SAW Components

SAW Duplexer for femtocell

Band 13 (3G/LTE)

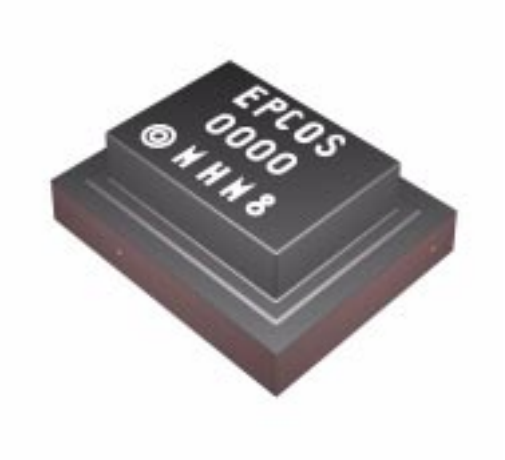
Series/type:	**B7939**
Ordering code:	**B39781B7939P810**
Date:	June 17, 2015
Version:	2.1

EPCOS AG is a TDK Group Company.

Datasheet SMD

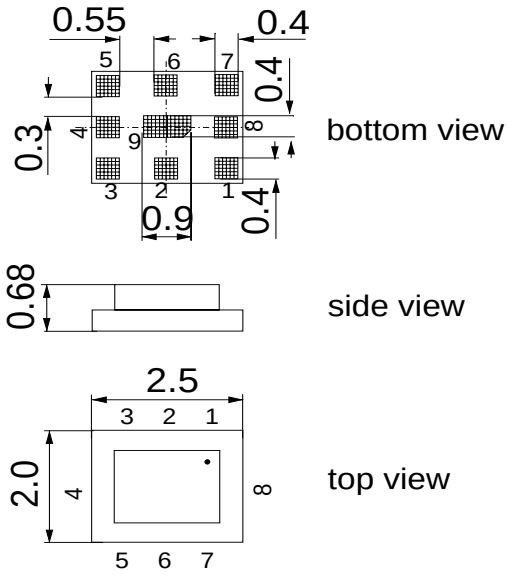
Application

- Low-loss SAW duplexer for 3G/LTE femtocell systems (Band 13)
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 10 MHz
- High power durability



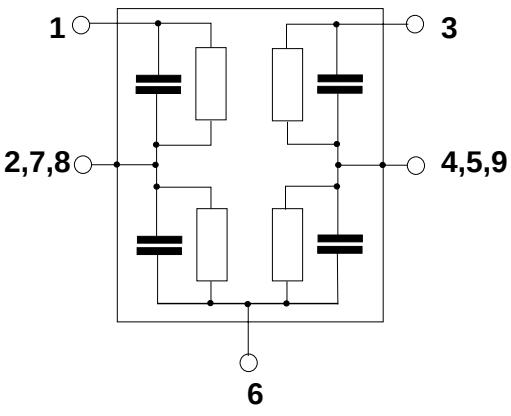
Features

- Package size 2.5 * 2.0 * 0.68 mm³
- 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
- RX = UPLINK = 777-787 MHz
- TX = DOWNLINK = 746-756 MHz



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 || 16 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

		B7939			
Characterisitcs ANT - RX		**min.**	**typ. @ 25 ˚C**	**max.**	
Center frequency	f_C		782.0		MHz
Maximum insertion attenuation	α_{max}				
777.0 ... 787.0 MHz		-	2.0	2.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
777.0 ... 787.0 MHz		-	0.6	1.5	dB
Error Vector Magnitude	EVM[1)]				
@$f_{carrier}$ 779.5 ... 784.5 MHz		-	1.8	3.0	%
Input VSWR (ANT port)					
777.0 ... 787.0 MHz		-	1.5	1.8	
Output VSWR (RX port)					
777.0 ... 787.0 MHz		-	1.5	1.8	
Attenuation	α				
10.0 ... 150.0 MHz		40	58	-	dB
150.0 ... 350.0 MHz		35	45	-	dB
350.0 ... 650.0 MHz		30	41	-	dB
728.0 ... 746.0 MHz		35	47	-	dB
746.0 ... 756.0 MHz		50	56	-	dB
758.0 ... 768.0 MHz		28	31	-	dB
808.0 ... 818.0 MHz		35	44	-	dB
859.0 ... 894.0 MHz		35	44	-	dB
1452.0 ... 1492.0 MHz		40	48	-	dB
1554.0 ... 1574.0 MHz		40	49	-	dB
1574.0 ... 1606.0 MHz		45	50	-	dB
1670.0 ... 1675.0 MHz		40	51	-	dB
1930.0 ... 1995.0 MHz		40	53	-	dB
2110.0 ... 2170.0 MHz		40	50	-	dB
2300.0 ... 2361.0 MHz		30	34	-	dB
2361.0 ... 2690.0 MHz		30	37	-	dB
3300.0 ... 3800.0 MHz		15	20	-	dB
5150.0 ... 5850.0 MHz		5	12	-	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 || 16 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

		B7939			
Characterisitcs TX - ANT		**min.**	**typ. @ 25 °C**	**max.**	
Center frequency	f_C		751.0		MHz
Maximum insertion attenuation	α_{max}				
746.0 ... 756.0 MHz		-	1.6	2.0	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
746.0 ... 756.0 MHz		-	0.4	1.0	dB
Error Vector Magnitude	EVM[1)]				
@$f_{carrier}$ 748.5 ... 753.5 MHz		-	1.4	2.5	%
Input VSWR (TX port)					
746.0 ... 756.0 MHz		-	1.5	1.8	
Output VSWR (ANT port)					
746.0 ... 756.0 MHz		-	1.4	1.8	
Attenuation	α				
10.0 ... 150.0 MHz		40	60	-	dB
150.0 ... 350.0 MHz		35	46	-	dB
350.0 ... 650.0 MHz		30	37	-	dB
698.0 ... 716.0 MHz		35	38	-	dB
716.0 ... 722.0 MHz		38	42	-	dB
777.0 ... 787.0 MHz		55	60	-	dB
788.0 ... 798.0 MHz		45	54	-	dB
798.0 ... 849.0 MHz		35	40	-	dB
1492.0 ... 1543.0 MHz		35	38	-	dB
1554.0 ... 1574.0 MHz		35	38	-	dB
1574.0 ... 1606.0 MHz		35	38	-	dB
1710.0 ... 1770.0 MHz		35	38	-	dB
1850.0 ... 1915.0 MHz		35	37	-	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	19	-	dB

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

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Temperature range for specification: T = –10 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT} = 50 Ω || 16 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

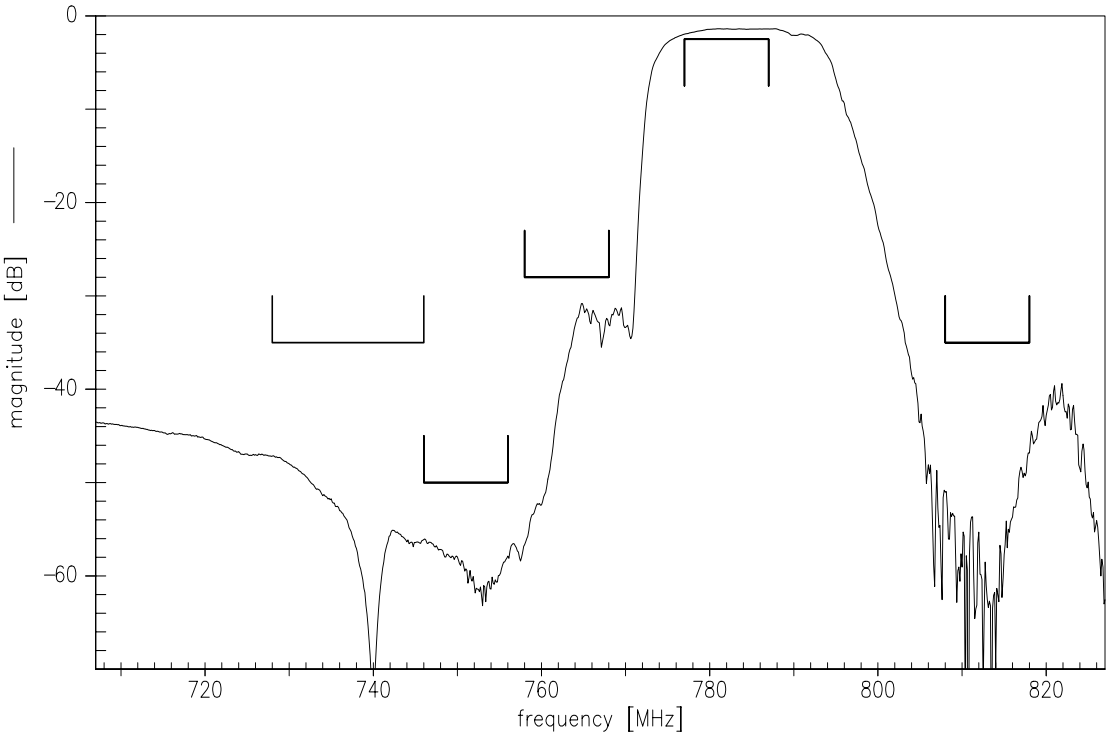
		B7939			
Characteristics TX-RX		**min.**	**typ. @ 25 ˚C**	**max.**	
Attenuation	α				
746.0 ... 756.0 MHz		50	55	-	dB
777.0 ... 787.0 MHz		52	59	-	dB

Maximum Ratings

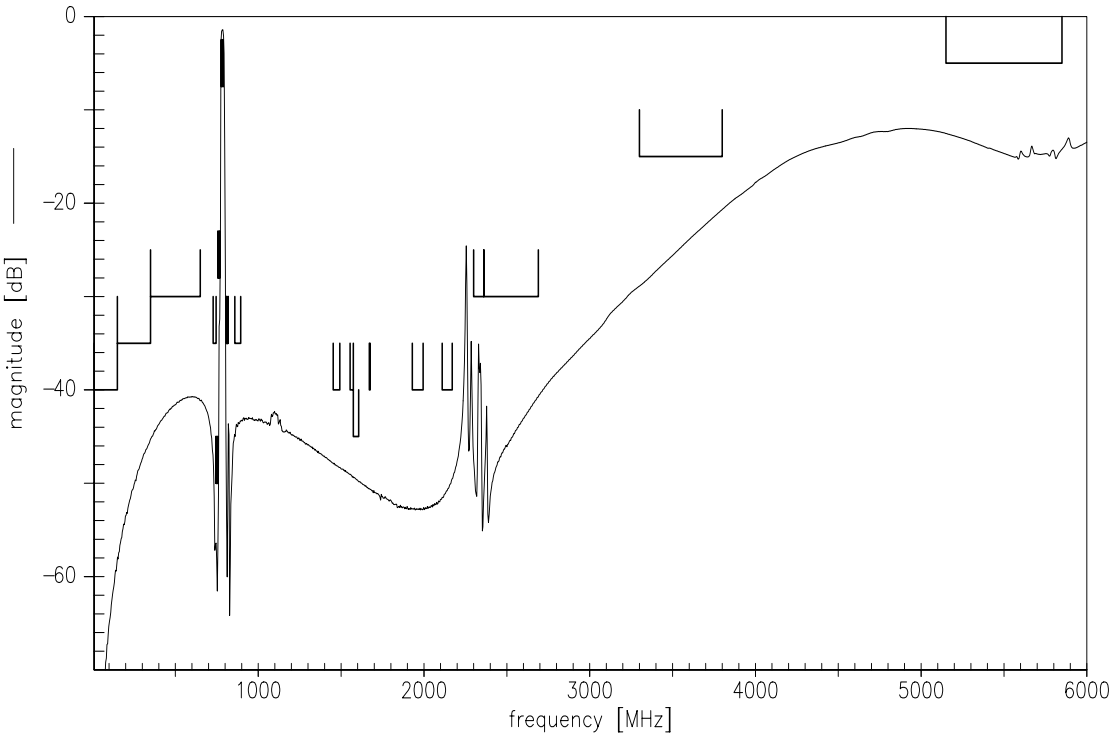
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	0	V	
ESD voltage	V_{ESD}	50[1)]	V	machine model, 10 pulses
	V_{ESD}	250[2)]	V	HBM model, 1 pulse
Input power at pin 1				source and load impedance 50 Ω
746.0 ...756.0 MHz	P_{in}	30.5	dBm	} LTE 5 MHz downlink average power T = 55˚C, 50.000 h
elsewhere	P_{in}	10	dBm	

1) According to JESD22-A115A (machine model), 10 negative and 10 positive pulses.
2) According to JESD22-A114F (Human Body Model), +/-1 pulse.

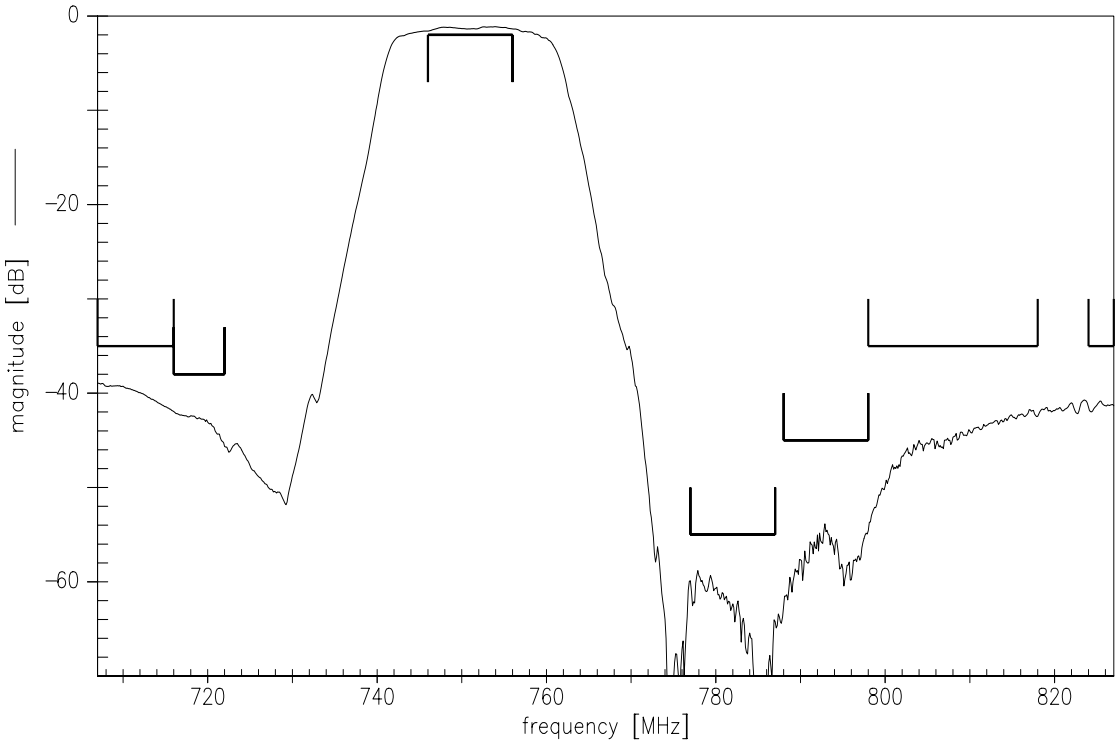
Frequency Response ANT-RX



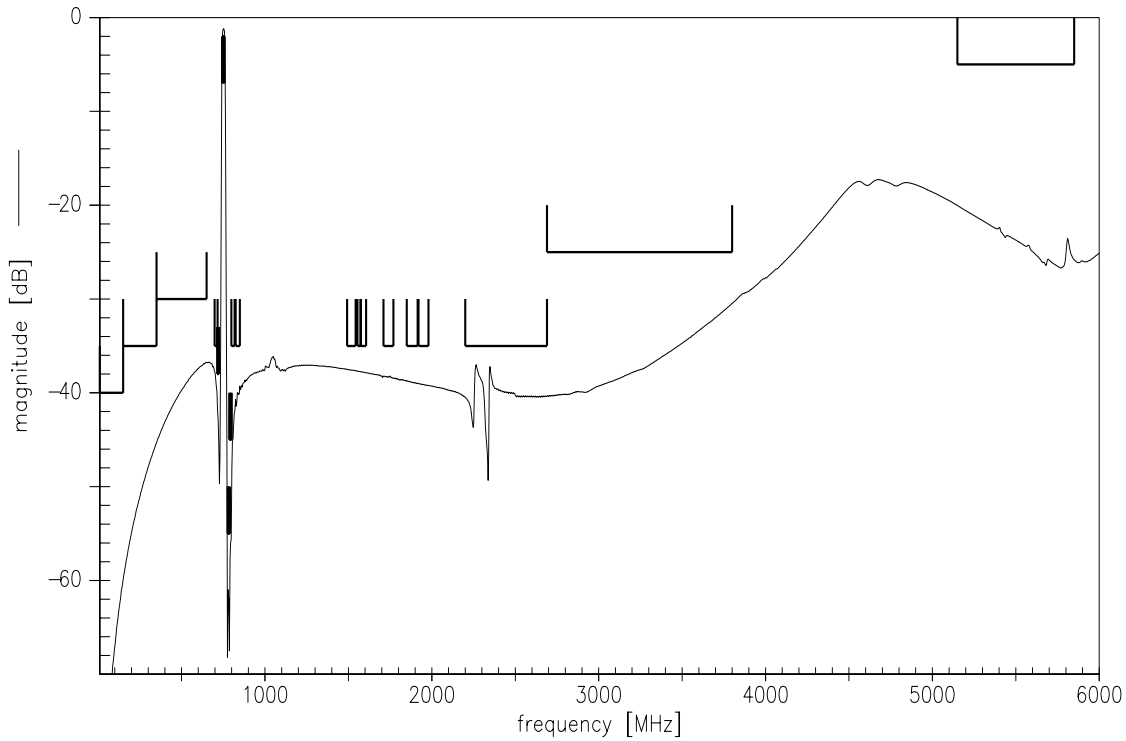
Frequency Response ANT-RX



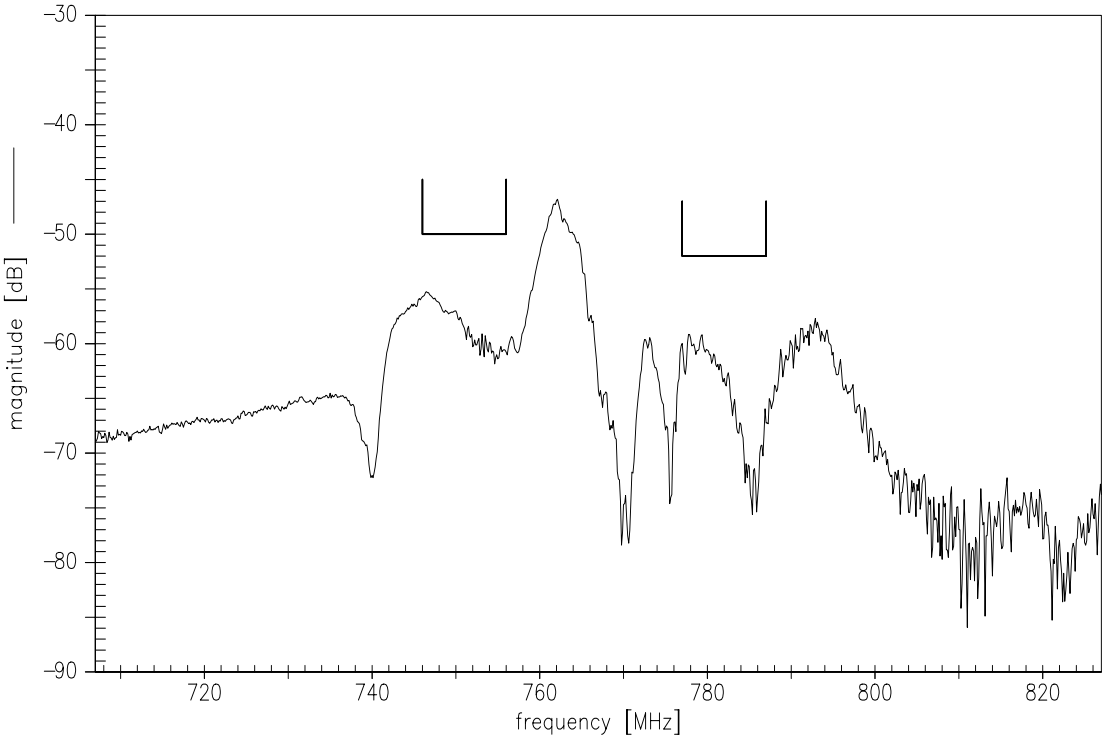
Frequency Response TX-ANT



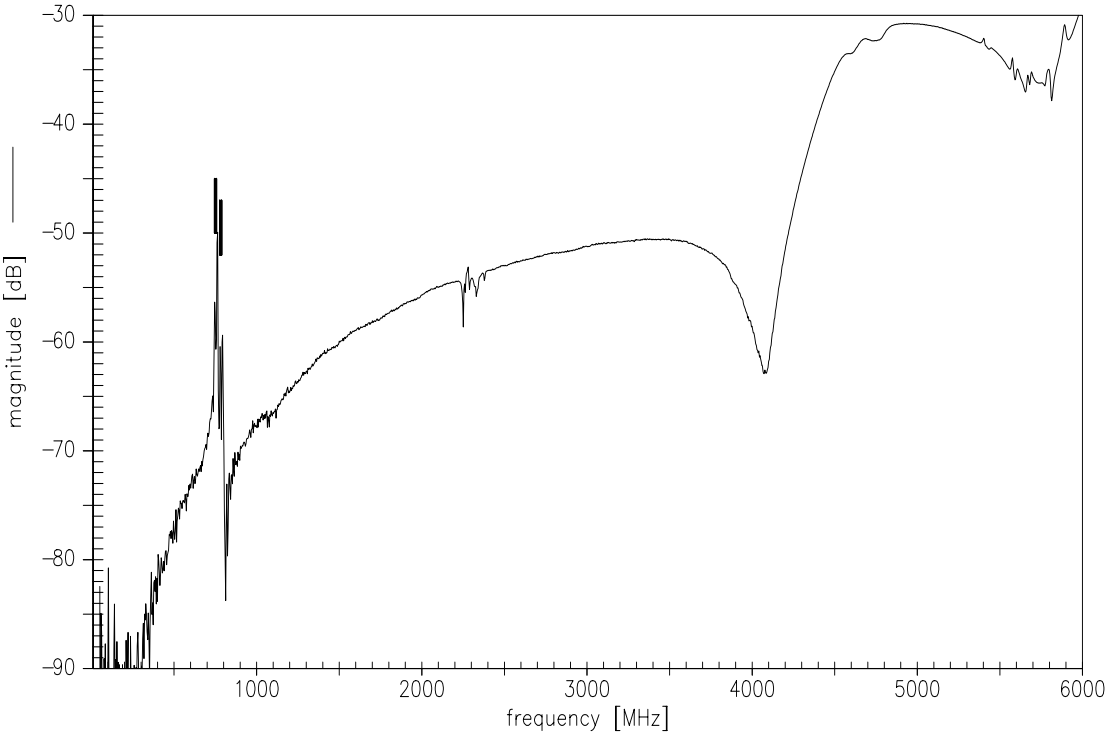
Frequency Response TX-ANT



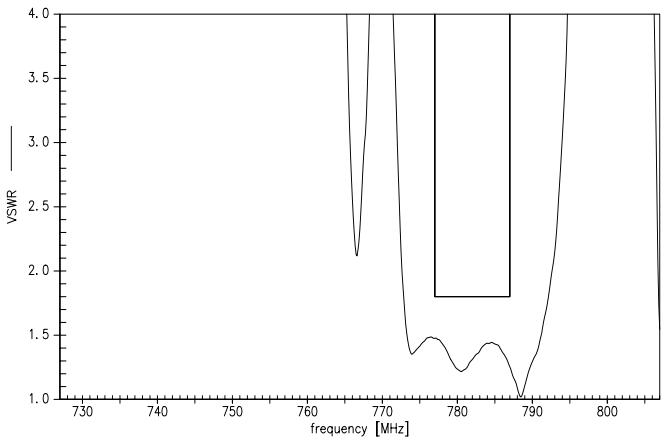
Frequency Response RX-TX

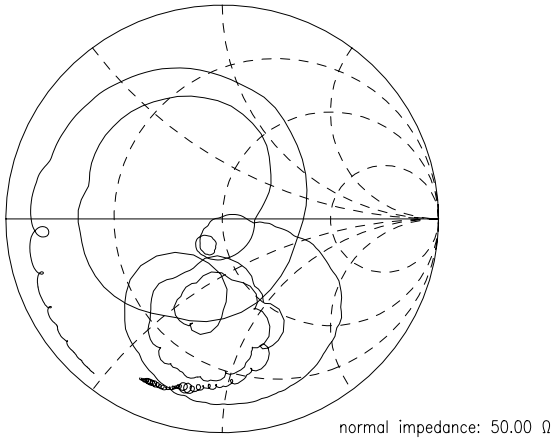


Frequency Response RX-TX

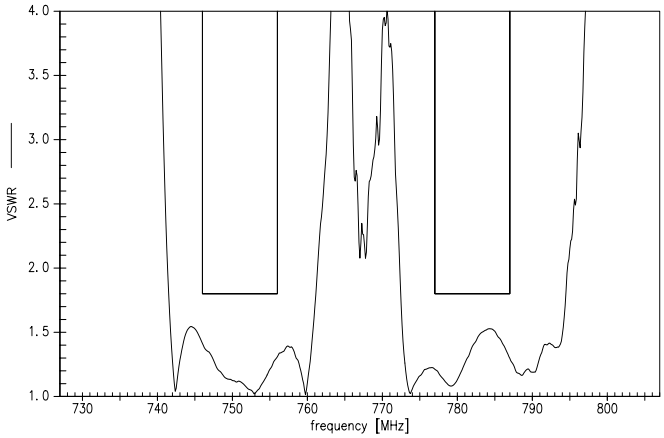


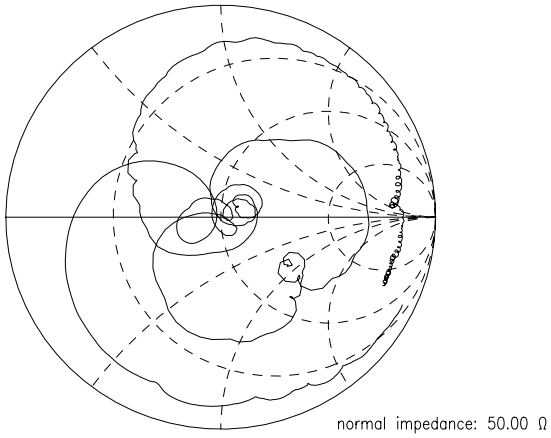
S11 VSWR (RX)



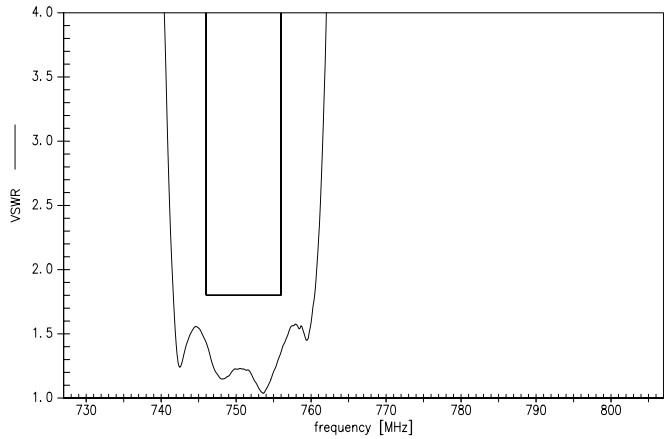


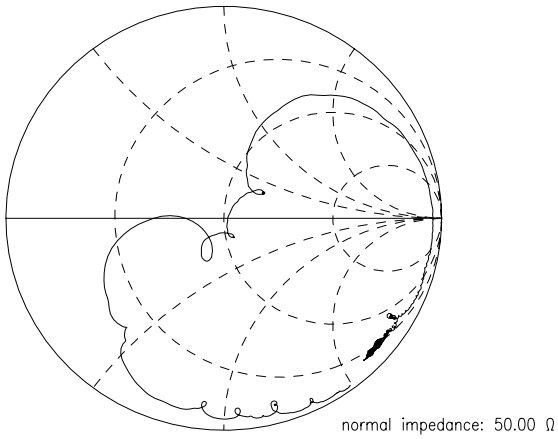
S22 VSWR (ANT)



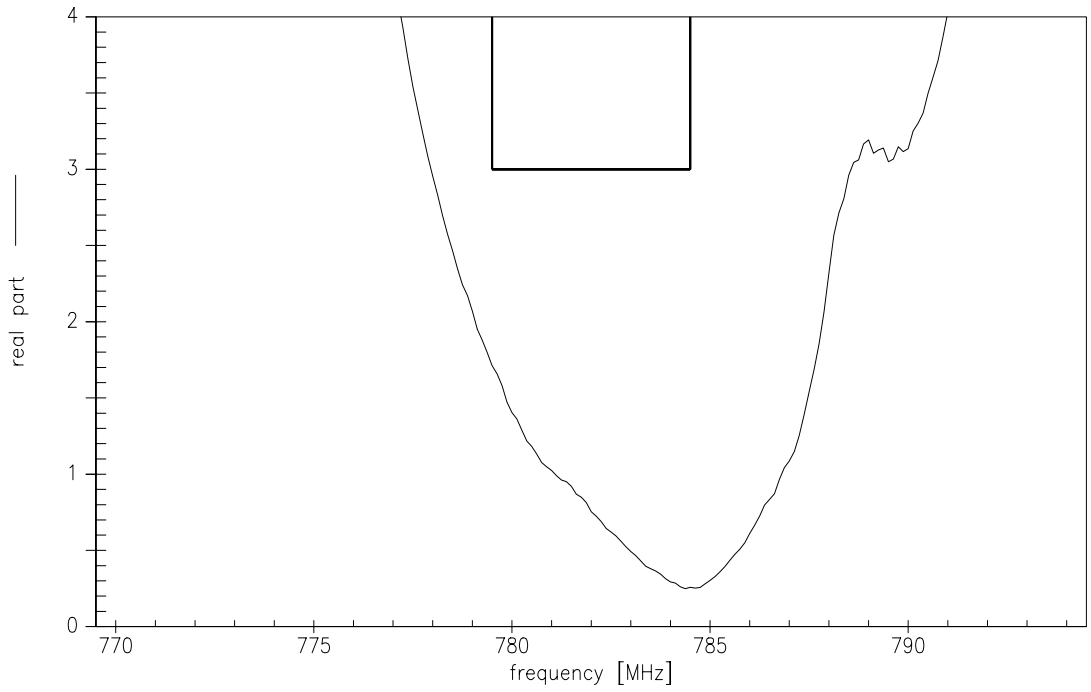


S33 VSWR (TX)

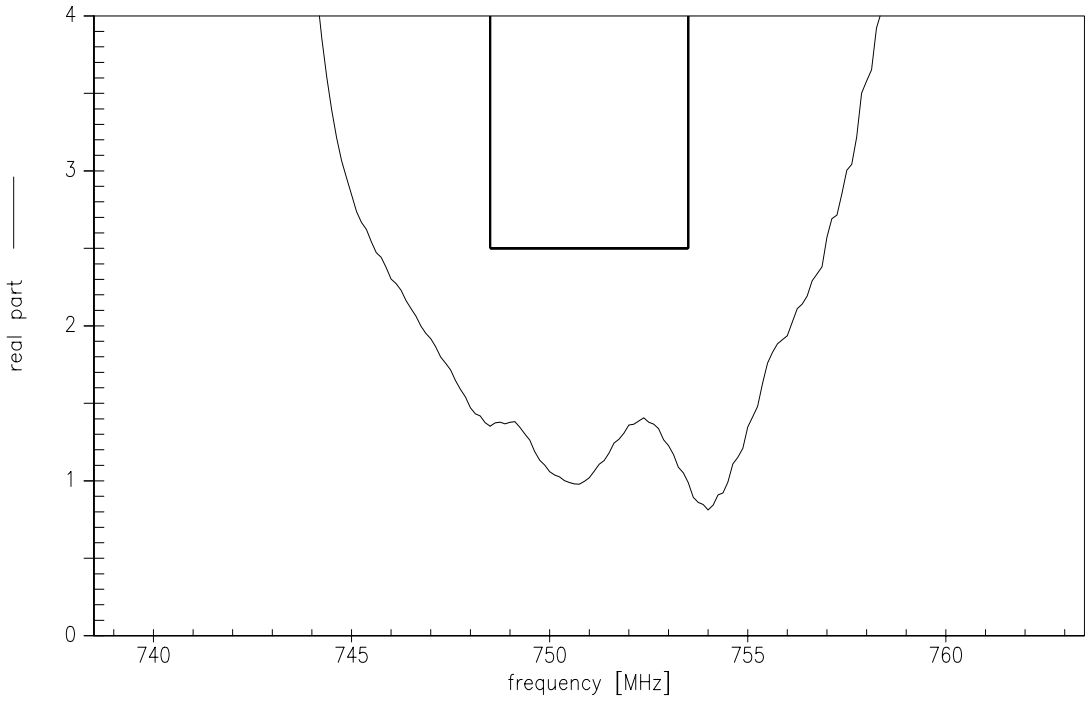




EVM RX



EVM TX



Datasheet SMD

Reference

Type	B7939
Ordering code	B39781B7939P810
Marking and package	C61157-A3-A61
Packaging	F61074-V8153-Z000
Date codes	L_1126
S-parameters	B7939_NB.s3p, B7939_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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