SAW Components

SAW Duplexer for Femtocell and Small-cell

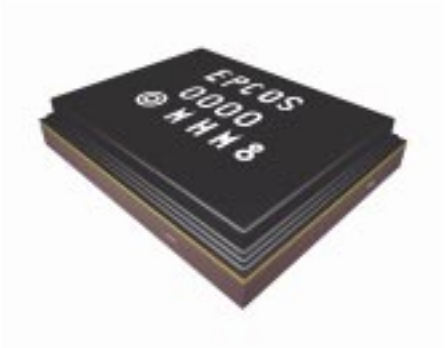
Band 12 (3G/LTE)

Series/type:	**B8012**
Ordering code:	**B39741B8012P810**
Date:	July 09, 2014
Version:	2.0

DataSheet SMD

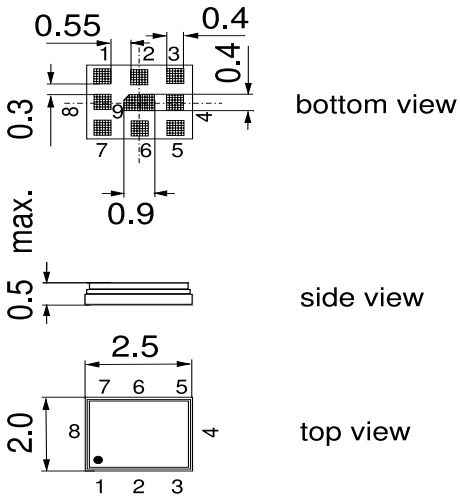
Application

- 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*



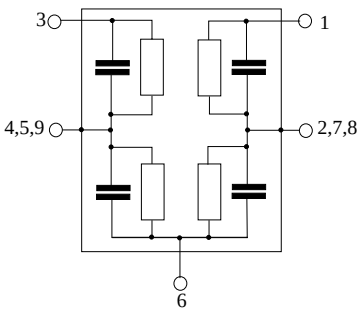
Features

- Package size 2.5 * 2.0 mm²
- max. Package height 0.5 mm
- RoHS compatible
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, Au-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- Moisture Sentivity Level 3



Pin configuration

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



Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω || 17 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	—	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

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

Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω || 17 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	—	737.5	—	MHz
Maximum insertion attenuation	α_{max}				
729.0 ... 746.0 MHz		—	1.8	2.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
729.0 ... 746.0 MHz		—	0.6	1.3	dB
Error Vector Magnitude	EVM[1)]				
@$f_{carrier}$ 731.5 ... 743.5 MHz		-	2.5	4.0	%
Input VSWR (TX port)					
729.0 ... 746.0 MHz		—	1.8	2.0	
Output VSWR (ANT port)					
729.0 ... 746.0 MHz		—	1.6	2.0	
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

Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω || 17 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

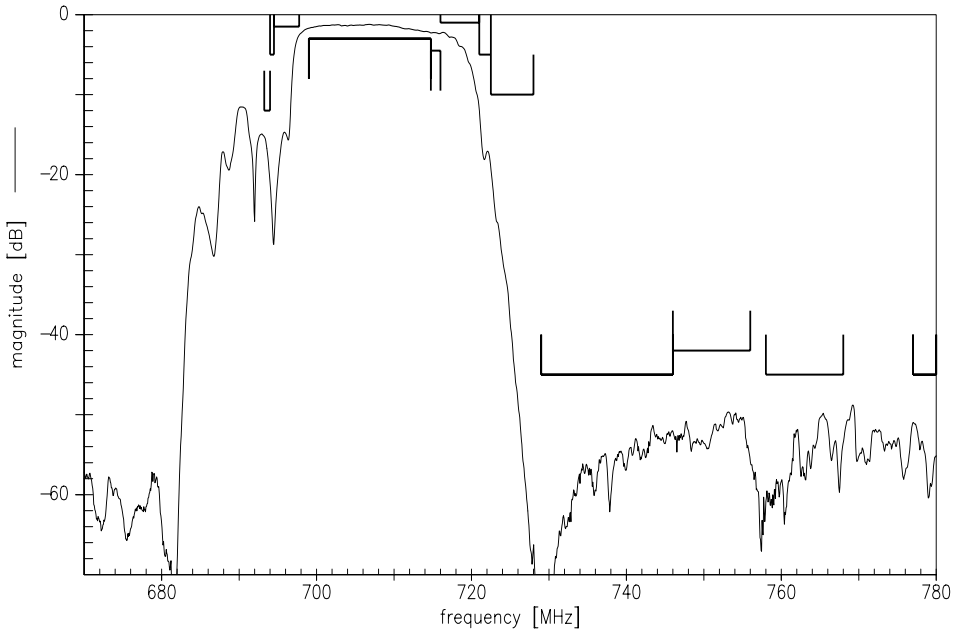
Characteristics TX-RX		min.	typ. @ 25 ˚C	max.	
Attenuation	α				
699.0 ... 716.0 MHz		48	52	—	dB
729.0 ... 746.0 MHz		48	52	—	dB

Maximum Ratings

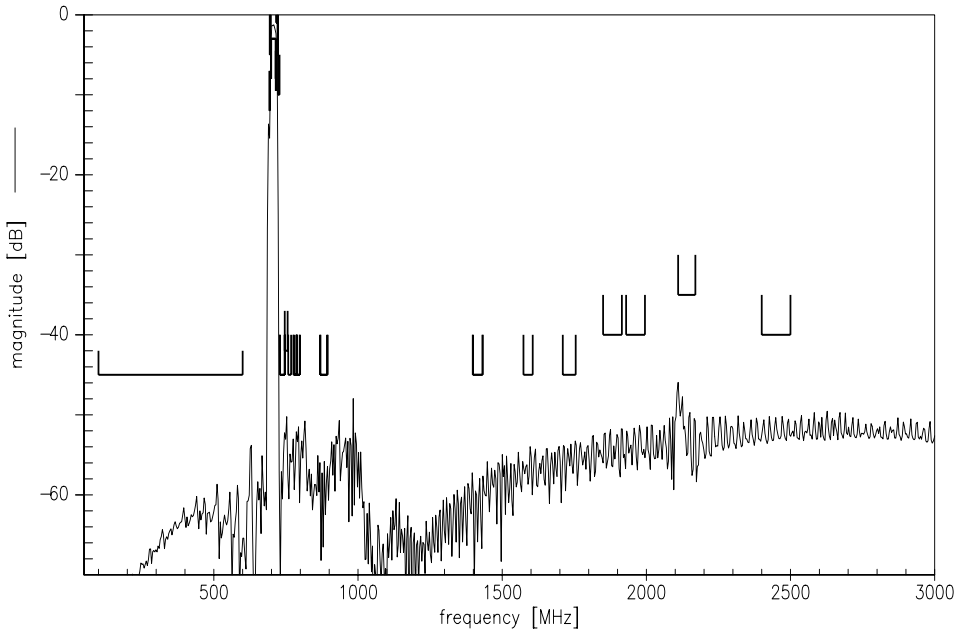
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	0	V	
ESD voltage	V_{ESD}	50[1)]	V	machine model, 1 pulse
Input power at pin 1				source and load impedance 50 Ω
729.0 ...746.0 MHz	P_{in}	31	dBm	} LTE 5 MHz downlink average power T = 55˚C, 50.000 h
elsewhere	P_{in}	10	dBm	

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

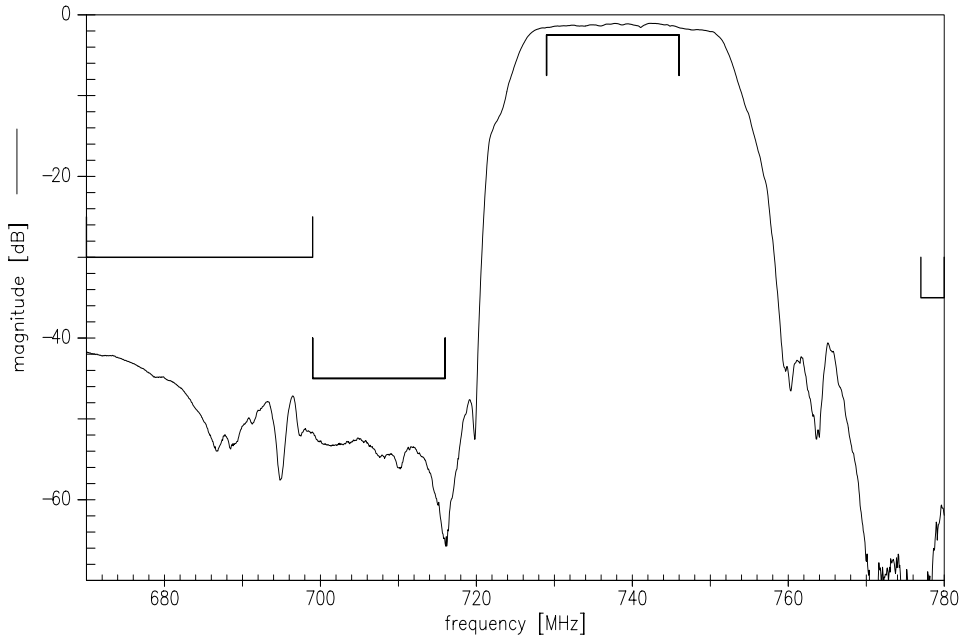
Frequency Response ANT-RX



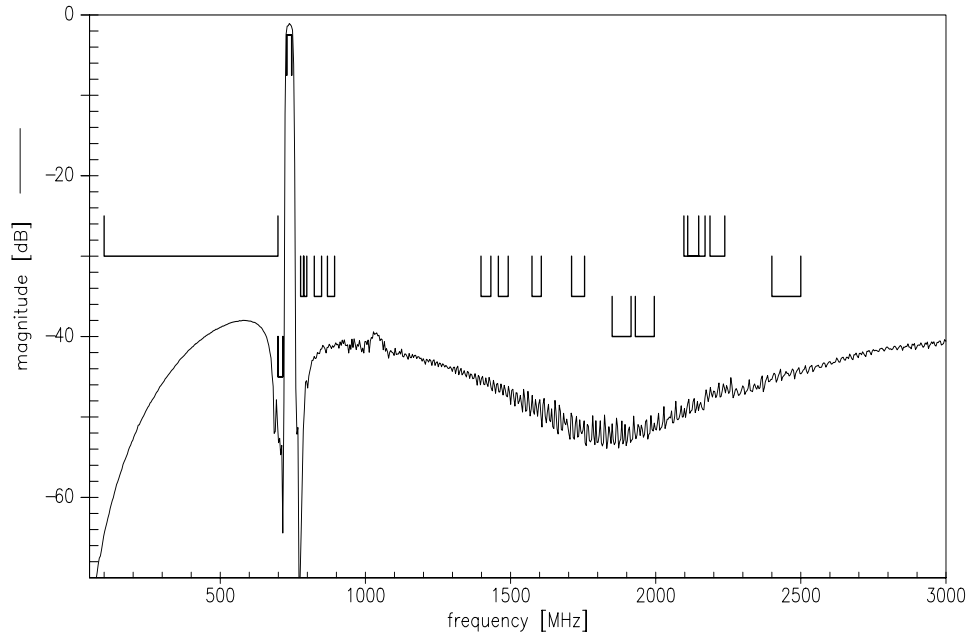
Frequency Response ANT-RX



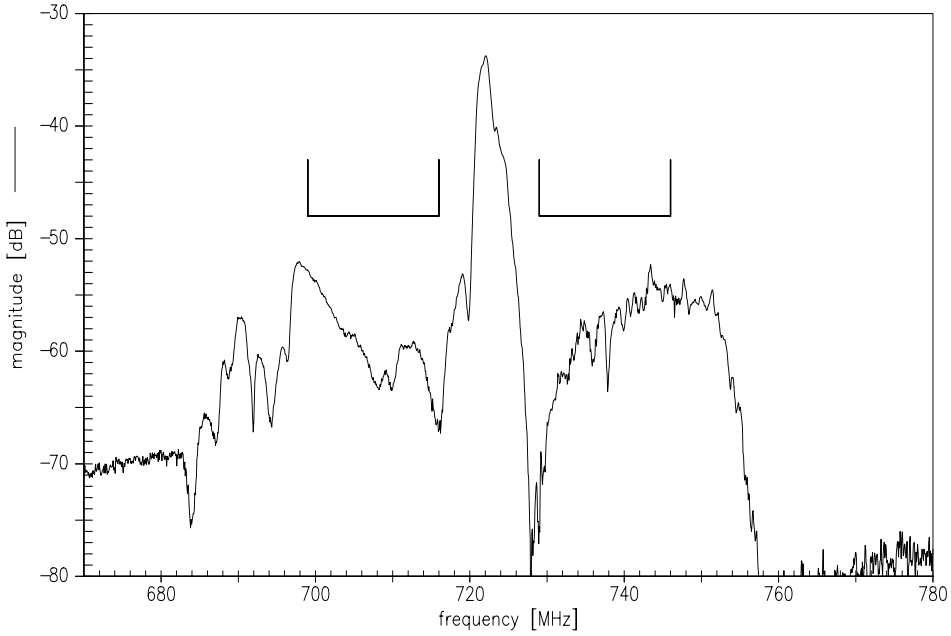
Frequency Response TX-ANT



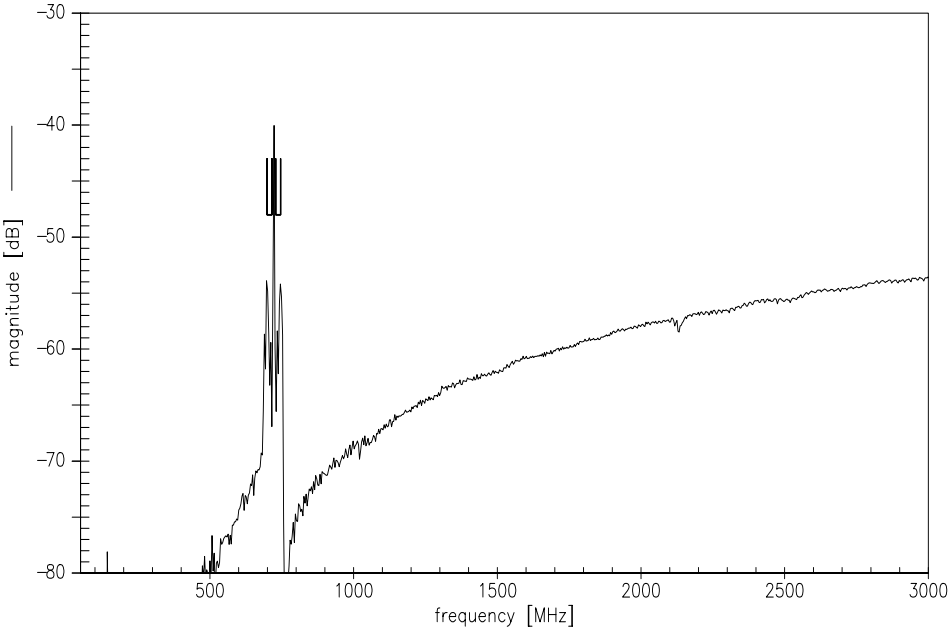
Frequency Response TX-ANT



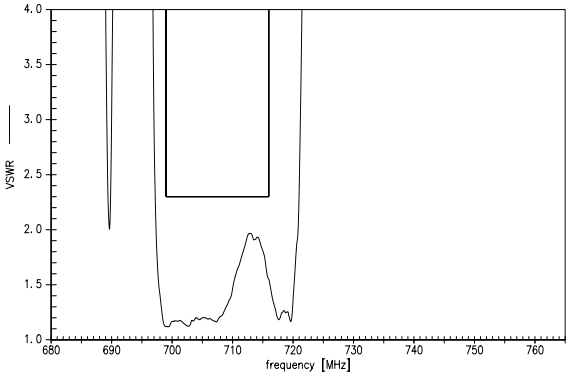
Frequency Response TX-RX

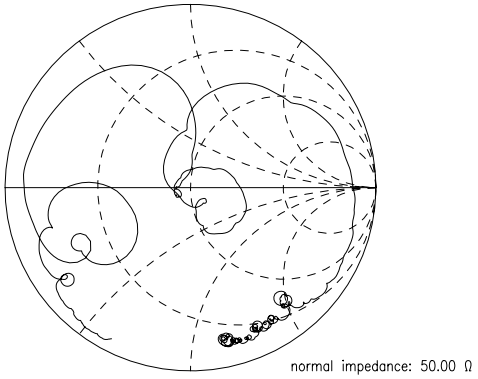


Frequency Response TX-RX

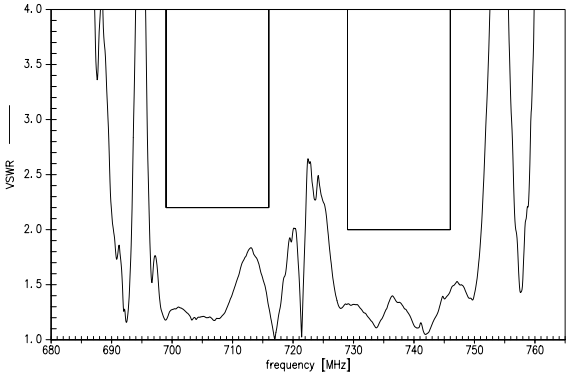


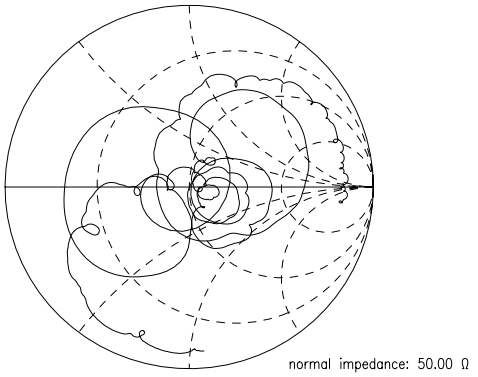
S11 VSWR (RX)



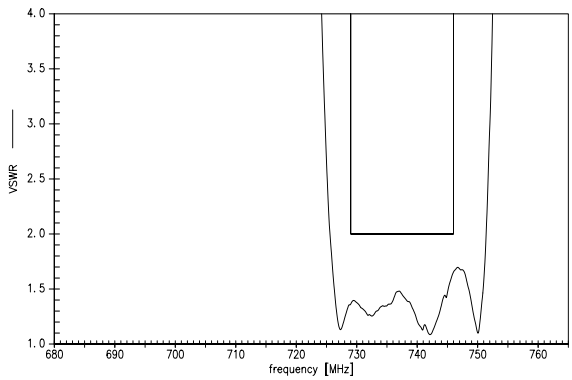


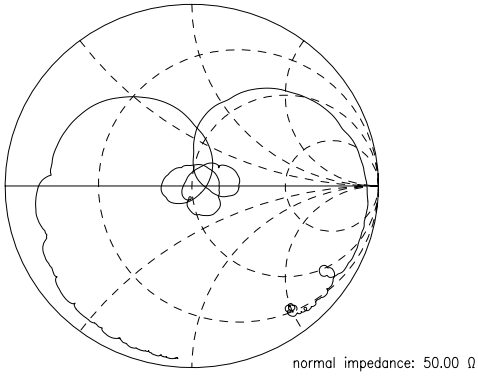
S22 VSWR (ANT)



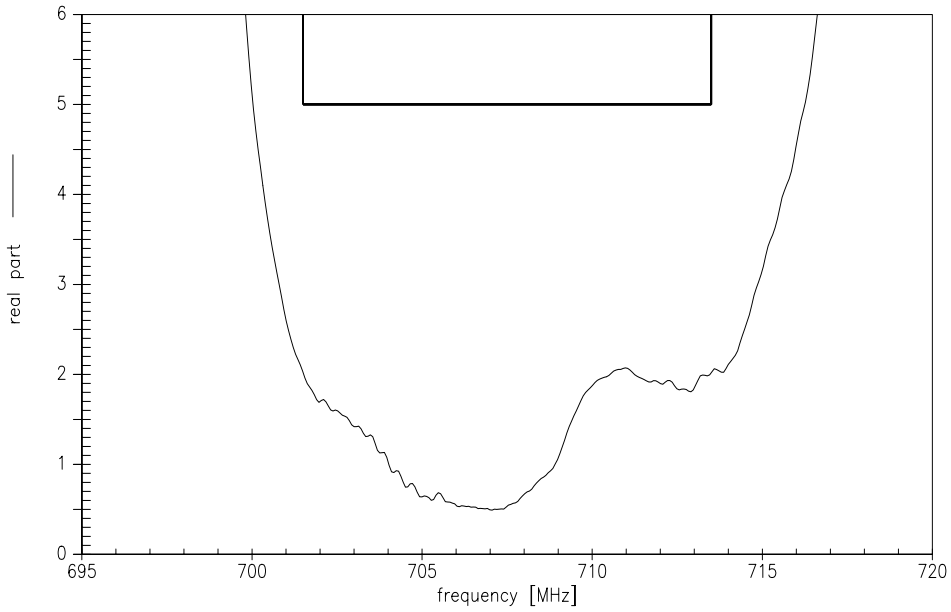


S33 VSWR (TX)

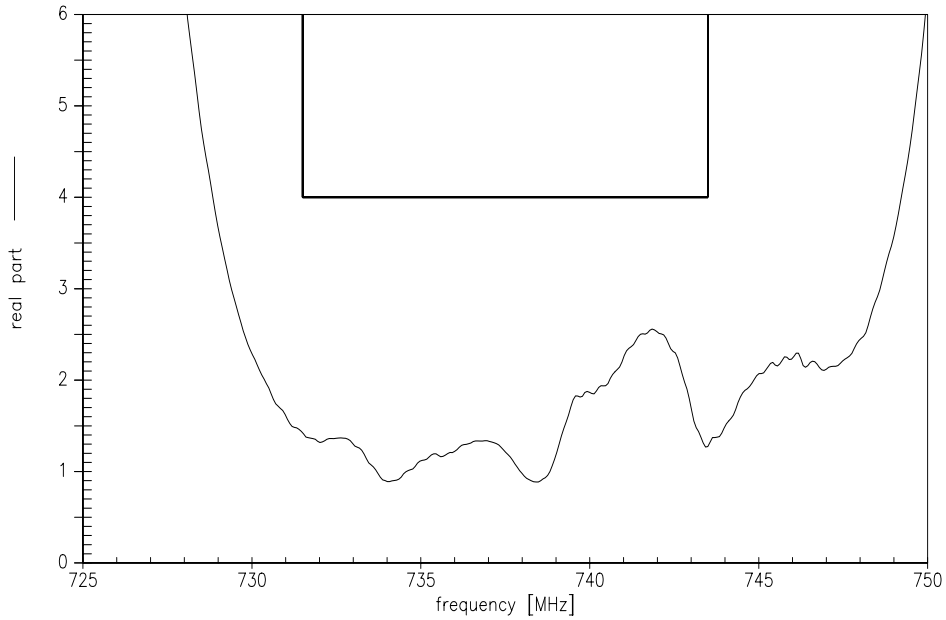




EVM RX


real part
frequency [MHz]
0
1
2
3
4
5
6
695
700
705
710
715
720

EVM TX


real part
frequency [MHz]
0
1
2
3
4
5
6
725
730
735
740
745
750

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 8th, 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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