



SAW Components

SAW Duplexer

Automotive telematics

Series/type:	B4403
Ordering code:	B39212B4403P810
Date:	March 25, 2015
Version:	2.3

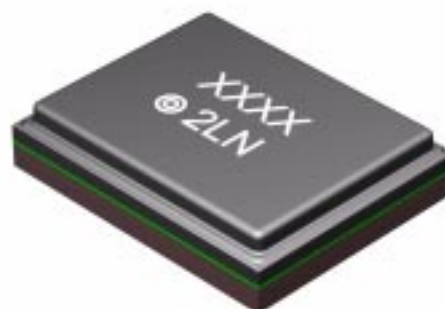
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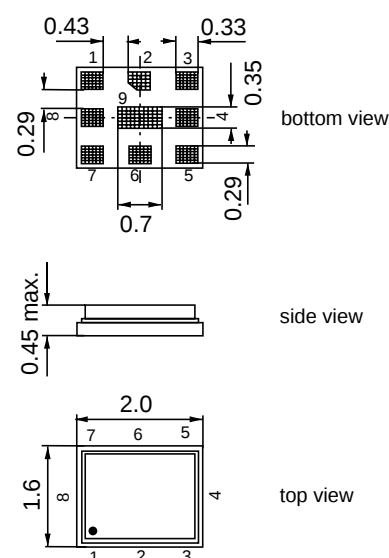
Application

- Low-loss SAW duplexer for WCDMA Band 4 / CDMA 1x AWS systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 45 MHz
- Single-ended to balanced transformation in Antenna-Rx path
- Impedance transformation 50Ω to 100Ω in Antenna-Rx path
- High isolation between Tx and Rx



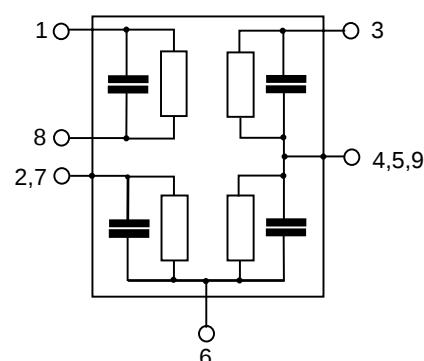
Features

- Package size 2.0 * 1.6 mm²
- Package height max. 0.45 mm
- RoHS compatible
- Approx. weight 0.005 g
- Package for **Surface Mount Technology (SMT)**
- Ni terminals, Au-plated
- **Electrostatic Sensitive Device (ESD)**
- AEC-Q200 qualified component family (operable temperature range -40°C to +85°C)



Pin configuration

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



SAW Components
B4403
SAW Duplexer
1732.5 / 2132.5 MHz
Data sheet

Characteristics

Temperature range for specification:	$T = -30\text{ }^{\circ}\text{C to } +85\text{ }^{\circ}\text{C}$
Antenna terminating impedance:	$Z_{ANT} = 50\text{ }\Omega \parallel 2.4\text{ nH}$
TX terminating impedance:	$Z_{TX} = 50\text{ }\Omega \parallel 10\text{ nH}$
RX terminating impedance:	$Z_{RX} = 100\text{ }\Omega \text{ (balanced)} \parallel 14\text{ nH}$

Characterisitcs TX - Antenna				min.	typ. @ 25 °C	max.	
Center frequency	f_C				1732.5		MHz
Maximum insertion attenuation	α	1710.0 ... 1755.0 MHz		—	1.5	2.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$	1710.0 ... 1755.0 MHz		—	0.5	1.5	dB
Input VSWR (TX port)		1710.0 ... 1755.0 MHz		—	1.4	2.0	
Output VSWR (ANT port)		1710.0 ... 1755.0 MHz		—	1.4	2.0	
Attenuation	α						
		100.0 ... 764.0 MHz		35	45	—	dB
		851.0 ... 894.0 MHz		35	42	—	dB
		1310.0 ... 1355.0 MHz		24	38	—	dB
		1565.42 ... 1585.42 MHz		40	47	—	dB
		1597.55 ... 1605.88 MHz		40	47	—	dB
		1805.0 ... 1880.0 MHz		20	46	—	dB
		1930.0 ... 1990.0 MHz		40	48	—	dB
		2110.0 ... 2155.0 MHz		45	49	—	dB
		2400.0 ... 2500.0 MHz		30	39	—	dB
		2565.0 ... 2677.0 MHz		25	36	—	dB
		3410.0 ... 3510.0 MHz		25	32	—	dB

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Characterisitcs Antenna - Rx				min.	typ. @ 25 °C	max.	
Center frequency	f_C				2132.5		MHz
Maximum insertion attenuation	α						
2110.0 ... 2155.0 MHz				—	1.9	2.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$						
2110.0 ... 2155.0 MHz				—	0.4	1.2	dB
Input VSWR (RX port)							
2110.0 ... 2155.0 MHz				—	1.4	2.0	
Output VSWR (ANT port)							
2110.0 ... 2155.0 MHz				—	1.6	2.0	
CMRR ($S_{32}-S_{42} / S_{32}+S_{42}$)							
2110.0 ... 2155.0 MHz				20	23	—	dB
Attenuation	α						
100.0 ... 400.0 MHz				57	75	—	dB
400.0 ... 1355.0 MHz				45	64	—	dB
1355.0 ... 1710.0 MHz				35	46	—	dB
1710.0 ... 1755.0 MHz				45	58	—	dB
1755.0 ... 1955.0 MHz				35	50	—	dB
1955.0 ... 2025.0 MHz				15	37	—	dB
2240.0 ... 2300.0 MHz				15	38	—	dB
2300.0 ... 2400.0 MHz				30	45	—	dB
2400.0 ... 2690.0 MHz				40	48	—	dB
2690.0 ... 3300.0 MHz				35	45	—	dB
3300.0 ... 3800.0 MHz				45	49	—	dB
3820.0 ... 3910.0 MHz				40	48	—	dB
3910.0 ... 4220.0 MHz				35	47	—	dB
4220.0 ... 4310.0 MHz				40	46	—	dB

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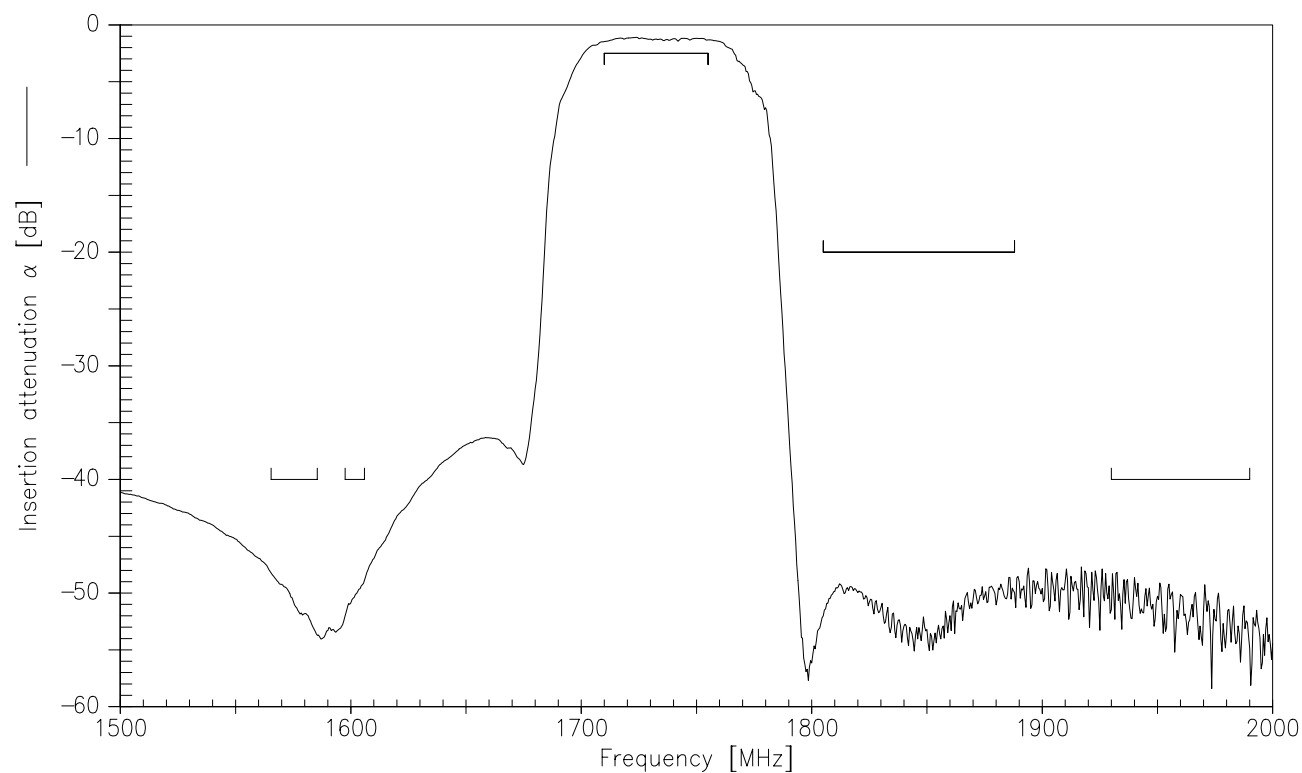
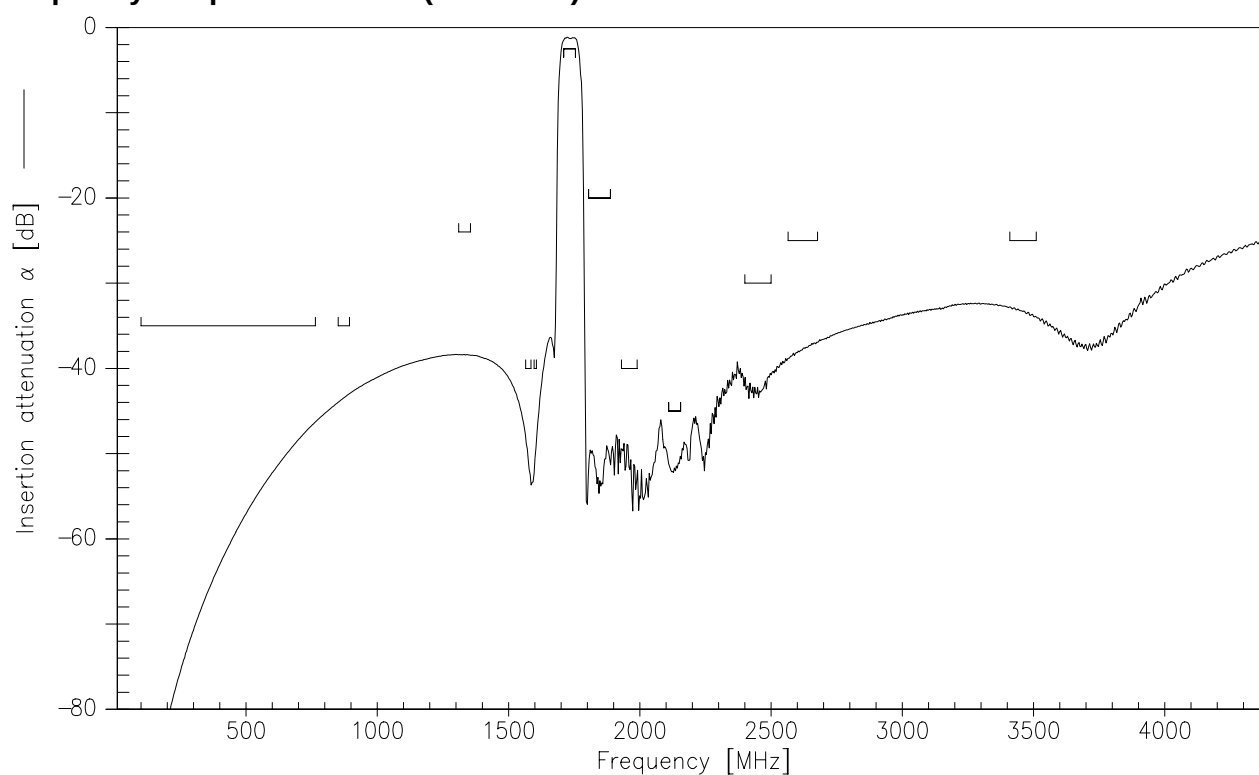
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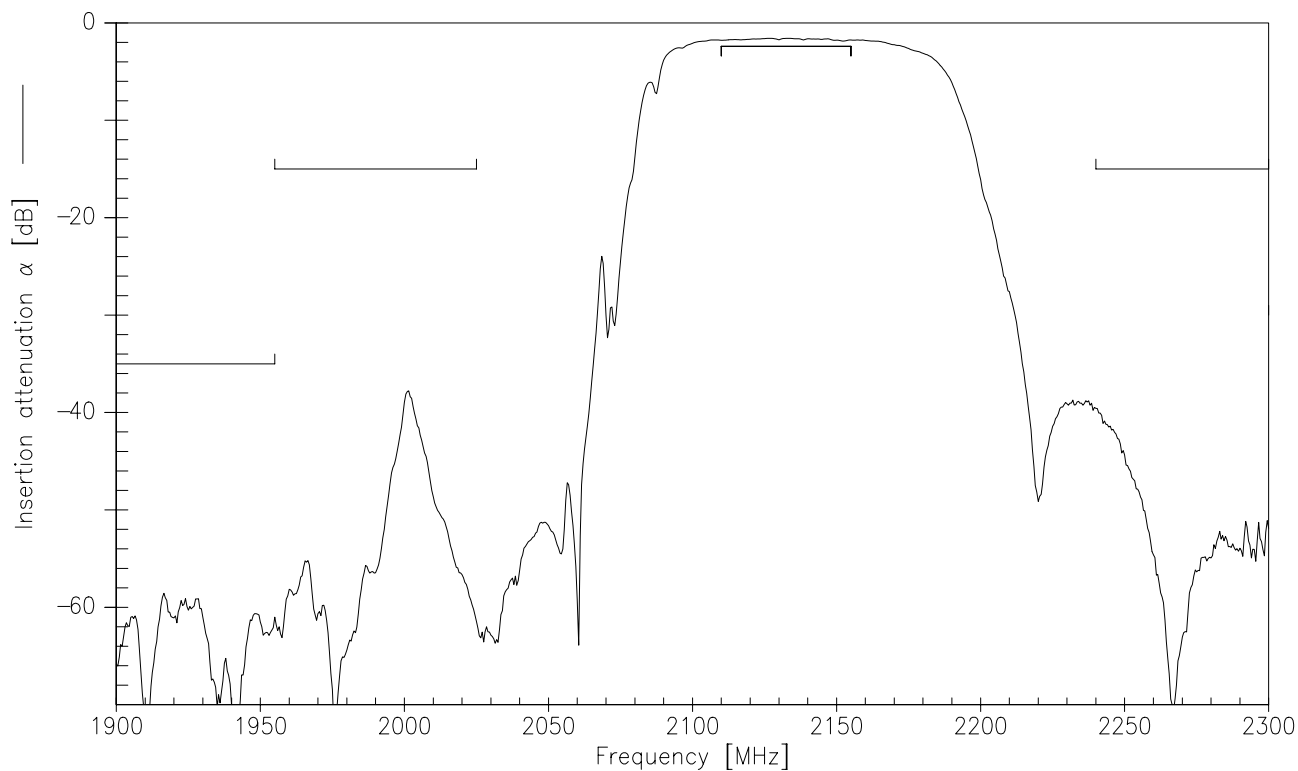
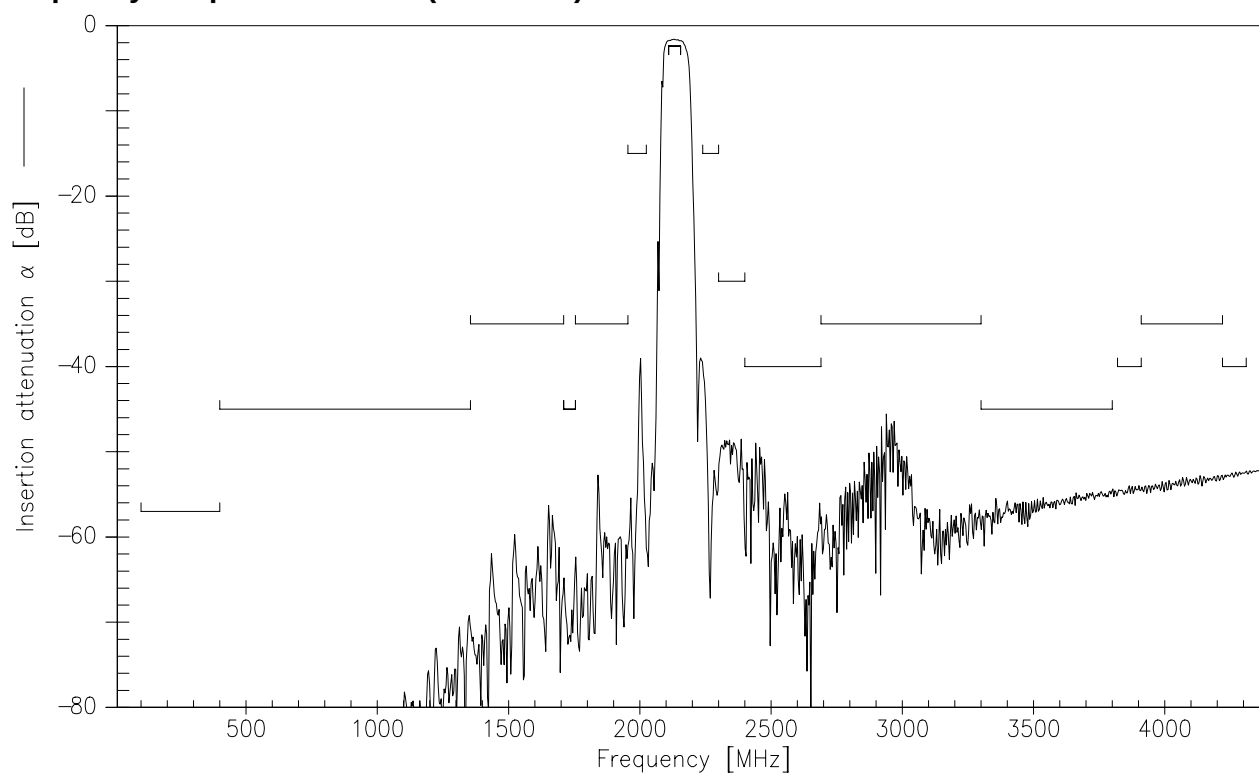
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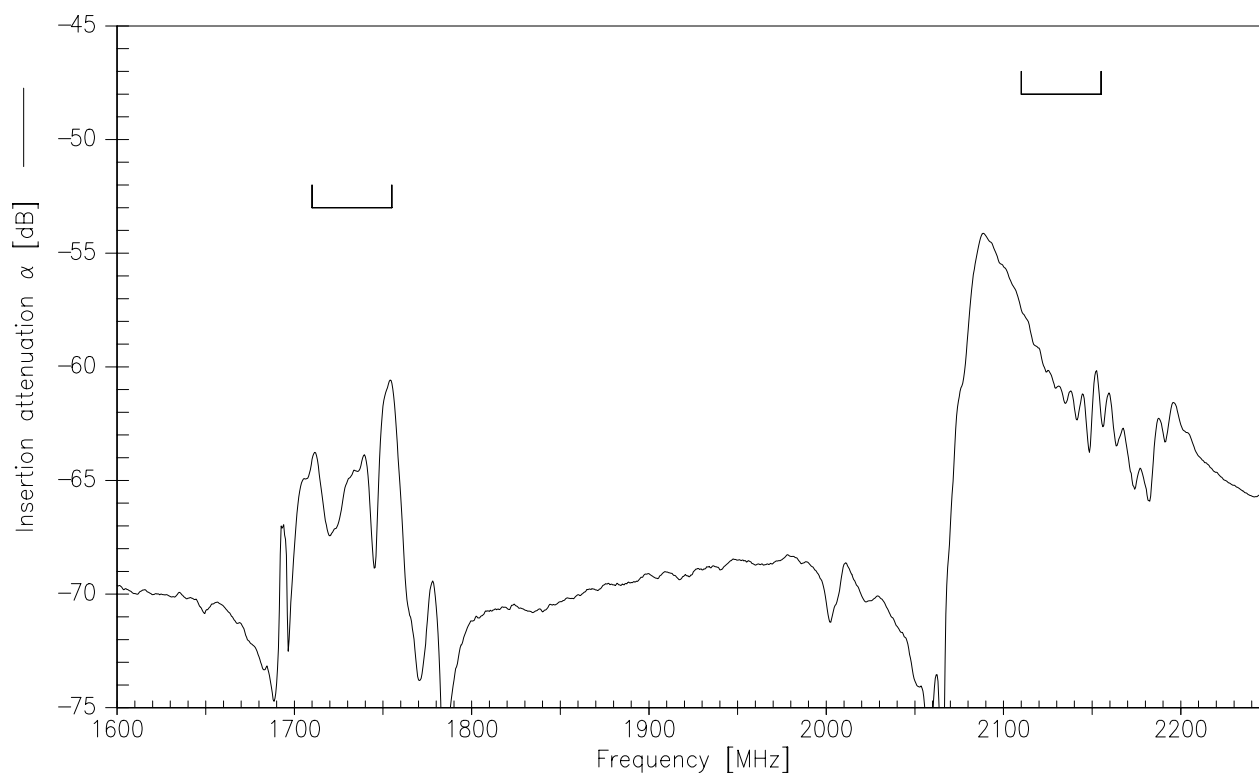
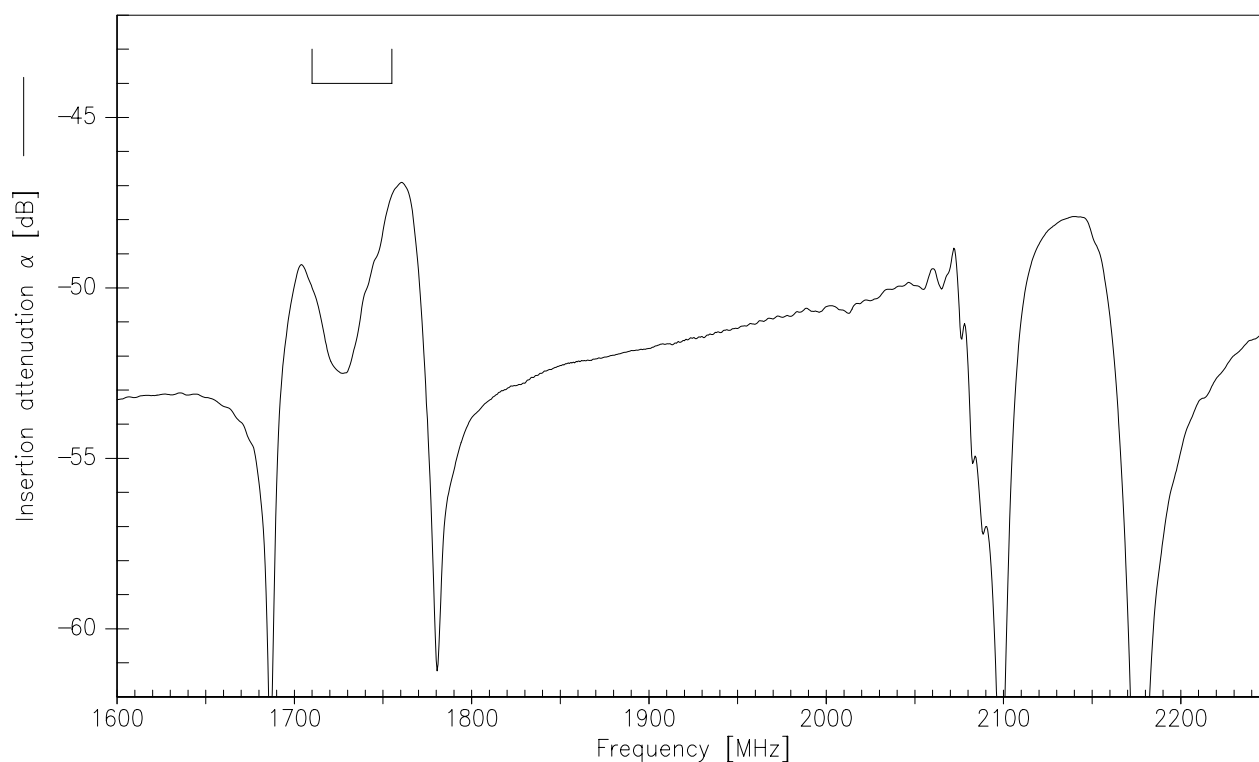
Characterisitcs Tx - Rx				min.	typ. @ 25 °C	max.	
Differential Mode Isolation							
			α				
1574.0	...	1577.0	MHz	40	69	—	dB
1710.0	...	1755.0	MHz	53	57	—	dB
2110.0	...	2155.0	MHz	48	56	—	dB
3410.0	...	3520.0	MHz	20	66	—	dB
Common Mode Isolation							
			α				
1710.0	...	1755.0	MHz	44	47	—	dB

Maximum Ratings

Operable temperature range	T	−40/+85	°C	source and load impedance 50 Ω } continuous wave 50 °C, 5000 h
Storage temperature range	T_{stg}	−40/+85	°C	
DC voltage	V_{DC}	0	V	
Input power at	P_{IN}			
1710.0 ... 1755.0 MHz		29	dBm	}
elsewhere		10	dBm	

Frequency Response TX-ANT

Frequency Response TX-ANT (wideband)



Frequency Response RX-ANT

Frequency Response RX-ANT (wideband)



Frequency Response TX-RX (Differential Mode)

Frequency Response TX-RX (Common Mode)


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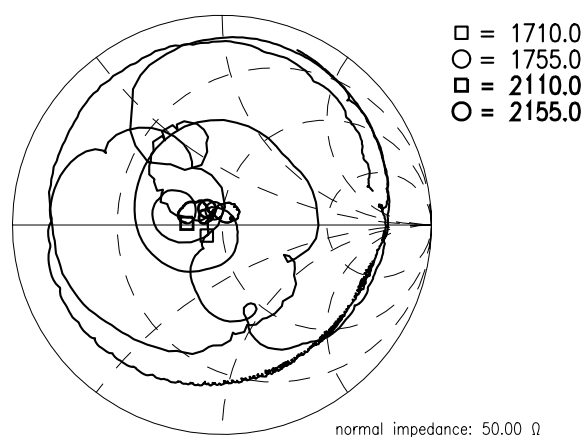
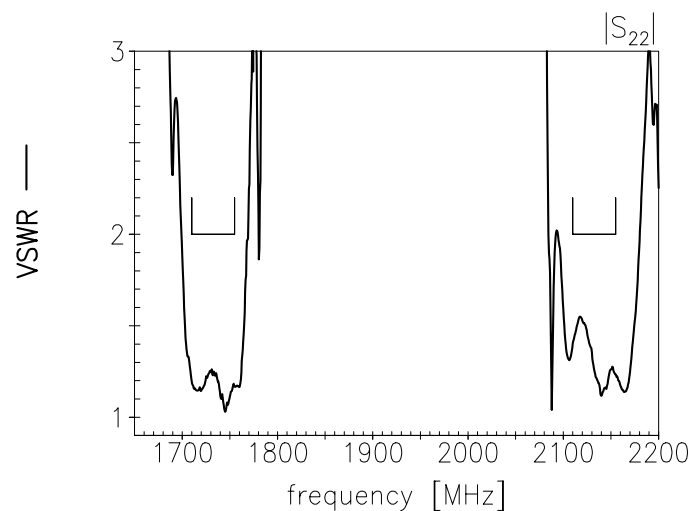
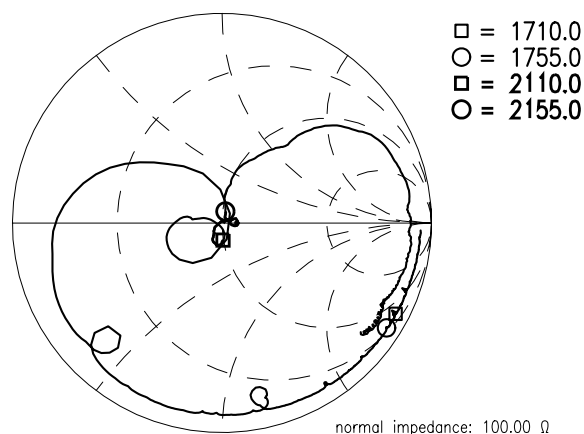
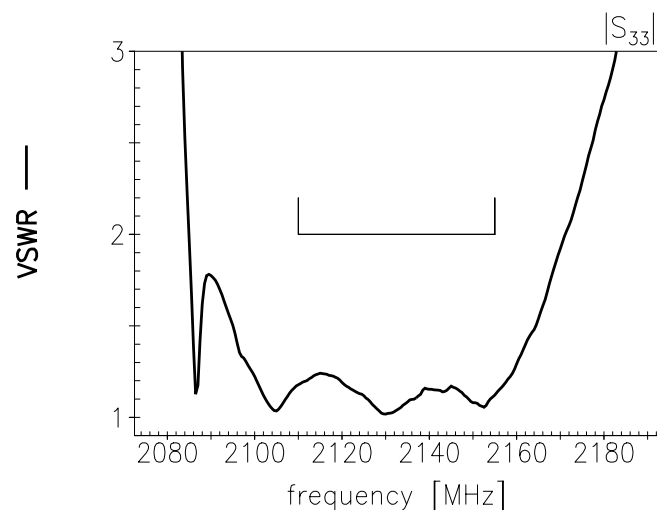
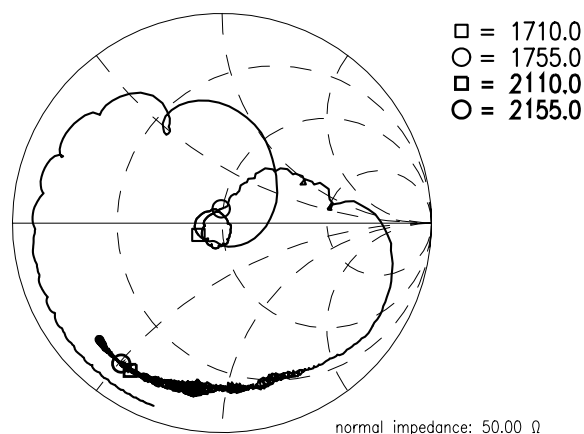
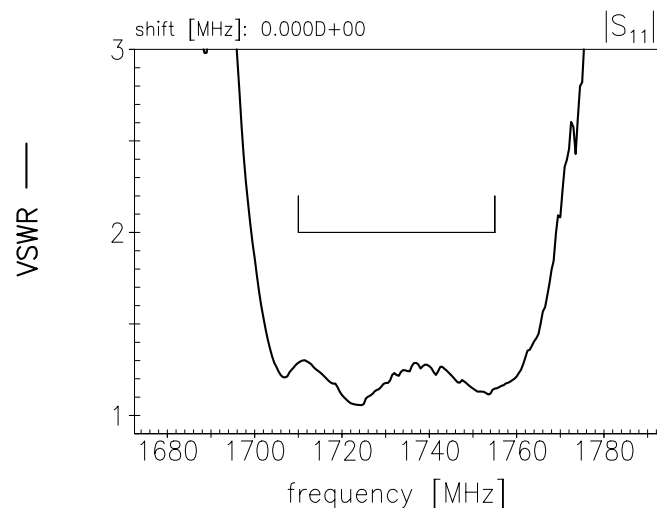


Return Loss

S_{11} TX- port

S_{33} RX-port

S_{22} ANT-port



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References

Type	B4403
Ordering code	B39212B4403P810
Marking and package	C61157-A8-A50
Packaging	F61074-V8247-Z000
Date codes	L_1126
S-parameters	B4403_NB_UN.s4p B4403_WB_UN.s4p 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.
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

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