SAW Components

SAW Duplexer

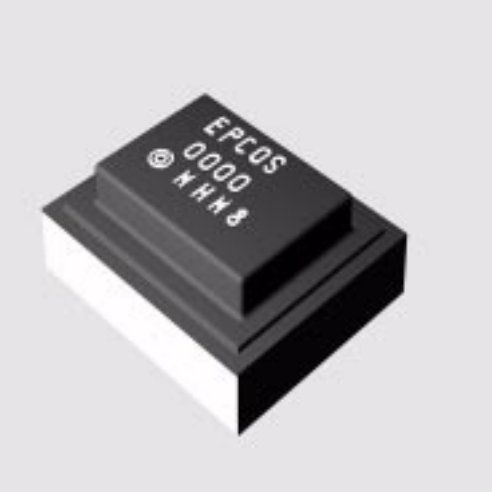
for WCDMA Band I (UMTS)

Series/type:	**B7646**
Ordering code:	**B39212B7646B310**
Date:	October 10, 2007
Version:	2.4

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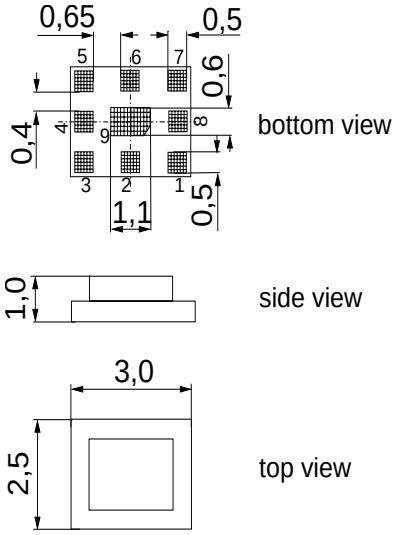
Application

- Low-loss SAW duplexer for mobile telephone WCDMA Band I (UMTS) systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 60 MHz



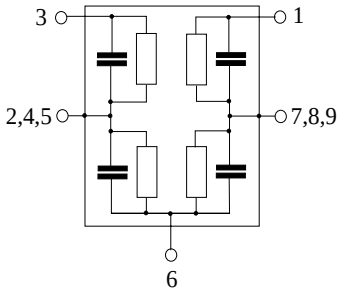
Features

- Package size 3.0 x 2.5 x 1.0 mm³
- Package code QCS9T
- RoHS compatible
- Approx. weight 0.030 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals



Pin configuration

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



Characteristics

Temperature range for specification: T = –15 ˚C to +80 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω
RX terminating impedance: Z_{RX} = 50 Ω

Characterisitcs TX - ANT		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	1950.0	—	MHz
Maximum insertion attenuation	α_{max}				
1920.0 ... 1980.0 MHz		—	1.6	2.0[1)]	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1920.0 ... 1980.0 MHz		—	0.45	0.9	dB
Amplitude ripple (p-p) **over any 5 MHz within passband**	$\Delta\alpha_{ch}$				
1920.0 ... 1980.0 MHz		—	0.2	0.5	dB
Group delay variation over any 5 MHz within passband	$\Delta\alpha_{ch}$				
1920.0 ... 1980.0 MHz		—	6	20	ns
Input VSWR (TX port)					
1920.0 ... 1980.0 MHz		—	1.5	1.8	
Output VSWR (ANT port)					
1920.0 ... 1980.0 MHz		—	1.3	1.6	
Attenuation	α				
0.3 ... 1000.0 MHz		30	40	—	dB
1000.0 ... 1550.0 MHz		30	36	—	dB
1550.0 ... 1600.0 MHz		35	36.5	—	dB
1730.0 ... 1790.0 MHz		30	43	—	dB
2110.0 ... 2155.0 MHz		43	47	—	dB
2155.0 ... 2170.0 MHz		45	50	—	dB
2400.0 ... 2500.0 MHz		25	32	—	dB
2500.0 ... 3840.0 MHz		20	26	—	dB
3840.0 ... 3960.0 MHz		25	41	—	dB
5760.0 ... 6000.0 MHz		10	20	—	dB

1) 2.1 dB in ranges -30...-15ºC and +80...+85ºC

Characteristics

Temperature range for specification: T = –15 ˚C to +80 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω
RX terminating impedance: Z_{RX} = 50 Ω

Characterisitcs ANT - RX		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	2140.0	—	MHz
Maximum insertion attenuation	α_{max}				
2110.0 ... 2170.0 MHz		—	2.2	2.5[1)]	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
2110.0 ... 2170.0 MHz		—	0.4	1.0	dB
Amplitude ripple (p-p) **over any 5 MHz within passband**	$\Delta\alpha_{ch}$				
2110.0 ... 2170.0 MHz		—	0.2	0.5	dB
Group delay variation over any 5 MHz within passband	$\Delta\alpha_{ch}$				
2110.0 ... 2170.0 MHz		—	7	20	ns
Input VSWR (ANT port)					
2110.0 ... 2170.0 MHz		—	1.6	2.0	
Output VSWR (RX port)					
2110.0 ... 2170.0 MHz		—	2.0	2.4	
IMD Product Level Limits at f_{TX} = 1950 MHz f_{RX} = 2140 MHz					
Blocker 1 190.0 MHz		—	-130	-110	dBm
Blocker 2 1760.0 MHz		—	-104	-101	dBm
Blocker 3 4090.0 MHz		—	-116	-110	dBm
Attenuation	α				
0.3 ... 1730.0 MHz		38	44	—	dB
1730.0 ... 1790.0 MHz		38	45	—	dB
1920.0 ... 1980.0 MHz		50	54	—	dB
2015.0 ... 2025.0 MHz		40	52	—	dB
2025.0 ... 2050.0 MHz		25	42	—	dB
2050.0 ... 2075.0 MHz		8	23	—	dB
2075.0 ... 2085.0 MHz		3	6	—	dB
2400.0 ... 2500.0 MHz		40	58	—	dB
3000.0 ... 4030.0 MHz		30	41	—	dB
4030.0 ... 4150.0 MHz		30	40	—	dB
4150.0 ... 5000.0 MHz		30	40	—	dB
5000.0 ... 6000.0 MHz		15	25	—	dB

1) 2.8 dB in ranges -30...-15ºC and +80...+85ºC

Characteristics

Temperature range for specification: T = –15 ˚C to +80 ˚C
Antenna terminating impedance: Z_{ANT} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω
RX terminating impedance: Z_{RX} = 50Ω

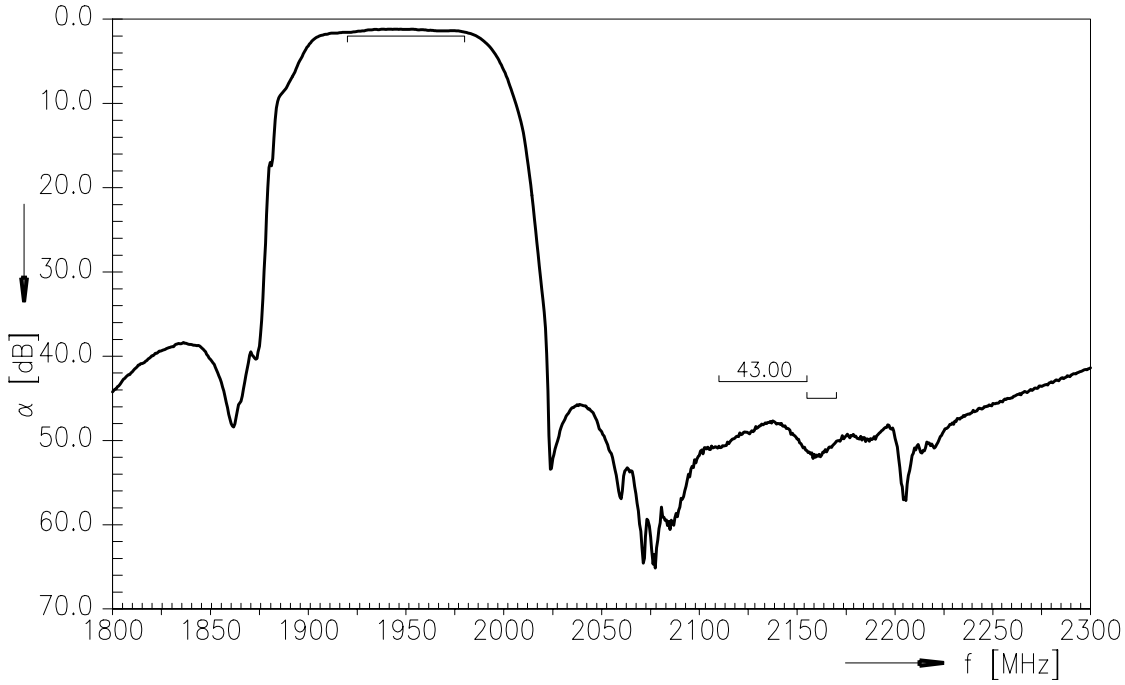
Characterisitcs TX - RX			min.	typ. @ 25 ˚C	max.	
Isolation		α				
1920.0 ... 1980.0	MHz		52	55.5	—	dB
2110.0 ... 2155.0	MHz		46	50	—	dB
2155.0 ... 2170.0	MHz		47	52	—	dB

Maximum ratings

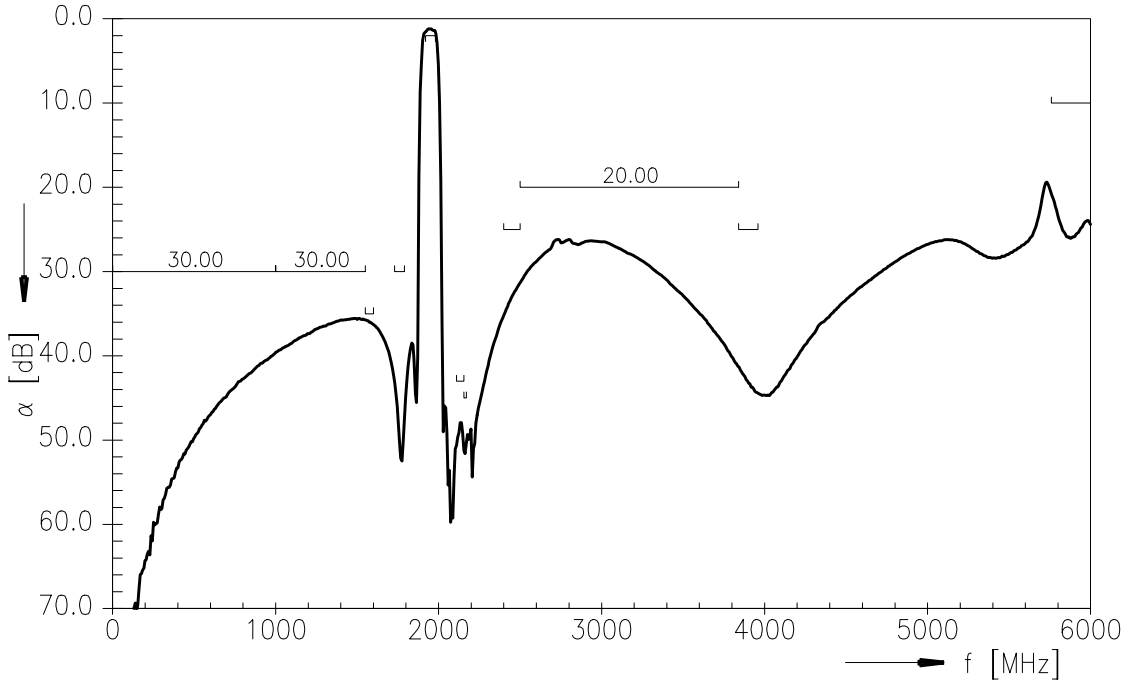
Operable temperature range	T	–30/+85	˚C	
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	100[1)]	V	machine model, 10 pulses
Input power at	P_{IN}			source and load impedance 50 Ω
1920.0 ... 1980.0 MHz		30	dBm	} continuous wave
elsewhere		10	dBm	*T* = 55˚C, 50.000 h

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

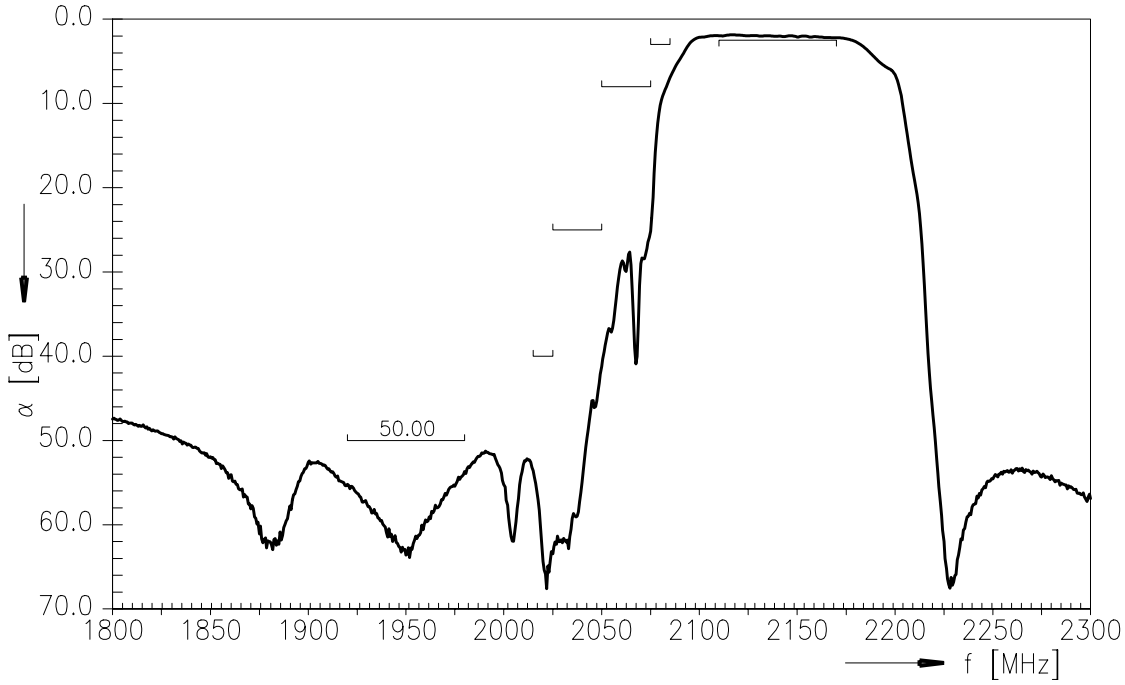
Frequency Response TX-ANT



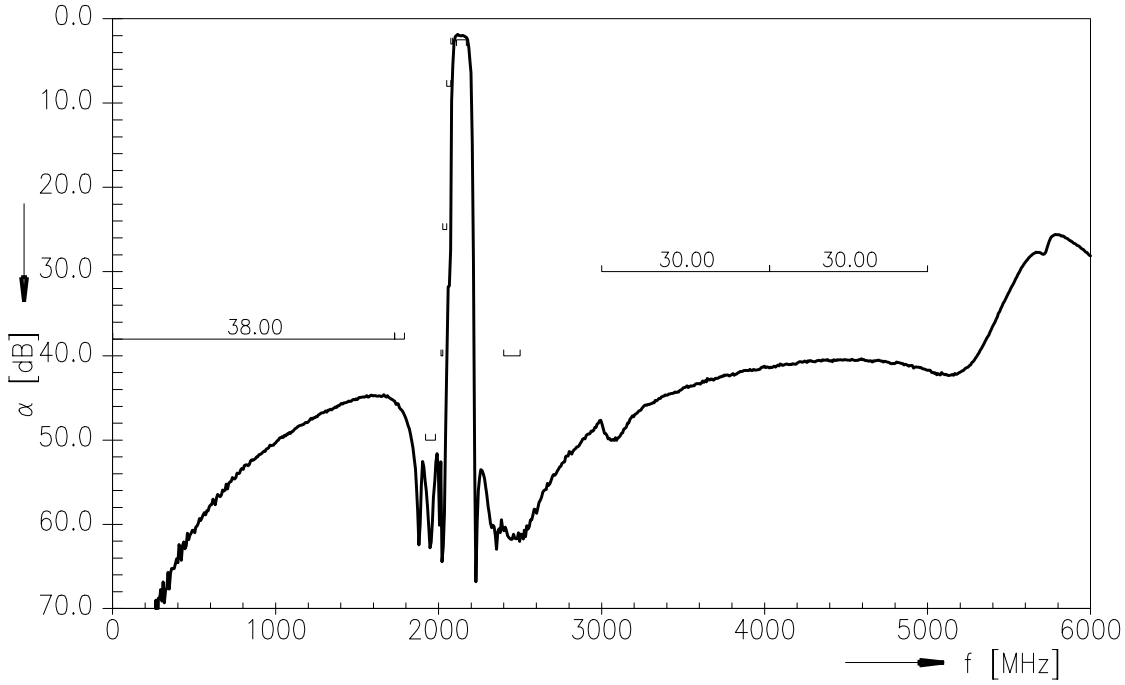
Frequency Response TX-ANT (wideband)



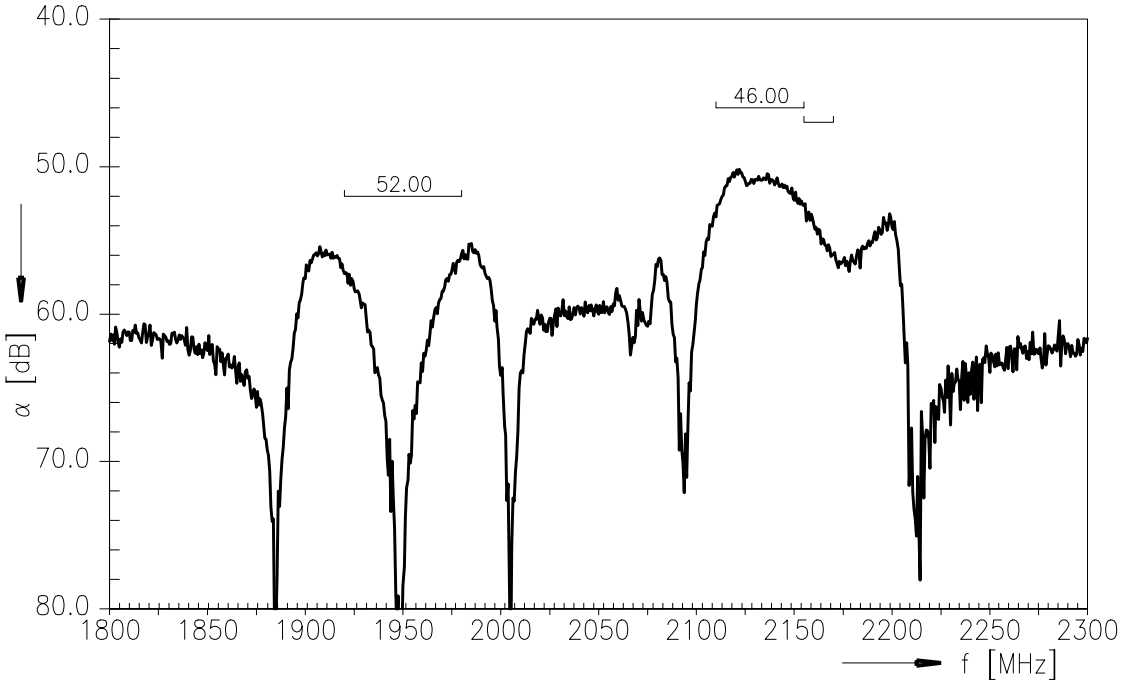
Frequency Response RX-ANT



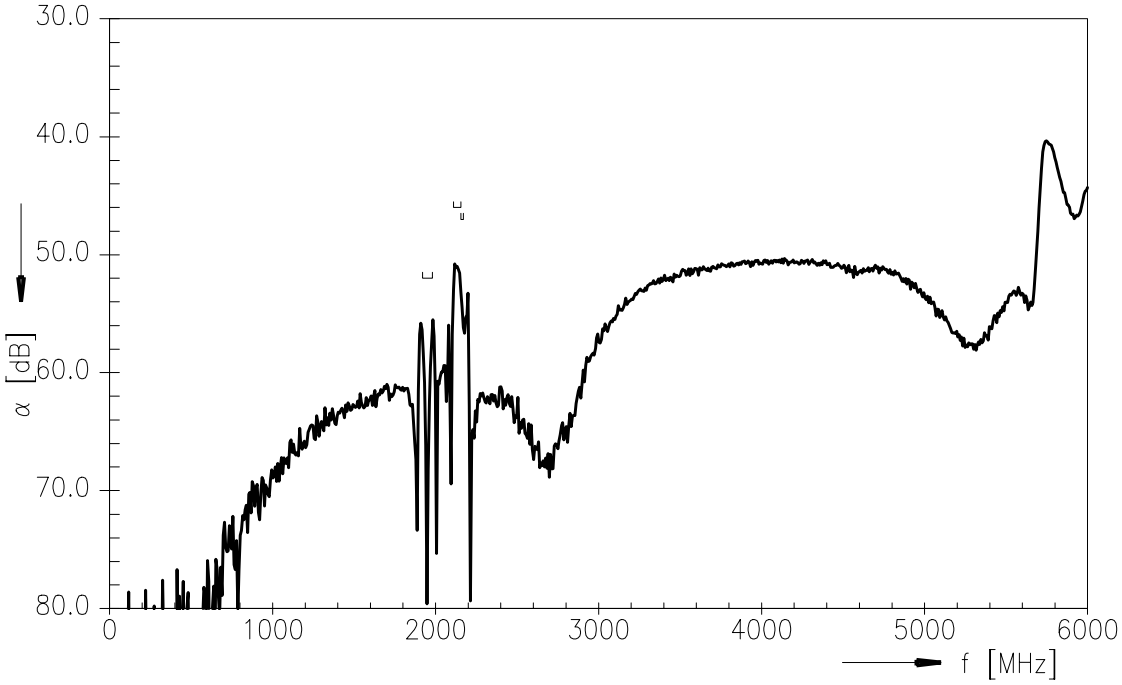
Frequency Response RX-ANT (wideband)



Frequency Response TX-RX



Frequency Response TX-RX (wideband)



References

Type	B7646
Ordering code	B39212B7646B310
Marking and package	C61157-A3-A26
Packaging	F61074-V8211-Z000
Date codes	L_1126
S-parameters	B7646_NB.s3p B7646_WB.s3p
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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