



SAW Components

SAW Duplexer

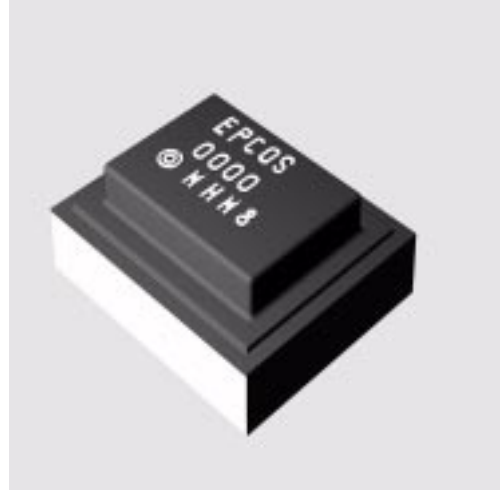
for WCDMA Band I (UMTS)

Series/type: B7646
Ordering code: B39212B7646B310

Date: October 10, 2007
Version: 2.4

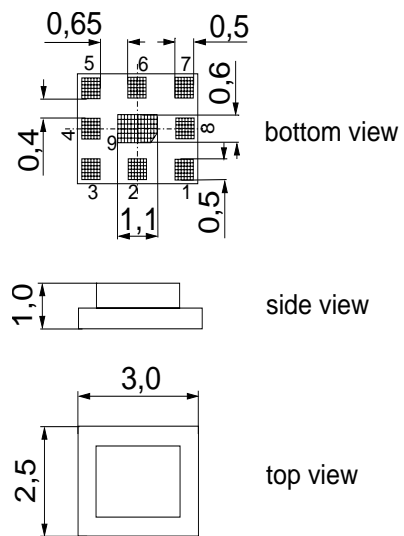
Application

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



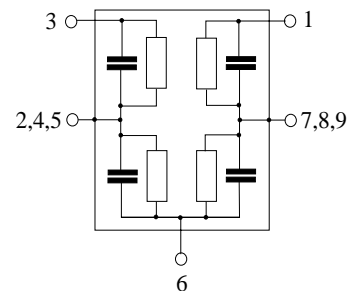
Features

- Package size 3.0 x 2.5 x 1.0 mm³
- Package code QCS9T
- RoHS compatible
- Approx. weight 0.030 g
- Package for **Surface Mount Technology (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





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 1920.0 ... 1980.0 MHz	α_{max}	—	1.6	2.0 ¹⁾	dB
Amplitude ripple (p-p) 1920.0 ... 1980.0 MHz	$\Delta\alpha$	—	0.45	0.9	dB
Amplitude ripple (p-p) over any 5 MHz within passband 1920.0 ... 1980.0 MHz	$\Delta\alpha_{ch}$	—	0.2	0.5	dB
Group delay variation over any 5 MHz within passband 1920.0 ... 1980.0 MHz	$\Delta\alpha_{ch}$	—	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



SAW Components	B7646
SAW Duplexer	1950 / 2140 MHz

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} 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 $f_{TX} = 1950\text{ MHz}$ $f_{RX} = 2140\text{ MHz}$				
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	—	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...-15°C and +80...+85°C



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 Antenna terminating impedance: $Z_{ANT} = 50\ \Omega$
 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 **B7646**

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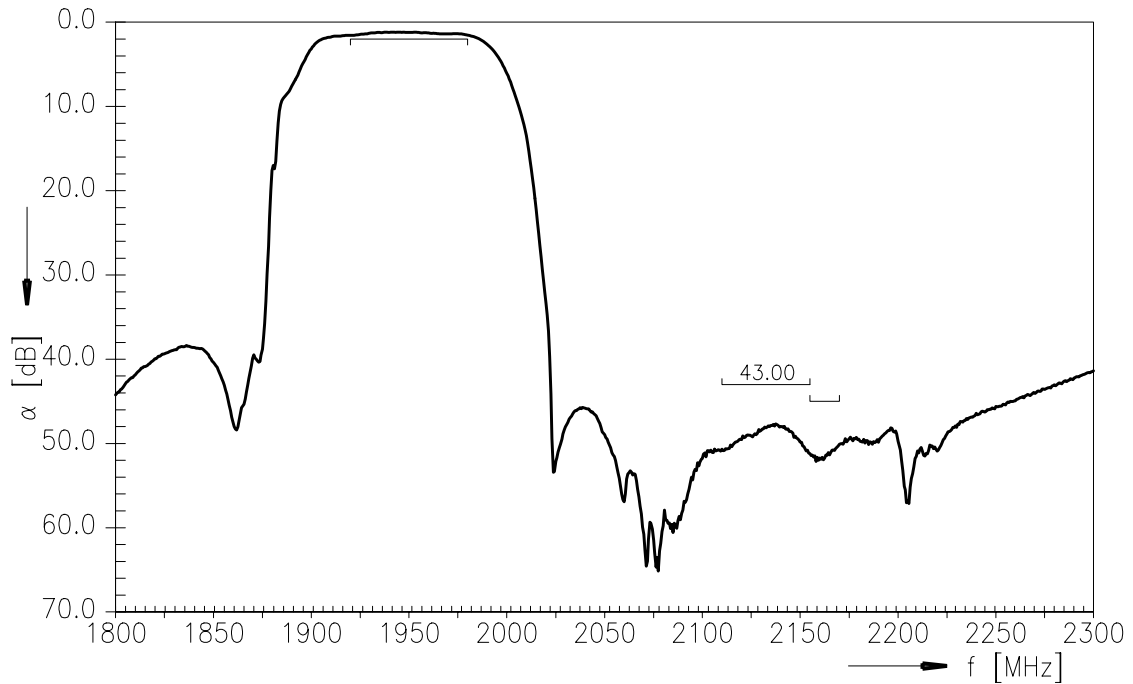
Maximum ratings

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	

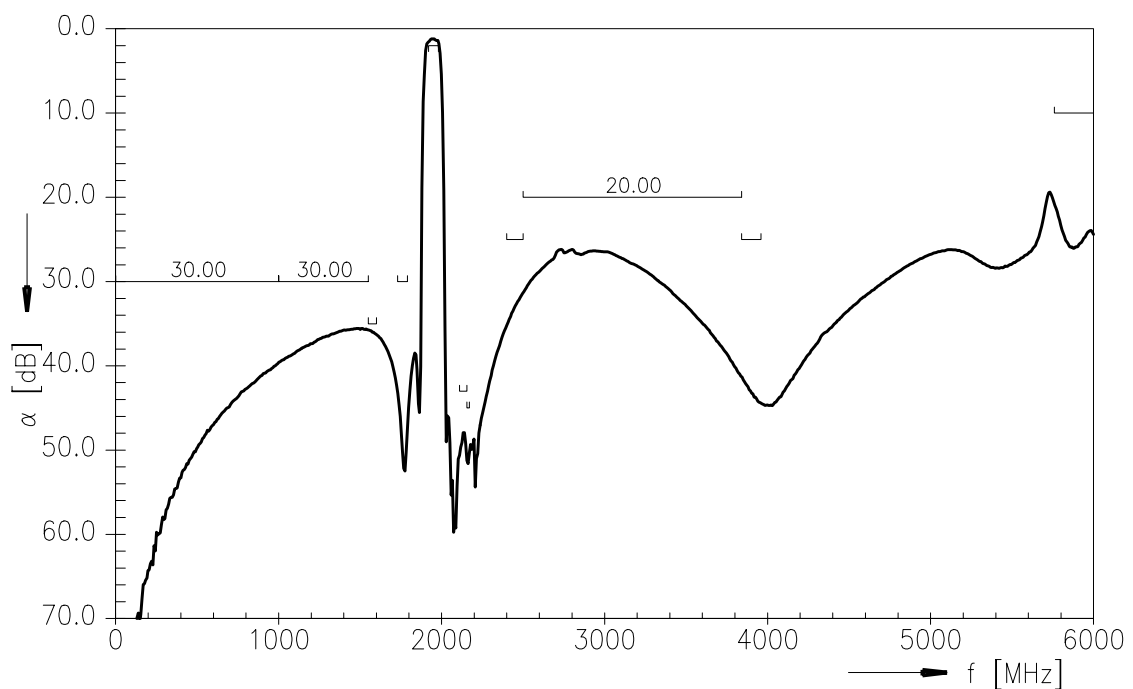
¹⁾ acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.



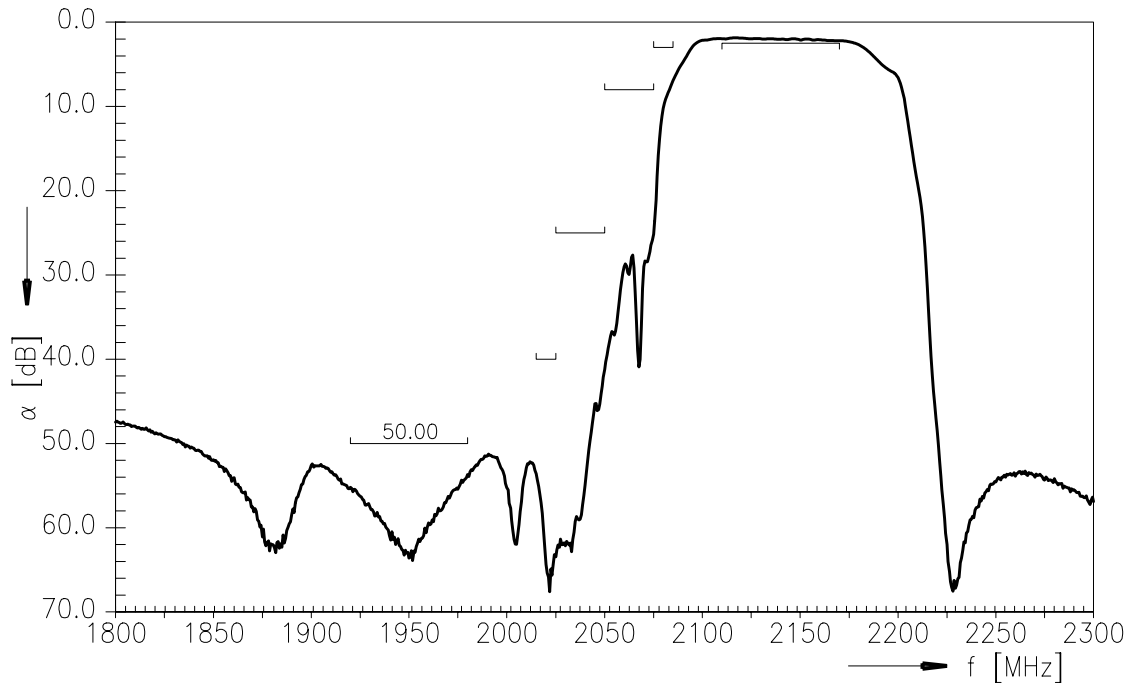
Frequency Response TX-ANT



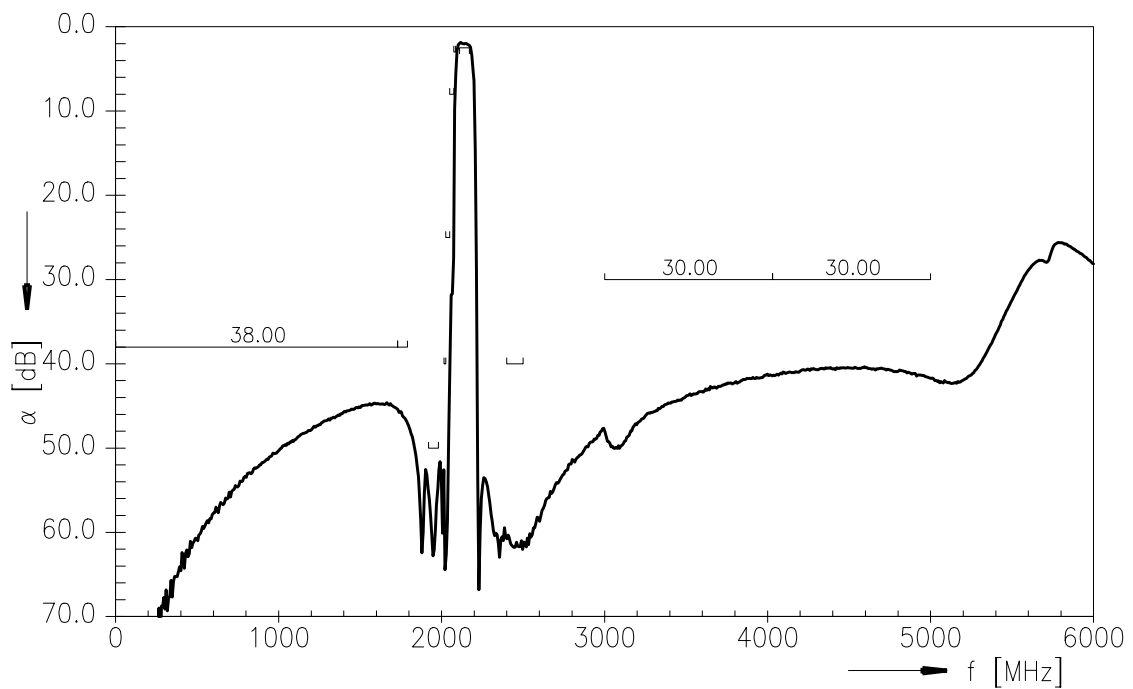
Frequency Response TX-ANT (wideband)



Frequency Response RX-ANT

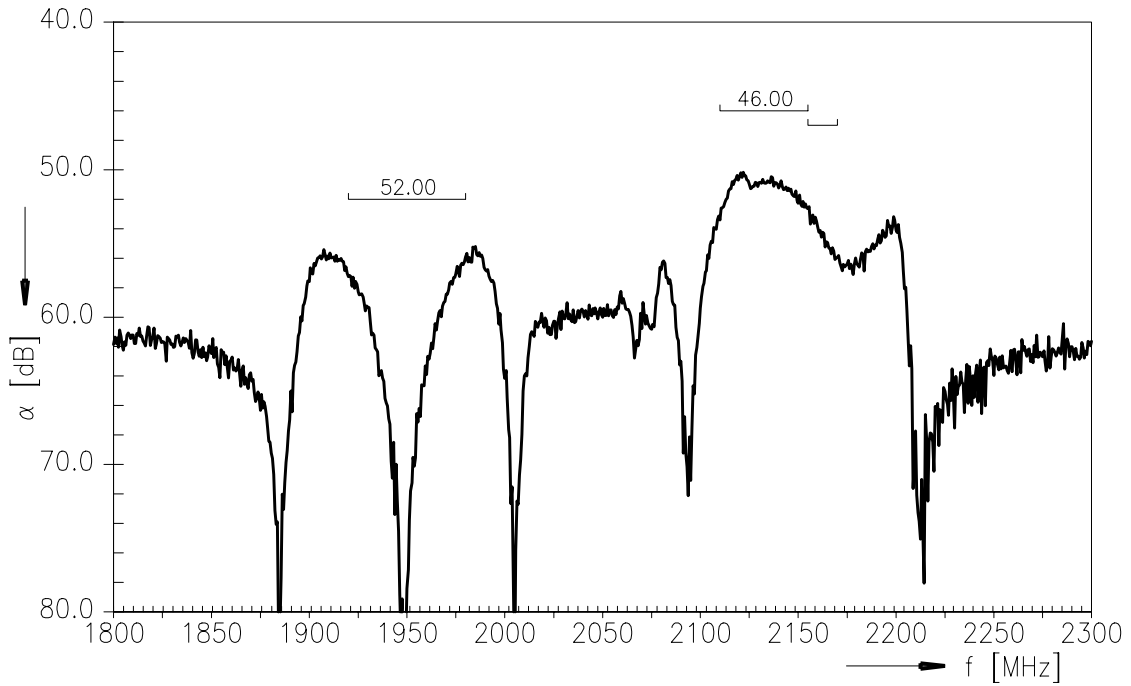


Frequency Response RX-ANT (wideband)

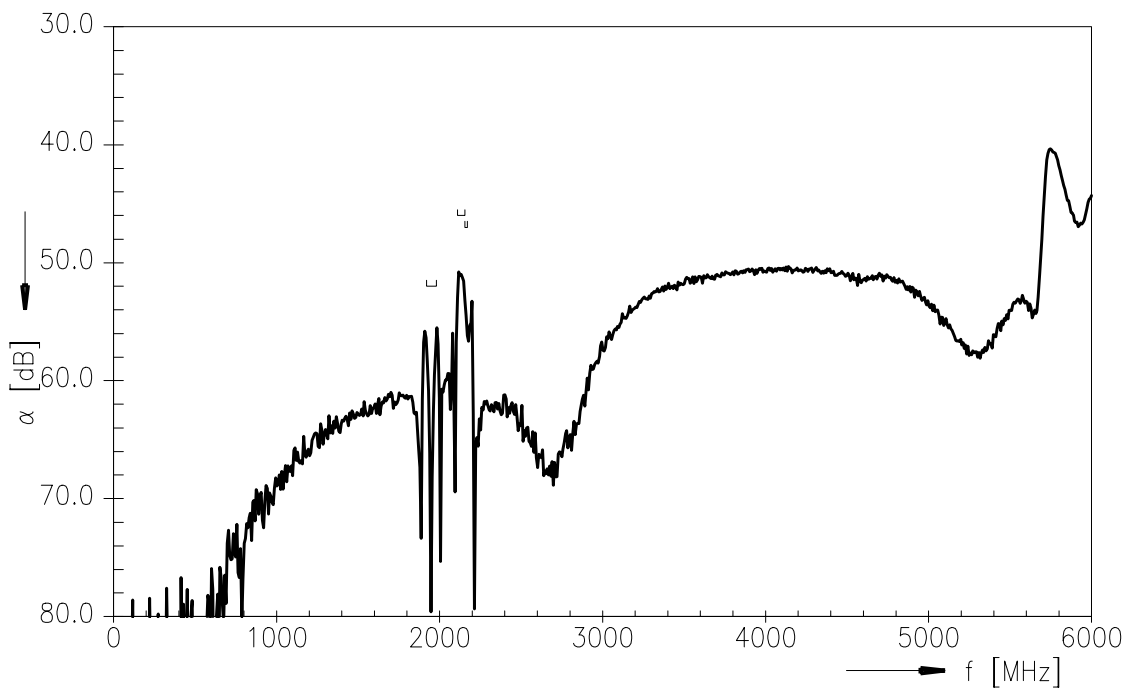




Frequency Response TX-RX



Frequency Response TX-RX (wideband)



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**References**

Type	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."

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

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