SAW Components

SAW duplexer
Band III

Series/type:	**B8088**
Ordering code:	**B39182B8088P810**

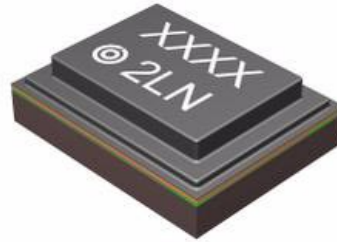|	
Date:	August 05, 2013
Version:	2.4

EPCOS

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
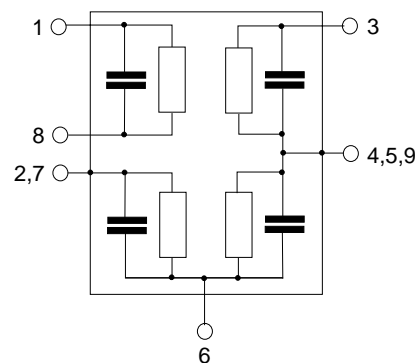- high Tx - Rx isolation

Features

- Package size 2.0 x 1.6
- Component height 0.45 mm max.
- RoHS compatible
- Approximate weight 0.006 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitive **L**evel 3

bottom view

side view

top view
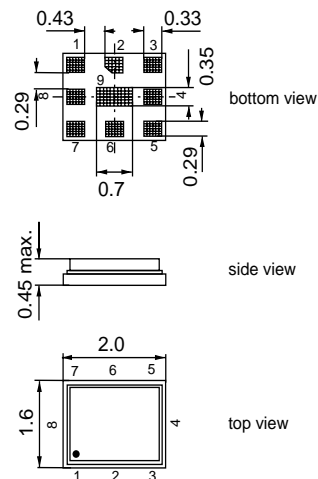
Pin configuration

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

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

Data Sheet   SMD

Characteristics

Temperature range for specification: T = −20 °C to +85 °C
ANT terminating impedance: Z_{ANT} = 50 Ω || 3.9nH.
RX terminating impedance: Z_{RX} = 100 Ω (balanced)|| 12nH.
TX terminating impedance: Z_{TX} = 50 Ω

Characteristics TX-ANT		min.	typ. @ 25°C	max.	
Center frequency	f_C	–	1747.5	–	MHz
Maximum insertion attenuation	α_{max}				
1714.0 ... 1781.0 MHz			2.0	3.0	dB
1710.0 ... 1785.0 MHz			2.5	4.0	dB
Amplitude ripple per 5MHz channel	$\Delta\alpha$				
1710.0 ... 1785.0 MHz			0.55	1.3	dB
VSWR					
TX port 1710.0 ... 1785.0 MHz			1.5	2.0	
ANT port 1710.0 ... 1785.0 MHz			1.5	2.0	
Attenuation	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 ... 1573.374 MHz		40	46		dB
1573.374... 1577.466 MHz		42	47		dB
1577.466... 1585.42 MHz		40	44		dB
1597.5515...1605.886 MHz		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

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

3   August 05, 2013

SAW duplexer **1747.5 / 1842.5 MHz**

Data Sheet   SMD

Characteristics

Temperature range for specification: T   = −20 ˚C to +85 ˚C
ANT terminating impedance: Z_{ANT} =   50 Ω ‖ 3.9nH.
RX terminating impedance: Z_{RX} = 100 Ω (balanced)‖ 12nH.
TX terminating impedance: Z_{TX} =   50 Ω

Characteristics ANT-RX				**min.**	**typ. @ 25˚C**	**max.**	
Center frequency			f_C	−	1842.5	−	MHz
Maximum insertion attenuation			α_{max}				
1805.0	...	1880.0	MHz		3.0	4.3	dB
Amplitude ripple per 5MHz channel			$\Delta\alpha$				
1805.0	...	1880.0	MHz		0.65	1.7	dB
Common mode rejection ratio							
1805.0	...	1880.0	MHz	23[1]	25		dB
VSWR							
RX port	1805.0	... 1880.0	MHz		1.6	2.0	
ANT port	1805.0	... 1880.0	MHz		1.6	2.0	
Attenuation			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
IMD Product Level Limits[2] at f_{TX}=1747.5MHz, f_{RX}=1842.5MHz			α				
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_{TX}=21dBm (antenna port output power) and $P_{Blocker}$= -15dBm (antenna port input power)

Data Sheet

Characteristics

Temperature range for specification: T   = −20 ˚C to +85 ˚C
ANT terminating impedance: Z_{ANT} =   50 Ω || 3.9nH.
RX terminating impedance: Z_{RX} = 100 Ω (balanced)|| 12nH.
TX terminating impedance: Z_{TX} =   50 Ω

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

Data Sheet   SMD

Characteristics

Temperature range for specification: T   =   25 ˚C
ANT terminating impedance: Z_{ANT} =   50 Ω || 3.9nH.
RX terminating impedance: Z_{RX} =   100 Ω (balanced)|| 12nH.
TX terminating impedance: Z_{TX} =   50 Ω

Characteristics TX-ANT				**min.**	**typ. @ 25˚C**	**max.**	
Center frequency			f_C	–	1747.5	–	MHz
Maximum insertion attenuation			α_{max}				
1714.0	... 1781.0	MHz			2.0	2.4	dB
1710.0	... 1785.0	MHz			2.5	2.6	dB
Amplitude ripple per 5MHz channel			$\Delta\alpha$				
1710.0	... 1785.0	MHz			0.55	1.3	dB
VSWR							
TX port 1710.0	... 1785.0	MHz			1.5	2.0	
ANT port 1710.0	... 1785.0	MHz			1.5	2.0	
Attenuation			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	... 1573.374	MHz		40	46		dB
1573.374	... 1577.466	MHz		42	47		dB
1577.466	... 1585.42	MHz		40	44		dB
1597.5515	... 1605.886	MHz		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

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

Data Sheet

SMD

Characteristics

Temperature range for specification: T = 25 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω || 3.9nH.
RX terminating impedance: Z_{RX} = 100 Ω (balanced)|| 12nH.
TX terminating impedance: Z_{TX} = 50 Ω

Characteristics ANT-RX		min.	typ. @ 25˚C	max.	
Center frequency	f_C	−	1842.5	−	MHz
Maximum insertion attenuation	α_{max}				
1805.0 ... 1880.0 MHz			3.0	3.3	dB
Amplitude ripple per 5MHz channel	$\Delta\alpha$				
1805.0 ... 1880.0 MHz			0.65	1.6	dB
Common mode rejection ratio					
1805.0 ... 1880.0 MHz		23[1]	25		dB
VSWR					
RX port 1805.0 ... 1880.0 MHz			1.6	2.0	
ANT port 1805.0 ... 1880.0 MHz			1.6	2.0	
Attenuation	α				
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
IMD Product Level Limits[2] at f_{TX}=1747.5MHz, f_{RX}=1842.5MHz	α				
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_{TX}=21dBm (antenna port output power) and $P_{Blocker}$= - 15dBm (antenna port input power)

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

7 August 05, 2013

Data Sheet SMD

Characteristics

Temperature range for specification: T = 25 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω ‖ 3.9nH.
RX terminating impedance: Z_{RX} = 100 Ω (balanced)‖ 12nH.
TX terminating impedance: Z_{TX} = 50 Ω

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

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8 August 05, 2013

Maximum ratings

Storage temperature range	T_{stg}	−40 / +85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50[1]	V	machine model, 10 pulses
	V_{ESD}	300[2]	V	human body model, 1 pulse
Input Power at	P_{IN}			
1710.0 ... 1785.0 MHz		29	dBm	} continuous wave
elsewhere		10	dBm	T = 55˚C, 5.000 h

[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.

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9   August 05, 2013

Frequency Response TX-ANT
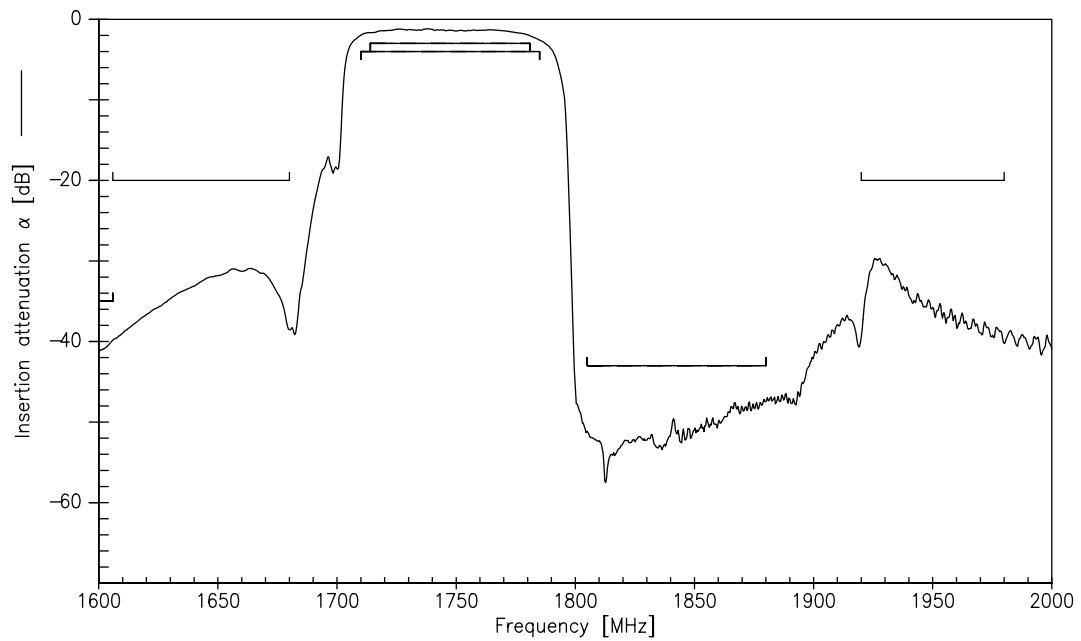
Frequency Response TX-ANT (wideband)
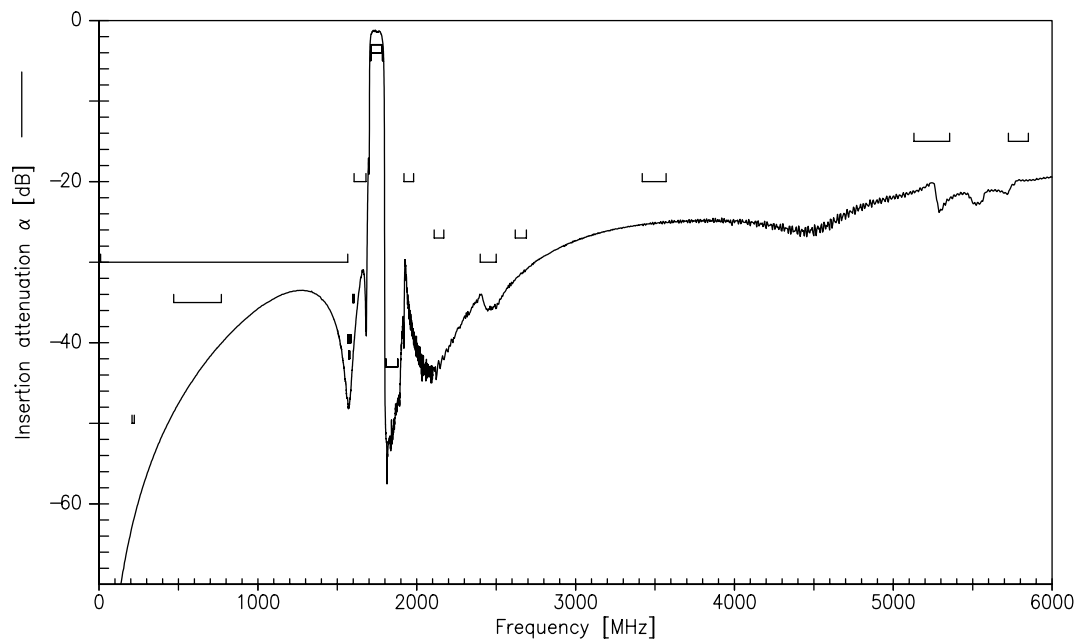
Please read *cautions and warnings and important notes* at the end of this document.

10   August 05, 2013

Frequency Response RX-ANT
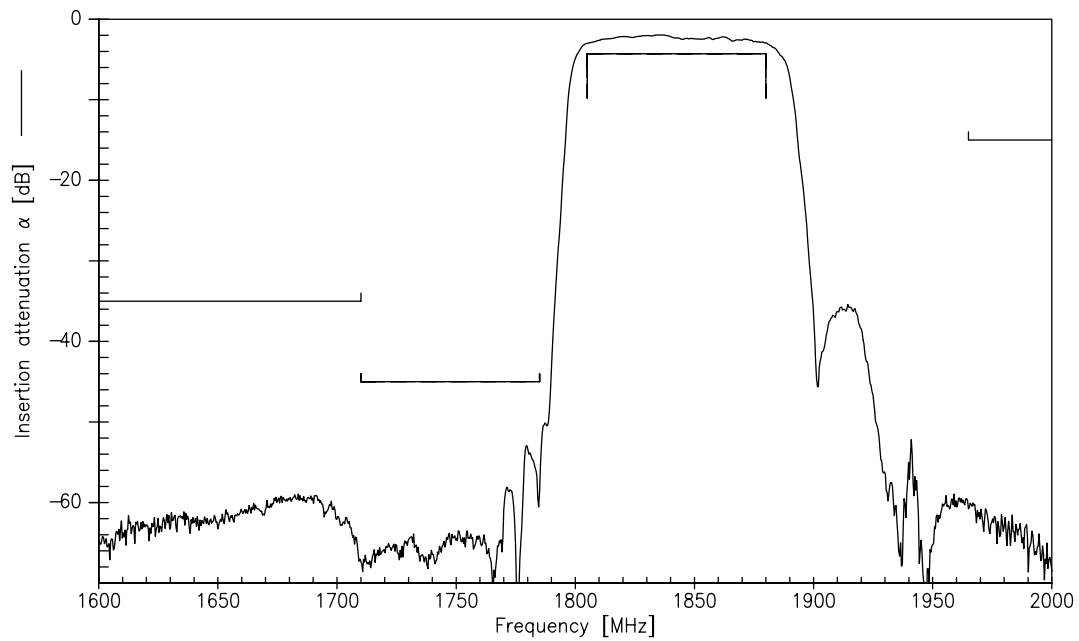
Frequency Response RX-ANT (wideband)
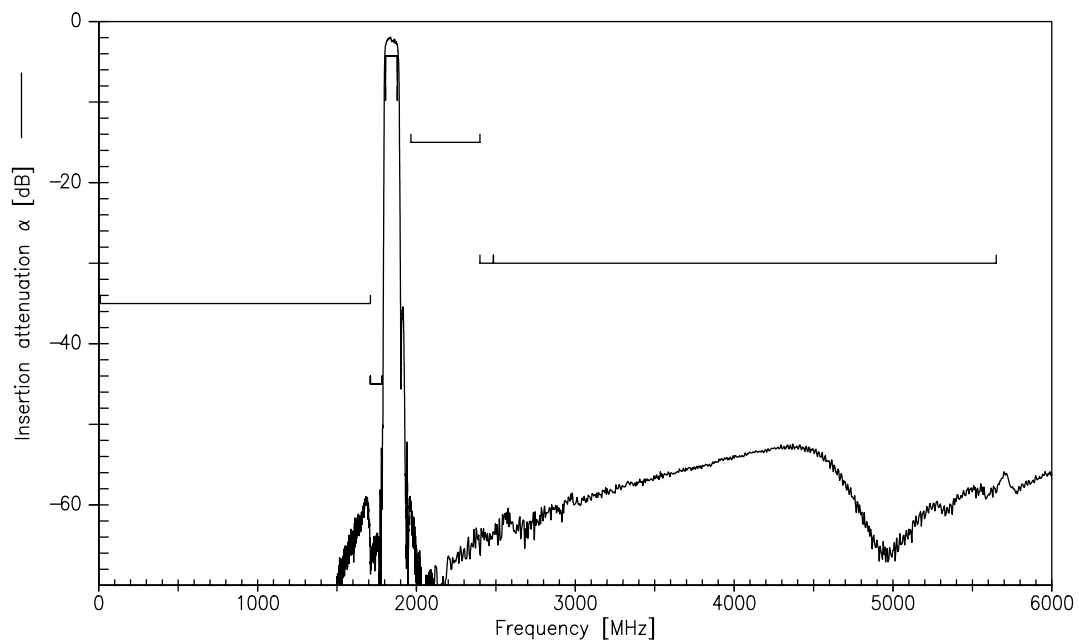
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11   August 05, 2013

Frequency Response TX-RX (differential mode)
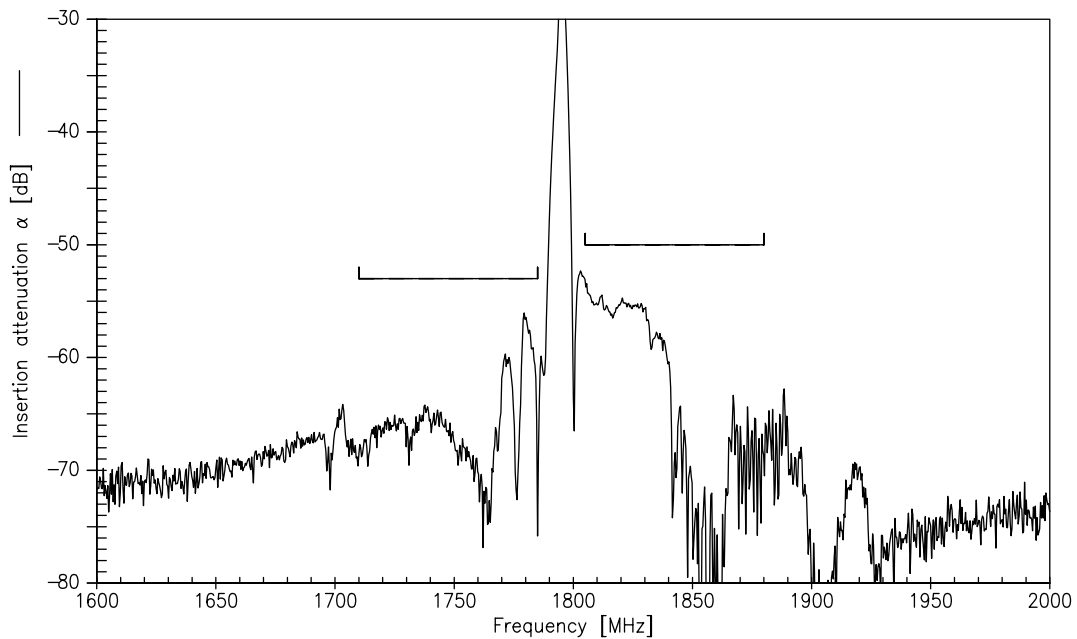
Frequency Response TX-RX (differential mode, wideband)
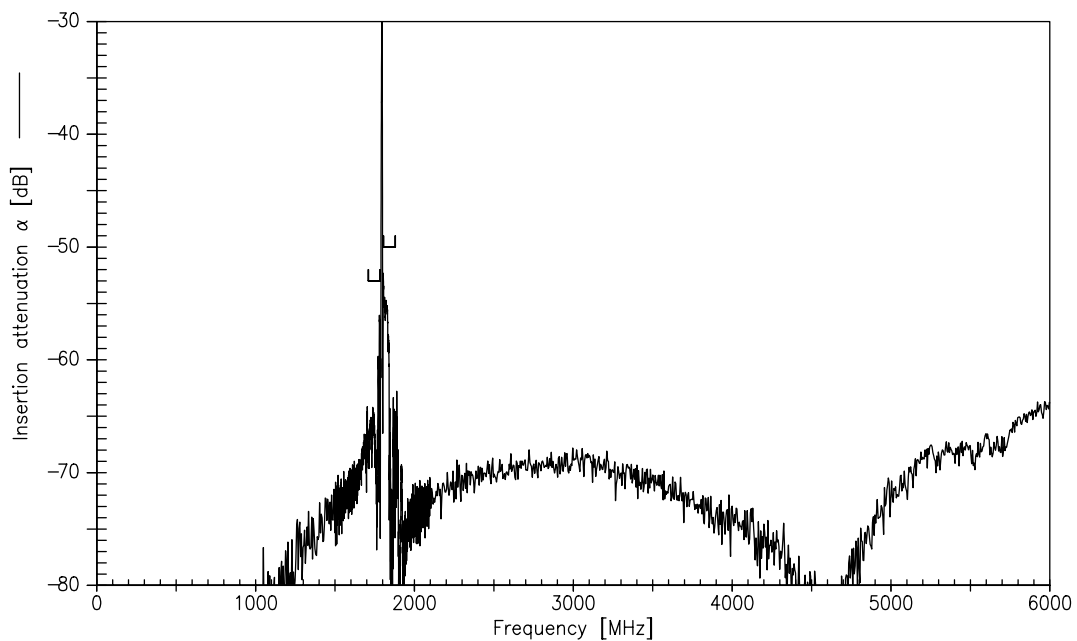
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12   August 05, 2013

Frequency Response TX-RX (common mode)
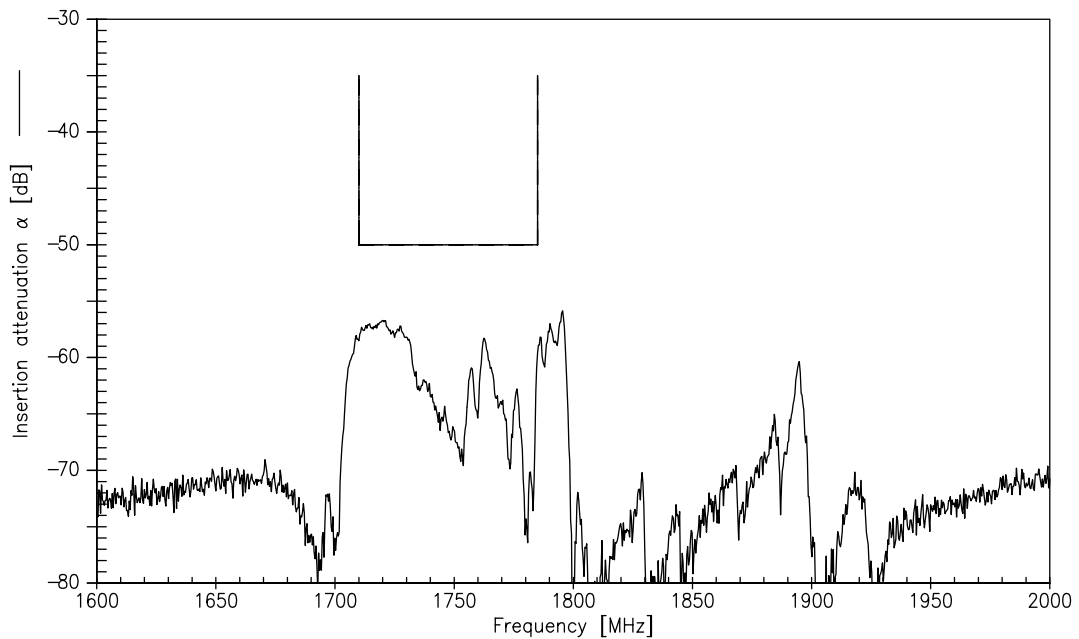
Frequency Response Common Mode Rejection Ration

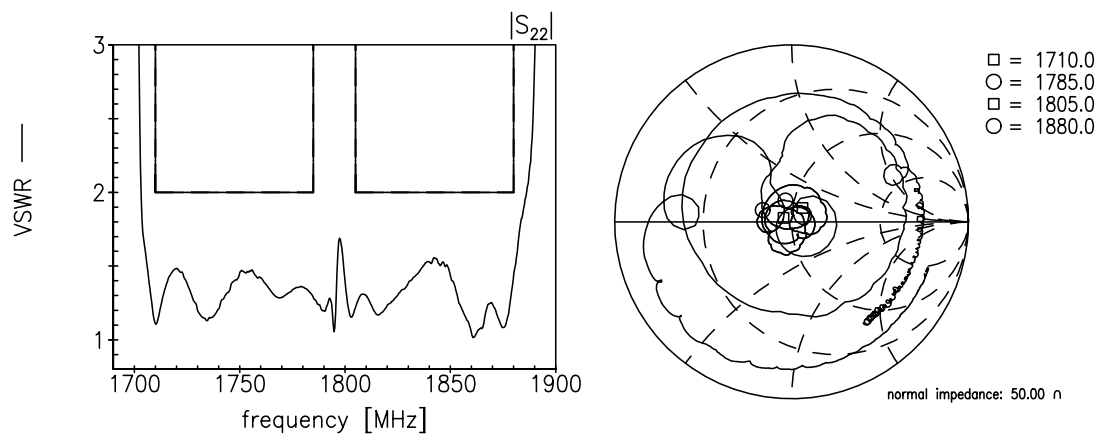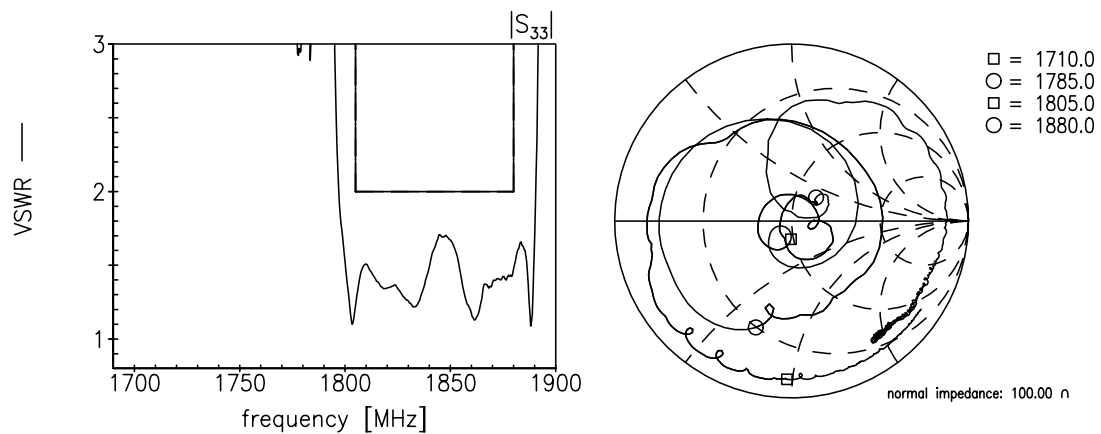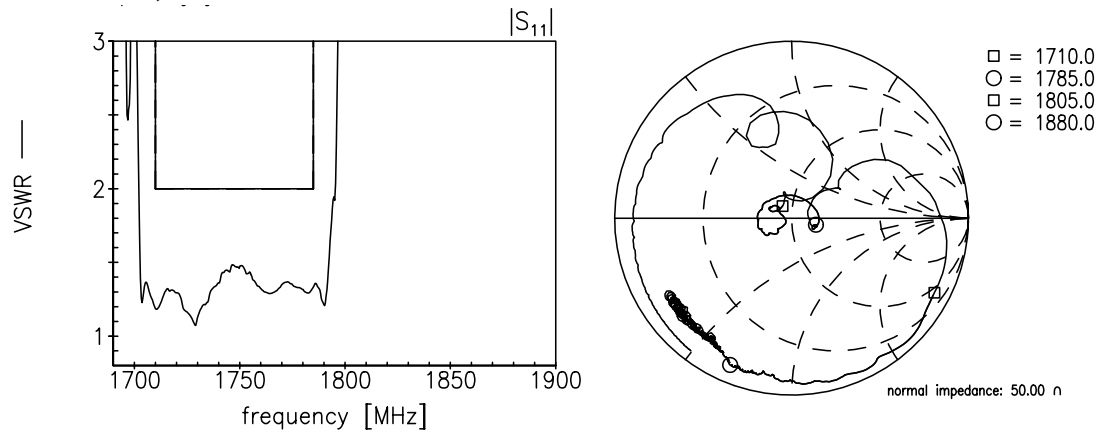Please read *cautions and warnings and important notes* at the end of this document.

VSWR at TX-, RX- and Antenna

References

Type	B8088
Ordering code	B39182B8088P810
Marking and Package	C61157-A8-A64
Packaging	F61074-V8247-Z0000
Date Codes	L_1126
S-Parameters	B8088_NB_UN.s4p, B8088_WB_UN.s4p See file header for pin/port assignment.
Soldering profile	S_6001
RoHS compatible	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."
Moldability	Before using in overmolding environment, please contact your EPCOS sales office.
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

For further information please contact your local EPCOS sales office or visit our webpage at www.epcos.com .

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15 August 05, 2013

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