

SAW Components

SAW Duplexer for Femtocell and Small-cell

Band 12 (3G/LTE)

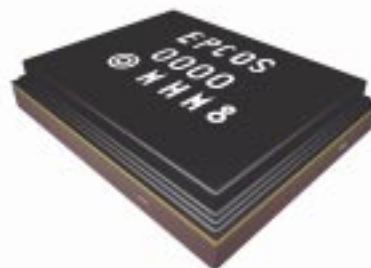
Series/type: B8012
Ordering code: B39741B8012P810

Date: July 09, 2014
Version: 2.0

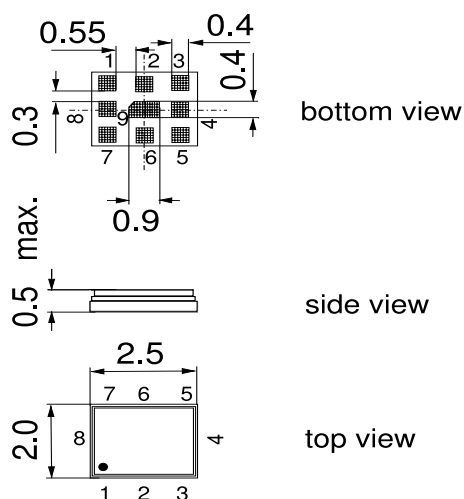
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Application

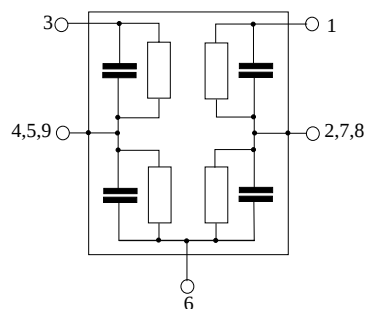
- Low-loss SAW duplexer for 3G/LTE femtocell and smallcell systems (Band 12)
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 17 MHz
- High power durability
- Rx = Uplink = 699-716 MHz
- Tx = Downlink = 729-746 MHz


Features

- Package size 2.5 * 2.0 mm²
- max. Package height 0.5 mm
- RoHS compatible
- Package for **Surface Mount Technology (SMT)**
- Ni, Au-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- Moisture Sensitivity Level 3


Pin configuration

- 3 RX output
- 1 TX input
- 6 Antenna
- 2, 4, 5, 7, 8, 9 To be grounded



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Characteristics

Temperature range for specification: $T = -10\text{ }^{\circ}\text{C}$ to $+85\text{ }^{\circ}\text{C}$
 Antenna terminating impedance: $Z_{\text{ANT}} = 50\text{ }\Omega \parallel 17\text{ nH}$
 RX terminating impedance: $Z_{\text{RX}} = 50\text{ }\Omega$
 TX terminating impedance: $Z_{\text{TX}} = 50\text{ }\Omega$

Characteristics ANT - RX				min.	typ. @ 25 °C	max.	
Center frequency	f_C			—	707.5	—	MHz
Maximum insertion attenuation	α_{max}						
699.0 ... 714.75 MHz				—	2.3	3.0	dB
714.75 ... 716.0 MHz				—	2.4	4.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$						
699.0 ... 714.75 MHz				—	0.9	2.0	dB
699.0 ... 716.0 MHz				—	1.0	3.0	dB
Error Vector Magnitude	EVM ¹⁾						
@ f_{carrier} 701.5 ... 713.5 MHz				-	2.2	5.0	%
Input VSWR (ANT port)							
699.0 ... 716.0 MHz				—	1.8	2.2	
Output VSWR (RX port)							
699.0 ... 716.0 MHz				—	2.0	2.3	
Attenuation	α						
100.0 ... 600.0 MHz				45	58	—	dB
693.25 ... 694.0 MHz				12	15	—	dB
694.0 ... 694.5 MHz				5	23	—	dB
694.5 ... 697.75 MHz				1.5	2.5	—	dB
716.0 ... 721.0 MHz				1	2.3	—	dB
721.0 ... 722.5 MHz				5	13	—	dB
722.5 ... 728.0 MHz				10	19	—	dB
729.0 ... 746.0 MHz				45	50	—	dB
746.0 ... 756.0 MHz				42	48	—	dB
758.0 ... 768.0 MHz				45	49	—	dB
777.0 ... 787.0 MHz				45	50	—	dB
788.0 ... 798.0 MHz				45	52	—	dB
869.0 ... 894.0 MHz				45	54	—	dB
1398.0 ... 1432.0 MHz				45	56	—	dB
1574.0 ... 1606.0 MHz				45	54	—	dB

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Characterisitcs ANT - RX				min.	typ. @ 25 °C	max.	
1710.0	...	1755.0	MHz	45	53	—	dB
1850.0	...	1915.0	MHz	40	51	—	dB
1930.0	...	1995.0	MHz	40	50	—	dB
2110.0	...	2170.0	MHz	30	44	—	dB
2400.0	...	2500.0	MHz	40	50	—	dB

¹⁾ Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141

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

Characterisitcs TX - ANT				min.	typ. @ 25 °C	max.	
Center frequency	f_c			—	737.5	—	MHz
Maximum insertion attenuation	α_{max}			—	1.8	2.5	dB
729.0 ... 746.0 MHz							
Amplitude ripple (p-p)	$\Delta\alpha$			—	0.6	1.3	dB
729.0 ... 746.0 MHz							
Error Vector Magnitude	EVM ¹⁾			—	2.5	4.0	%
@ f_{carrier} 731.5 ... 743.5 MHz							
Input VSWR (TX port)				—	1.8	2.0	
729.0 ... 746.0 MHz							
Output VSWR (ANT port)				—	1.6	2.0	
729.0 ... 746.0 MHz							
Attenuation	α						
10.0 ... 699.0 MHz				30	42	—	dB
699.0 ... 716.0 MHz				45	51	—	dB
777.0 ... 787.0 MHz				35	48	—	dB
788.0 ... 798.0 MHz				35	45	—	dB
824.0 ... 849.0 MHz				35	41	—	dB
869.0 ... 894.0 MHz				35	40	—	dB
1398.0 ... 1432.0 MHz				35	45	—	dB
1458.0 ... 1492.0 MHz				35	46	—	dB
1574.0 ... 1606.0 MHz				35	47	—	dB
1710.0 ... 1755.0 MHz				35	49	—	dB
1850.0 ... 1915.0 MHz				40	49	—	dB
1930.0 ... 1995.0 MHz				40	49	—	dB
2097.0 ... 2148.0 MHz				30	46	—	dB
2110.0 ... 2170.0 MHz				30	46	—	dB
2187.0 ... 2238.0 MHz				30	44	—	dB
2400.0 ... 2500.0 MHz				35	42	—	dB

¹⁾ Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141

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

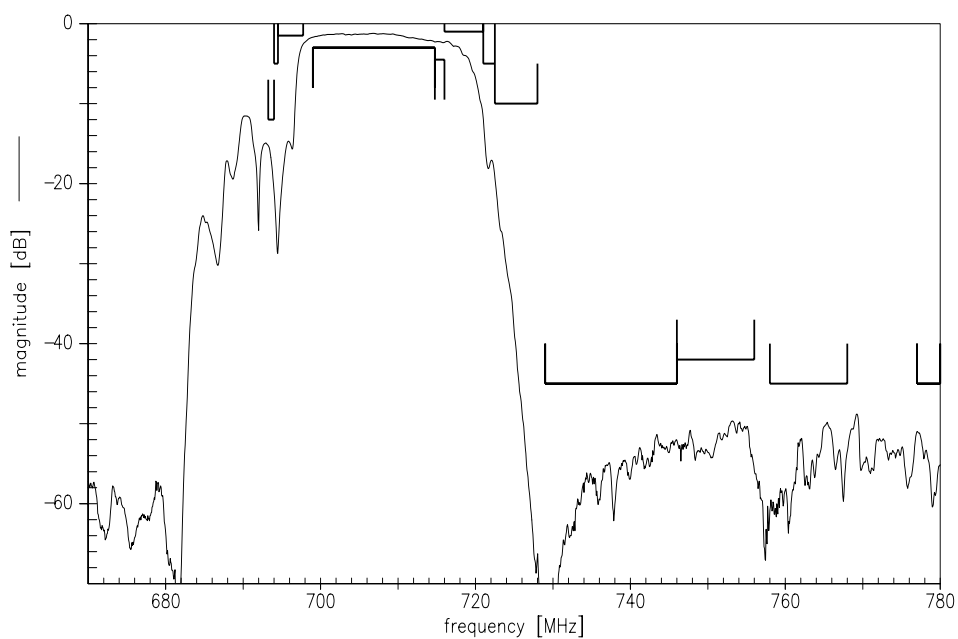
Characteristics TX-RX				min.	typ. @ 25 °C	max.	
Attenuation							
	699.0 ... 716.0 MHz		α	48	52	—	dB
	729.0 ... 746.0 MHz			48	52	—	dB

Maximum Ratings

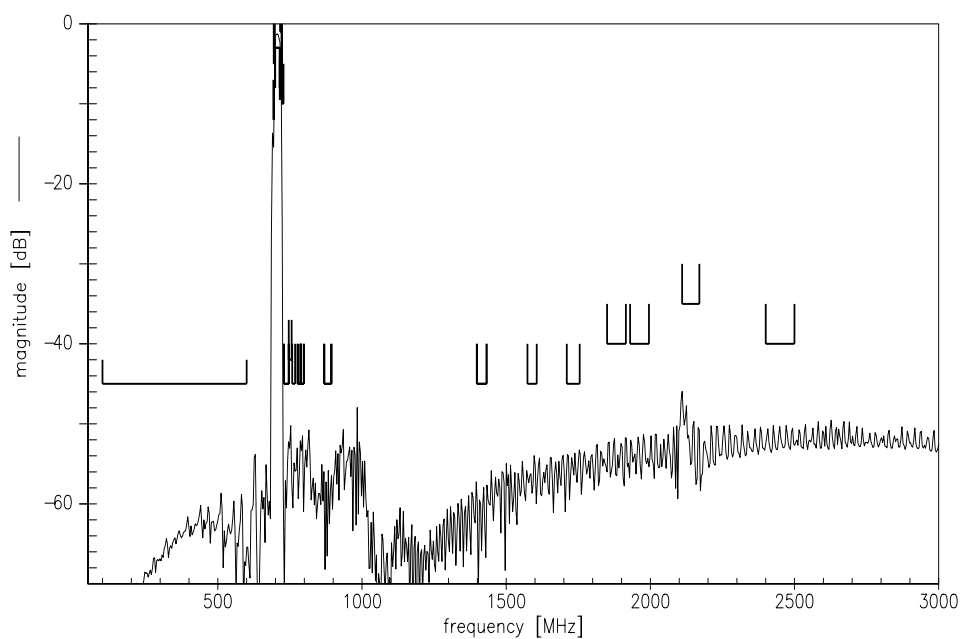
Storage temperature range	T_{stg}	−40/+85	°C	machine model, 1 pulse source and load impedance 50 Ω LTE 5 MHz downlink } average power T = 55°C, 50.000 h
DC voltage	V_{DC}	0	V	
ESD voltage	V_{ESD}	50 ¹⁾	V	
Input power at pin 1				
729.0 ... 746.0 MHz	P_{in}	31	dBm	} average power T = 55°C, 50.000 h
elsewhere	P_{in}	10	dBm	

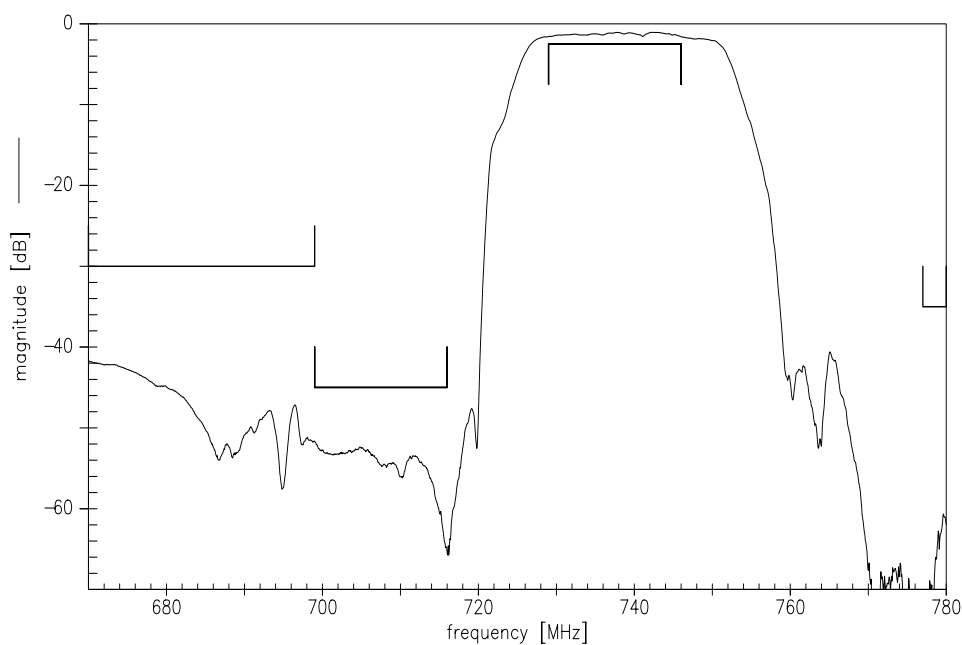
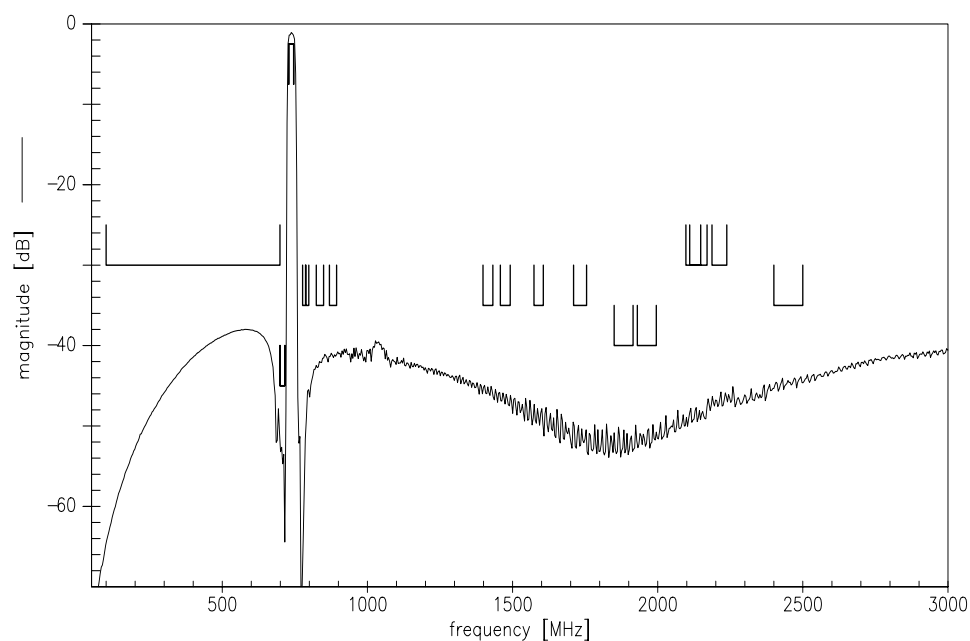
¹⁾ According to JESD22-A115A (machine model), 1 negative and 1 positive pulses.

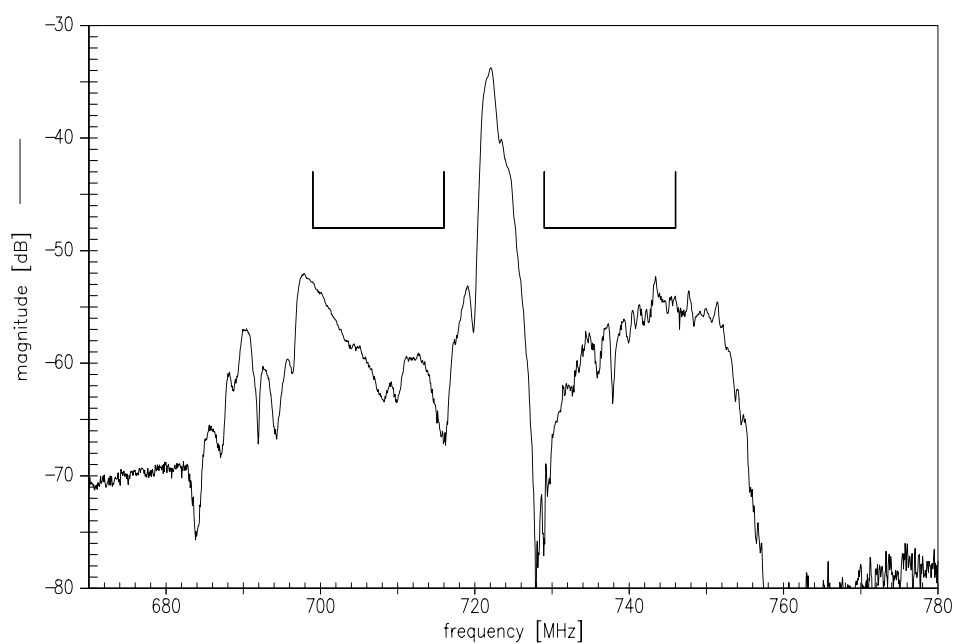
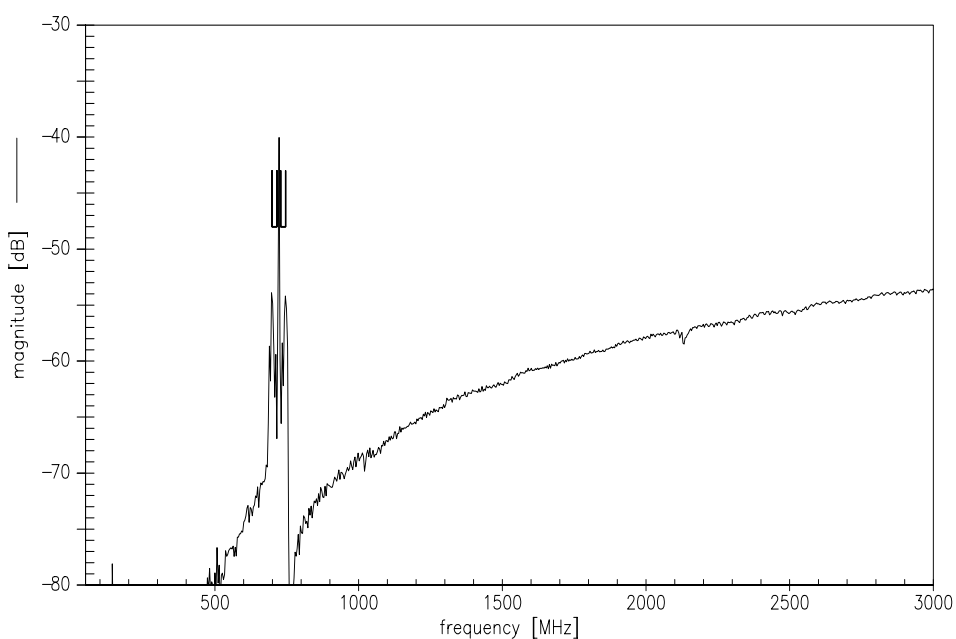
Frequency Response ANT-RX

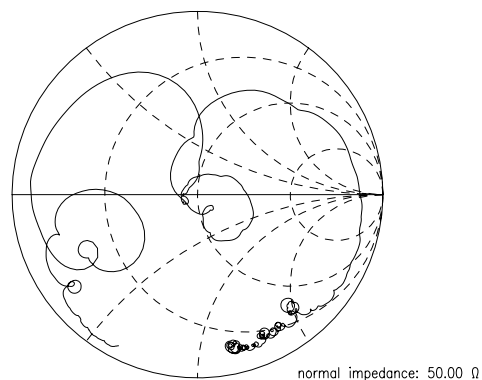
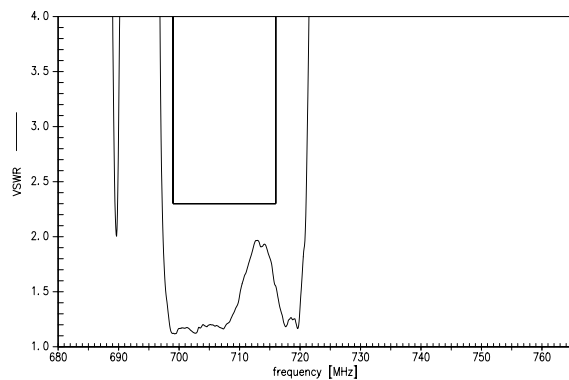
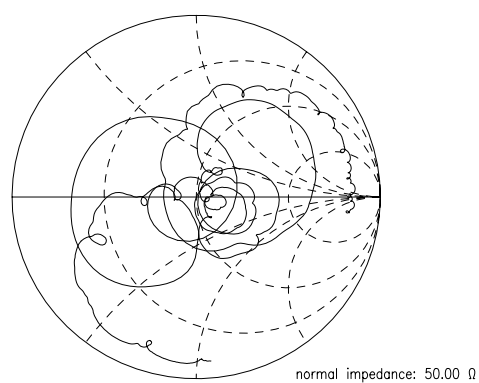
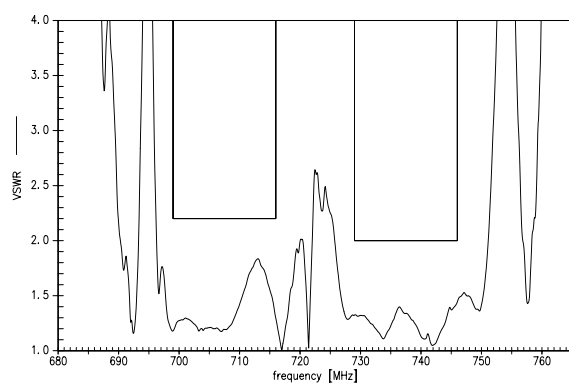
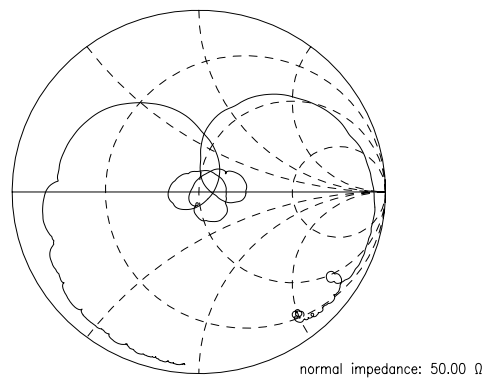
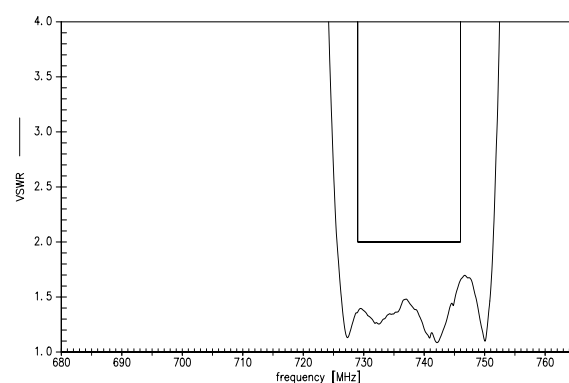


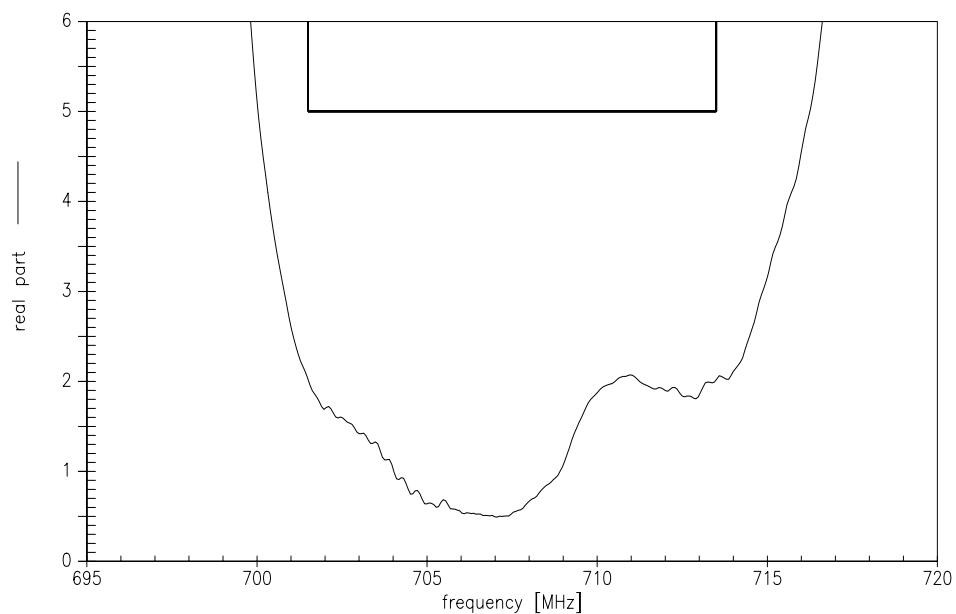
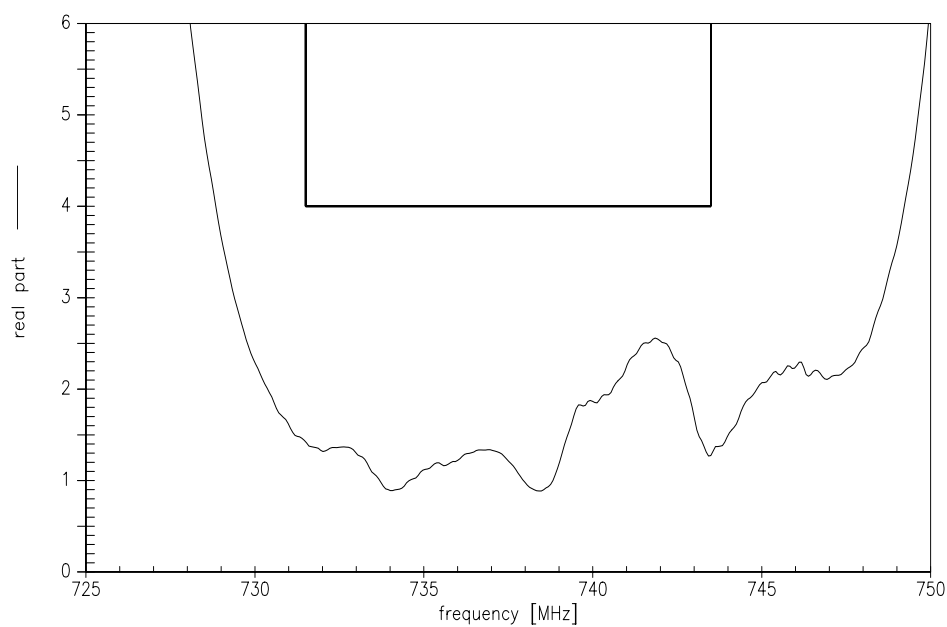
Frequency Response ANT-RX



Frequency Response TX-ANT

Frequency Response TX-ANT


Frequency Response TX-RX

Frequency Response TX-RX


S11 VSWR (RX)

S22 VSWR (ANT)

S33 VSWR (TX)


EVM RX

EVM TX


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References

Type	B8012
Ordering code	B39741B8012P810
Marking and package	C61157-A3-A27
Packaging	F61074-V8232-Z000
Date codes	L_1126
S-parameters	B8012_NB.s3p, B8012_WB.s3p See file header for port/pin assignment table
Soldering profile	S_6001
RoHS compatible	RoHS-compatible means that products are compatible with the requirements according to Art. 4 (substance restrictions) of Directive 2011/65/EU of the European Parliament and of the Council of June 8 th , 2011, on the restriction of the use of certain hazardous substances in electrical and electronic equipment ("Directive") with due regard to the application of exemptions as per Annex III of the Directive in certain cases.
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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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