



SAW Components

SAW duplexer

WCDMA Band VIII

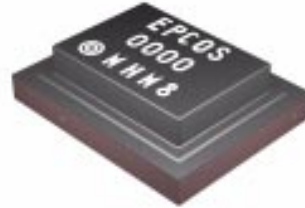
Series/type:	B7675
Ordering code:	B39941B7675P810
Date:	February 12, 2010
Version:	2.0

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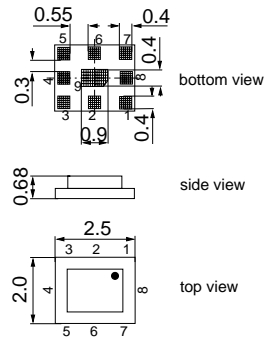
Application

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



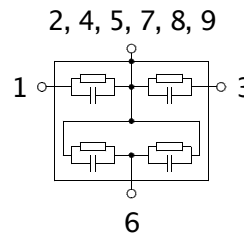
Features

- 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



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



SAW Components

B7675

SAW duplexer

897.5 / 942.5 MHz

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							
	0.3 ... 840.0MHz	α		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



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 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.



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 ANT-RX				min.	typ. @ 25°C	max.	
Attenuation			α				
		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	$\alpha_{\text{WCDMA}}^{1)}$	52	56	—	dB
@f _{Carrier}	927.4 ...	957.6MHz	$\alpha_{\text{WCDMA}}^{1)}$	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	
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
880.0 ... 915.0 MHz		30	dBm	} continuous wave 55 °C, 10000 h
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

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

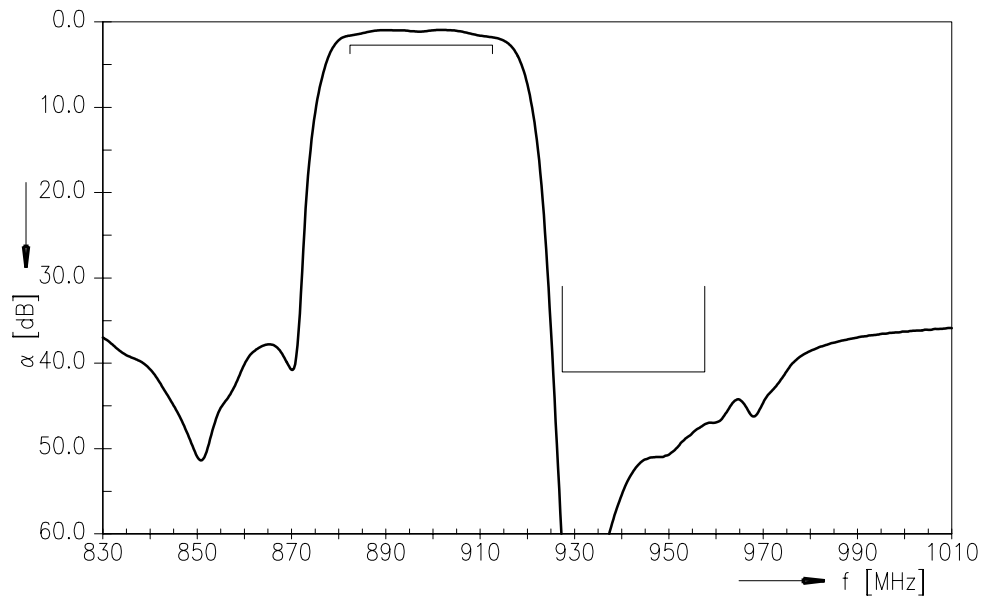
f_{Carrier} according to 3GPP TS 25.101 (e.g. for UMTS-Passband, f_{Carrier} ranges from 882.4 MHz (lowest Tx channel) to 912.6 MHz (highest Tx channel)). $H_{\text{RRC}}(f)$ is the transfer function of the root-raised cosine transmit pulse shaping filter according to 3GPP TS 25.101 with the following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

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

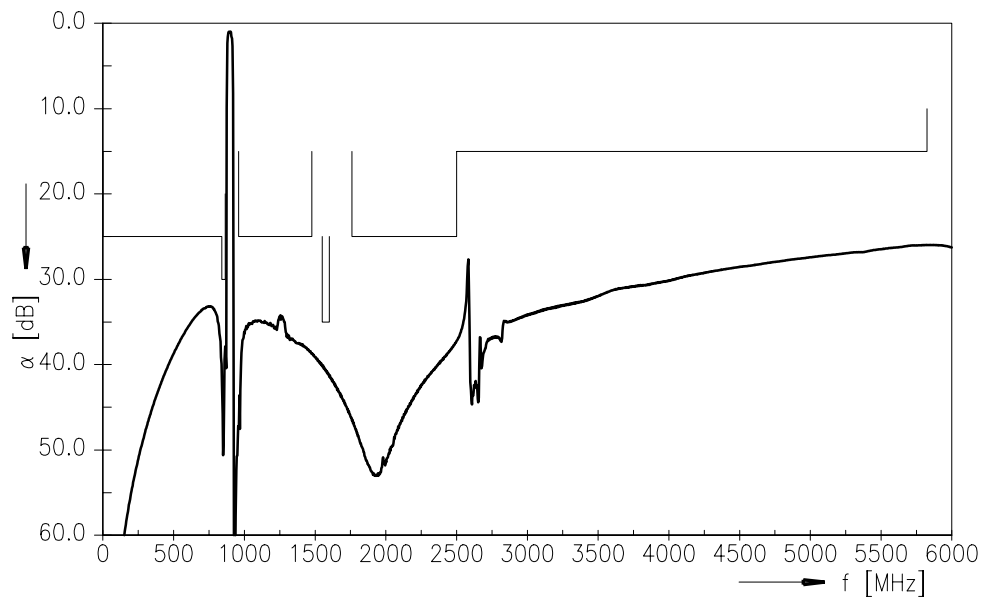
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Frequency Response TX-ANT (Powertransferfunction)



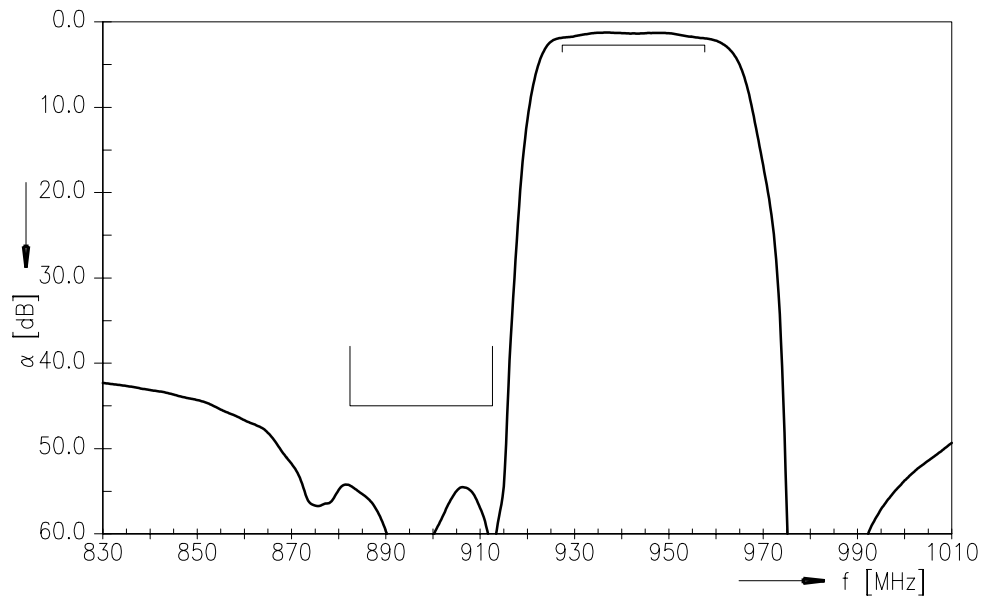
Frequency Response TX-ANT (wideband)



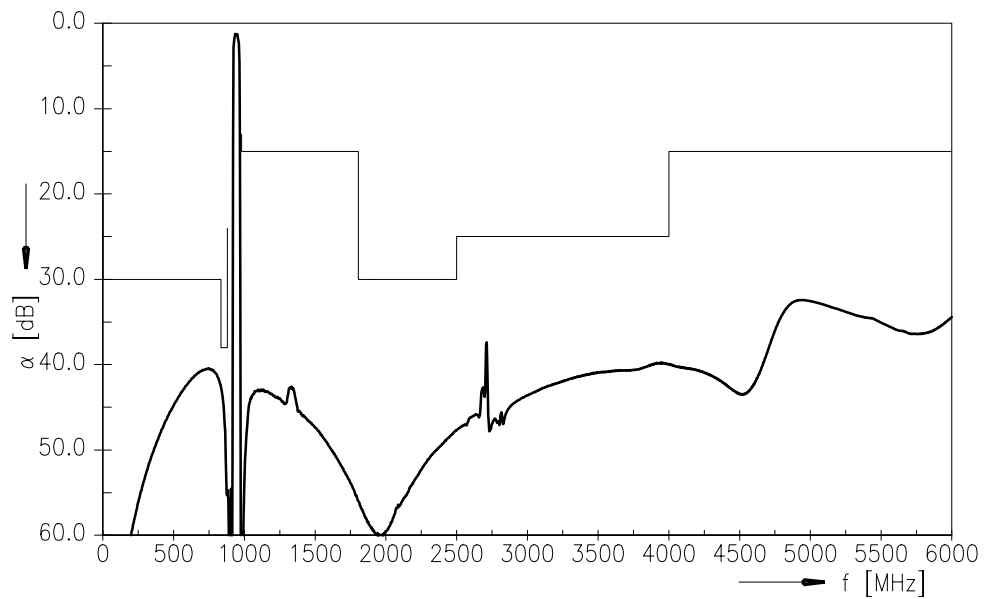
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Frequency Response RX-ANT (Powertransferfunction)



Frequency Response RX-ANT (wideband)



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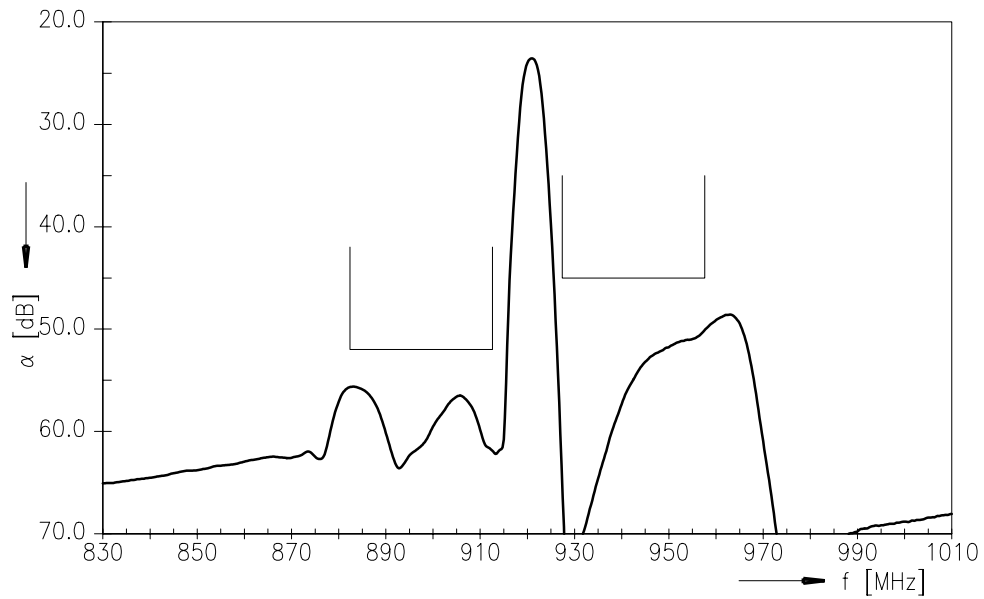
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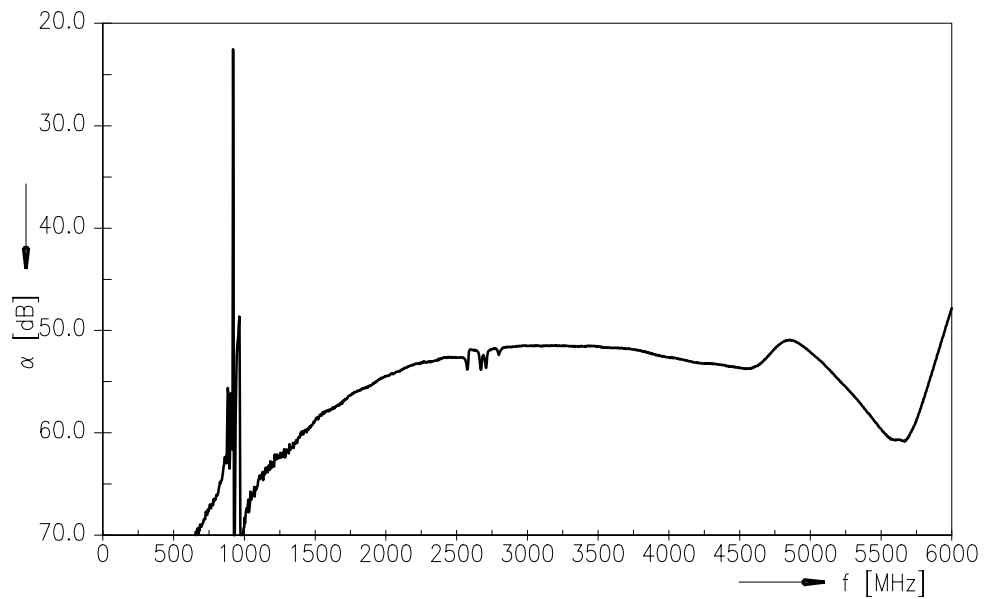
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Frequency Response TX-RX (Powertransferfunction)



Frequency Response TX-RX (wideband)



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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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10 February 12, 2010



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