

RF360 Europe GmbH

A Qualcomm – TDK Joint Venture

SAW Components

SAW Duplexer for Smallcell

Band 17 (3G/LTE)

Series/type:	B8017
Ordering code:	B39741B8017P810
Date:	February 25, 2015
Version:	2.3

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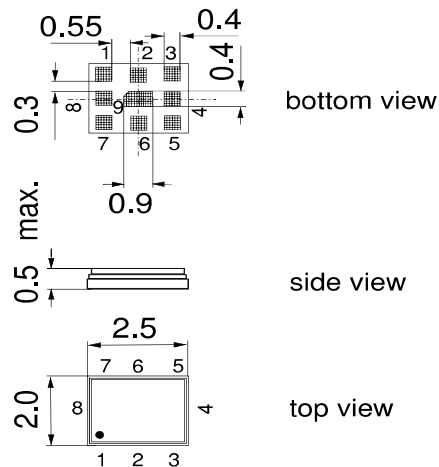
Data sheet


Application

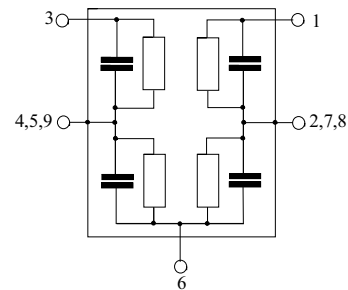
- Low-loss SAW duplexer for 3G/LTE smallcell systems (Band 17)
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 12 MHz
- High power durability
- Industrial qualification
- Rx = Uplink = 704-716 MHz
- Tx = Downlink = 734-746 MHz


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 Sensity Level 3


Pin configuration

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



Data sheet


Characteristics

Temperature range for specification:	T = -10 °C to +85 °C
Antenna terminating impedance:	Z _{ANT} = 50 Ω 30 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	—	710.0	—	MHz
Maximum insertion attenuation 704.0 ... 716.0 MHz	α _{max}	—	2.0	3.2	dB
Amplitude ripple (p-p) 704.0 ... 716.0 MHz	Δα	—	0.6	2.0	dB
Error Vector Magnitude @f _{carrier} 706.5 ... 713.5 MHz	EVM ¹⁾	—	2.3	3.8	%
Input VSWR (ANT port) 704.0 ... 716.0 MHz		—	1.5	1.7	
Output VSWR (RX port) 704.0 ... 716.0 MHz		—	1.6	1.8	
Attenuation	α				
10.0 ... 600.0 MHz		40	55	—	dB
693.25 ... 697.75 MHz		10	20	—	dB
699.0 ... 700.0 MHz		1.5	12	—	dB
700.0 ... 704.0 MHz		1	2	—	dB
716.0 ... 722.2 MHz		1	2	—	dB
722.2 ... 724.0 MHz		7	16	—	dB
724.0 ... 728.0 MHz		15	17	—	dB
729.0 ... 734.0 MHz		35	55	—	dB
734.0 ... 746.0 MHz		50	55	—	dB
746.0 ... 756.0 MHz		48	56	—	dB
758.0 ... 768.0 MHz		45	49	—	dB
869.0 ... 894.0 MHz		40	50	—	dB
1408.0 ... 1432.0 MHz		50	60	—	dB
1930.0 ... 1990.0 MHz		45	56	—	dB
2110.0 ... 2170.0 MHz		45	56	—	dB
2400.0 ... 2500.0 MHz		45	56	—	dB
2816.0 ... 2864.0 MHz		45	57	—	dB
3000.0 ... 6000.0 MHz		15	26	—	dB

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

Data sheet

Characteristics

Temperature range for specification:	$T = -10\text{ °C to }+85\text{ °C}$
Antenna terminating impedance:	$Z_{ANT} = 50\ \Omega \parallel 30\text{ nH}$
RX terminating impedance:	$Z_{RX} = 50\ \Omega$
TX terminating impedance:	$Z_{TX} = 50\ \Omega$

Characterisitcs TX - ANT		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	740.0	—	MHz
Maximum insertion attenuation 734.0 ... 746.0 MHz	α_{max}	—	1.6	2.2	dB
Amplitude ripple (p-p) 734.0 ... 746.0 MHz	$\Delta\alpha$	—	0.5	1.1	dB
Error Vector Magnitude @ $f_{carrier}$ 736.5 ... 743.5 MHz	EVM ¹⁾	—	1.7	3.8	%
Input VSWR (TX port) 734.0 ... 746.0 MHz		—	1.5	1.8	
Output VSWR (ANT port) 734.0 ... 746.0 MHz		—	1.3	1.7	
Attenuation	α				
10.0 ... 600.0 MHz		30	43	—	dB
699.0 ... 704.0 MHz		50	54	—	dB
704.0 ... 716.0 MHz		50	54	—	dB
777.0 ... 787.0 MHz		40	55	—	dB
788.0 ... 798.0 MHz		40	50	—	dB
824.0 ... 849.0 MHz		40	46	—	dB
1468.0 ... 1492.0 MHz		40	52	—	dB
1574.0 ... 1606.0 MHz		45	53	—	dB
1710.0 ... 1755.0 MHz		40	52	—	dB
1850.0 ... 1915.0 MHz		40	48	—	dB
2202.0 ... 2238.0 MHz		30	43	—	dB
2400.0 ... 2500.0 MHz		35	42	—	dB
2936.0 ... 2984.0 MHz		20	40	—	dB
3000.0 ... 5000.0 MHz		10	21	—	dB
5000.0 ... 6000.0 MHz		10	15	—	dB

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

SAW Components	B8017
SAW Duplexer	710.0 / 740.0 MHz

Data sheet



Characteristics

Temperature range for specification:	T = -10 °C to +85 °C
Antenna terminating impedance:	Z _{ANT} = 50 Ω 30 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
704.0 ... 716.0 MHz	53	58	—	dB
734.0 ... 746.0 MHz	53	58	—	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
734.0 ...746.0 MHz	P _{in}	28 ²⁾	dBm	Pin 28 dBm average - 39 dBm peak
elsewhere	P _{in}	10	dBm	} LTE 5 MHz downlink T = 55°C, 100.000 h
Operating lifetime with Output power at antenna				source and load impedance 50 Ω
734.0 ...746.0 MHz	P _{out}	24 ³⁾	dBm	Continuous wave T=55°C, 100khrs

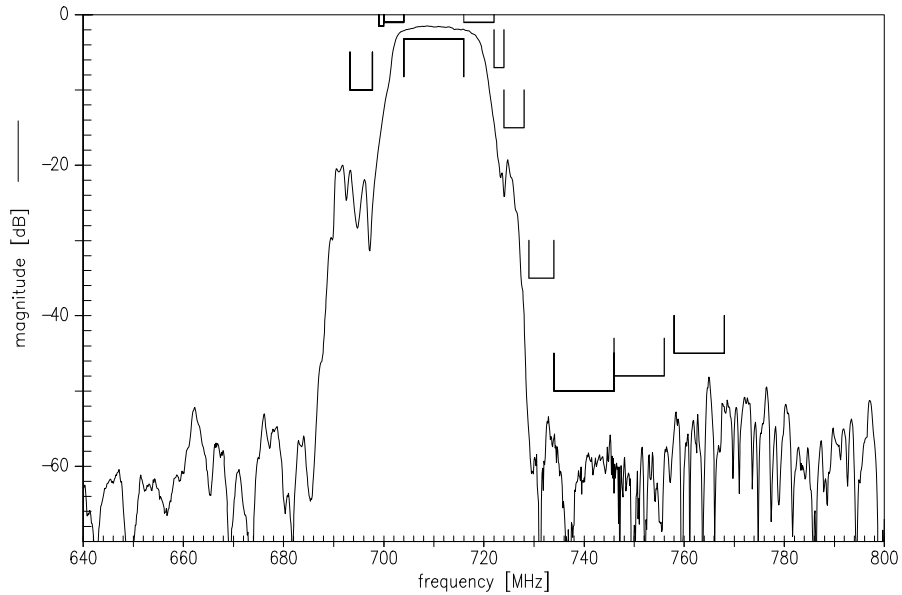
¹⁾ According to JESD22-A115A (machine model), 1 negative and 1 positive pulses.

²⁾ Time to failure (TTDF) according to accelerated power durability tests, and wear out models.

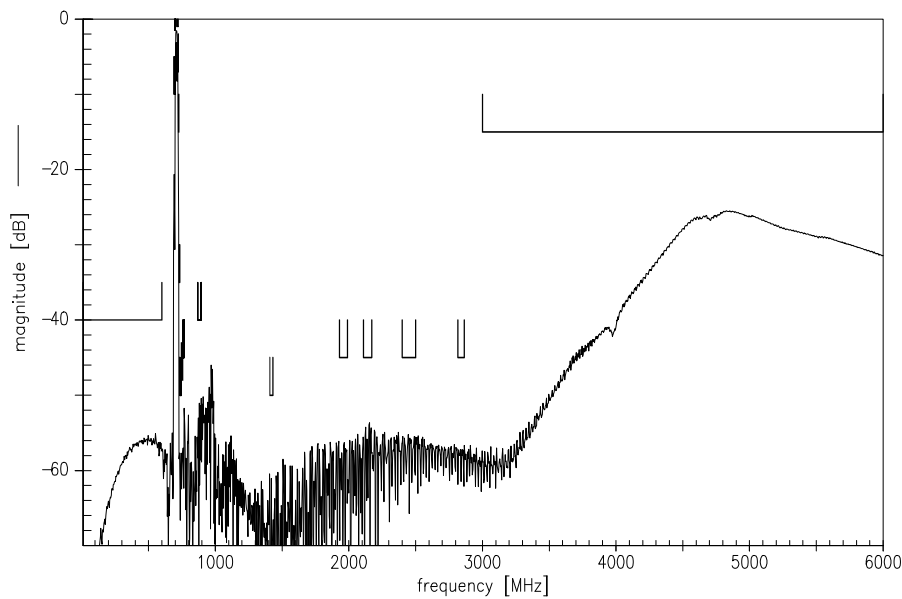
³⁾ according to accelerated High Temperature Operating Life (HTOL) test.



Frequency Response ANT-RX

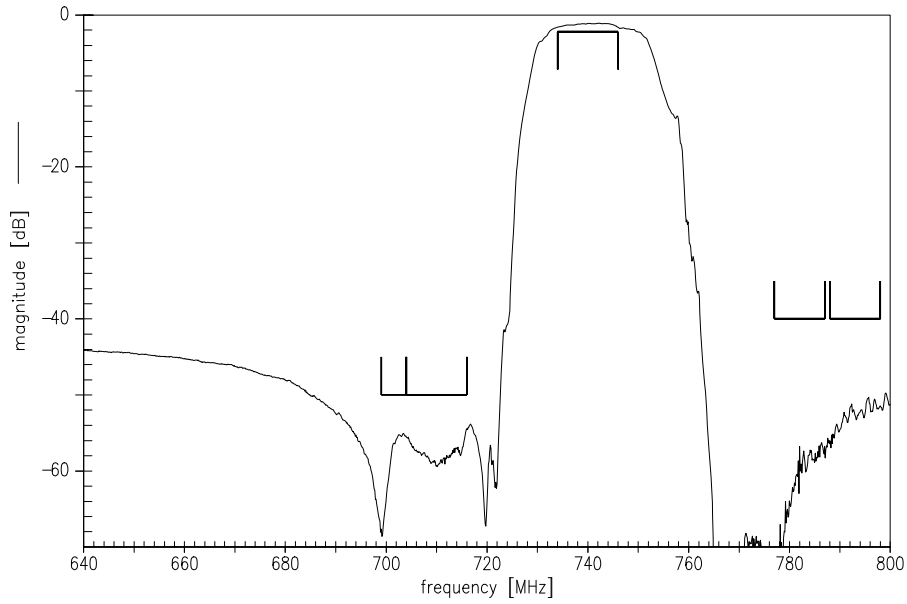


Frequency Response ANT-RX

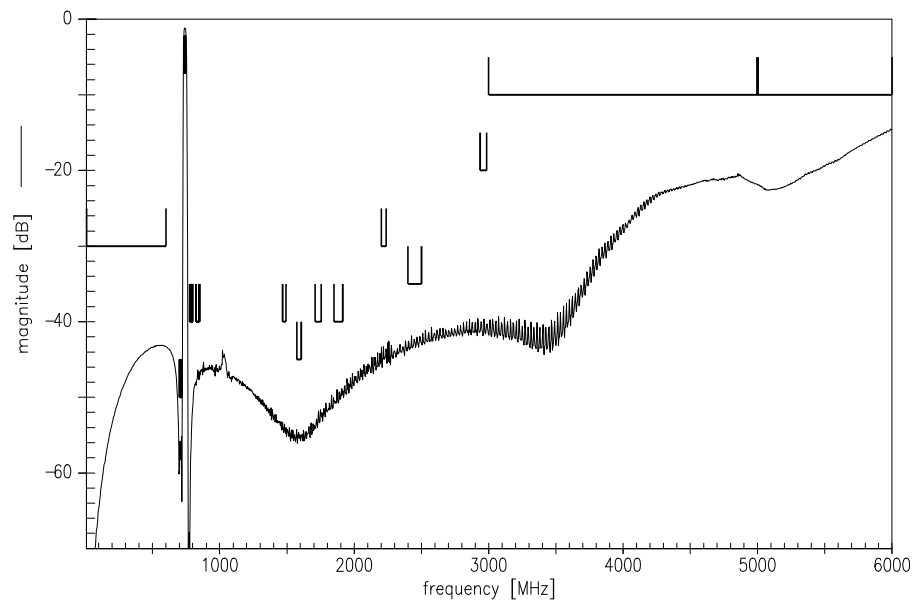




Frequency Response TX-ANT



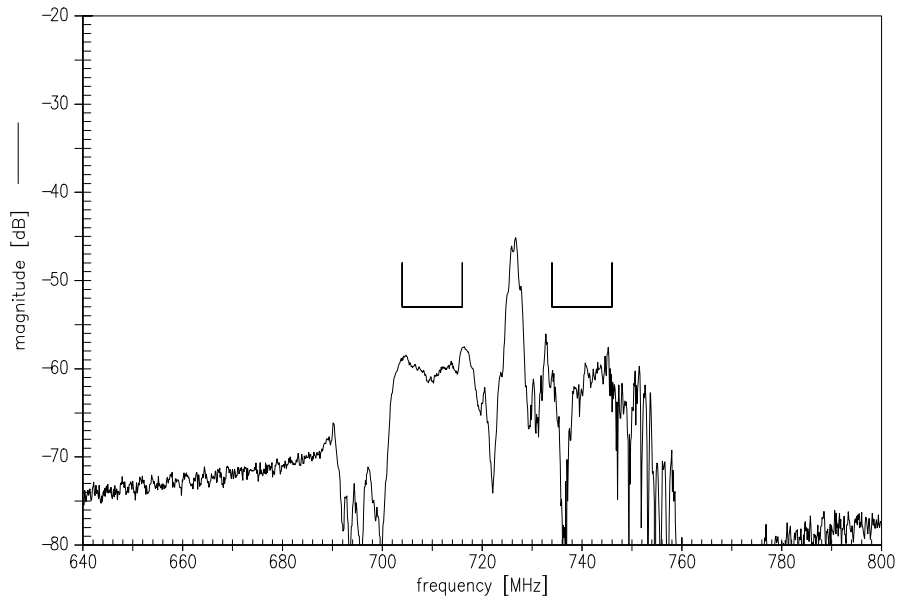
Frequency Response TX-ANT



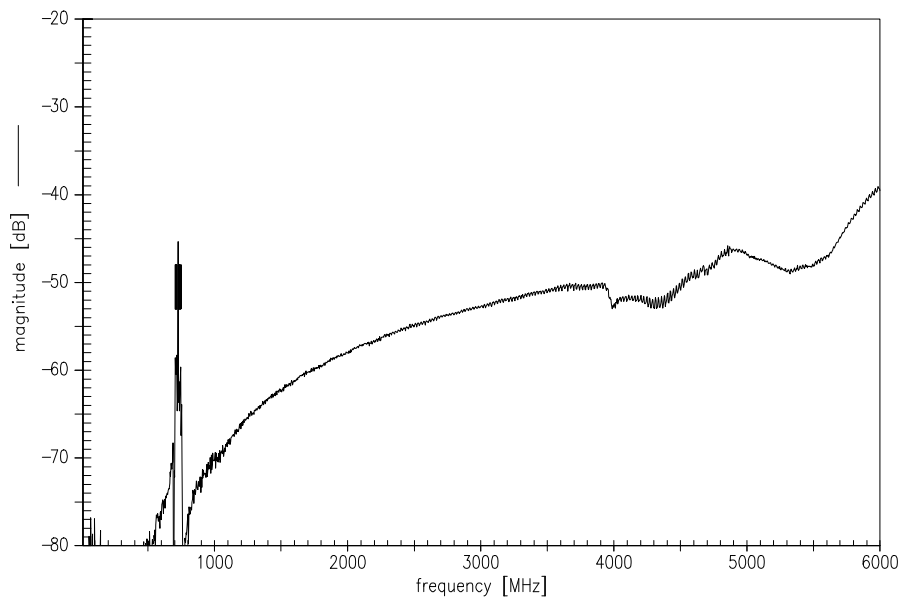
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Frequency Response TX-RX



Frequency Response TX-RX

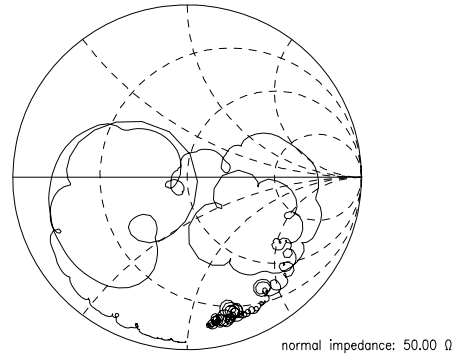
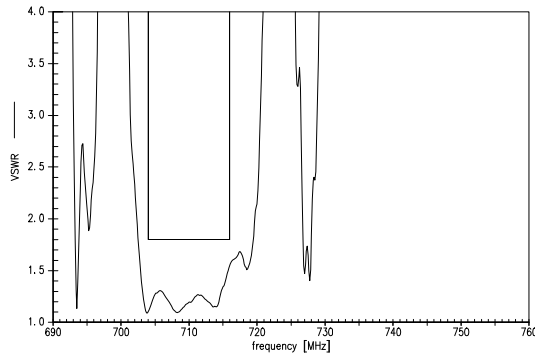


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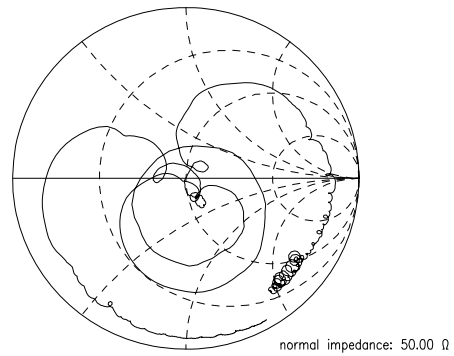
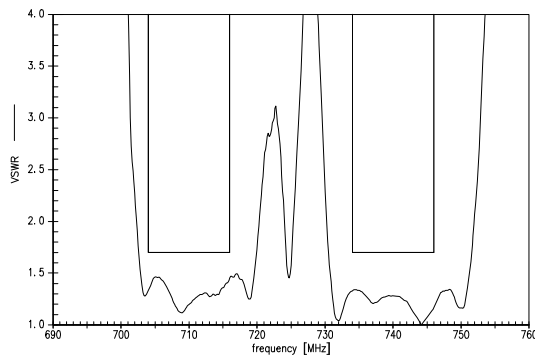
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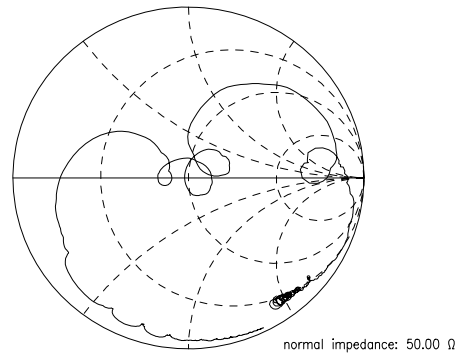
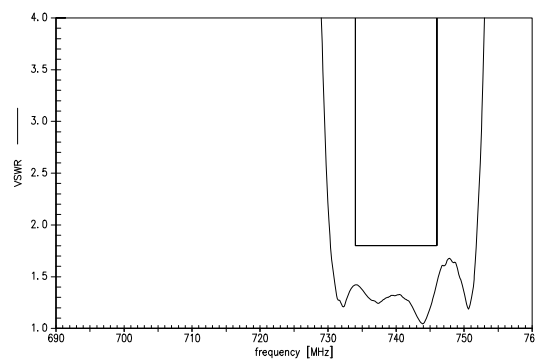
S11 VSWR (RX)



S22 VSWR (ANT)



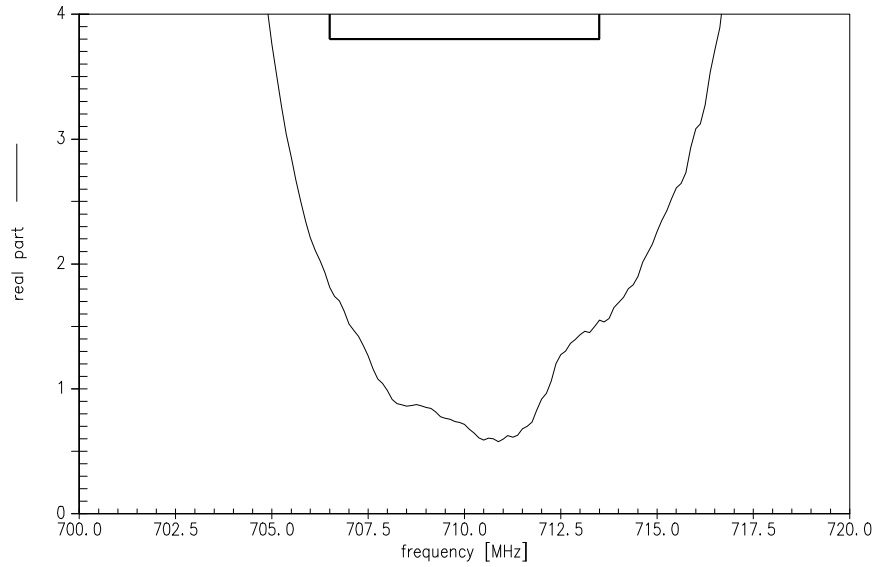
S33 VSWR (TX)



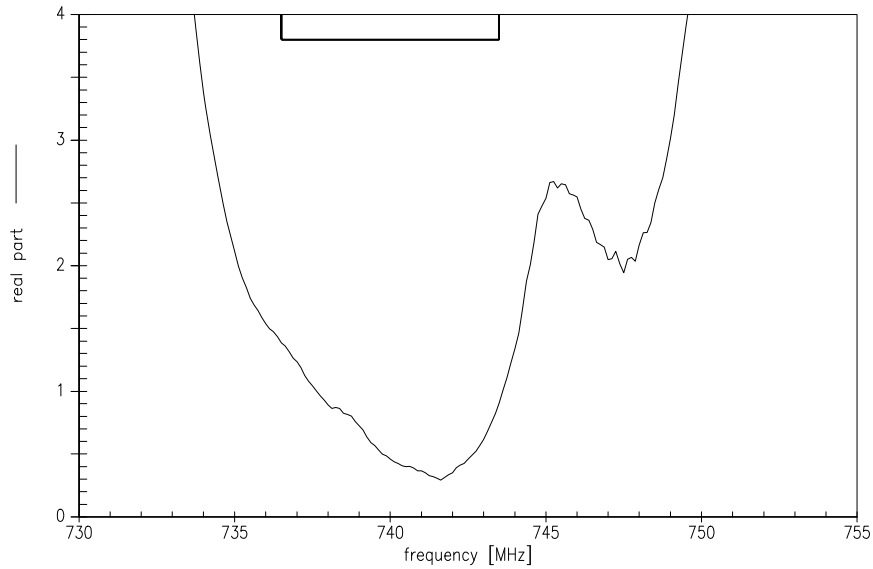
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EVM RX



EVM TX



SAW Components	B8017
SAW Duplexer	710.0 / 740.0 MHz

Data sheet



References

Type	B8017
Ordering code	B39741B8017P810
Marking and package	C61157-A3-A27
Packaging	F61074-V8232-Z000
Date codes	L_1126
S-parameters	B8017_NB.s3p, B8017_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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