



SAW Components

SAW Duplexer

LTE Band 13

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



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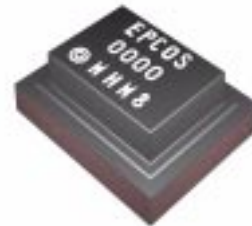
782.0 / 752.0 MHz

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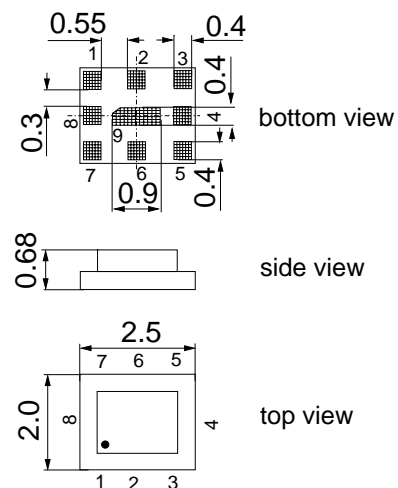
Application

- 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



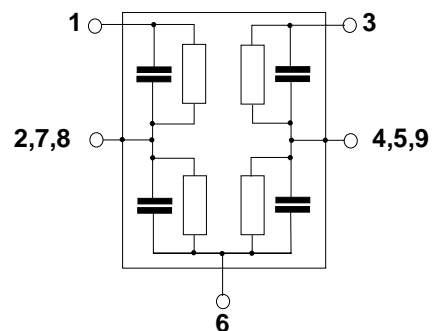
Features

- Package size 2.5 x 2.0 x 0.68 mm³
- 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





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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

Characteristics 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



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Temperature range for specification: $T = -30\text{ °C to }+85\text{ °C}$
 Antenna terminating impedance: $Z_{\text{ANT}} = 50\ \Omega \parallel 18\text{ nH}$
 RX terminating impedance: $Z_{\text{RX}} = 50\ \Omega$
 TX terminating impedance: $Z_{\text{TX}} = 50\ \Omega$

Characteristics 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	$\Delta\alpha$	—	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



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

Characteristics 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	machine model, 1 pulse
DC voltage	V _{DC}	5	V	
ESD voltage	V _{ESD}	100 ¹⁾	V	
Input power at Tx Port				} LTE uplink signal 55 °C, 50000 H
779.5 ... 784.5 MHz	P _{IN}	28	dBm	
Elsewhere	P _{IN}	10		

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



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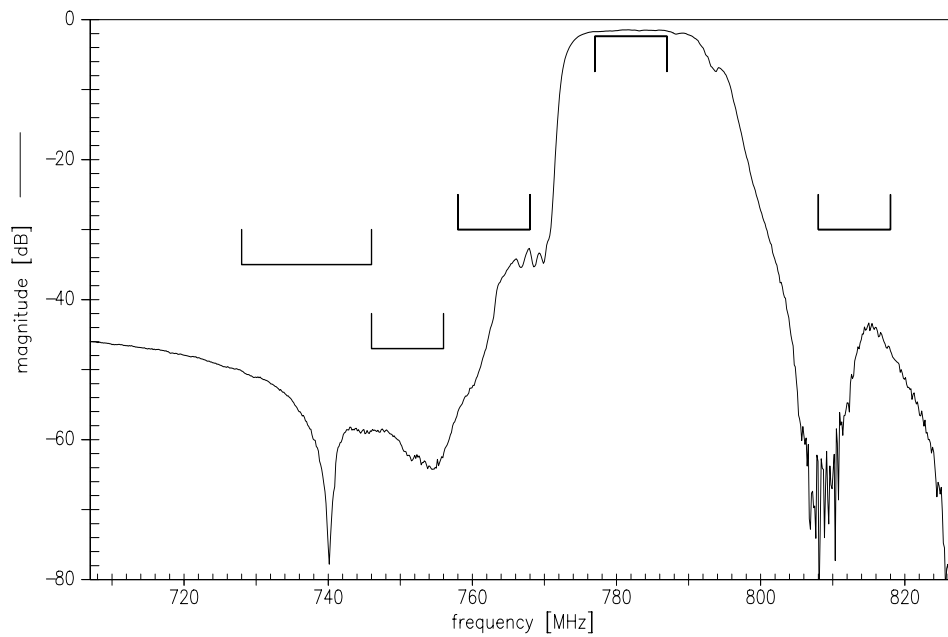
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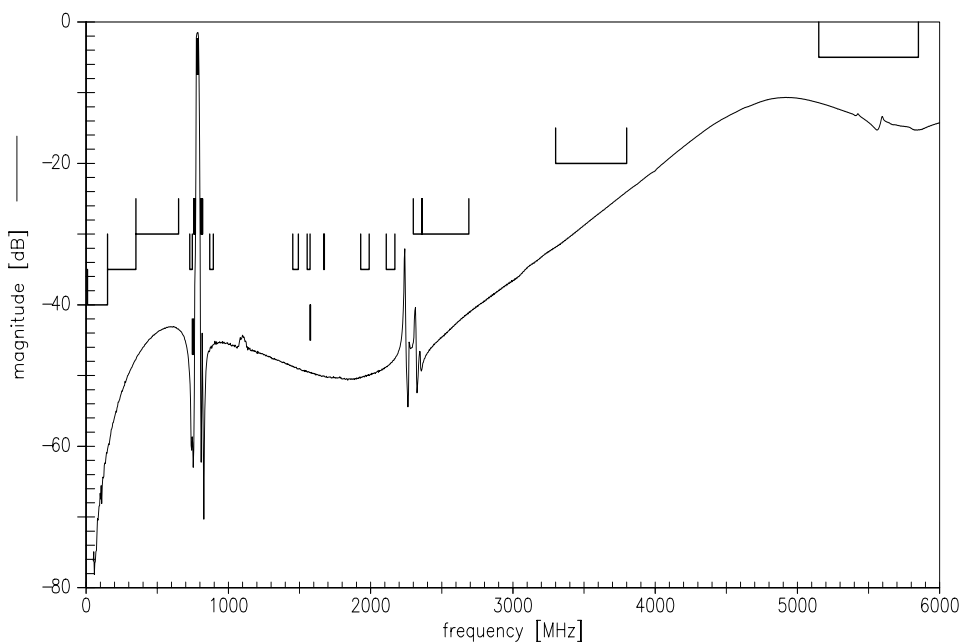
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Frequency Response TX-ANT



Frequency Response TX-ANT



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



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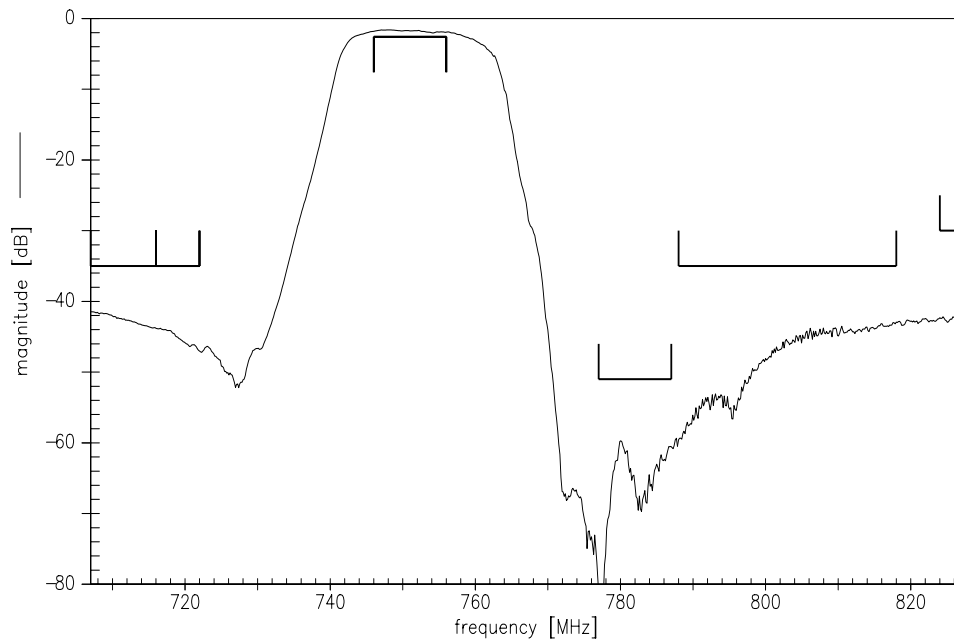
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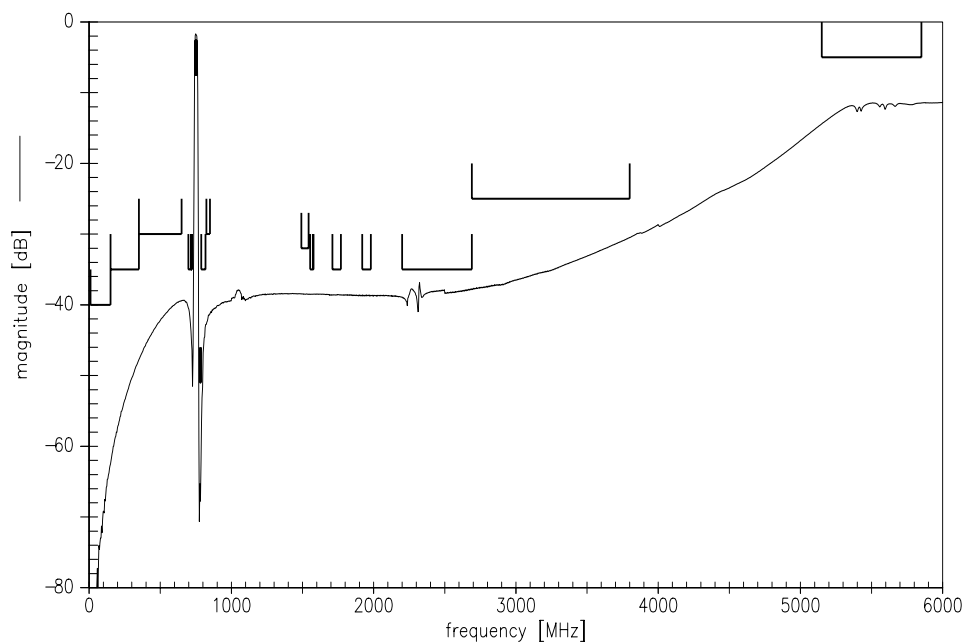
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Frequency Response ANT-RX



Frequency Response ANT-RX



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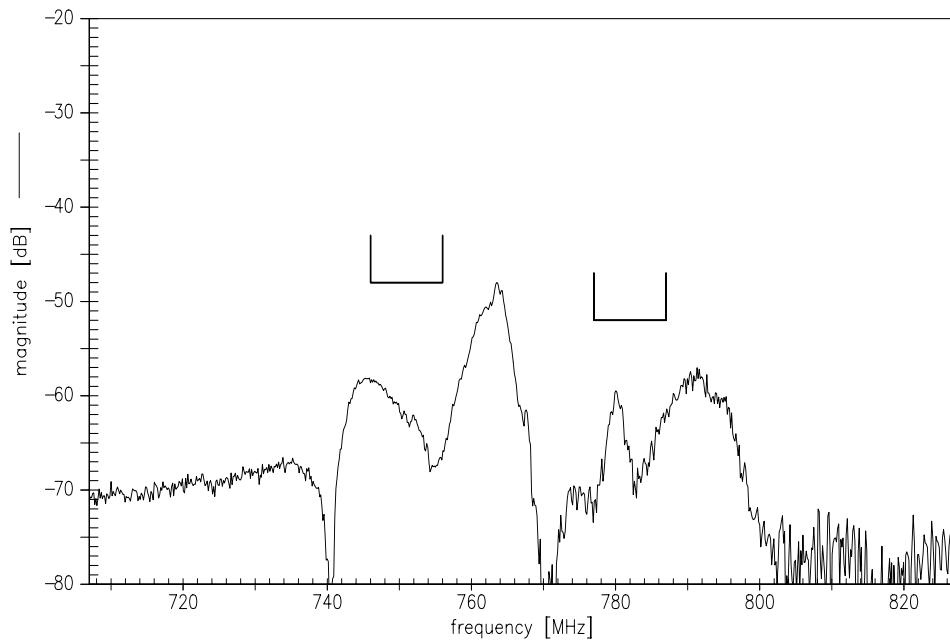
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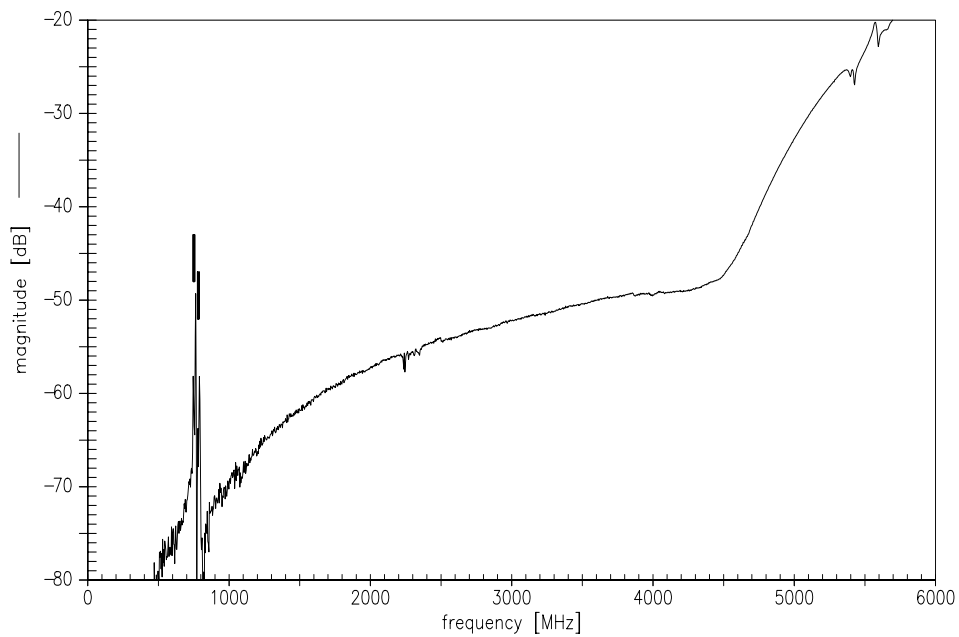
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ISOLATION TX-RX



ISOLATION TX-RX



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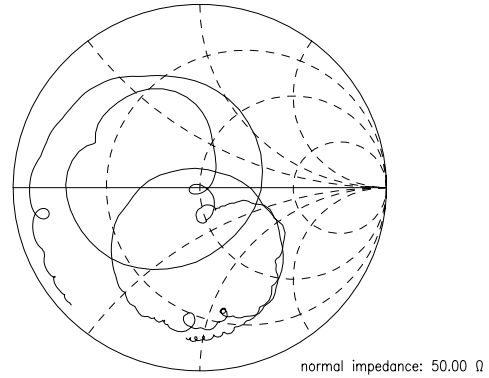
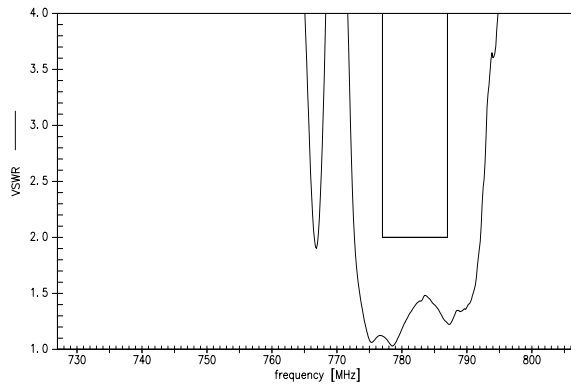
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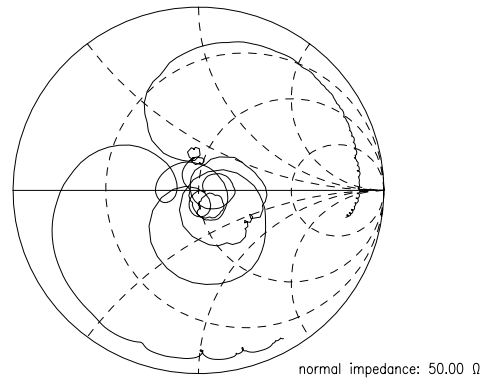
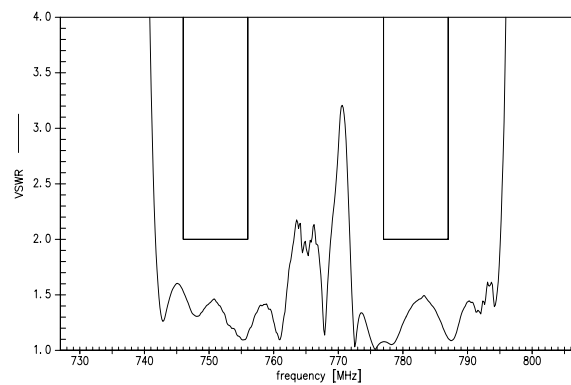
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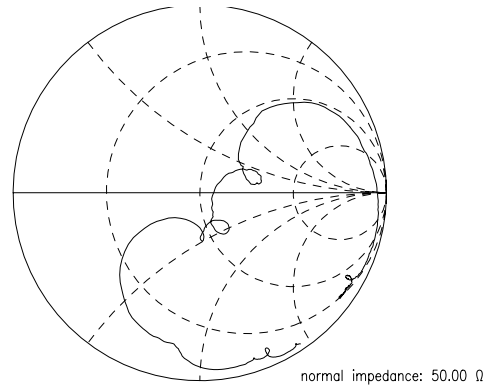
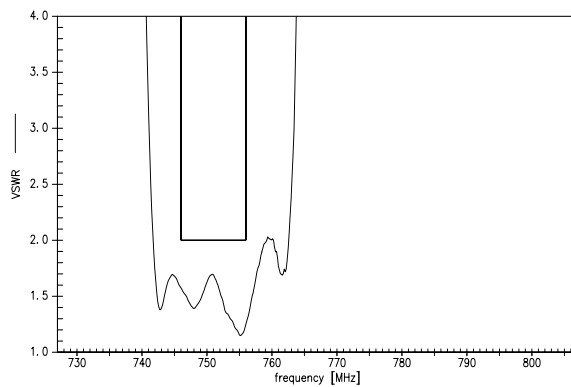
S11 VSWR (TX)



S22 VSWR (ANT)



S33 VSWR (RX)



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**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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Surface Acoustic Wave Components Division

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