SAW Components

SAW Duplexer

WCDMA/LTE Band XI

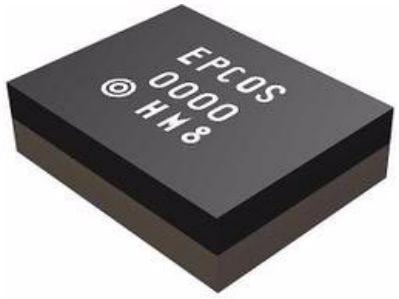
Series/type:	**B8559**
Ordering code:	**B39142B8559P810**
Date:	July 20, 2012
Version:	2.1

EPCOS AG is a TDK Group Company.

Data Sheet SMD

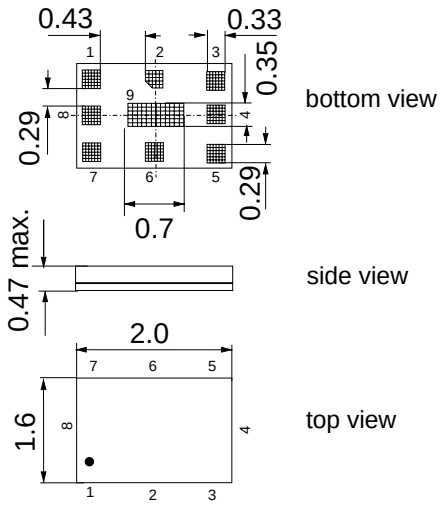
Application

- Low-loss SAW duplexer for mobile telephone WCDMA/LTE Band XI systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 20MHz(Lower and Middle band)
- Single ended to balanced transformation in Antenna-Rx path
- Impedence transformation 50ohm to 100ohm in Antenna - Rx path



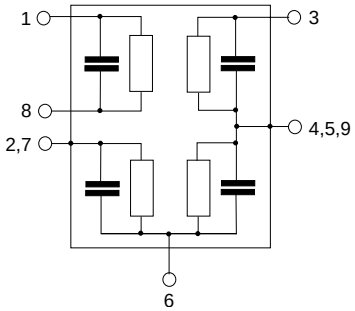
Features

- Package size 2.0 * 1.6 mm²
- Max. height 0.47 mm
- RoHS compatible
- Approximate weight 0.006g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni terminals, Au-plated
- Balanced Rx port, unbalanced Tx port
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitive **L**evel (**MSL**) 3



Pin configuration

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



Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω II 6.8nH
RX terminating impedance: Z_{RX} = 100 Ω (Balanced)
TX terminating impedance: Z_{TX} = 50 Ω

Characteristics TX - ANT		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	1437.9	—	MHz
Maximum insertion attenuation					
1427.9 ... 1437.9 MHz			1.4	2.0	dB
1437.9 ... 1447.9 MHz			1.5	2.5	dB
Amplitude ripple(p-p)					
1427.9 ... 1437.9 MHz			0.3	1.0	dB
1437.9 ... 1447.9 MHz			0.4	1.0	dB
Input VSWR (TX port)					
1427.9 ... 1447.9 MHz			1.4	2.0	
Output VSWR (ANT port)					
1427.9 ... 1447.9 MHz			1.4	2.0	

Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω II 6.8nH
RX terminating impedance: Z_{RX} = 100 Ω (Balanced)
TX terminating impedance: Z_{TX} = 50 Ω

Characteristics TX - ANT				min.	typ. @ 25 ˚C	max.	
Attenuation			α				
10	...	1350	MHz	30	36		dB
207.5	...	222	MHz	50	62		dB
470	...	770	MHz	35	43		dB
1350	...	1390	MHz	30	34		dB
1390	...	1409	MHz		6		dB
1475.9	...	1495.9	MHz	45	48		dB
1565.42	...	1573.374	MHz	35	47		dB
1573.374	...	1577.466	MHz	40	47		dB
1577.466	...	1585.42	MHz	35	47		dB
1597.5515	...	1605.886	MHz	40	47		dB
1607	...	1680	MHz	25	47		dB
1844.9	...	1879.9	MHz	30	41		dB
1884.5	...	1919.6	MHz	15	41		dB
2010	...	2025	MHz	30	41		dB
2110	...	2170	MHz	30	38		dB
2400	...	2483.5	MHz	30	34		dB
2855.8	...	2905.8	MHz	20	31		dB
4283.7	...	4358.7	MHz	20	27		dB
5150	...	5850	MHz	15	25		dB

Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω II 6.8nH
RX terminating impedance: Z_{RX} = 100 Ω (Balanced)
TX terminating impedance: Z_{TX} = 50 Ω

Characteristics ANT - RX		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	1485.9	—	MHz
Maximum insertion attenuation					
1475.9 ... 1485.9 MHz			1.8	2.5	dB
1485.9 ... 1495.9 MHz			1.9	2.5	dB
Amplitude ripple (p-p)					
1475.9 ... 1485.9 MHz			0.3	1.0	dB
1485.9 ... 1495.9 MHz			0.3	1.0	dB
Input VSWR (ANT port)					
1475.9 ... 1495.9 MHz			1.6	2.0	
Output VSWR (RX port)					
1475.9 ... 1495.9 MHz			1.7	2.0	
Common Mode Rejection Ratio CMRR					
1475.9 ... 1495.9 MHz		20[1)]	32		dB

[1)] A combination of 10º phase balance and 1dB amplitude balance corresponds to 19.6 dB CMRR.

Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω II 6.8nH
RX terminating impedance: Z_{RX} = 100 Ω (Balanced)
TX terminating impedance: Z_{TX} = 50 Ω

Characteristics ANT - RX				min.	typ. @ 25 ˚C	max.	
Attenuation			α				
1	...	1381	MHz	30	59		dB
1381	...	1429	MHz	40	52		dB
1427.9	...	1447.9	MHz	45	56		dB
1453	...	1462	MHz	2.5	10		dB
1516	...	1560	MHz		5		dB
1560	...	6000	MHz	30	50		dB
IMD Product Level Limits[1)]							
at f_{TX}=1437.9 MHz, f_{RX}=1485.9 MHz							
Blocker 1		48.0	MHz		-127	-106	dBm
Blocker 2		1389.9	MHz		-117	-106	dBm
Blocker 3		2923.8	MHz		-95	-85	dBm
Blocker 4		4361.7	MHz		-125	-106	dBm

1) IMD product level limits for power levels P_{TX}=21.5dB (antenna port output power) and $P_{BLOCK-ER}$=-15dBm (antenna port input power).

Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω II 6.8nH
RX terminating impedance: Z_{RX} = 100 Ω (Balanced)
TX terminating impedance: Z_{TX} = 50 Ω

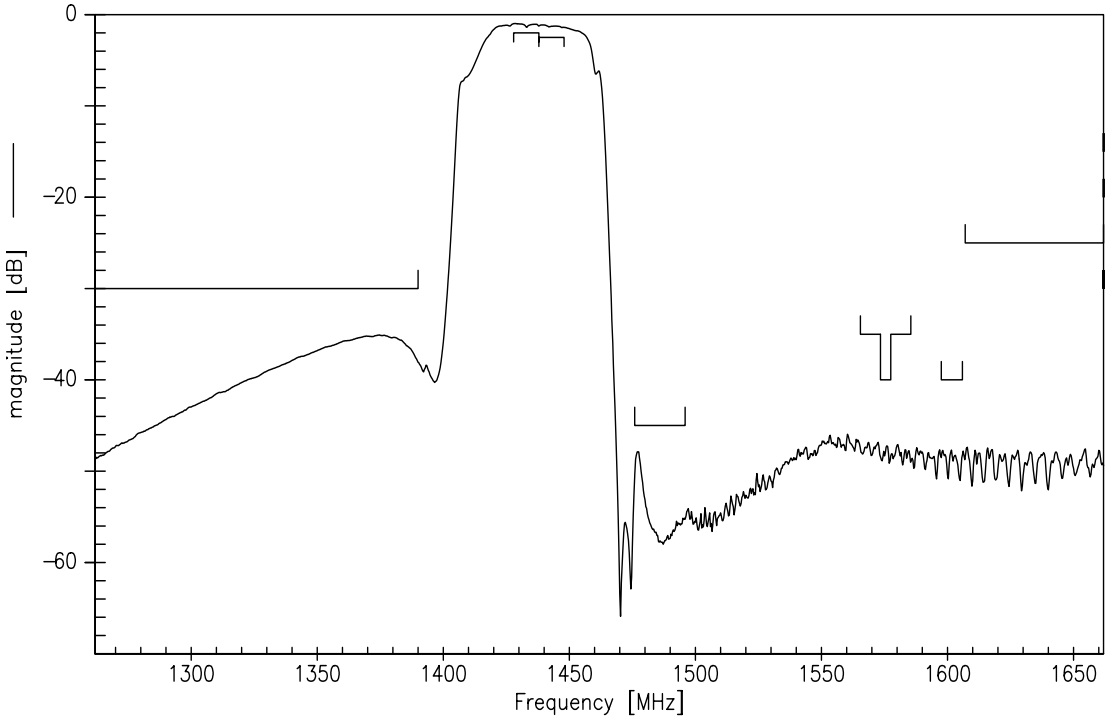
Characteristics TX - RX		min.	typ. @ 25 ˚C	max.	
Differential mode isolation	α				
1427.9 ... 1447.9	MHz	53	56		dB
1475.9 ... 1495.9	MHz	50	55		dB
1574 ... 1577	MHz	30	83		dB
2855.8 ... 2905.8	MHz	30	66		dB
4283.7 ... 4358.7	MHz	25	59		dB
Common mode isolation					
1427.9 ... 1447.9	MHz	53	56		dB

Maximum ratings

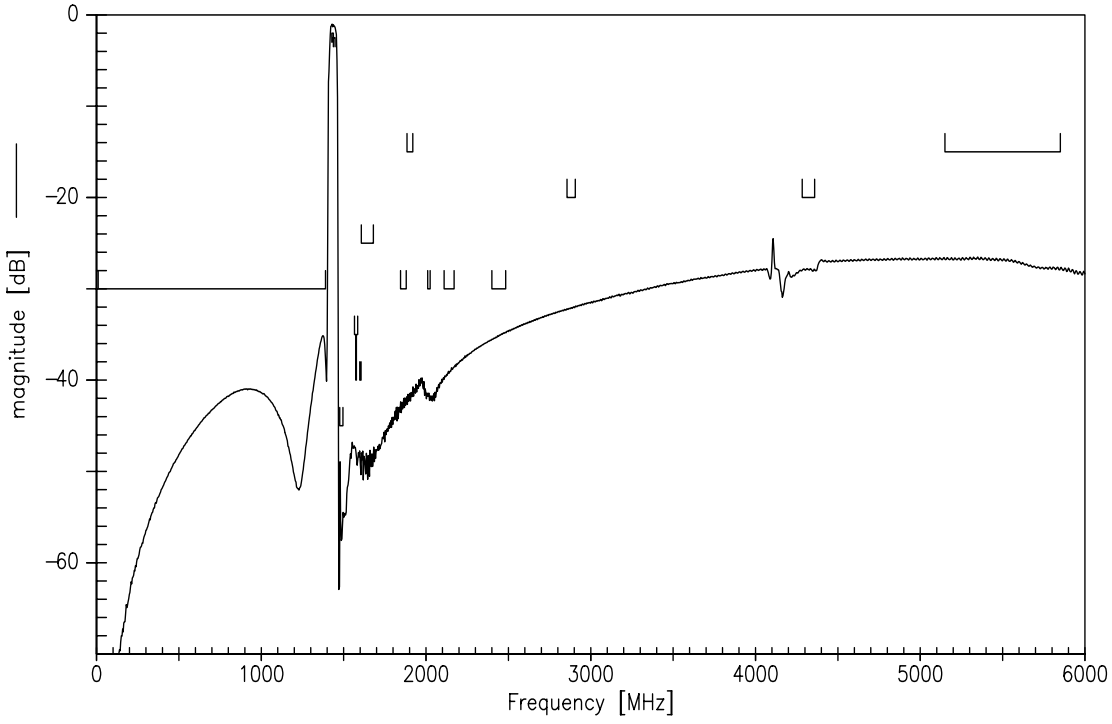
Storage temperature range	T_{stg}	–40/+85	°C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50[1)]	V	machine model, 10 pulses
Input power at	P_{IN}			source and load impedance 50 Ω
1427.9 - 1447.9 MHz		29	dBm	} continuous wave
elsewhere		10	dBm	} T = 50°C, 5000h

1) acc. to JESD22-A115A (machine model), 10 negative & 10 positive pulses.

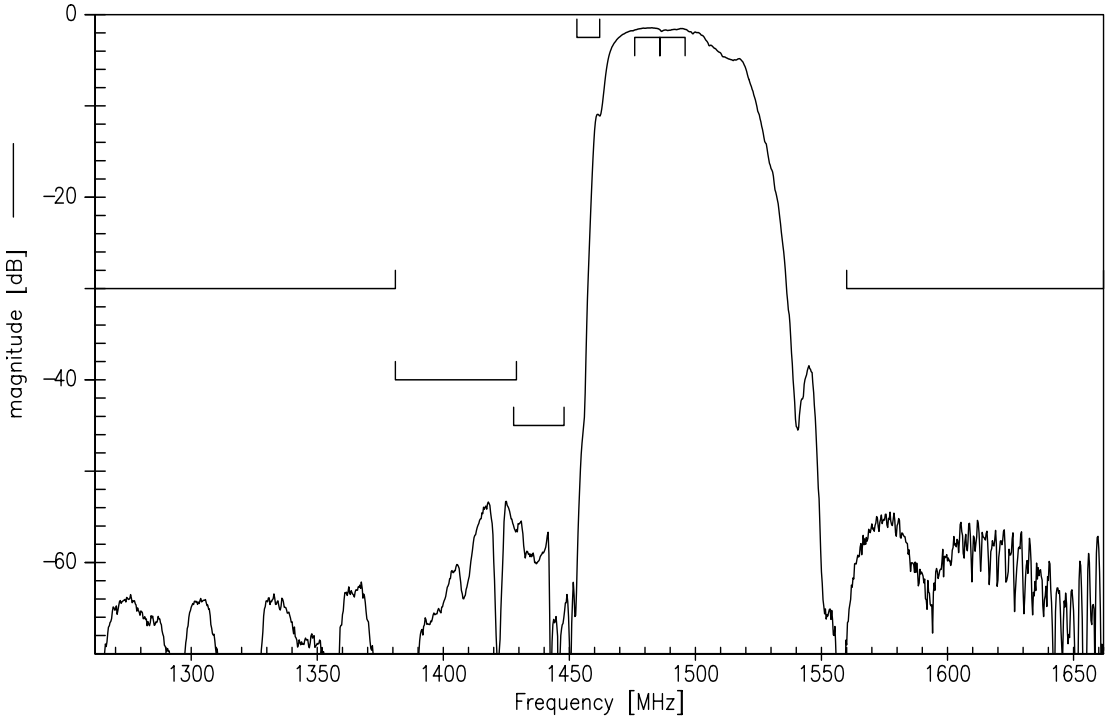
Frequency Response Tx-ANT (passband)



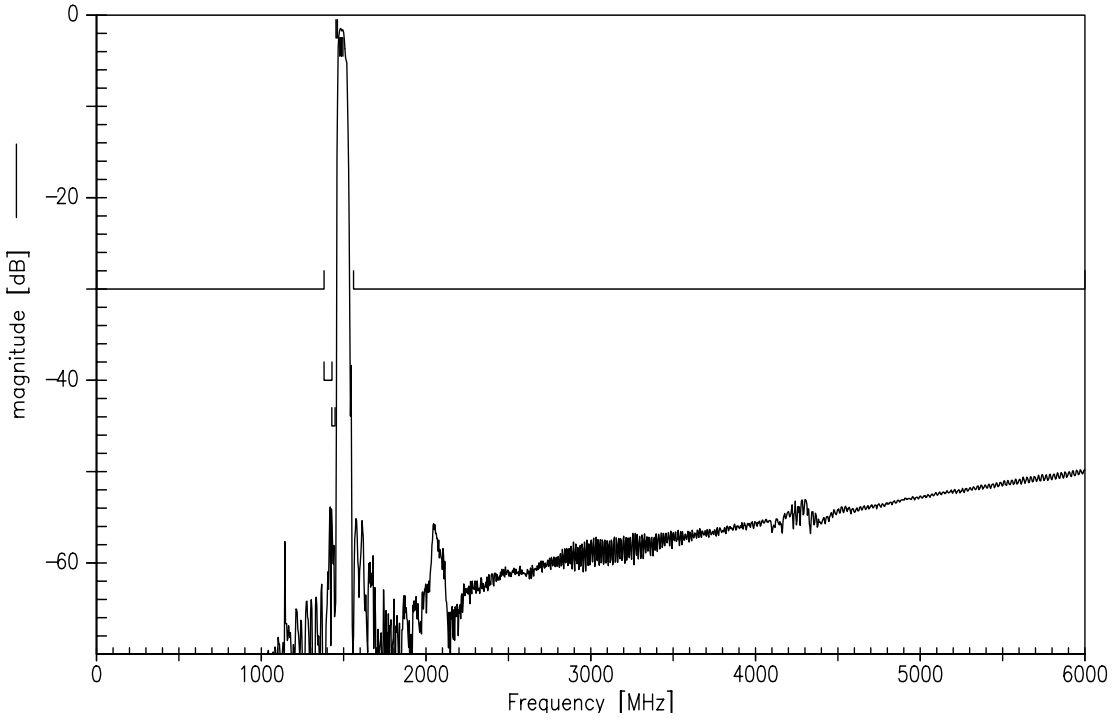
Frequency Response Tx-ANT (wideband)



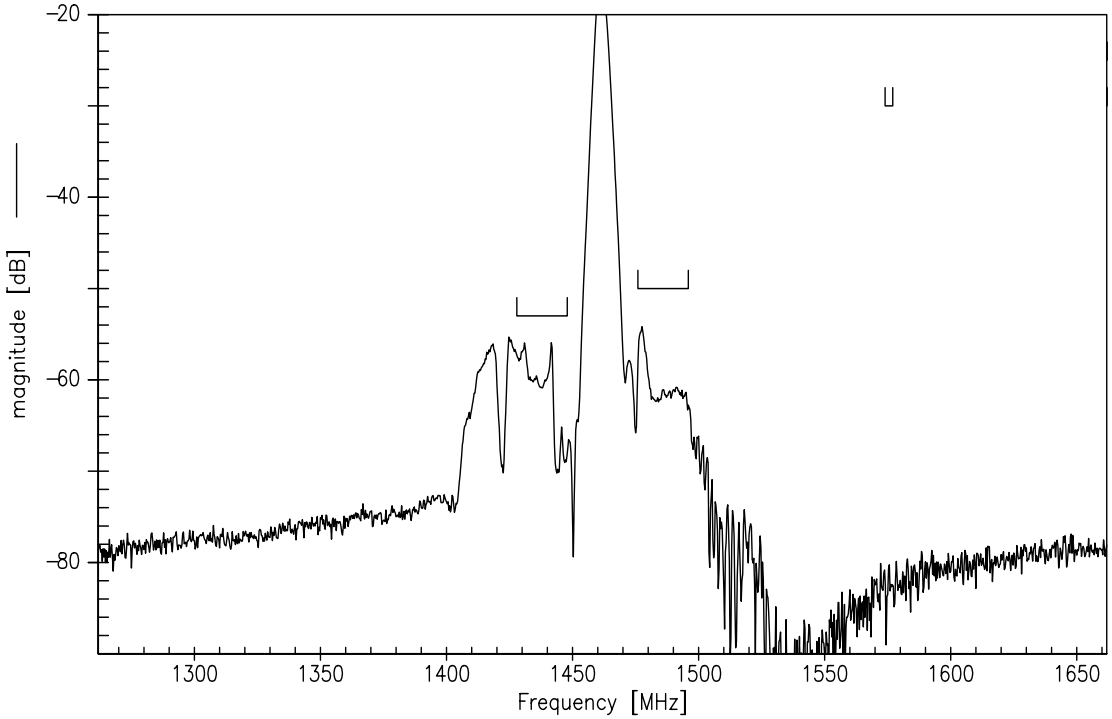
Frequency Response ANT-Rx (passband)



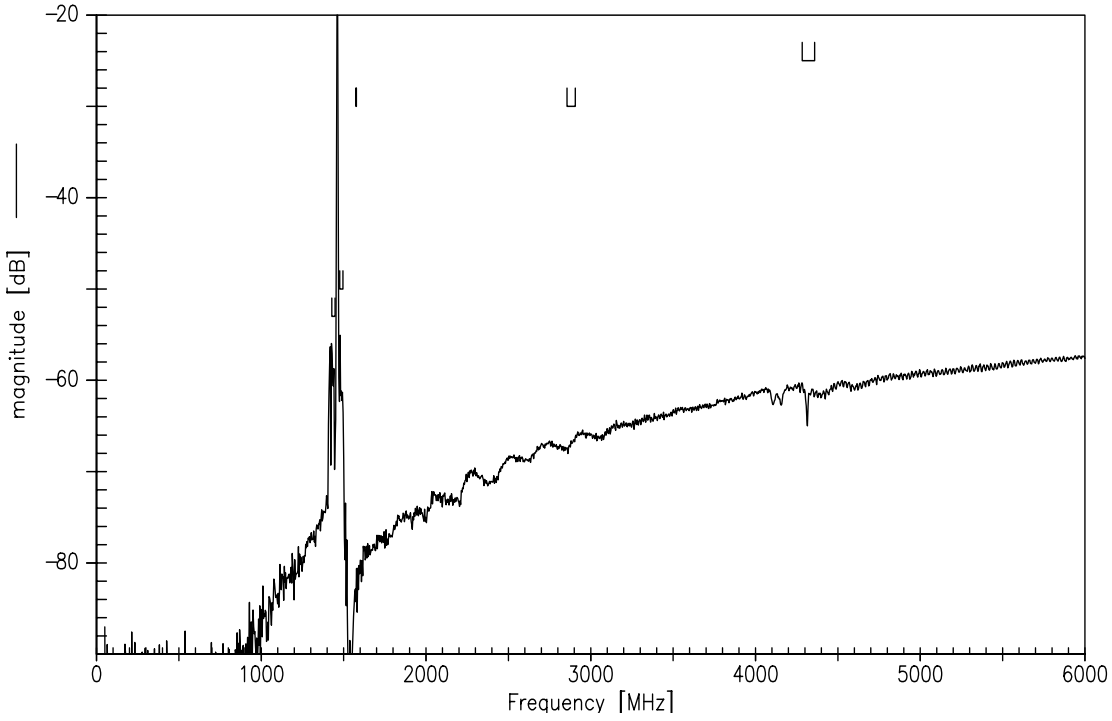
Frequency Response ANT-Rx (wideband)



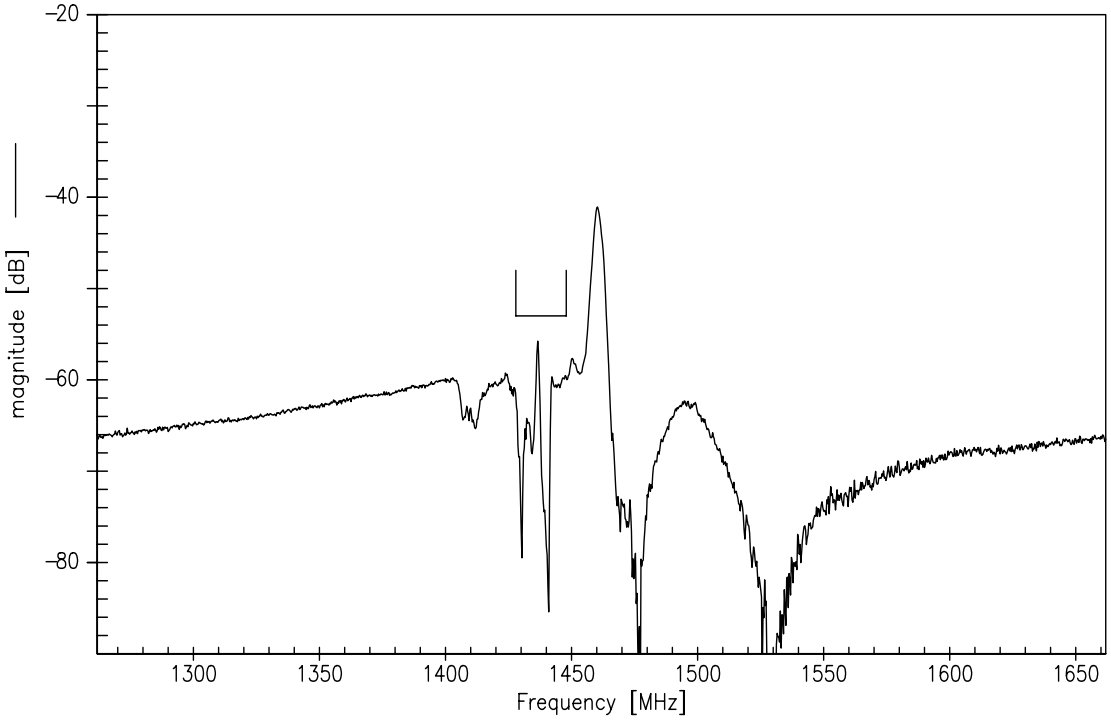
Frequency Response Tx-Rx (passband) / Differential Mode



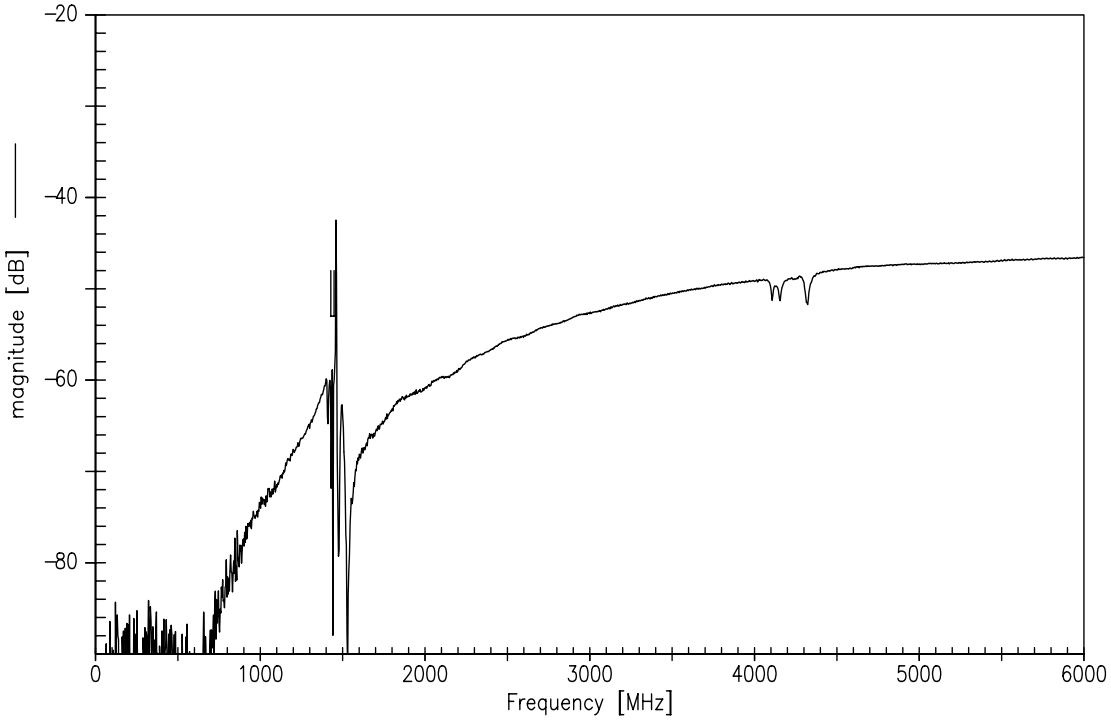
Frequency Response Tx-Rx (wideband) / Differential Mode



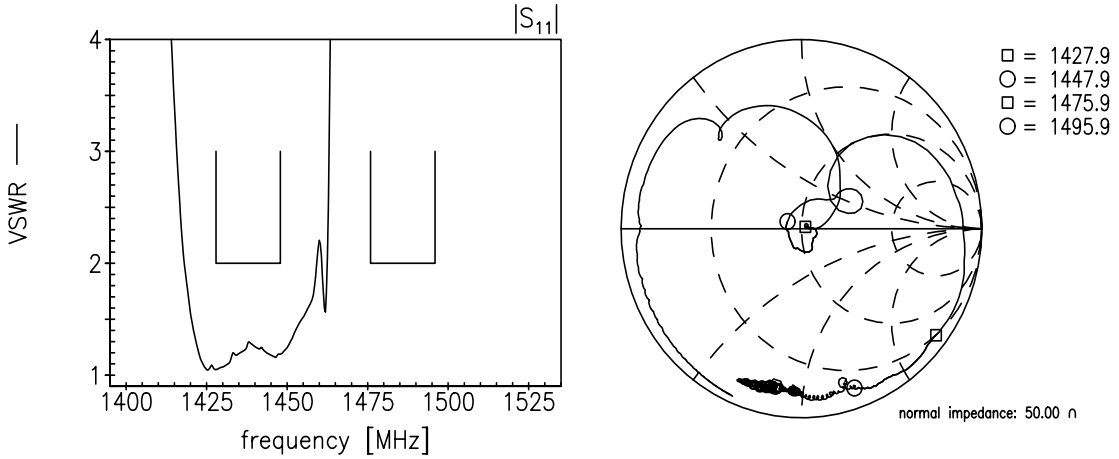
requency Response Tx-Rx (passband) / Common Mode

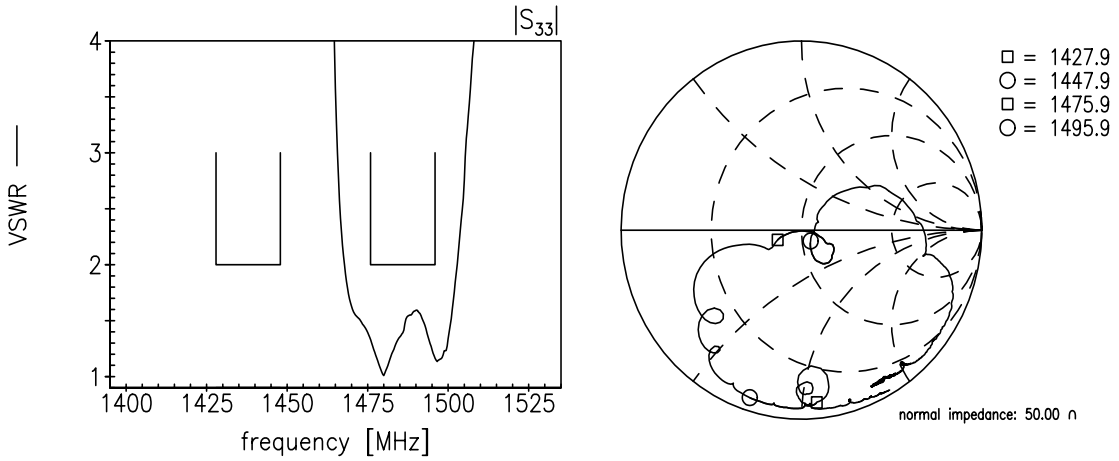


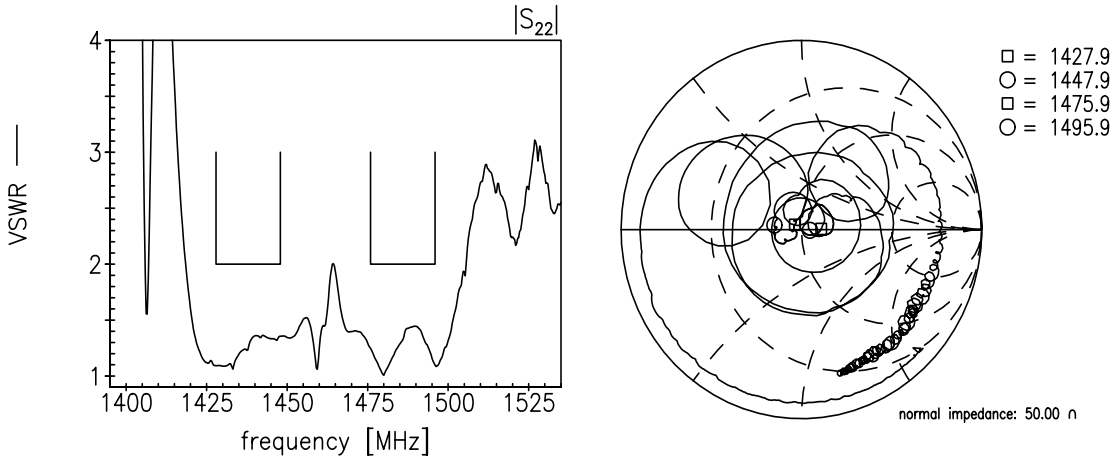
Frequency Response Tx-Rx (wideband) / Common Mode



Return Loss S_{11} Tx - port S_{22} ANT - port S_{33} Rx - port







References

Type	B8559
Ordering code	B39142B8559P810
Marking and package	C61157-A8-A38
Packaging	F61074-V8247-Z0000
Date codes	L_1126
S-parameters	B8559_NB.s4p, B8559_WB.s4p see file header for port/pin assignment table
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

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