SAW Components

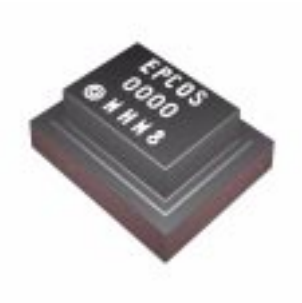
SAW Duplexer

LTE Band 13

Series/type:	**B7678** **B39781B7678A710**
Date:	January 24, 2011
Version:	2.1

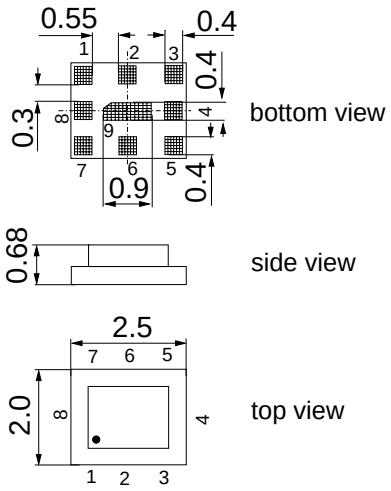
Application

- Low-loss SAW duplexer for mobile telephone LTE Band 13 systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 10 MHz
- Very small size and low height



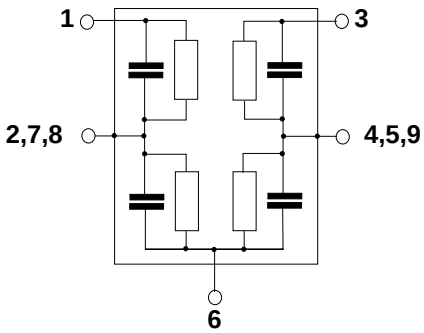
Features

- Package size 2.5 x 2.0 x 0.68 mm^3
- RoHS compatible
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **L**evel **S**ensitivity **3**



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 = –30 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω || 18 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characterisitcs TX - ANT		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C		782.0		MHz
Maximum insertion attenuation					
777.0 ... 787.0 MHz	α	—	1.9	2.4	dB
Amplitude ripple (p-p)					
777.0 ... 787.0 MHz	Δα	—	0.5	1.3	dB
Input VSWR (TX port)					
777.0 ... 787.0 MHz		—	1.5	2.0	
Output VSWR (ANT port)					
777.0 ... 787.0 MHz		—	1.5	2.0	
Attenuation	α				
10.0 ... 150.0 MHz		40	60	—	dB
150.0 ... 350.0 MHz		35	47	—	dB
350.0 ... 650.0 MHz		30	42	—	dB
728.0 ... 746.0 MHz		35	50	—	dB
746.0 ... 756.0 MHz		47	57	—	dB
758.0 ... 768.0 MHz		30	32	—	dB
808.0 ... 818.0 MHz		30	43	—	dB
869.0 ... 894.0 MHz		35	45	—	dB
1452.0 ... 1492.0 MHz		35	49	—	dB
1554.0 ... 1574.0 MHz		35	50	—	dB
1574.0 ... 1577.0 MHz		45	51	—	dB
1670.0 ... 1675.0 MHz		35	51	—	dB
1930.0 ... 1990.0 MHz		35	50	—	dB
2110.0 ... 2170.0 MHz		35	48	—	dB
2300.0 ... 2361.0 MHz		30	40	—	dB
2361.0 ... 2690.0 MHz		30	41	—	dB
3300.0 ... 3800.0 MHz		20	24	—	dB
5150.0 ... 5850.0 MHz		5	12	—	dB

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω || 18 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characterisitcs ANT - RX		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C		751.0		MHz
Maximum insertion attenuation					
746.0 ... 756.0 MHz	α	—	2.1	2.6	dB
Amplitude ripple (p-p)					
746.0 ... 756.0 MHz	Δα	—	0.5	1.2	dB
Input VSWR (ANT port)					
746.0 ... 756.0 MHz		—	1.6	2.0	
Output VSWR (RX port)					
746.0 ... 756.0 MHz		—	1.6	2.0	
Attenuation	α				
10.0 ... 150.0 MHz		40	60	—	dB
150.0 ... 350.0 MHz		35	47	—	dB
350.0 ... 650.0 MHz		30	39	—	dB
698.0 ... 716.0 MHz		35	40	—	dB
716.0 ... 722.0 MHz		35	43	—	dB
777.0 ... 787.0 MHz		51	59	—	dB
788.0 ... 818.0 MHz		35	42	—	dB
824.0 ... 849.0 MHz		30	40	—	dB
1492.0 ... 1543.0 MHz		32	38	—	dB
1554.0 ... 1574.0 MHz		35	38	—	dB
1574.0 ... 1577.0 MHz		35	38	—	dB
1710.0 ... 1770.0 MHz		35	39	—	dB
1920.0 ... 1980.0 MHz		35	39	—	dB
2200.0 ... 2690.0 MHz		35	38	—	dB
2690.0 ... 3800.0 MHz		25	30	—	dB
5150.0 ... 5850.0 MHz		5	11	—	dB

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT} = 50 Ω || 18 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

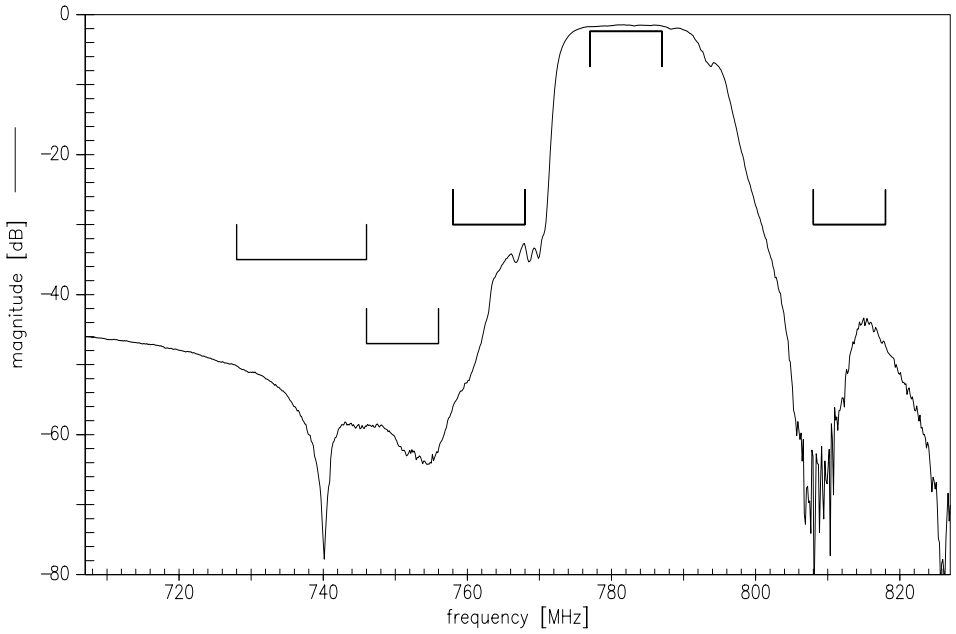
Characterisitcs TX - RX		min.	typ. @ 25 ˚C	max.	
Isolation	α				
746.0 ... 756.0 MHz		48	59	—	dB
777.0 ... 787.0 MHz		52	59	—	dB

Maximum ratings

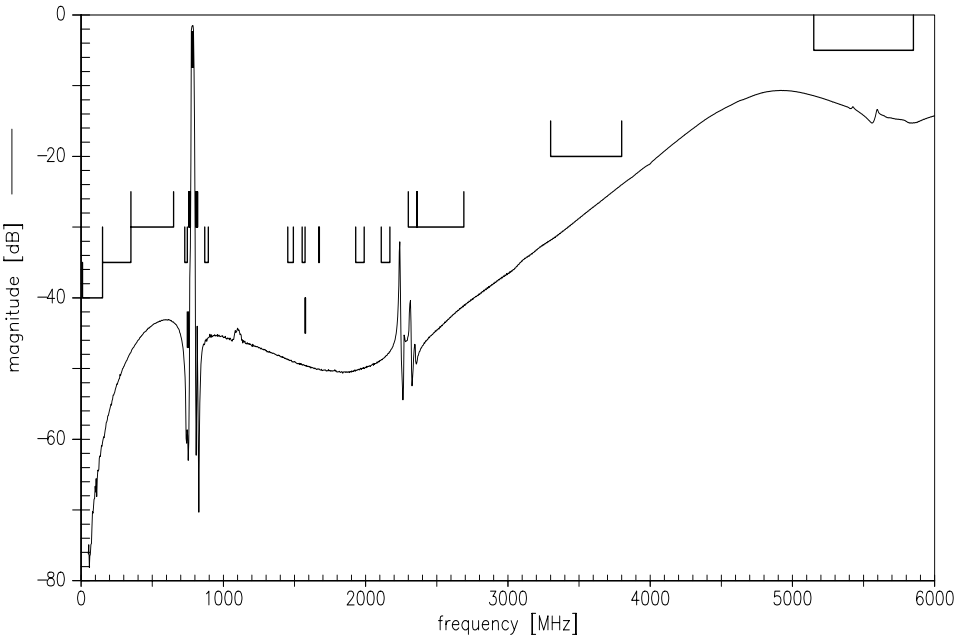
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	100[1)]	V	machine model, 1 pulse
Input power at Tx Port				
779.5 ... 784.5 MHz	P_{IN}	28	dBm	} LTE uplink signal
Elsewhere	P_{IN}	10		55 ˚C, 50000 H

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

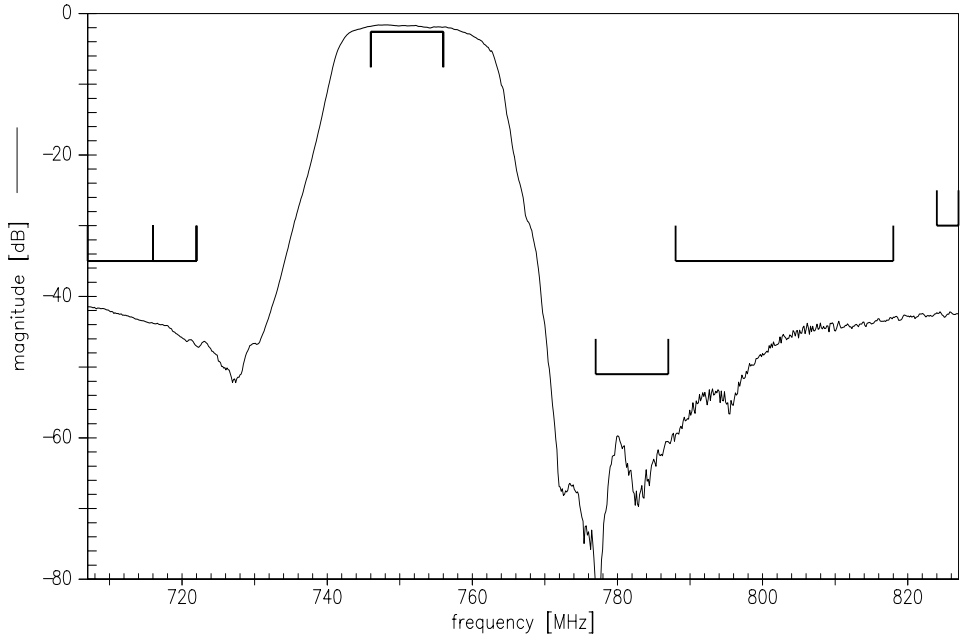
Frequency Response TX-ANT



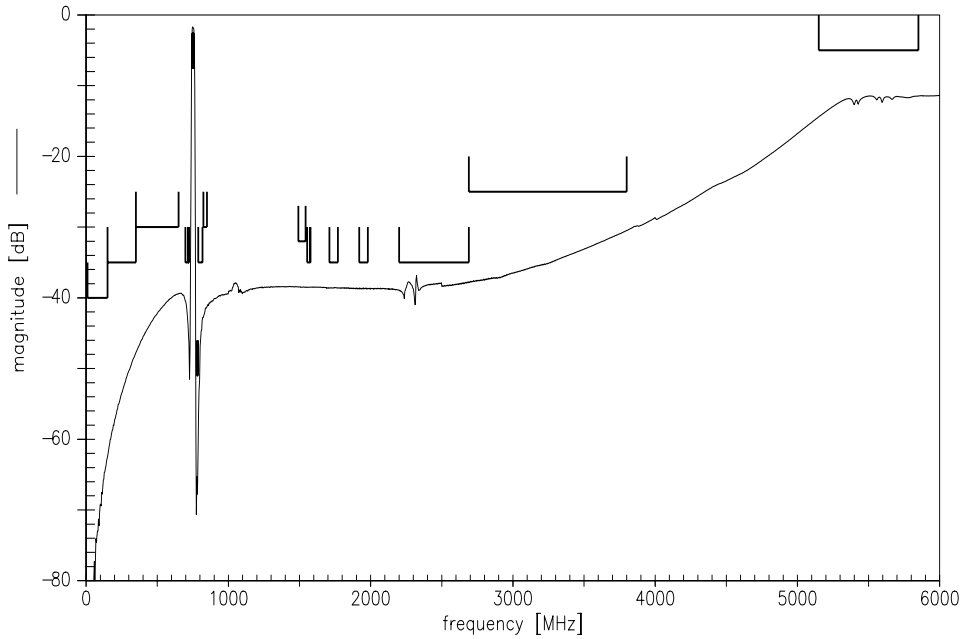
Frequency Response TX-ANT



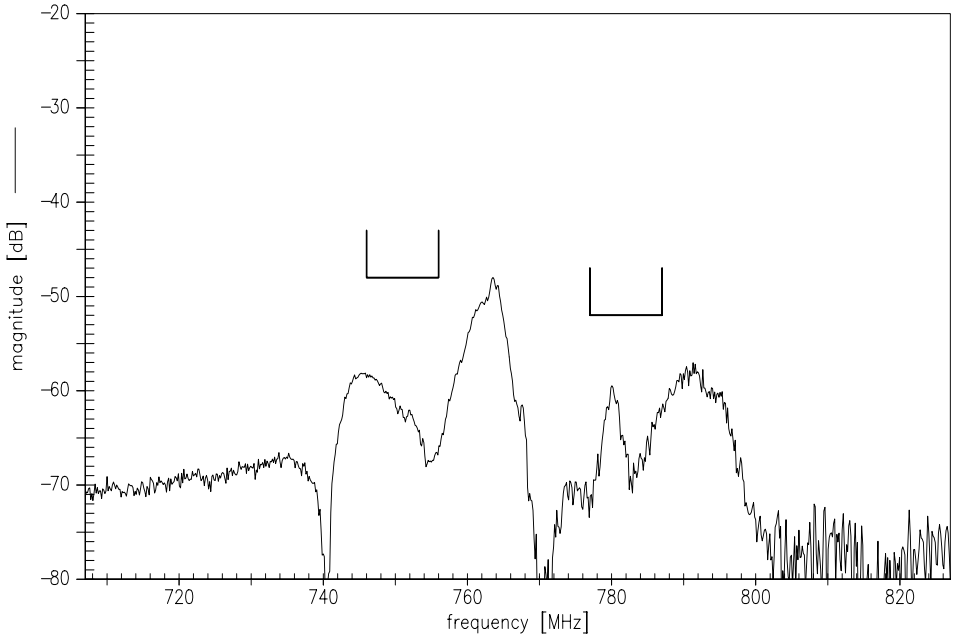
Frequency Response ANT-RX



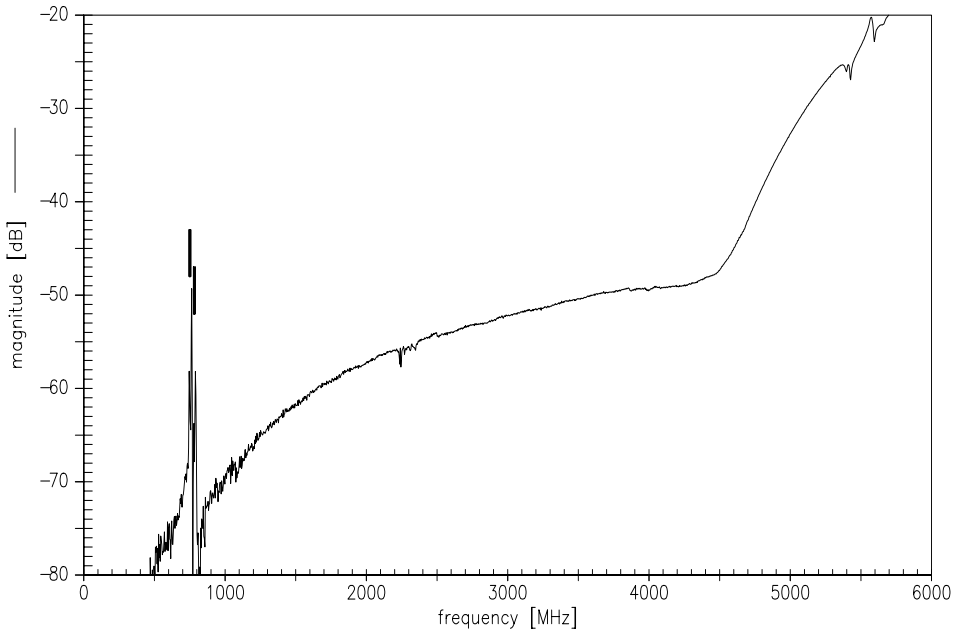
Frequency Response ANT-RX



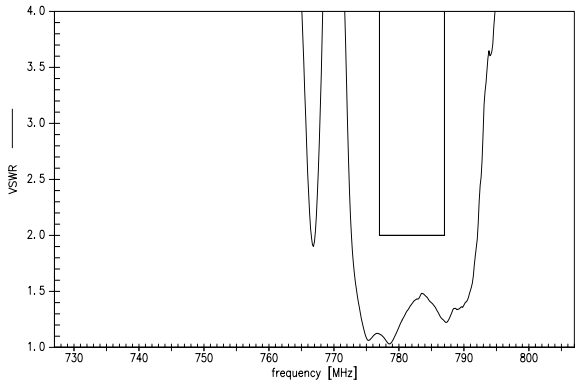
ISOLATION TX-RX

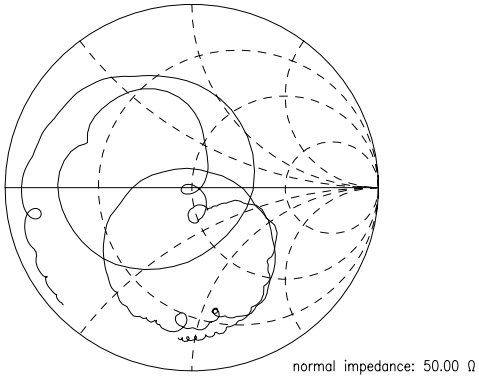


ISOLATION TX-RX

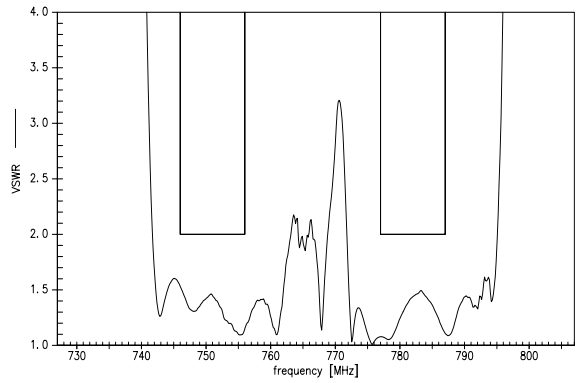


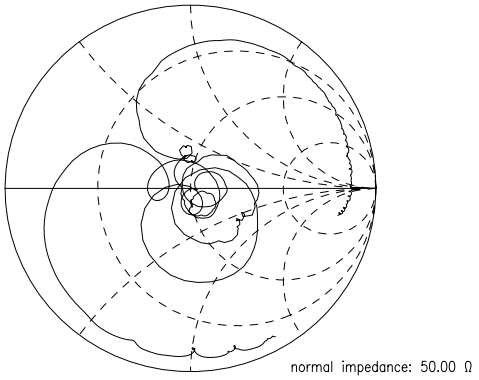
S11 VSWR (TX)



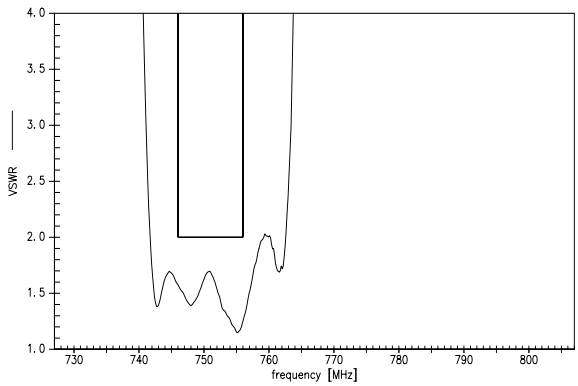


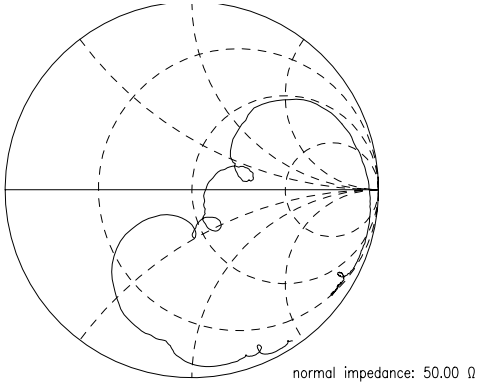
S22 VSWR (ANT)





S33 VSWR (RX)





References

Type	B7678
Ordering code	B39781B7678A710
Marking and package	C61157-A3-A61
Packaging	F61074-V8153-Z000
Date codes	L_1126
S-parameters	B7678_NB.s3p B7678_WB.s3p See file header for port/pin assignment table
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."
Matching coils	See Inductor pdf-catalog http://www.tdk.co.jp/tefe02/coil.htm#aname1 and Data Library for circuit simulation http://www.tdk.co.jp/etvcl/index.htm

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