SAW Components

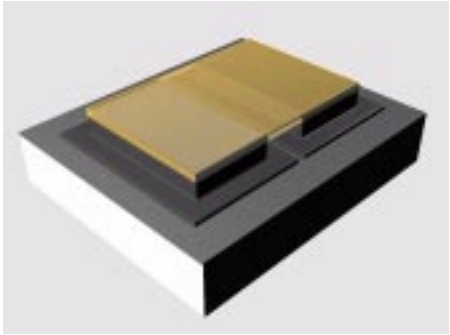
BAW Duplexer

WCDMA Band II

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

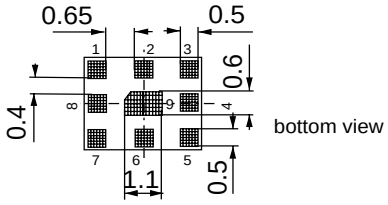
Application

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

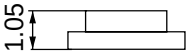


Features

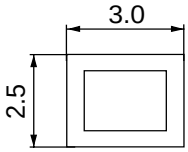
- Package size 3.0 x 2.5 mm^2, max. height 1.15 mm
- RoHS compatible
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- Fully matched by integrated matching network
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)



bottom view



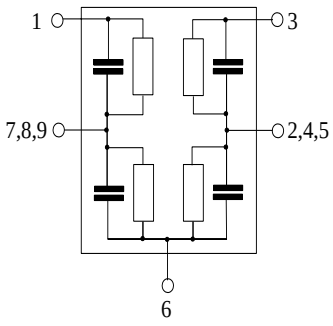
side view



top view

Pin configuration

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



Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω
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		1880.0		MHz
Maximum insertion attenuation					
@$f_{Carrier}$ 1852.4 ... 1907.6 MHz	α_{WCDMA} 1)	-	2.2	3.0 2)	dB
@$f_{Carrier}$ 1852.4 ... 1907.6 MHz	α_{WCDMA} 1)	-	2.2	3.2 3)	dB
Amplitude ripple (p-p)		-			
@$f_{Carrier}$ 1852.4 ... 1907.6 MHz	α_{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	α_{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.

Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω
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		1960.0		MHz
Maximum insertion attenuation					
@$f_{Carrier}$ 1932.4 ... 1987.6 MHz	α_{WCDMA} [1]	-	2.6	3.5	dB
Amplitude ripple (p-p)					
@$f_{Carrier}$ 1932.4 ... 1987.6 MHz	α_{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	α_{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.

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).

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	P_{IN}			source and load impedance 50 Ω
1850.0 ... 1910.0 MHz		30	dBm	} continuous wave
elsewhere		10	dBm	} T = 55˚C, 50.000 h

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

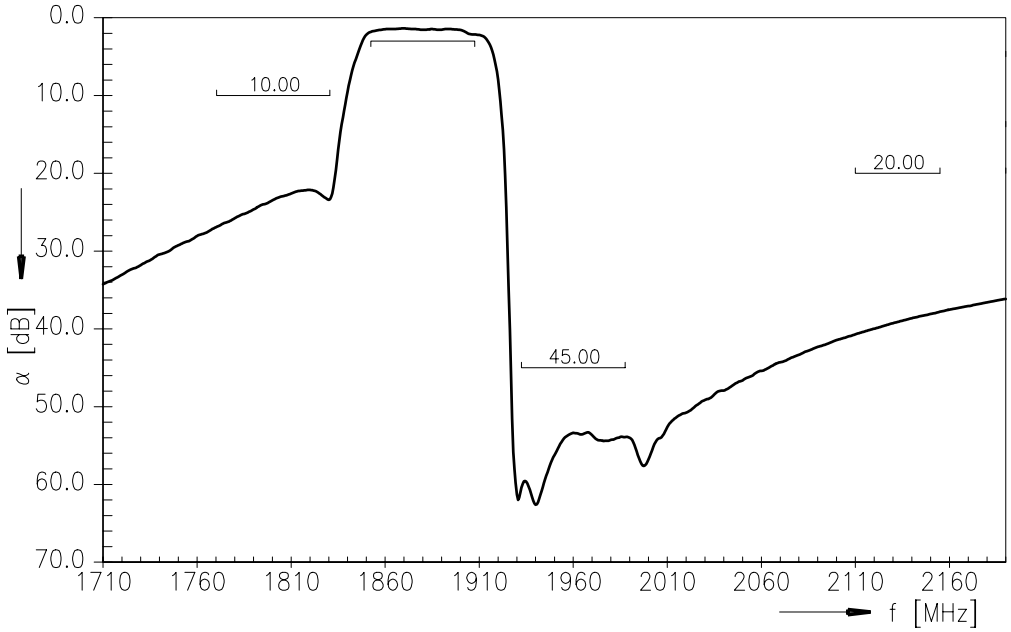
Attenuation of WCDMA signal ("Powertransferfunction", α_{WCDMA}) is determined by

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

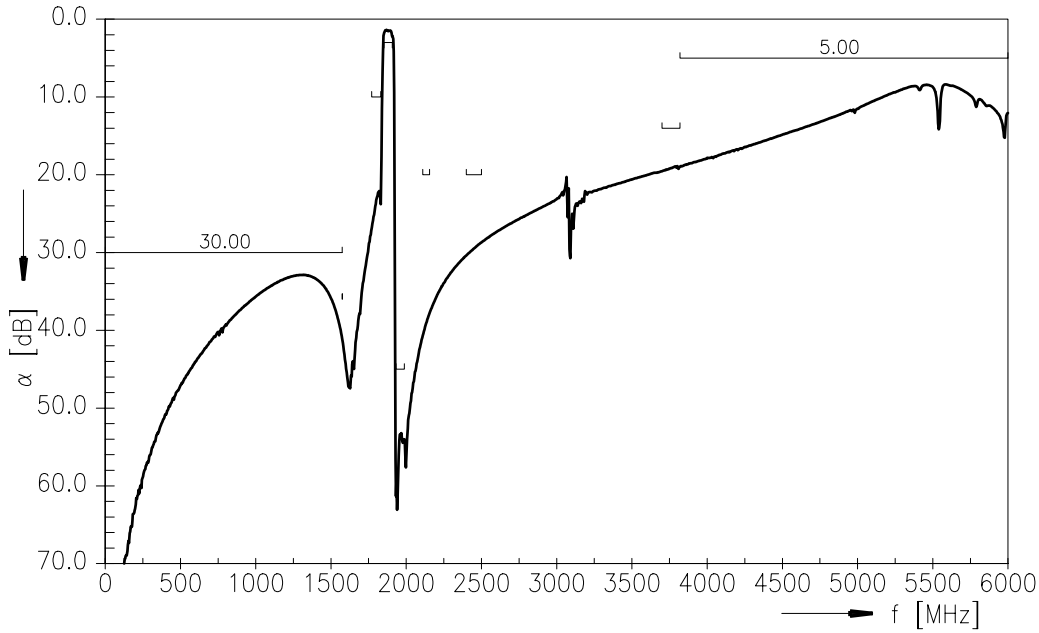
$f_{Carrier}$ according to 3GPP TS 25.101 (e.g. for UMTS-Passband, $f_{Carrier}$ ranges from 882.4 MHz (lowest Tx channel) to 912.6 MHz (highest Tx channel)). $H_{RRC}(f)$ is the transfer function of the root-raised cosine transmit pulse shaping filter according to 3GPP TS 25.101 with the following normalization:

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

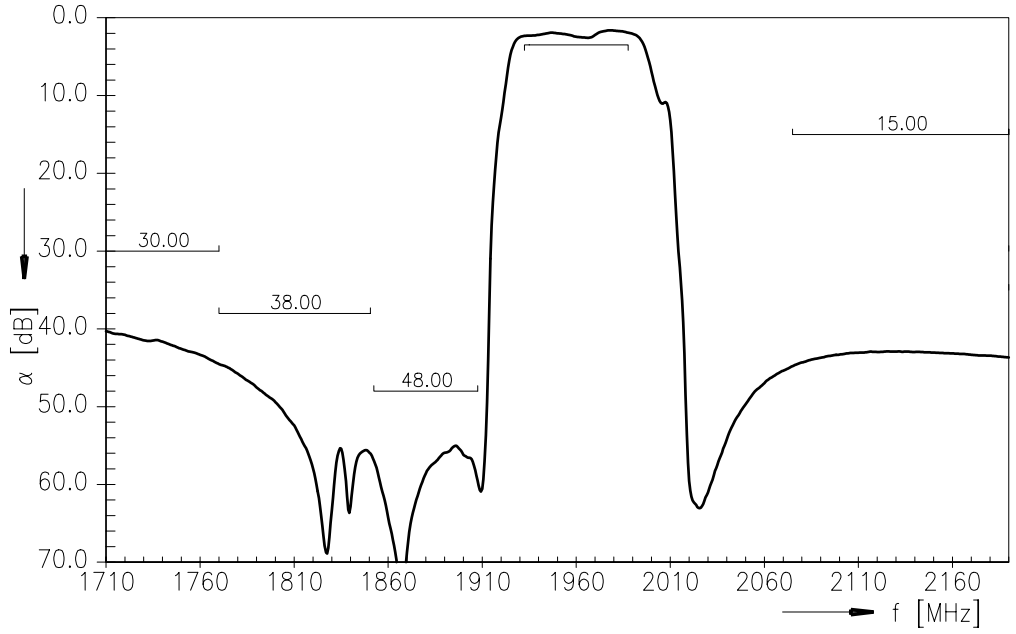
Frequency Response TX-ANT (PTF)



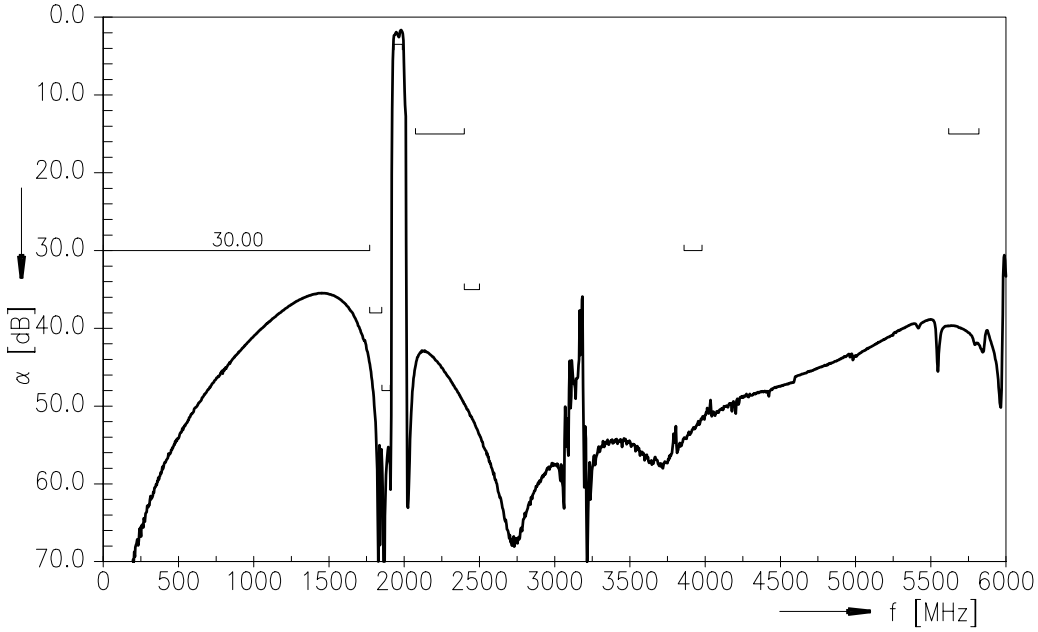
Frequency Response TX-ANT (wideband)



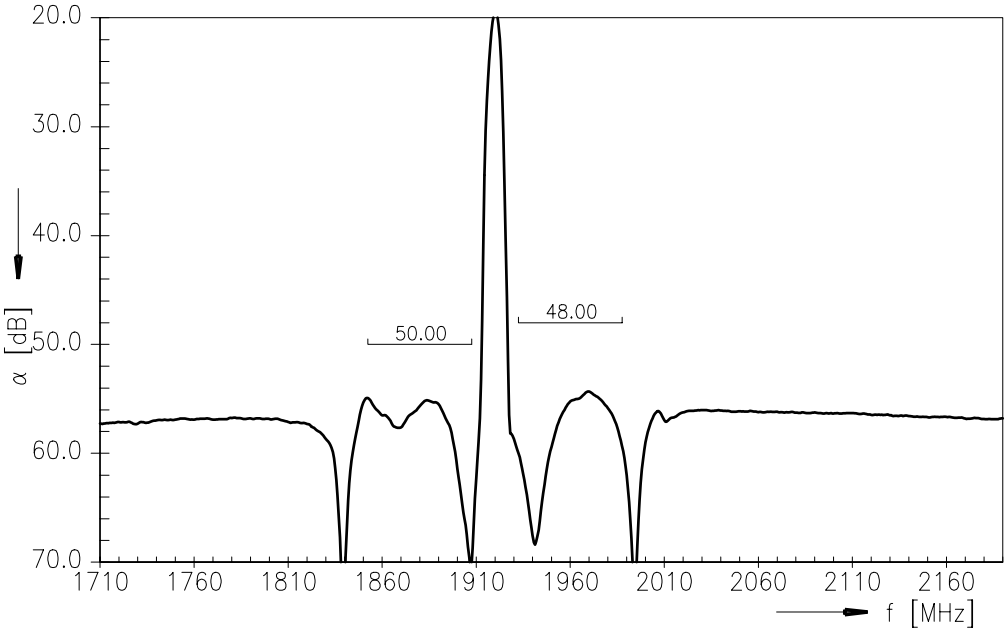
Frequency Response ANT-RX (PTF)



Frequency Response ANT-RX (wideband)



Frequency Response TX-RX (PTF)



References

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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