



## **SAW Components**

### **SAW duplexer**

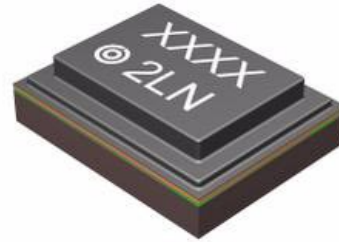
Band III

<b>Series/type:</b>	<b>B8088</b>
<b>Ordering code:</b>	<b>B39182B8088P810</b>
<b>Date:</b>	<b>August 05, 2013</b>
<b>Version:</b>	<b>2.4</b>



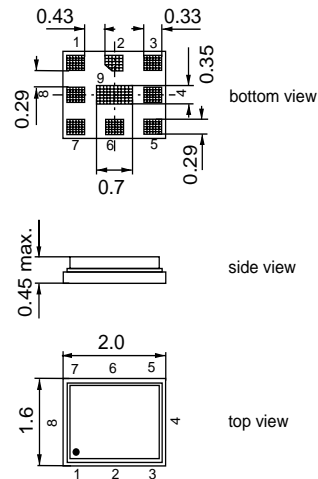
**Application**

- Low-loss SAW duplexer for mobile telephone Band III 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



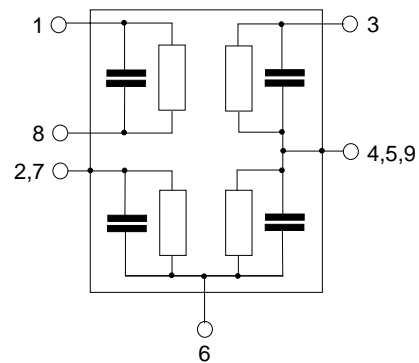
**Features**

- Package size 2.0 x 1.6
- Component height 0.45 mm max.
- RoHS compatible
- Approximate weight 0.006 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitive Level 3**



**Pin configuration**

- 1,8 RX Output (balanced)
- 3 TX Input (single ended)
- 6 Antenna
- 2, 4, 5 To be grounded
- 7, 9 To be grounded





**SAW Components**

**B8088**

**SAW duplexer**

**1747.5 / 1842.5 MHz**

**Data Sheet**



**Characteristics**

Temperature range for specification: T = -20 °C to +85 °C  
 ANT terminating impedance: Z<sub>ANT</sub> = 50 Ω || 3.9nH.  
 RX terminating impedance: Z<sub>RX</sub> = 100 Ω (balanced)|| 12nH.  
 TX terminating impedance: Z<sub>TX</sub> = 50 Ω

<b>Characteristics TX-ANT</b>		<b>min.</b>	<b>typ. @ 25°C</b>	<b>max.</b>	
<b>Center frequency</b>	f <sub>C</sub>	–	1747.5	–	MHz
<b>Maximum insertion attenuation</b>	α <sub>max</sub>				
1714.0 ... 1781.0 MHz			2.0	3.0	dB
1710.0 ... 1785.0 MHz			2.5	4.0	dB
<b>Amplitude ripple per 5MHz channel</b>	Δα				
1710.0 ... 1785.0 MHz			0.55	1.3	dB
<b>VSWR</b>					
TX port 1710.0 ... 1785.0 MHz			1.5	2.0	
ANT port 1710.0 ... 1785.0 MHz			1.5	2.0	
<b>Attenuation</b>	α				
10.0 ... 1565.42 MHz		30	33		dB
207.5 ... 222.0 MHz		50	62		dB
470.0 ... 770.0 MHz		35	40		dB
1565.42 ... 1573.374MHz		40	46		dB
1573.374... 1577.466MHz		42	47		dB
1577.466... 1585.42 MHz		40	44		dB
1597.5515... 1605.886MHz		35	39		dB
1605.886... 1680.0 MHz		20	30		dB
1805.0 ... 1880.0 MHz		43	47		dB
1920.0 ... 1980.0 MHz		20	33		dB
2110.0 ... 2170.0 MHz		27	41		dB
2400.0 ... 2500.0 MHz		30	34		dB
2620.0 ... 2690.0 MHz		27	31		dB
3420.0 ... 3570.0 MHz		20	25		dB
5130.0 ... 5355.0 MHz		15	20		dB
5725.0 ... 5850.0 MHz		15	20		dB



Data Sheet



Characteristics

Temperature range for specification: T = -20 °C to +85 °C  
 ANT terminating impedance: Z<sub>ANT</sub> = 50 Ω || 3.9nH.  
 RX terminating impedance: Z<sub>RX</sub> = 100 Ω (balanced)|| 12nH.  
 TX terminating impedance: Z<sub>TX</sub> = 50 Ω

Characteristics ANT-RX		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>				
1805.0 ... 1880.0 MHz			3.0	4.3	dB
<b>Amplitude ripple per 5MHz channel</b>	Δα				
1805.0 ... 1880.0 MHz			0.65	1.7	dB
<b>Common mode rejection ratio</b>					
1805.0 ... 1880.0 MHz		23 <sup>1)</sup>	25		dB
<b>VSWR</b>					
RX port 1805.0 ... 1880.0 MHz			1.6	2.0	
ANT port 1805.0 ... 1880.0 MHz			1.6	2.0	
<b>Attenuation</b>	α				
10.0 ... 1710.0 MHz		35	58		dB
1710.0 ... 1785.0 MHz		45	54		dB
1965.0 ... 2400.0 MHz		15	58		dB
2400.0 ... 2484.0 MHz		30	60		dB
2484.0 ... 5650.0 MHz		30	52		dB
<b>IMD Product Level Limits<sup>2)</sup></b>	α				
at f <sub>TX</sub> =1747.5MHz, f <sub>RX</sub> =1842.5MHz					
Blocker 1 95.0 MHz			-115		dBm
Blocker 2 1652.5 MHz			-114		dBm
Blocker 3 3590.0 MHz			-110		dBm
Blocker 4 5337.5 MHz			-116		dBm

1) A combination of 10° phase balance and 1 dB amplitude balance corresponds to 19.6 dB CMRR  
 2) IMD product level limits for power levels P<sub>TX</sub>=21dBm (antenna port output power) and P<sub>Blocker</sub>= -15dBm (antenna port input power)



## Data Sheet



## Characteristics

Temperature range for specification:	T = -20 °C to +85 °C
ANT terminating impedance:	Z <sub>ANT</sub> = 50 Ω    3.9nH.
RX terminating impedance:	Z <sub>RX</sub> = 100 Ω (balanced)   12nH.
TX terminating impedance:	Z <sub>TX</sub> = 50 Ω

Characteristics TX-RX	min.	typ. @ 25°C	max.	
<b>Differential Mode Isolation</b> α				
1710.0 ... 1785.0 MHz	53	58		dB
1805.0 ... 1880.0 MHz	50	53		dB
<b>Common Mode Isolation</b>				
1710.0 ... 1785.0 MHz	50	57		dB



**SAW Components**

**B8088**

**SAW duplexer**

**1747.5 / 1842.5 MHz**

**Data Sheet**



**Characteristics**

Temperature range for specification: T = 25 °C  
 ANT terminating impedance: Z<sub>ANT</sub> = 50 Ω || 3.9nH.  
 RX terminating impedance: Z<sub>RX</sub> = 100 Ω (balanced)|| 12nH.  
 TX terminating impedance: Z<sub>TX</sub> = 50 Ω

<b>Characteristics TX-ANT</b>		<b>min.</b>	<b>typ. @ 25°C</b>	<b>max.</b>	
<b>Center frequency</b>	f <sub>C</sub>	–	1747.5	–	MHz
<b>Maximum insertion attenuation</b>	α <sub>max</sub>				
1714.0 ... 1781.0 MHz			2.0	2.4	dB
1710.0 ... 1785.0 MHz			2.5	2.6	dB
<b>Amplitude ripple per 5MHz channel</b>	Δα				
1710.0 ... 1785.0 MHz			0.55	1.3	dB
<b>VSWR</b>					
TX port 1710.0 ... 1785.0 MHz			1.5	2.0	
ANT port 1710.0 ... 1785.0 MHz			1.5	2.0	
<b>Attenuation</b>	α				
10.0 ... 1565.42 MHz		30	33		dB
207.5 ... 222.0 MHz		50	62		dB
470.0 ... 770.0 MHz		35	40		dB
1565.42 ... 1573.374MHz		40	46		dB
1573.374... 1577.466MHz		42	47		dB
1577.466... 1585.42 MHz		40	44		dB
1597.5515...1605.886MHz		35	39		dB
1605.886... 1680.0 MHz		20	30		dB
1805.0 ... 1880.0 MHz		43	47		dB
1920.0 ... 1980.0 MHz		20	33		dB
2110.0 ... 2170.0 MHz		27	41		dB
2400.0 ... 2500.0 MHz		30	34		dB
2620.0 ... 2690.0 MHz		27	31		dB
3420.0 ... 3570.0 MHz		20	25		dB
5130.0 ... 5355.0 MHz		15	20		dB
5725.0 ... 5850.0 MHz		15	20		dB



Data Sheet



Characteristics

Temperature range for specification:  $T = 25\text{ }^{\circ}\text{C}$   
 ANT terminating impedance:  $Z_{\text{ANT}} = 50\ \Omega \parallel 3.9\text{nH}$ .  
 RX terminating impedance:  $Z_{\text{RX}} = 100\ \Omega$  (balanced)  $\parallel 12\text{nH}$ .  
 TX terminating impedance:  $Z_{\text{TX}} = 50\ \Omega$

Characteristics ANT-RX		min.	typ. @ 25°C	max.	
<b>Center frequency</b>	$f_C$	–	1842.5	–	MHz
<b>Maximum insertion attenuation</b>	$\alpha_{\text{max}}$				
1805.0 ... 1880.0 MHz			3.0	3.3	dB
<b>Amplitude ripple per 5MHz channel</b>	$\Delta\alpha$				
1805.0 ... 1880.0 MHz			0.65	1.6	dB
<b>Common mode rejection ratio</b>					
1805.0 ... 1880.0 MHz		23 <sup>1)</sup>	25		dB
<b>VSWR</b>					
RX port 1805.0 ... 1880.0 MHz			1.6	2.0	
ANT port 1805.0 ... 1880.0 MHz			1.6	2.0	
<b>Attenuation</b>	$\alpha$				
10.0 ... 1710.0 MHz		35	58		dB
1710.0 ... 1785.0 MHz		46	54		dB
1965.0 ... 2400.0 MHz		15	58		dB
2400.0 ... 2484.0 MHz		30	60		dB
2484.0 ... 5650.0 MHz		30	52		dB
<b>IMD Product Level Limits<sup>2)</sup></b>	$\alpha$				
at $f_{\text{TX}}=1747.5\text{MHz}$ , $f_{\text{RX}}=1842.5\text{MHz}$					
Blocker 1 95.0 MHz			-115		dBm
Blocker 2 1652.5 MHz			-114		dBm
Blocker 3 3590.0 MHz			-110		dBm
Blocker 4 5337.5 MHz			-116		dBm

1) A combination of 10° phase balance and 1 dB amplitude balance corresponds to 19.6 dB CMRR  
 2) IMD product level limits for power levels  $P_{\text{TX}}=21\text{dBm}$  (antenna port output power) and  $P_{\text{Blocker}} = -15\text{dBm}$  (antenna port input power)



Data Sheet



Characteristics

Temperature range for specification: T = 25 °C  
 ANT terminating impedance: Z<sub>ANT</sub> = 50 Ω || 3.9nH.  
 RX terminating impedance: Z<sub>RX</sub> = 100 Ω (balanced)|| 12nH.  
 TX terminating impedance: Z<sub>TX</sub> = 50 Ω

Characteristics TX-RX	min.	typ. @ 25°C	max.	
<b>Differential Mode Isolation</b> α				
1710.0 ... 1785.0 MHz	53	58		dB
1805.0 ... 1880.0 MHz	50	53		dB
<b>Common Mode Isolation</b>				
1710.0 ... 1785.0 MHz	50	57		dB





SAW Components

B8088

SAW duplexer

1747.5 / 1842.5 MHz

Data Sheet



**Maximum ratings**

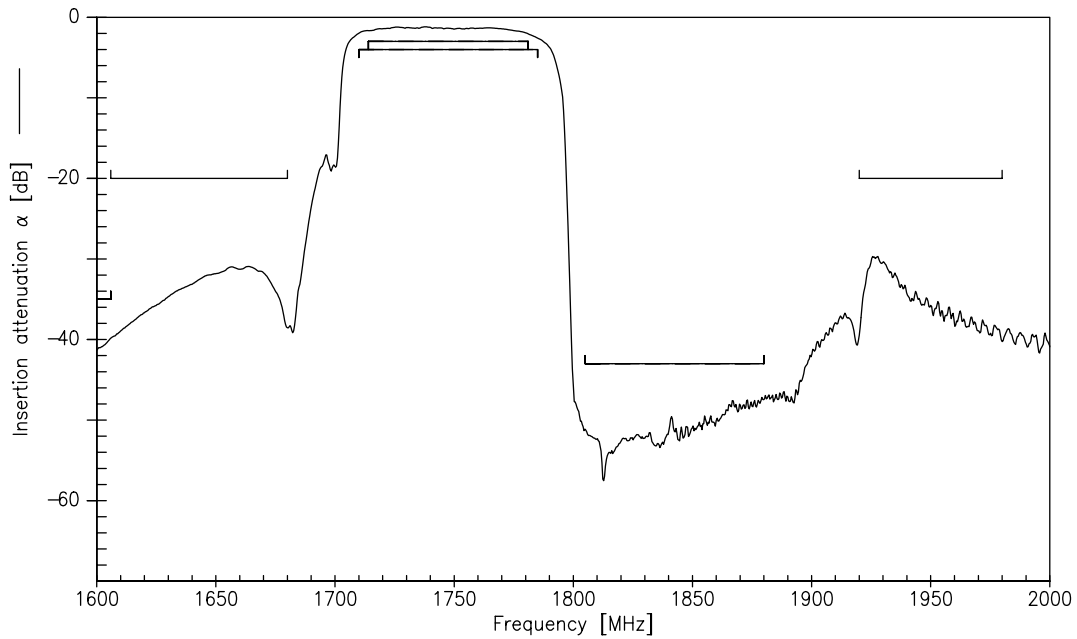
Storage temperature range	$T_{stg}$	-40 / +85	°C	
DC voltage	$V_{DC}$	5	V	
ESD voltage	$V_{ESD}$	50 <sup>1)</sup>	V	machine model, 10 pulses human body model, 1 pulse
	$V_{ESD}$	300 <sup>2)</sup>	V	
Input Power at 1710.0 ... 1785.0 MHz elsewhere	$P_{IN}$	29	dBm	} continuous wave $T = 55^{\circ}C, 5.000 h$
		10	dBm	

1) acc. to JESD22-A115B (machine model), 10 negative & 10 positive pulses.

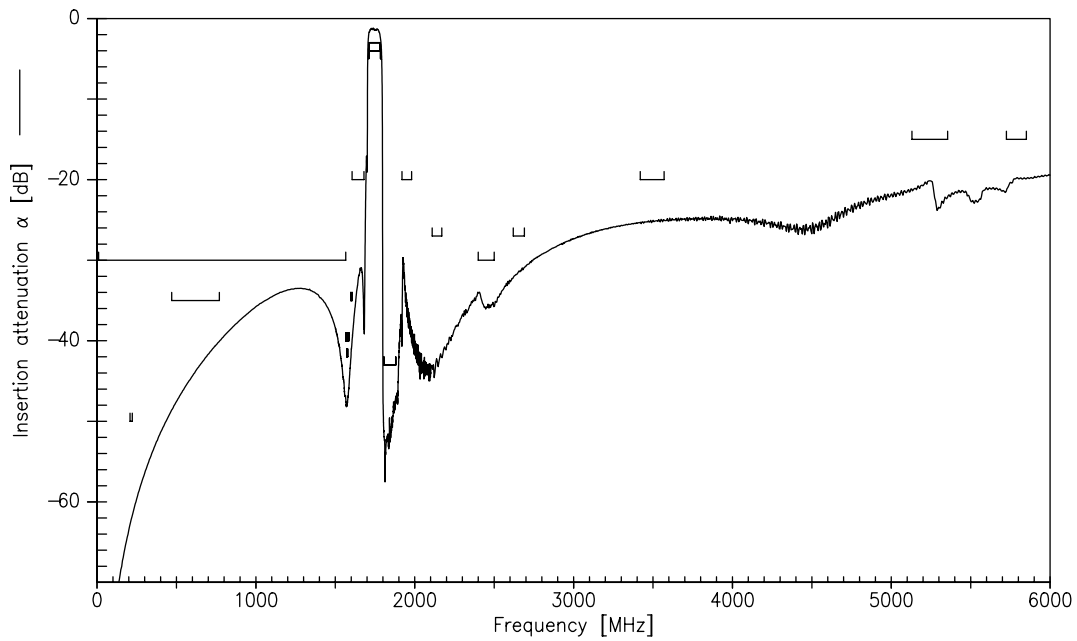
2) acc. to JESD22-A114F (human body model), 1 negative & 1 positive pulse.



Frequency Response TX-ANT

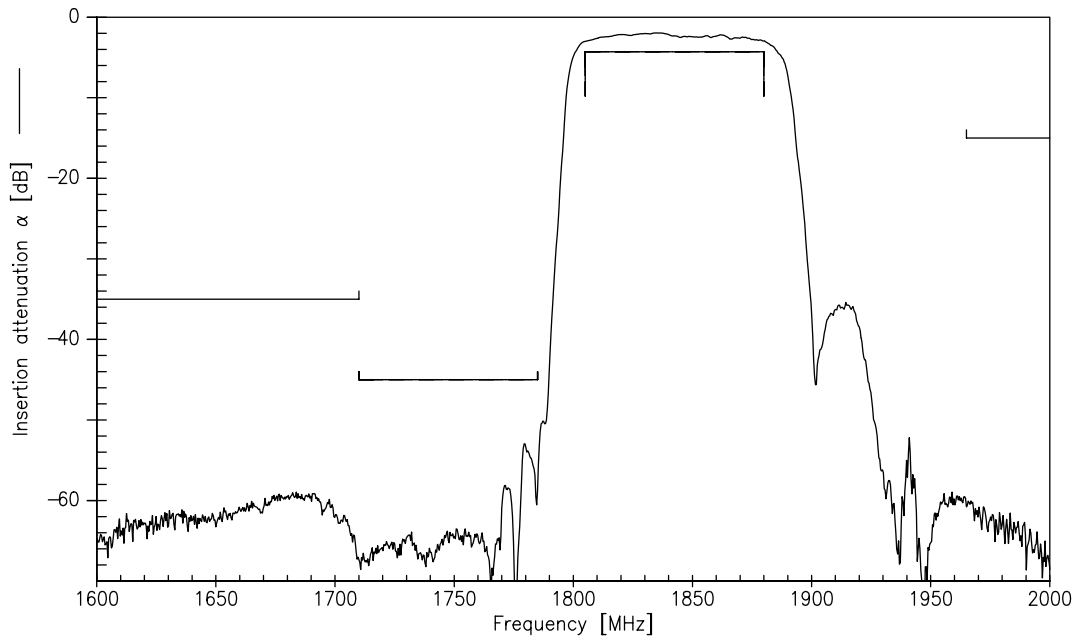


Frequency Response TX-ANT (wideband)

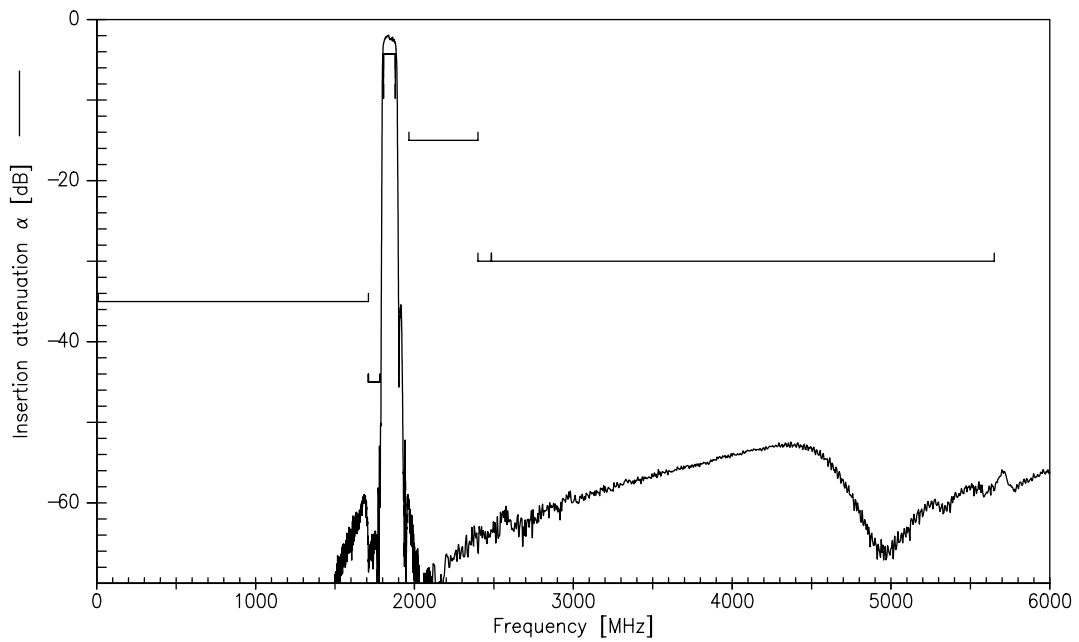




Frequency Response RX-ANT



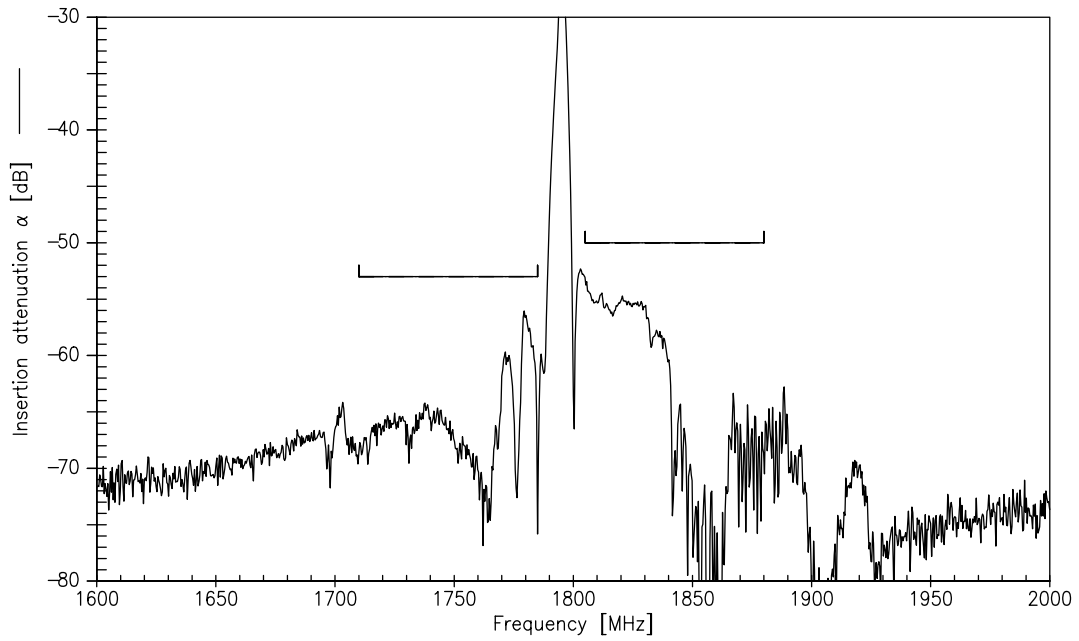
Frequency Response RX-ANT (wideband)



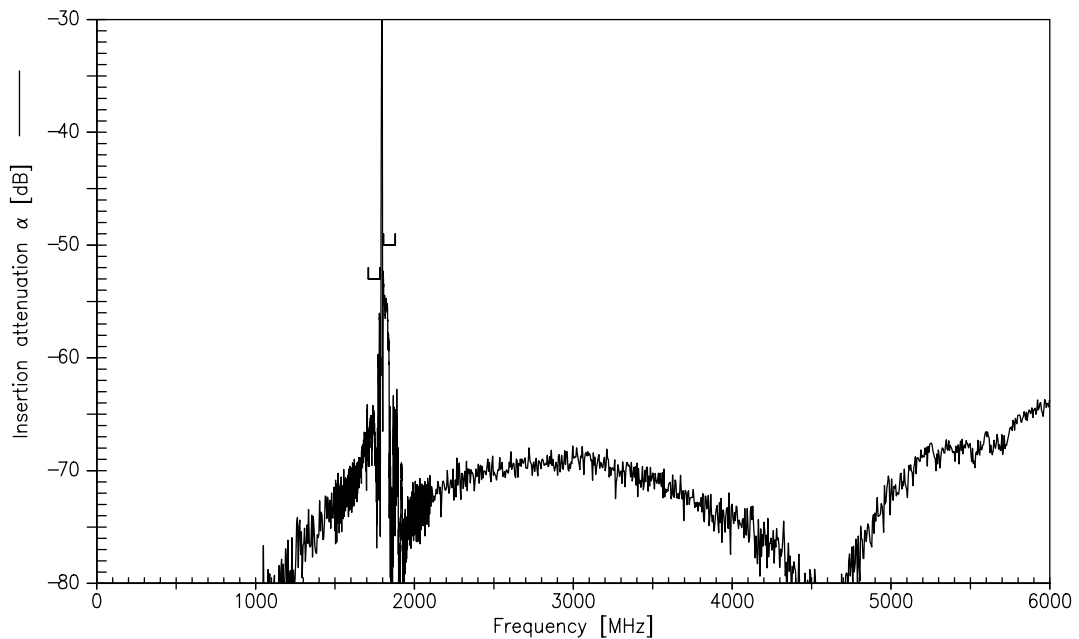
Please read *cautions and warnings* and *important notes* at the end of this document.



Frequency Response TX-RX (differential mode)



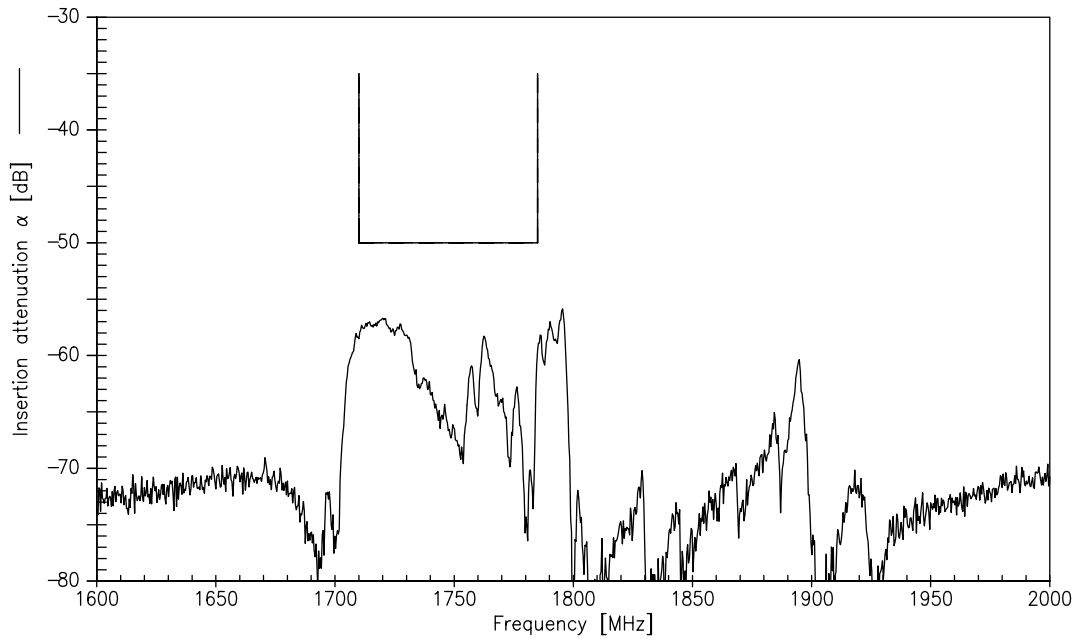
Frequency Response TX-RX (differential mode, wideband)



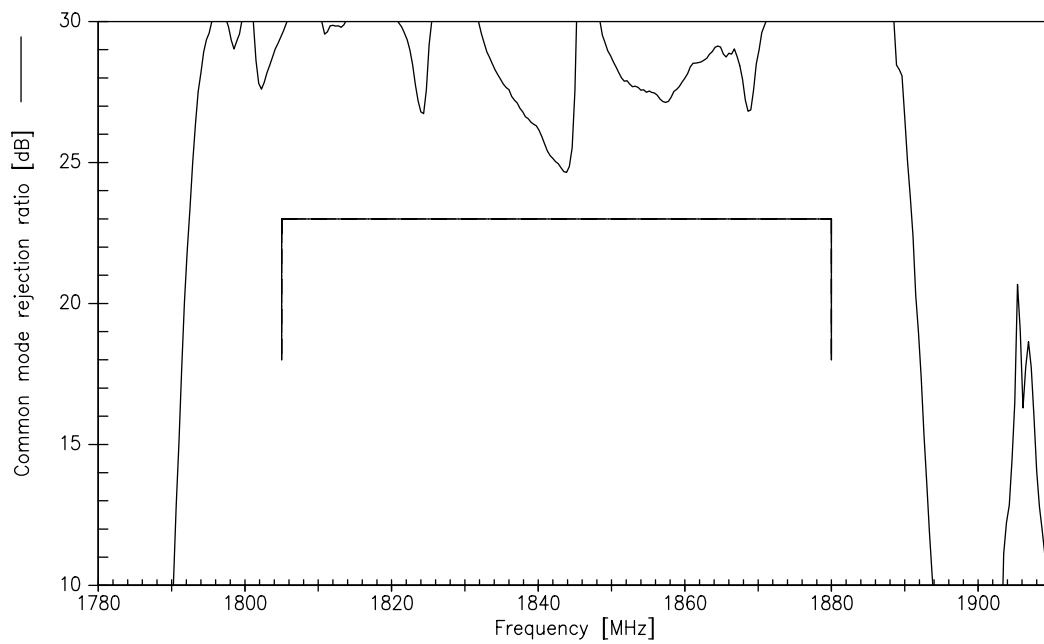
Please read *cautions and warnings and important notes* at the end of this document.



Frequency Response TX-RX (common mode)



Frequency Response Common Mode Rejection Ration

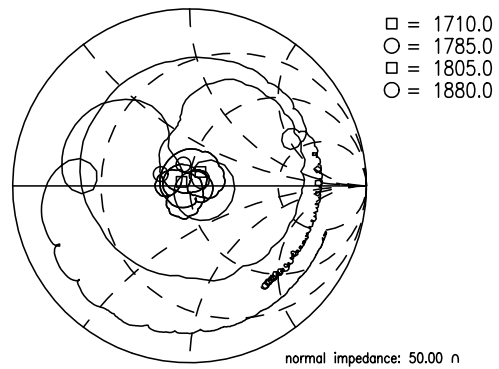
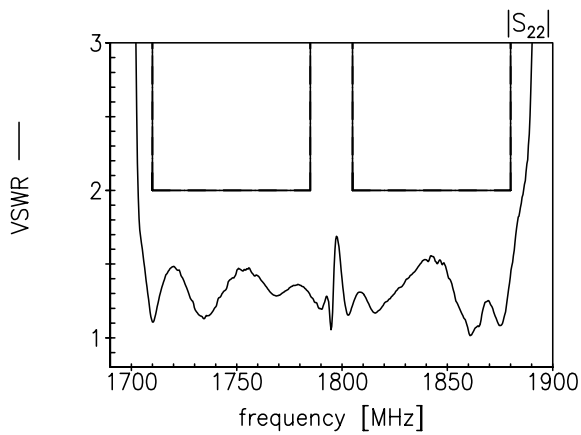
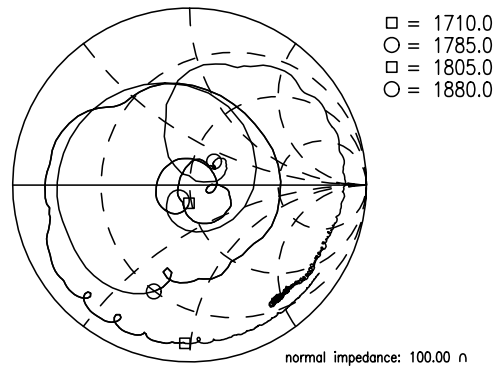
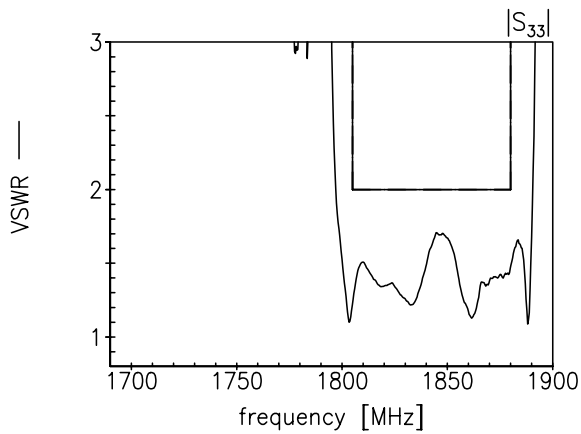
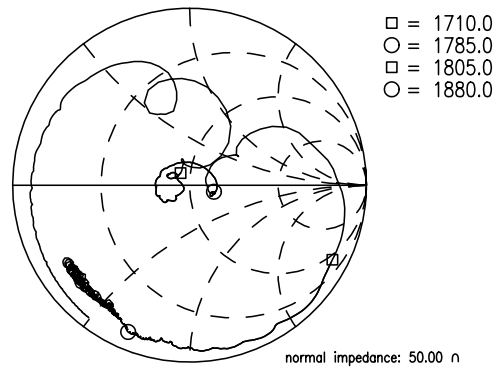
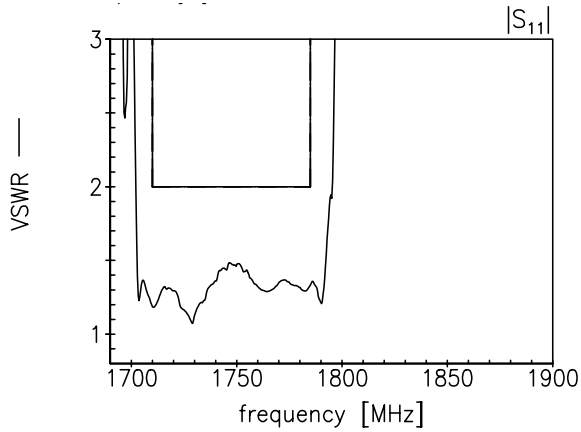




Data Sheet



VSWR at TX-, RX- and Antenna



**SAW Components****B8088****SAW duplexer****1747.5 / 1842.5 MHz**

Data Sheet

**References**

<b>Type</b>	B8088
<b>Ordering code</b>	B39182B8088P810
<b>Marking and Package</b>	C61157-A8-A64
<b>Packaging</b>	F61074-V8247-Z0000
<b>Date Codes</b>	L_1126
<b>S-Parameters</b>	B8088_NB_UN.s4p, B8088_WB_UN.s4p See file header for pin/port assignment.
<b>Soldering profile</b>	S_6001
<b>RoHS compatible</b>	defined as compatible with the following documents: "DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment."
<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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