



SAW Components

SAW duplexer

WCDMA Band VIII

Series/type:	B7675
Ordering code:	B39941B7675P810
Date:	February 12, 2010
Version:	2.0



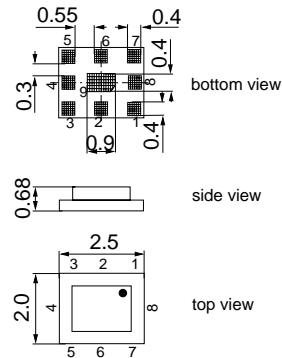
Application

- Low-loss SAW duplexer for mobile telephone WCDMA Band VIII systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 35 MHz



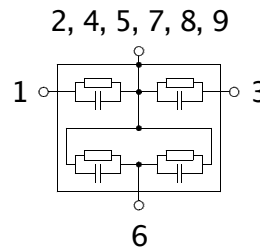
Features

- Package size 2.5 x 2.0 x 0.68 mm³
- RoHS compatible
- Approximate weight 0.013 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- MSL 3



Pin configuration

- 1 RX output, single ended
- 3 TX input, single ended
- 6 Antenna
- 2,4,5,7,8,9 Ground





Data sheet



Characteristics

Temperature range for specification:	T = -15 °C to +80 °C
ANT terminating impedance:	Z _{ANT} = 50 Ω 9.2 nH
RX terminating impedance:	Z _{RX} = 50 Ω
TX terminating impedance:	Z _{TX} = 50 Ω + 2.0 nH (series) ^{*)}

^{*)} Integration of TX coil into a typical PA matching network should be possible without additional elements.

Characteristics TX-ANT				min.	typ. @ 25°C	max.	
Center frequency		f _C		—	897.50	—	MHz
Maximum insertion attenuation	@f _{Carrier}	882.4 ... 912.6MHz	α _{WCDMA} ¹⁾	—	1.8	2.7	dB
Amplitude ripple (p-p)	@f _{Carrier}	882.4 ... 912.6MHz	Δ _{WCDMA} ¹⁾	—	0.9	1.8	dB
Error Vector Magnitude	@f _{Carrier}	882.4 ... 912.6MHz	EVM ²⁾	—	2.1	5.5	%
	@f _{Carrier}	882.4 ... 912.6MHz	EVM ²⁾	—	2.1	4.2 ³⁾	%
VSWR							
	TX port	880.0 ... 915.0MHz		—	1.7	2.1	
	ANT port	880.0 ... 915.0MHz		—	1.6	2.0	
Attenuation			α				
		0.3 ... 840.0MHz		25	33	—	dB
		840.0 ... 865.0MHz		30	37	—	dB
	@f _{Carrier}	927.4 ... 957.6MHz	α _{WCDMA} ¹⁾	41	47	—	dB
		960.0 ... 1472.0MHz		25	34	—	dB
		1472.0 ... 1477.0MHz		25	38	—	dB
		1550.0 ... 1600.0MHz		35	40	—	dB
		1760.0 ... 1830.0MHz		25	46	—	dB
		1830.0 ... 2500.0MHz		25	37	—	dB
		2500.0 ... 4000.0MHz		15	27	—	dB
		4000.0 ... 5825.0MHz		15	25	—	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⁾ T=0°C to +55°C



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Characteristics

Temperature range for specification: T = -15 °C to +80 °C
 ANT terminating impedance: Z_{ANT} = 50 Ω || 9.2 nH
 RX terminating impedance: Z_{RX} = 50 Ω
 TX terminating impedance: Z_{TX} = 50 Ω + 2.0 nH (series)*

*) Integration of TX coil into a typical PA matching network should be possible without additional elements.

Characteristics ANT-RX	min.	typ. @ 25°C	max.	
Center frequency f _C	—	942.5	—	MHz
Maximum insertion attenuation @f _{Carrier} 927.4 ... 957.6MHz α _{WCDMA} ¹⁾	—	2.0	2.7	dB
Amplitude ripple (p-p) @f _{Carrier} 927.4 ... 957.6MHz Δ _{WCDMA} ¹⁾	—	0.7	1.7	dB
Error Vector Magnitude @f _{Carrier} 927.4 ... 957.6MHz EVM ²⁾	—	2.2	4.7	%
VSWR				
RX port 925.0 ... 960.0MHz	—	1.7	2.1	
ANT port 925.0 ... 960.0MHz	—	1.6	2.0	

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.



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Characteristics

Temperature range for specification: $T = -15\text{ °C to }+80\text{ °C}$
 ANT terminating impedance: $Z_{ANT} = 50\ \Omega \parallel 9.2\text{ nH}$
 RX terminating impedance: $Z_{RX} = 50\ \Omega$
 TX terminating impedance: $Z_{TX} = 50\ \Omega + 2.0\text{ nH (series)*}$

*) Integration of TX coil into a typical PA matching network should be possible without additional elements.

Characteristics ANT-RX	min.	typ. @ 25°C	max.	
Attenuation				
0.3 ... 835.0MHz	30	40	—	dB
835.0 ... 880.0MHz	38	43	—	dB
@f _{Carrier} 882.4 ... 912.6MHz	45	54	—	dB
980.0 ... 1805.0MHz	15	43	—	dB
1805.0 ... 1920.0MHz	30	56	—	dB
1920.0 ... 2400.0MHz	30	49	—	dB
2400.0 ... 2500.0MHz	30	48	—	dB
2500.0 ... 2880.0MHz	25	37	—	dB
2880.0 ... 4000.0MHz	25	40	—	dB
4000.0 ... 6000.0MHz	15	32	—	dB

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

Characteristics TX-RX	min.	typ. @ 25°C	max.	
Isolation between TX and RX				
@f _{Carrier} 882.4 ... 912.6MHz	52	56	—	dB
@f _{Carrier} 927.4 ... 957.6MHz	45	50	—	dB

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



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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 55 °C, 10000 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}			
880.0 ... 915.0 MHz		30	dBm	
elsewhere		10	dBm	

¹⁾ 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

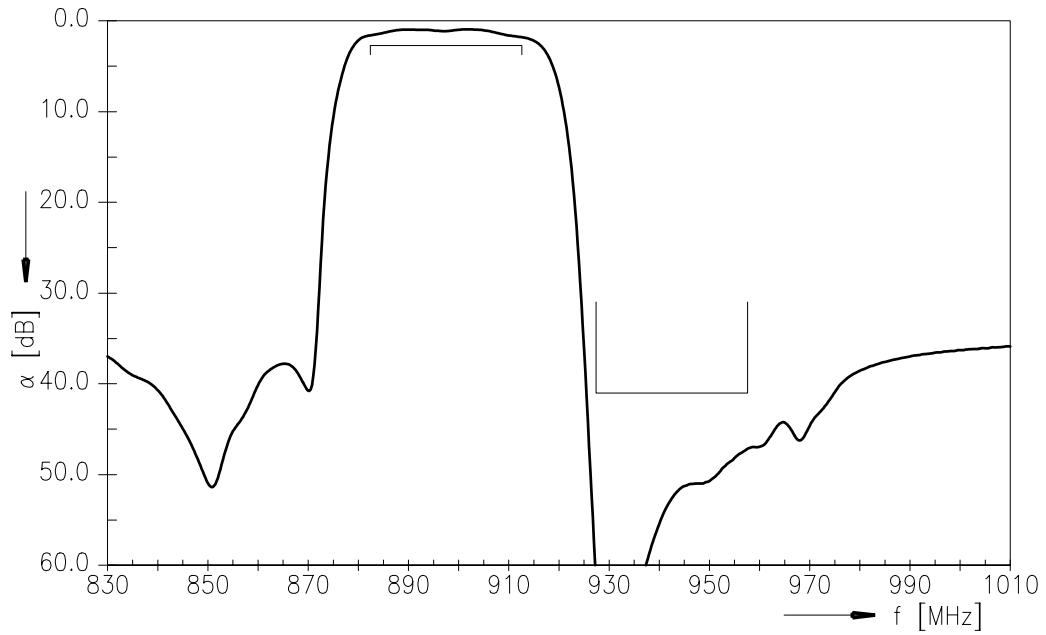
$$\int_{-\infty}^{\infty} |S_{ds21}(f)H_{RRC}(f - f_{Carrier})|^2 df$$

$f_{Carrier}$ 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)). $H_{RRC}(f)$ is the transfer function of the root-raised cosine transmit pulse shaping filter according to 3GPP TS 25.101 with the following normalization:

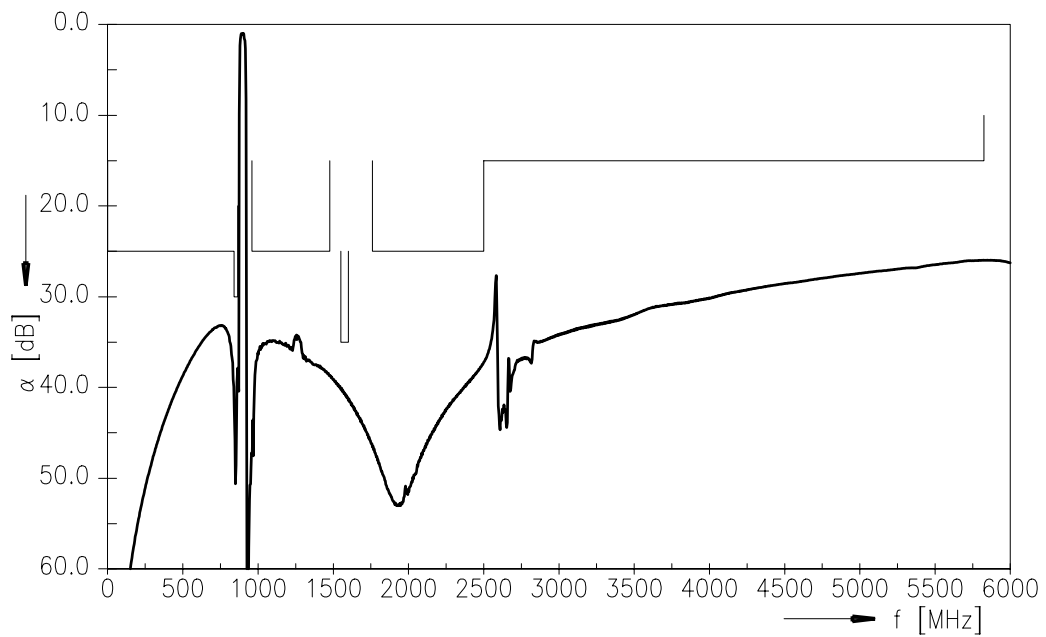
$$\int_{-\infty}^{\infty} |H_{RRC}(f)|^2 df = 1$$



Frequency Response TX-ANT (Powertransferfunction)

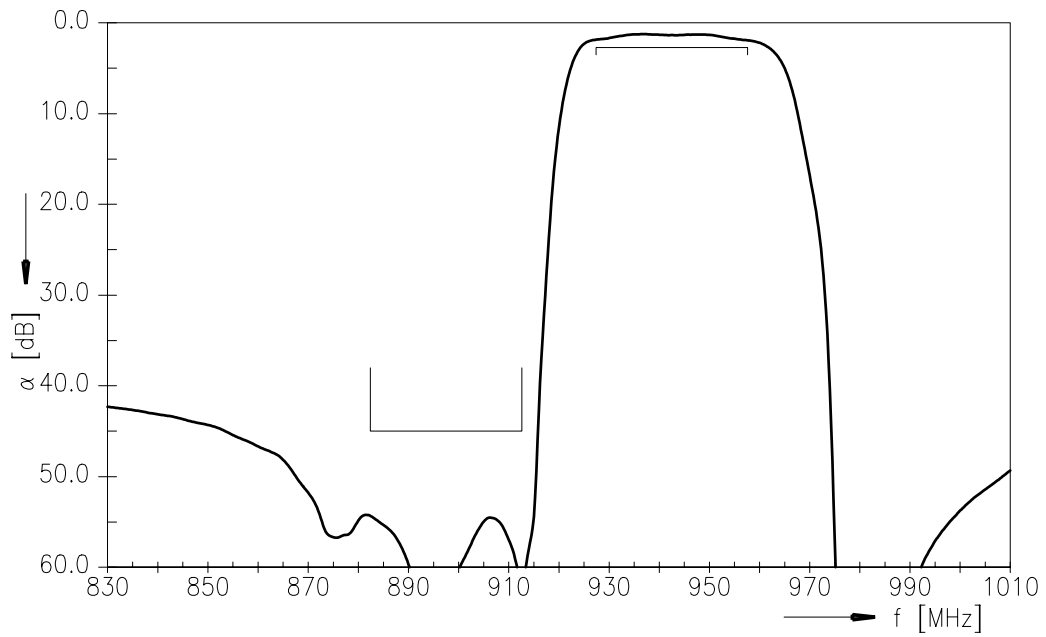


Frequency Response TX-ANT (wideband)

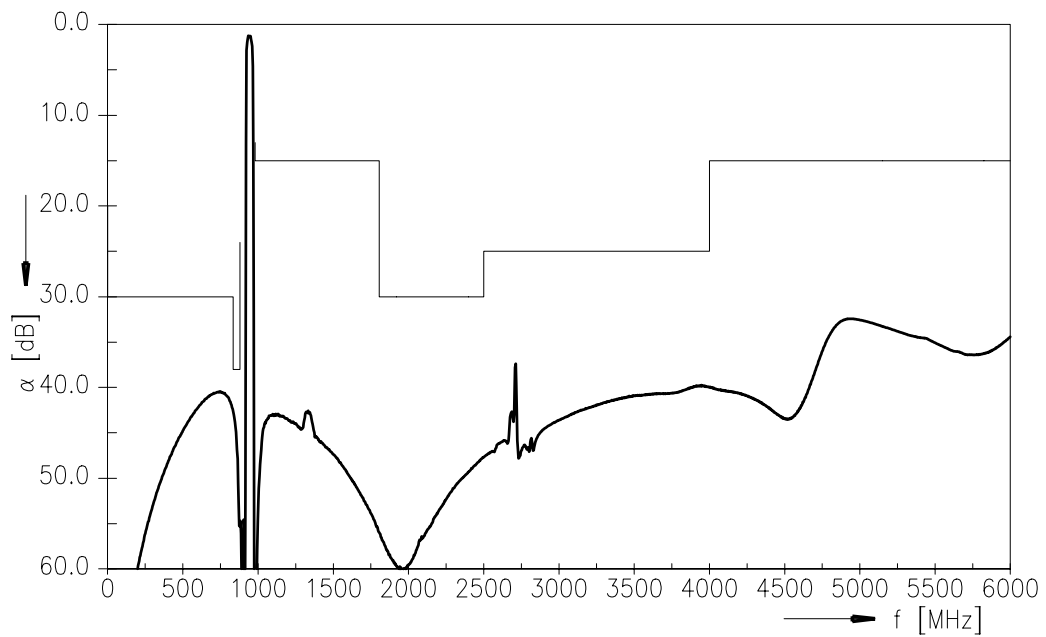




Frequency Response RX-ANT (Powertransferfunction)



Frequency Response RX-ANT (wideband)





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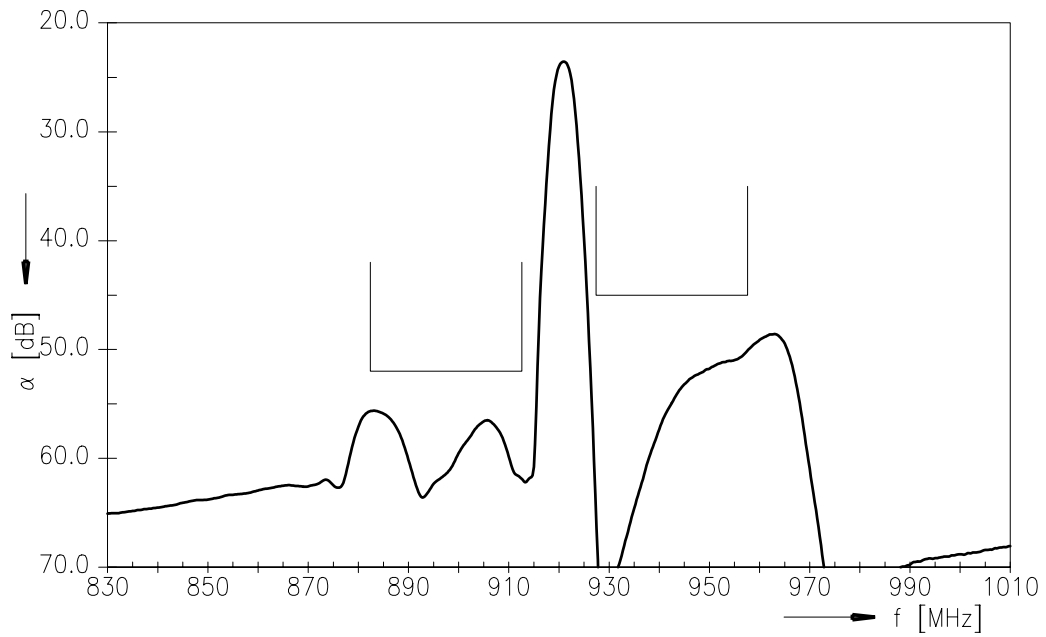
SAW duplexer

897.5 / 942.5 MHz

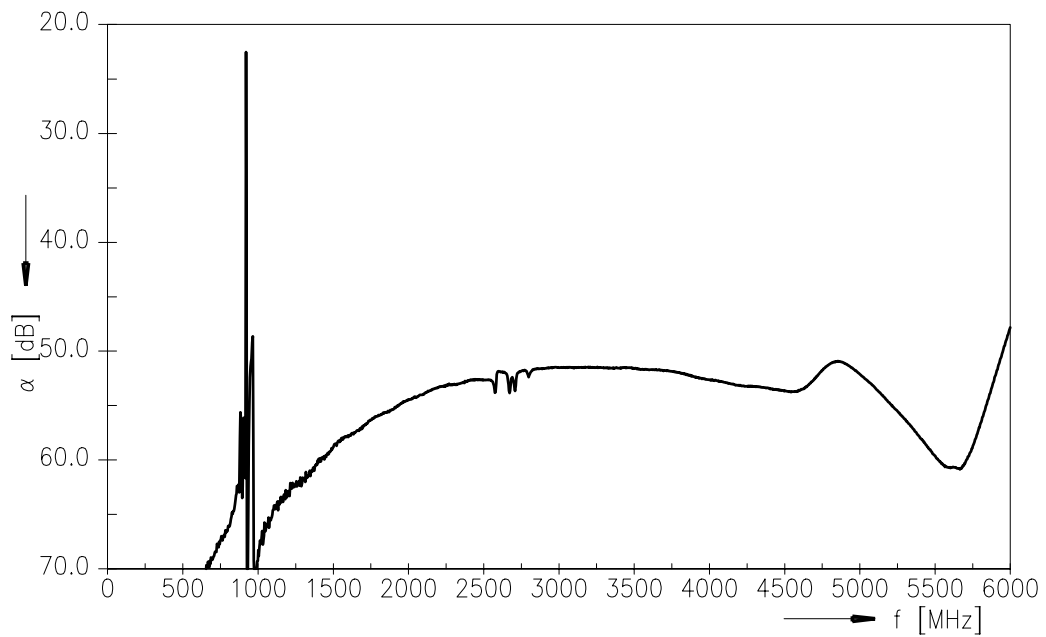
Data sheet



Frequency Response TX-RX (Powertransferfunction)



Frequency Response TX-RX (wideband)



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



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897.5 / 942.5 MHz

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References

Type	B7675
Ordering code	B39941B7675P810
Marking and Package	C61157-A3-A54
Packaging	F61074-V8153-Z000
Date Codes	L_1126
S-Parameters	B7675_NB.s3p B7675_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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