



# SAW Components

## SAW Duplexer

LTE / E-UTRA Band 3

<b>Series/type:</b>	<b>B8529</b>
<b>Ordering code:</b>	<b>B39182B8529P810</b>
<b>Date:</b>	<b>December 11, 2014</b>
<b>Version:</b>	<b>2.1</b>

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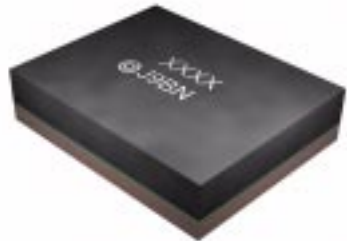
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Data sheet



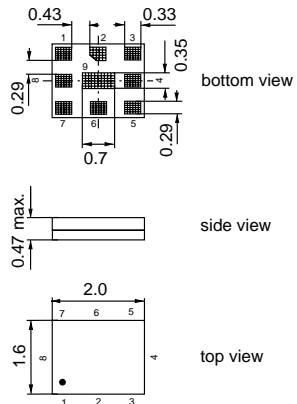
### Application

- Low-loss SAW duplexer for mobile telephone LTE / E-UTRA Band 3 systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 75 MHz
- Single ended to balanced transformation in Antenna - Rx path
- Impedance transformation 50Ω to 100Ω in Antenna - Rx path
- high Tx - Rx isolation
- optimized for envelope tracking



### Features

- Package size 2.0 x 1.6 mm<sup>2</sup>
- Package height 0.47mm max.
- RoHS compatible
- Approximate weight 4.2mg
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitive Level 3**



### Pin configuration

- 3 Tx input
- 1, 8 Rx output (balanced)
- 6 Antenna
- 2, 4, 5, 7, 9 To be grounded

<b>SAW Components</b>	<b>B8529</b>
<b>SAW Duplexer</b>	<b>1747.5 / 1842.5 MHz</b>

Data sheet



**Characteristics**

Temperature range for specification: T = -30 °C to +85 °C  
 ANT terminating impedance: Z<sub>ANT</sub> = 50 Ω || 3.5 nH  
 RX terminating impedance: Z<sub>RX</sub> = 100 Ω (balanced) +1 nH || 12 nH  
 TX terminating impedance: Z<sub>TX</sub> = 50 Ω

Characteristics TX-ANT <sup>1)</sup>	min.	typ. @ 25°C	max.	
<b>Center frequency</b> f <sub>C</sub>	-	1747.5	-	MHz
<b>Maximum insertion attenuation</b>				
1712.5 ... 1782.5 MHz α <sub>max</sub> α <sub>LTE<sup>2)3)</sup></sub>	-	2.0	3.0	dB
1712.5 ... 1782.5 MHz α <sub>LTE<sup>2)</sup></sub>	-	2.0	3.7	dB
<b>Amplitude ripple per 5MHz channel</b> Δα				
1710.24 ... 1784.76 MHz	-	0.6	-	dB
<b>Input VSWR (Tx port)</b>				
1710.24 ... 1784.76 MHz <sup>3)</sup>	-	1.5	2.0	
1710.24 ... 1784.76 MHz	-	1.5	3.4	
<b>Output VSWR (Ant Port)</b>				
1710.24 ... 1784.76 MHz <sup>3)</sup>	-	1.4	2.0	
1710.24 ... 1784.76 MHz	-	1.4	2.4	
<b>Attenuation</b> α				
10.0 ... 1565.42 MHz	35	38	-	dB
703.0 ... 748.0 MHz	40	46	-	dB
716.0 ... 756.0 MHz	40	46	-	dB
814.0 ... 849.0 MHz	39	44	-	dB
824.0 ... 849.0 MHz	39	44	-	dB
830.0 ... 845.0 MHz	39	44	-	dB
832.0 ... 862.0 MHz	39	43	-	dB
880.0 ... 915.0 MHz	38	42	-	dB
925.0 ... 960.0 MHz	38	41	-	dB
1226.0 ... 1250.0 MHz	35	38	-	dB
1496.0 ... 1511.0 MHz	38	42	-	dB
1559.0 ... 1563.0 MHz	42	50	-	dB
1565.42 ... 1573.374MHz	42	50	-	dB
1573.374... 1577.466MHz	42	48	-	dB
1577.466... 1585.42 MHz	40	47	-	dB
1597.5515... 1605.886MHz	37	43	-	dB
1605.886... 1680.0 MHz	20	34	-	dB
1807.5 ... 1877.5 MHz α <sub>LTE<sup>2)</sup></sub>	44	55	-	dB
1920.0 ... 1980.0 MHz	24	32	-	dB
2110.0 ... 2170.0 MHz	24	33	-	dB

<b>SAW Components</b>	<b>B8529</b>
<b>SAW Duplexer</b>	<b>1747.5 / 1842.5 MHz</b>

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<b>Characteristics TX-ANT <sup>1)</sup></b>	<b>min.</b>	<b>typ. @ 25°C</b>	<b>max.</b>	
2400.0 ... 2500.0 MHz	26	33	-	dB
2440.0 ... 2494.0 MHz	26	33	-	dB
2500.0 ... 2570.0 MHz	25	32	-	dB
2620.0 ... 2690.0 MHz	24	31	-	dB
3420.0 ... 3570.0 MHz	21	27	-	dB
4900.0 ... 5950.0 MHz	12	22	-	dB
5100.0 ... 5385.0 MHz	12	25	-	dB
5130.0 ... 5355.0 MHz	12	25	-	dB
6840.0 ... 7140.0 MHz	-	24	-	dB
8550.0 ... 8925.0 MHz	-	28	-	dB
10260.0 ... 10710.0 MHz	-	30	-	dB
11970.0 ... 12495.0 MHz	-	28	-	dB

<sup>1)</sup> Specified values are valid for a testing power of +10dBm

<sup>2)</sup> Averaged value of linear s-parameter over 5 MHz

<sup>3)</sup> Valid in the temperature range from 0°C to 85°C

Data sheet


**Characteristics**

Temperature range for specification:	T = -30 °C to +85 °C
ANT terminating impedance:	Z <sub>ANT</sub> = 50 Ω    3.5 nH
RX terminating impedance:	Z <sub>RX</sub> = 100 Ω (balanced) +1 nH    12 nH
TX terminating impedance:	Z <sub>TX</sub> = 50 Ω

Characteristics ANT-RX <sup>1)</sup>		min.	typ. @ 25°C	max.	
<b>Center frequency</b>	f <sub>C</sub>	–	1842.5	–	MHz
<b>Maximum insertion attenuation</b>	α <sub>max</sub>				
1807.5 ... 1877.5 MHz	α <sub>LTE<sup>2)</sup>3)</sub>	–	2.8	3.5	dB
1807.5 ... 1877.5 MHz	α <sub>LTE<sup>2)</sup></sub>	–	2.8	3.9	dB
<b>Amplitude ripple per 5MHz channel</b>	Δα				
1805.24 ... 1879.76 MHz		–	0.7	–	dB
<b>Common mode rejection ratio</b>					
1805.24 ... 1879.76 MHz		18	23	–	dB
<b>Input VSWR (Ant port)</b>					
1805.24 ... 1879.76 MHz		–	1.5	2.2	
<b>Output VSWR (Rx Port)</b>					
1805.24 ... 1879.76 MHz		–	1.5	2.2	
<b>Attenuation</b>	α				
10.0 ... 1710.0 MHz		40	50	–	dB
95.0 MHz		50	70	–	dB
718.0 ... 748.0 MHz		40	70	–	dB
814.0 ... 849.0 MHz		40	70	–	dB
832.0 ... 862.0 MHz		40	70	–	dB
880.0 ... 915.0 MHz		40	68	–	dB
1447.0 ... 1463.0 MHz		40	52	–	dB
1615.0 ... 1690.0 MHz		40	50	–	dB
1712.5 ... 1782.5 MHz	α <sub>LTE<sup>2)</sup></sub>	45	53	–	dB
1785.0 ... 1790.0 MHz		10	55	–	dB
1920.0 ... 2000.0 MHz		32	46	–	dB
2000.0 ... 2400.0 MHz		38	44	–	dB
2400.0 ... 2500.0 MHz		40	51	–	dB
2500.0 ... 2570.0 MHz		40	52	–	dB
2570.0 ... 3515.0 MHz		40	45	–	dB
3515.0 ... 3760.0 MHz		40	46	–	dB
3760.0 ... 6000.0 MHz		36	45	–	dB
4900.0 ... 5950.0 MHz		36	45	–	dB

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<b>Characteristics ANT-RX<sup>1)</sup></b>	<b>min.</b>	<b>typ. @ 25°C</b>	<b>max.</b>	
5205.0 ... 5660.0 MHz	36	45	–	dB
6000.0 ... 13025.0 MHz	–	35	–	dB
7220.0 ... 7520.0 MHz	–	48	–	dB
9025.0 ... 9400.0 MHz	–	35	–	dB
10830.0 ... 11280.0 MHz	–	37	–	dB
12635.0 ... 13160.0 MHz	–	38	–	dB

<sup>1)</sup> Specified values are valid for a testing power of +10dBm

<sup>2)</sup> Averaged value of linear s-parameter over 5 MHz

<sup>3)</sup> Valid in the temperature range from 0°C to 85°C

<b>SAW Components</b>	<b>B8529</b>
<b>SAW Duplexer</b>	<b>1747.5 / 1842.5 MHz</b>

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**Characteristics**

Temperature range for specification:  $T = -30\text{ °C to }+85\text{ °C}$   
 ANT terminating impedance:  $Z_{ANT} = 50\ \Omega \parallel 3.5\text{ nH}$   
 RX terminating impedance:  $Z_{RX} = 100\ \Omega\text{ (balanced)} +1\text{ nH} \parallel 12\text{ nH}$   
 TX terminating impedance:  $Z_{TX} = 50\ \Omega$

Characteristics TX-RX <sup>1)</sup>		min.	typ. @ 25°C	max.	
<b>Isolation</b>	$\alpha$				
	1712.5 ... 1782.5 MHz $\alpha_{LTE}^{2)}$	54	57	-	dB
	1807.5 ... 1877.5 MHz $\alpha_{LTE}^{2)}$	50	55	-	dB

1) Specified values are valid for a testing power of +10dBm  
 2) Averaged value of linear s-parameter over 5 MHz

**Maximum ratings**

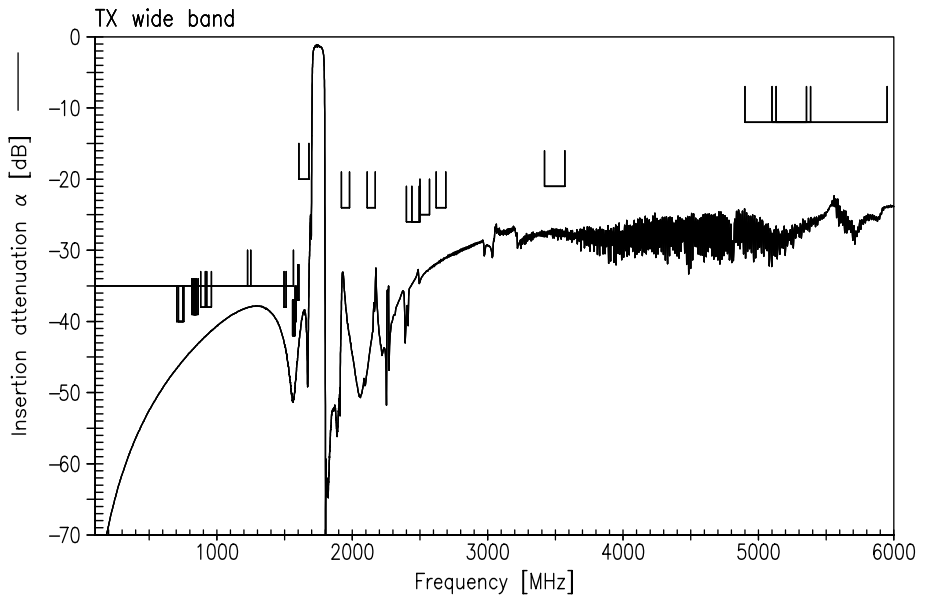
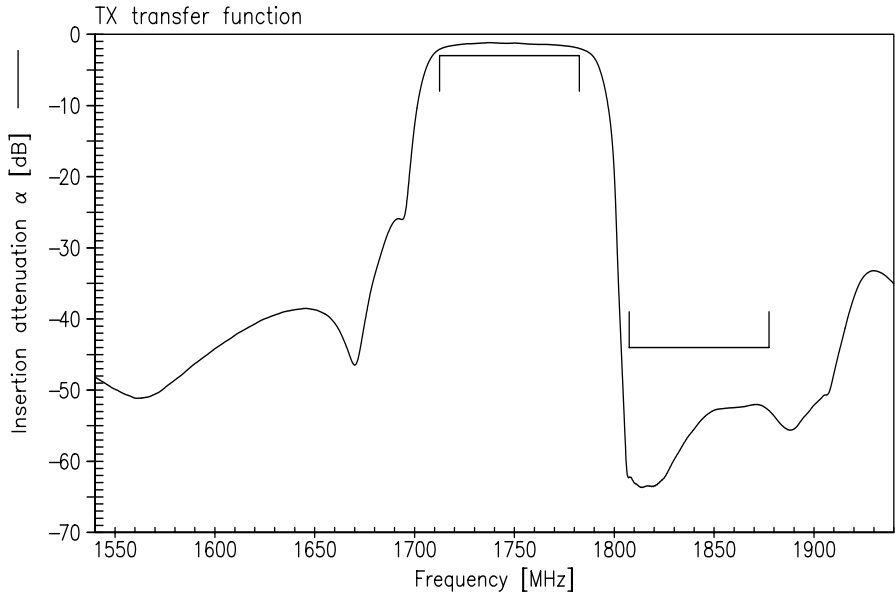
Storage temperature range	$T_{stg}$	-40/+90	°C	Machine Model Human Body Model Charge Device Model
DC voltage	$V_{DC}$	0 <sup>1)</sup>	V	
ESD voltage	$V_{ESD}$	50 <sup>2)</sup>	V	
	$V_{ESD}$	300 <sup>3)</sup>	V	
	$V_{ESD}$	500 <sup>4)</sup>	V	
Input Power				
1712.5 ... 1782.5 MHz	$P_{IN}$	29	dBm	5 MHz LTE uplink @ 50°C, 5000h

1) DC resistance at RX output might be less than 100 M $\Omega$  at elevated temperatures. Hence, we recommend usage of blocking capacitors.  
 2) Acc. to JESD22-A115B (machine model), 10 negative & 10 positive pulses.  
 3) Acc. to JESD22-A114F (human body model), 1 negative & 1 positive pulses.  
 4) Acc. to JESD22-C101C (charge device model), 3 negative & 3 positive pulses.

Data sheet



**Frequency response TX - ANT**

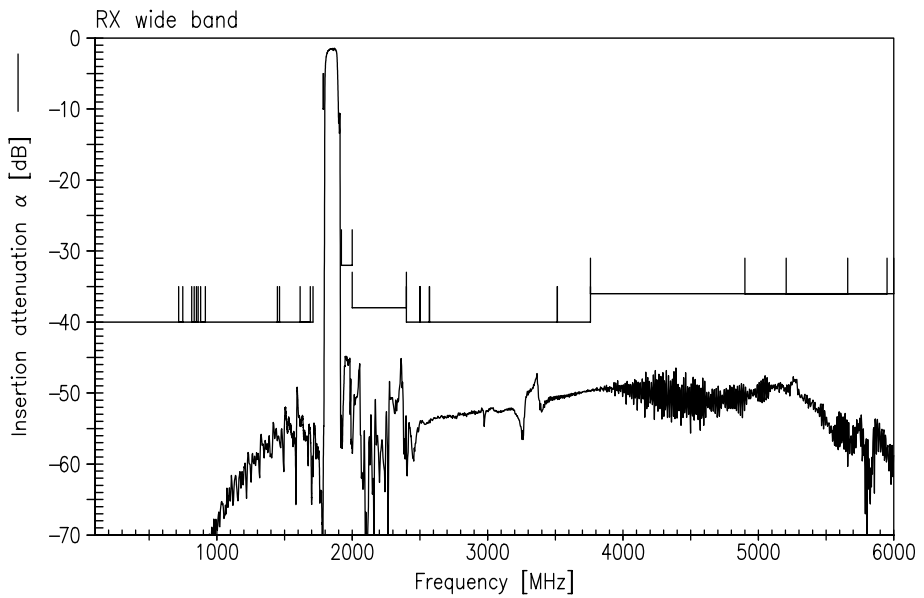
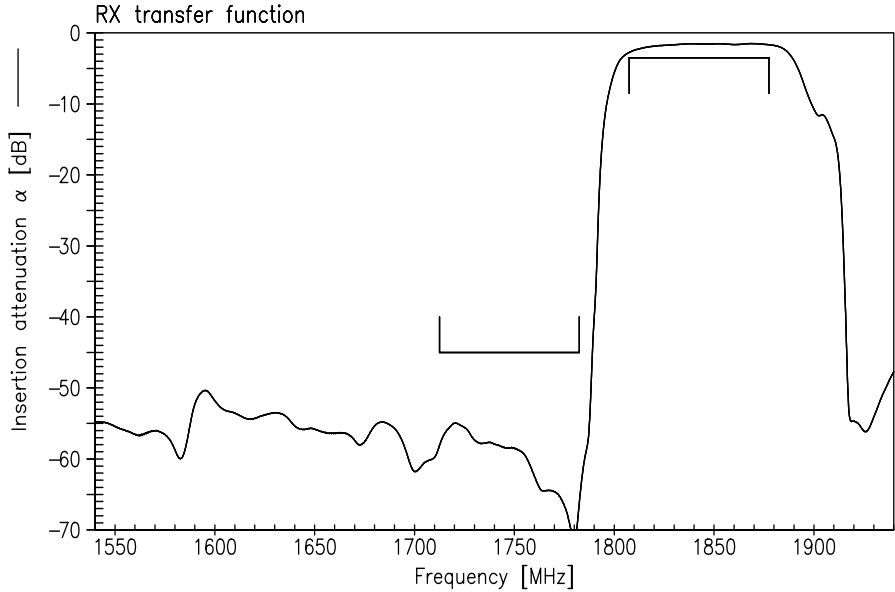




Data sheet



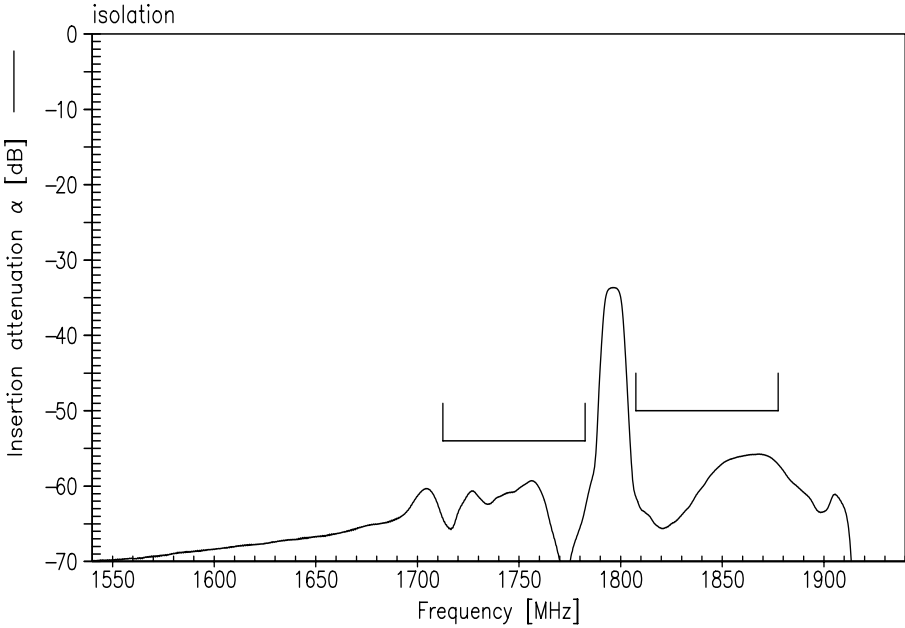
**Frequency response ANT - RX**



Data sheet



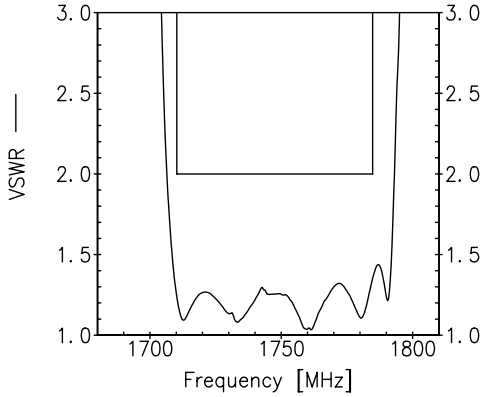
**Frequency Response TX - RX**



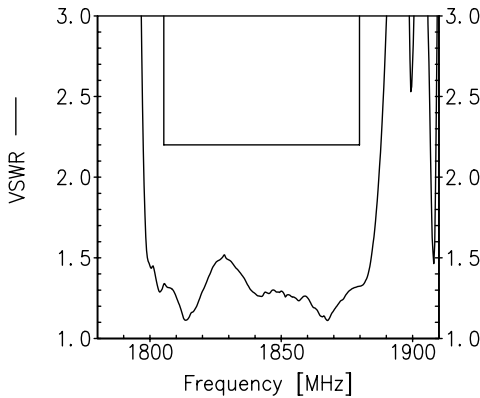
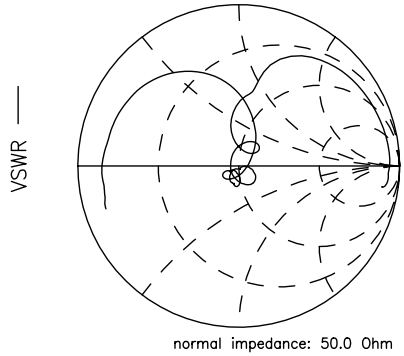
Data sheet



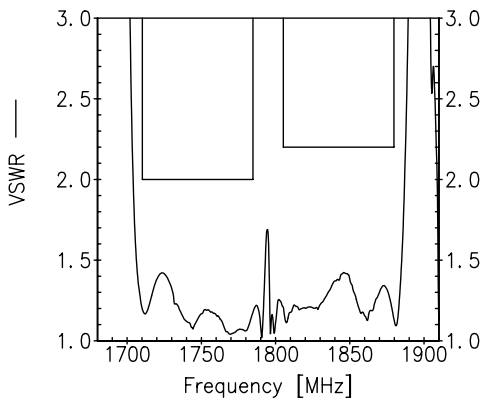
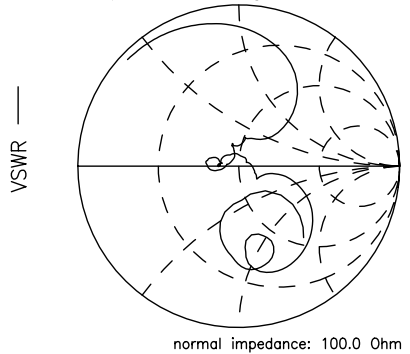
**VSWR of TX-port, RX-port and ANT-port**



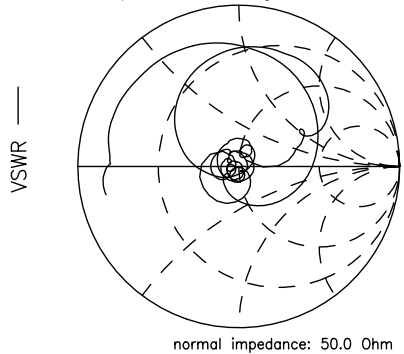
TX port matching



RX port matching



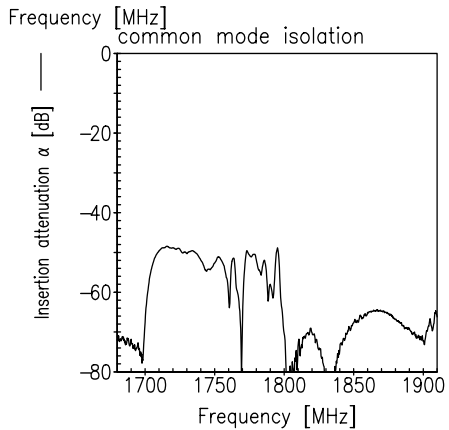
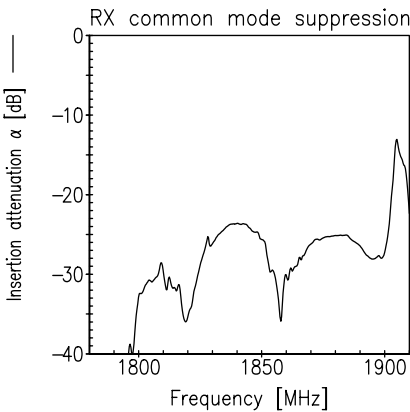
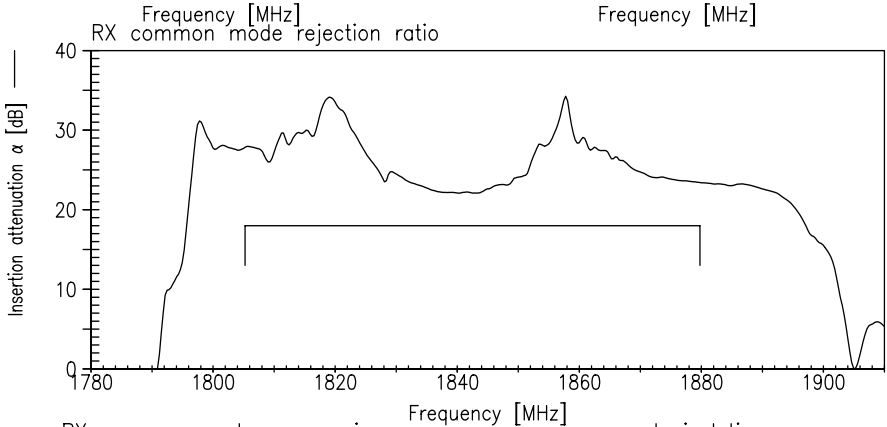
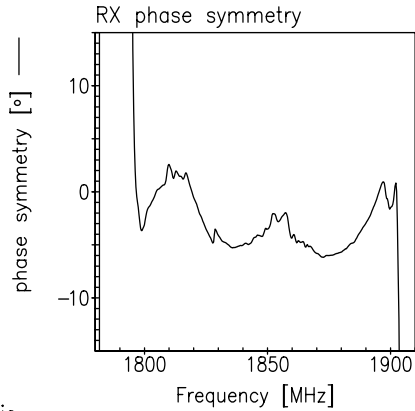
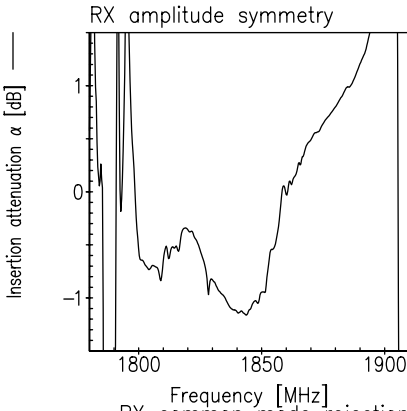
ANT port matching



Data sheet



**RX Common mode rejection ratio**



<b>SAW Components</b>	<b>B8529</b>
<b>SAW Duplexer</b>	<b>1747.5 / 1842.5 MHz</b>

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## References

<b>Type</b>	B8529
<b>Ordering code</b>	B39182B8529P810
<b>Marking and Package</b>	C61157-A8-A153
<b>Packaging</b>	F61074-V8247-Z000
<b>Date Codes</b>	L_1126
<b>S-Parameters</b>	B8529_NB_UN.s4p (narrow band, unmatched), B8529_WB_UN.s4 (wide band, unmatched), B8529_HD_WB_UN.s4p (HD wide band, unmatched) See file header for port/pin assignment table
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	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 <sup>th</sup> , 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.
<b>Moldability</b>	Before using in overmolding environment, please contact your EPCOS sales office.
<b>Matching coils</b>	See Inductor pdf-catalog <a href="http://www.tdk.co.jp/tefe02/coil.htm#aname1">http://www.tdk.co.jp/tefe02/coil.htm#aname1</a> and Data Library for circuit simulation <a href="http://www.tdk.co.jp/etvcl/index.htm">http://www.tdk.co.jp/etvcl/index.htm</a>

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