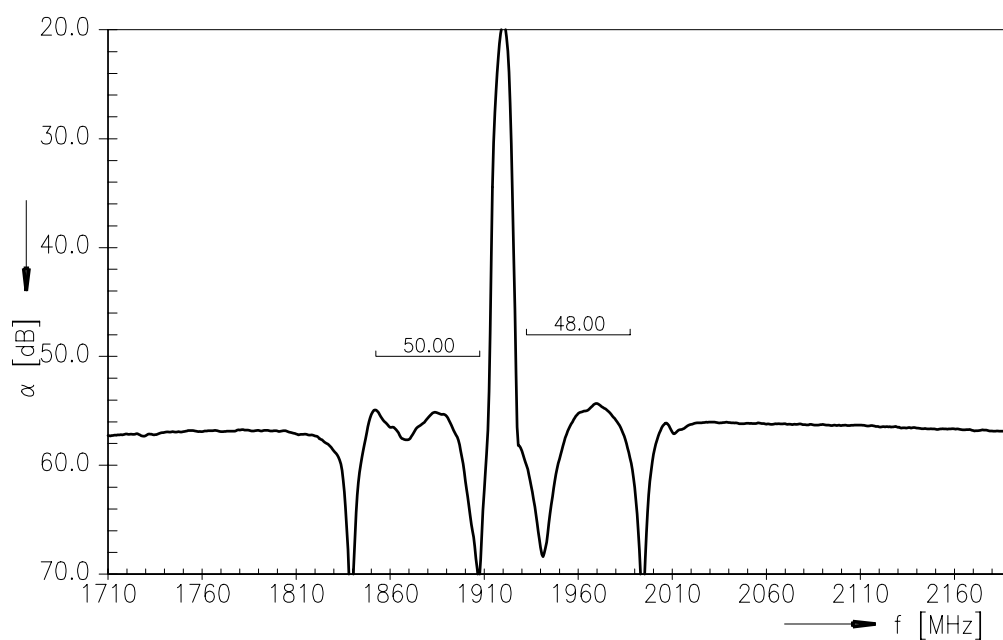
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Frequency Response TX-RX (PTF)



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**References**

Type	B7692
Ordering code	B39202B7692A710
Marking and package	C61157-A3-A47
Packaging	F6107-V8211-Z000
Date codes	L_1126
S-parameters	B7692_NB.s3p B7692_WB.s3p See file header for pin/port assignment
Soldering profile	S_6001
RoHS compatible	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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