



SAW Components

SAW Duplexer

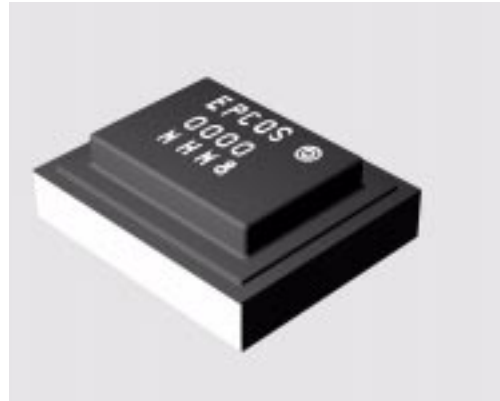
for WCDMA Band I (UMTS)

Series/type: B7649
Ordering code: B39212B7649L312

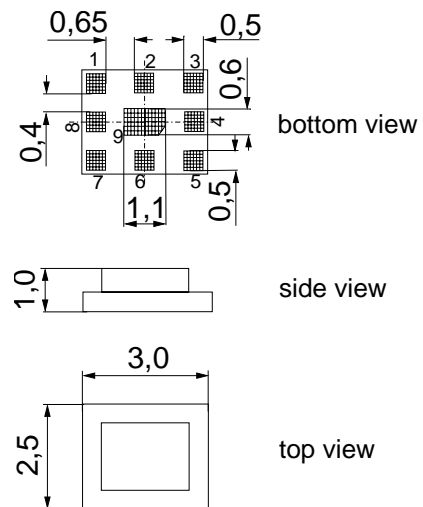
Date: October 12, 2007
Version: 2.1

Application

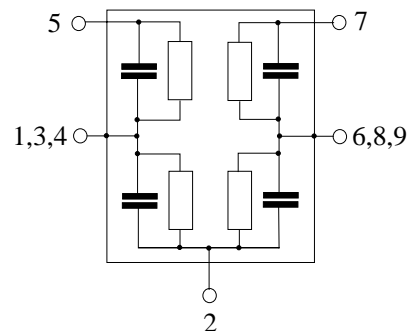
- Low-loss SAW duplexer for mobile telephone WCDMA Band I (UMTS) systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 60 MHz


Features

- Package size 3.0 x 2.5 x 1.0 mm³
- Package code QCS9U
- RoHS compatible
- Approx. weight 0.030 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals


Pin configuration

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





Data sheet



Characteristics

Temperature range for specification: $T = -15\text{ °C to }+80\text{ °C}$
 Antenna terminating impedance: $Z_{ANT} = 50\ \Omega$
 TX terminating impedance: $Z_{TX} = 50\ \Omega$
 RX terminating impedance: $Z_{RX} = 50\ \Omega$

Characteristics 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...-15°C and +80...+85°C



Data sheet



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 TX terminating impedance: $Z_{TX} = 50\ \Omega$
 RX terminating impedance: $Z_{RX} = 50\ \Omega$

Characteristics ANT - RX		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	2140.0	—	MHz
Maximum insertion attenuation	α_{max}	—	2.2	2.5 ¹⁾	dB
2110.0 ... 2170.0 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	0.4	1.0	dB
2110.0 ... 2170.0 MHz					
Amplitude ripple (p-p) over any 5 MHz within passband	$\Delta\alpha_{ch}$	—	0.2	0.5	dB
2110.0 ... 2170.0 MHz					
Group delay variation over any 5 MHz within passband	$\Delta\alpha_{ch}$	—	7	20	ns
2110.0 ... 2170.0 MHz					
Input VSWR (ANT port)		—	1.6	2.0	
2110.0 ... 2170.0 MHz					
Output VSWR (RX port)		—	2.0	2.4	
2110.0 ... 2170.0 MHz					
IMD Product Level Limits					
at $f_{TX} = 1950\text{ MHz}$ $f_{RX} = 2140\text{ MHz}$					
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	—	
1920.0 ... 1980.0 MHz		50	54	—	dB
2015.0 ... 2025.0 MHz		40	52	—	
2025.0 ... 2050.0 MHz		25	42	—	dB
2050.0 ... 2075.0 MHz		8	23	—	
2075.0 ... 2085.0 MHz		3	6	—	dB
2400.0 ... 2500.0 MHz		40	58	—	
3000.0 ... 4030.0 MHz		30	41	—	dB
4030.0 ... 4150.0 MHz		30	40	—	
4150.0 ... 5000.0 MHz		30	40	—	dB
5000.0 ... 6000.0 MHz		15	25	—	

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



SAW Components **B7649**

SAW Duplexer **1950 / 2140 MHz**

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 TX terminating impedance: $Z_{TX} = 50\ \Omega$
 RX terminating impedance: $Z_{RX} = 50\ \Omega$

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



SAW Components **B7649**

SAW Duplexer **1950 / 2140 MHz**

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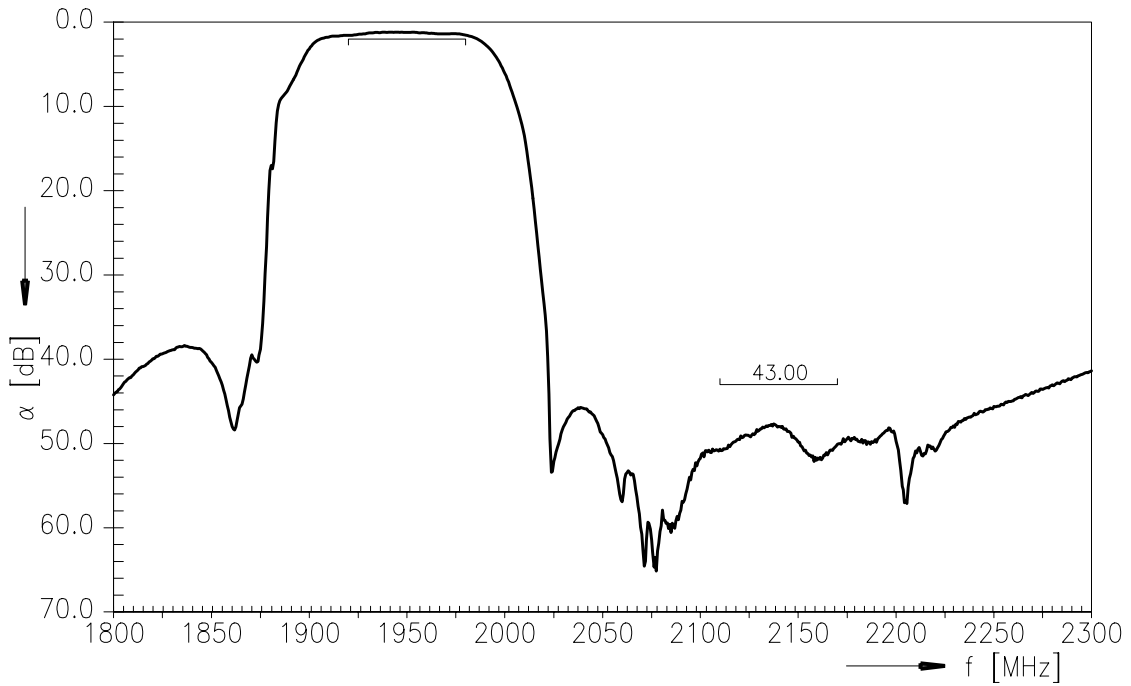
Maximum ratings

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

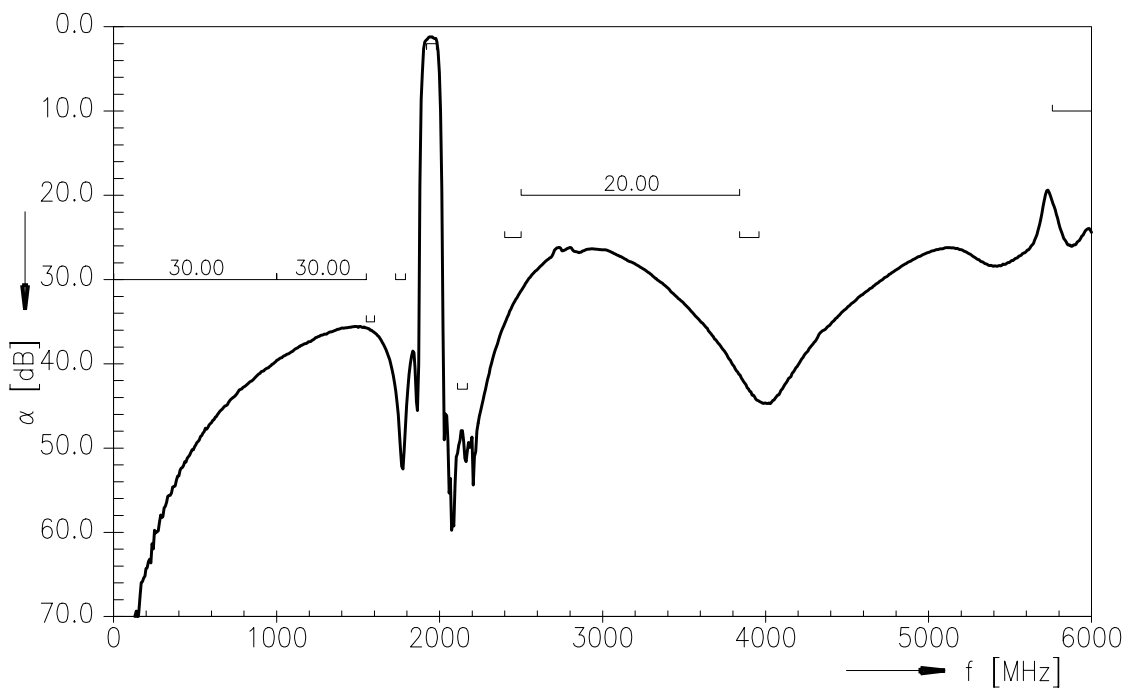
¹⁾ acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



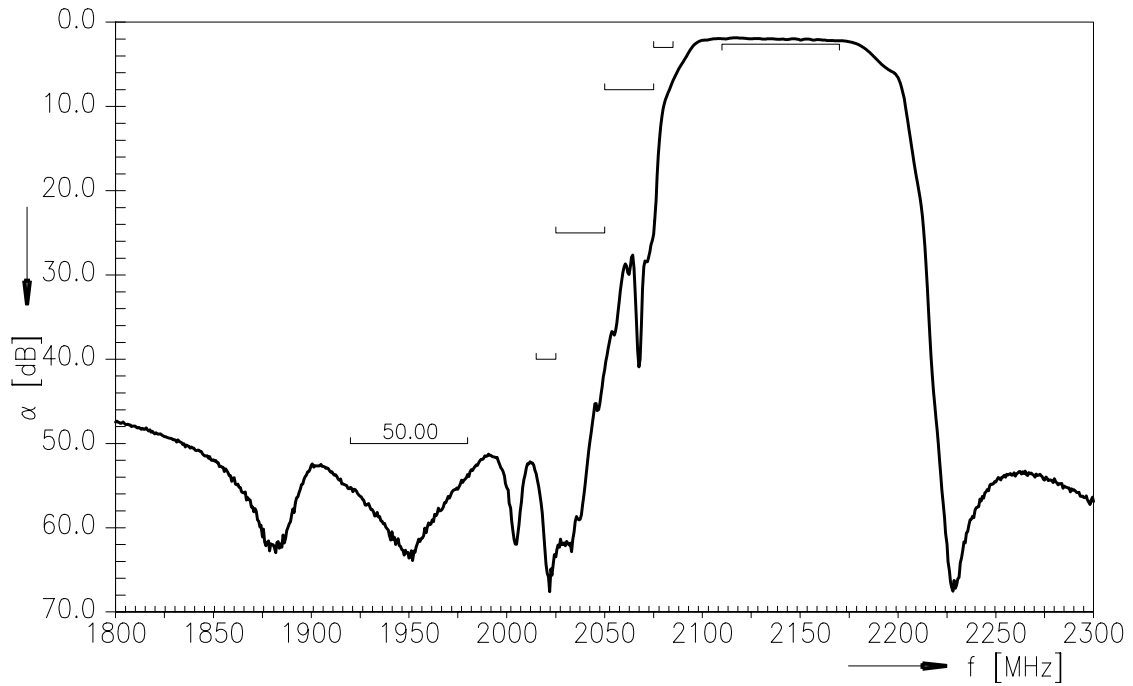
Frequency Response TX-ANT



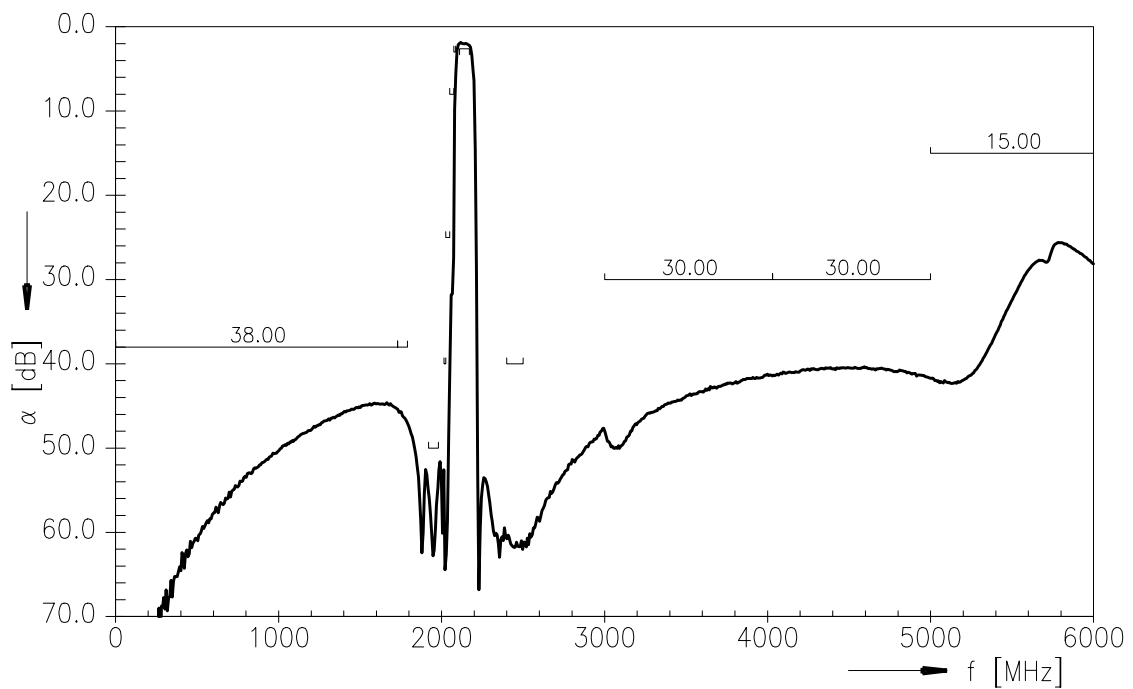
Frequency Response TX-ANT (wideband)



Frequency Response RX-ANT

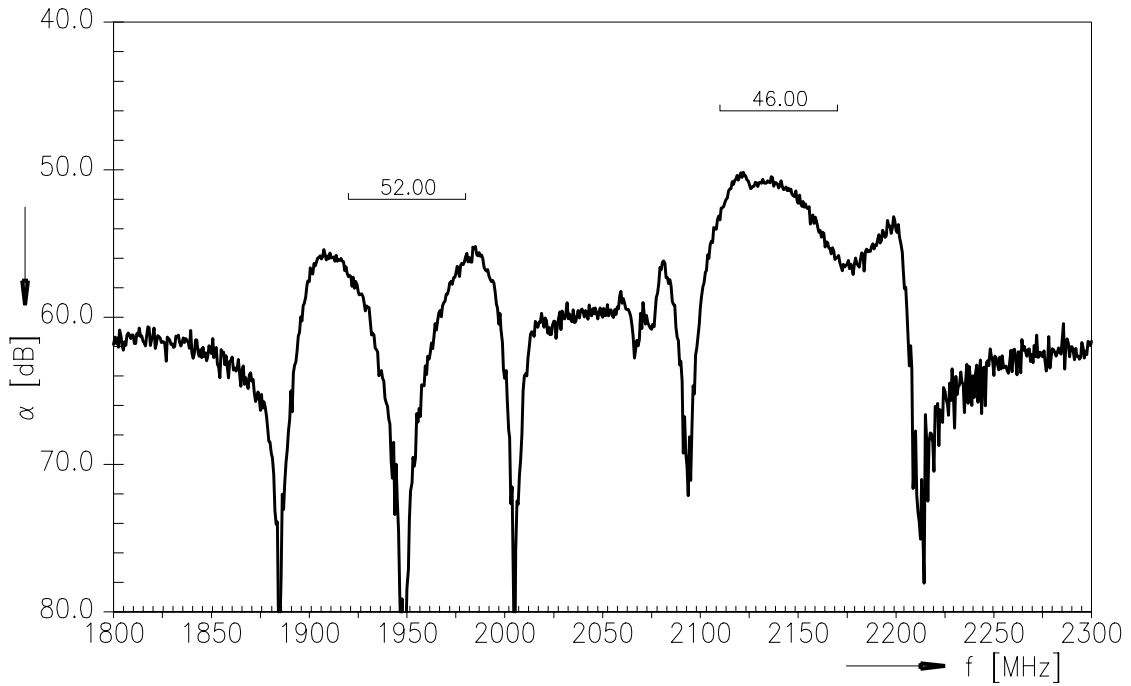


Frequency Response RX-ANT (wideband)

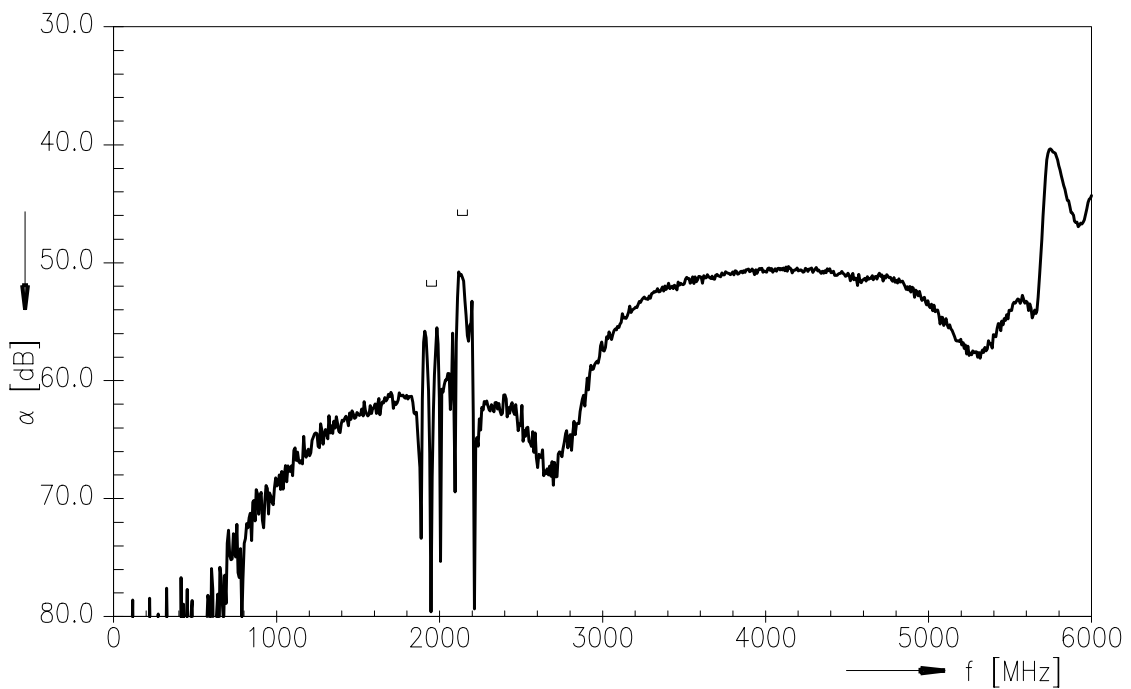




Frequency Response TX-RX



Frequency Response TX-RX (wideband)



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**References**

Type	B7649
Ordering code	B39212B7649L312
Marking and package	C61157-A3-A32
Packaging	F61074-V8211-Z000
Date codes	L_1126
S-parameters	B7649_NB.s3p B7649_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."

For further information please contact your local EPCOS sales office or visit our webpage at www.epcos.com .

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