SAW Components

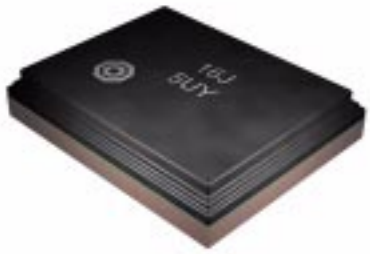
SAW Duplexer for smallcells

Band 5 (LTE)

Series/type:	**B8013**
Ordering code:	**B39881B8013P810**
Date:	July 23, 2015
Version:	2.6

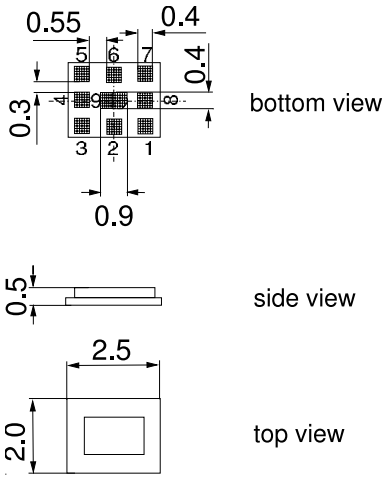
Application

- Low-loss RF SAW Duplexer for smallcells (Band V)
- Usable passband 25 MHz
- Unbalanced to unbalanced operation
- High power durability in downlink
- Rx = UPLINK = 824-849 MHz
- Tx = DOWNLINK = 869-894 MHz



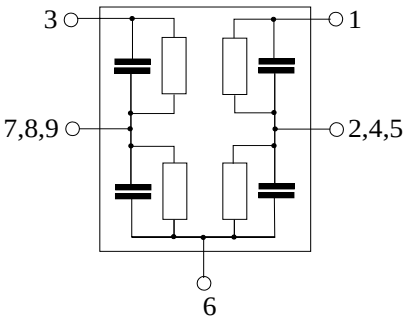
Features

- Package size 2.5 x 2.0 mm²
- Max. Package height 0.5mm
- RoHS compatible
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitivity **L**evel 3



Pin configuration

- 1 Tx Input
- 3 Rx output
- 6 Antenna
- 2,4,5,7,8,9 To be grounded



Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
TX terminating impedance: Z_{Tx} = 50 Ω
ANT terminating impedance: Z_{Ant} = 50 Ω || 8.7 nH
RX teminating impedance: Z_{Rx} = 50 Ω

Characteristics ANT-Rx				min.	typ. @ 25 ˚C	max.	
Center frequency		f_C		—	836.5	—	MHz
Maximum insertion attenuation							
824.0 ... 849.0	MHz	α_{max}		—	2.6	3.1[1)]	dB
Amplitude ripple (p-p)							
824.0 ... 849.0	MHz	$\Delta\alpha$		—	1.3	1.8[2)]	dB
Error Vector Magnitude							
@$f_{Carrier}$ 826.4 ... 846.6	MHz	EVM [3)]		—	3.0	4.5	%
VSWR (Rx port)							
824.0 ... 849.0	MHz			—	2.0	2.3[4)]	
VSWR (Ant port)							
824.0 ... 849.0	MHz			—	1.9	2.3[4)]	
Absolute Attenuation		α					
869.0 ... 894.0	MHz			50	57	—	dB
1648.0 ... 1698.0	MHz			25	51	—	dB
1840.0 ... 1870.0	MHz			25	48	—	dB
1930.0 ... 1990.0	MHz			25	46	—	dB
2110.0 ... 2170.0	MHz			25	45	—	dB
2400.0 ... 2484.0	MHz			25	42	—	dB
2472.0 ... 2547.0	MHz			25	41	—	dB
3296.0 ... 3396.0	MHz			20	39	—	dB

1) Specification for ILmax is 3.2dB for –20 ˚C to +85 ˚C.
2) Specification for AR is 1.9dB for –20 ˚C to +85 ˚C.
3) Time to failure (TTF) according to accelerated power durability test, and wear out models.
4) Specification for VSWR is 2.4 for –20 ˚C to +85 ˚C.

Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
TX terminating impedance: Z_{Tx} = 50 Ω
ANT terminating impedance: Z_{Ant} = 50 Ω || 8.7 nH
RX teminating impedance: Z_{Rx} = 50 Ω

Characteristics Tx-ANT		min.	typ. @ 25 ˚C	max.	
Center frequency	f_c	—	881.5	—	MHz
Maximum insertion attenuation	α				
869.0 ... 894.0 MHz		—	1.9	2.5[1)]	dB
Amplitude ripple (p-p)	Δα				
869.0 ... 894.0 MHz		—	0.6	1.3[2)]	dB
Error Vector Magnitude					
@$f_{Carrier}$ 871.4 ... 891.6 MHz	EVM[3)]	—	1.4	3.5	%
VSWR (Tx port)					
869.0 ... 894.0 MHz		—	1.9	2.1[4)]	
VSWR (Ant Port)					
869.0 ... 894.0 MHz		—	1.8	2.1[4)]	
Attenuation	α				
824.0 ... 849.0 MHz		52	59	—	dB
1574.4 ... 1576.4 MHz		45	58	—	dB
1602.5 ... 1615.5 MHz		35	59	—	dB
1710.0 ... 1788.0 MHz		40	59	—	dB
1850.0 ... 1910.0 MHz		40	57	—	dB
1920.0 ... 1980.0 MHz		40	55	—	dB
2400.0 ... 2484.0 MHz		21	50	—	dB
2607.0 ... 2682.0 MHz		21	47	—	dB
3476.0 ... 3576.0 MHz		21	49	—	dB

1) Specification for ILmax is 2.6dB for –20 ˚C to +85 ˚C.
2) Specification for AR is 1.4dB for –20 ˚C to +85 ˚C.
3) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.
4) Specification for VSWR is 2.2 for –20 ˚C to +85 ˚C.

Data sheet SMD

Characteristics

Temperature range for specification: T = –10 ˚C to +85 ˚C
TX terminating impedance: Z_{Tx} = 50 Ω
ANT terminating impedance: Z_{Ant} = 50 Ω || 8.7 nH
RX teminating impedance: Z_{Rx} = 50 Ω

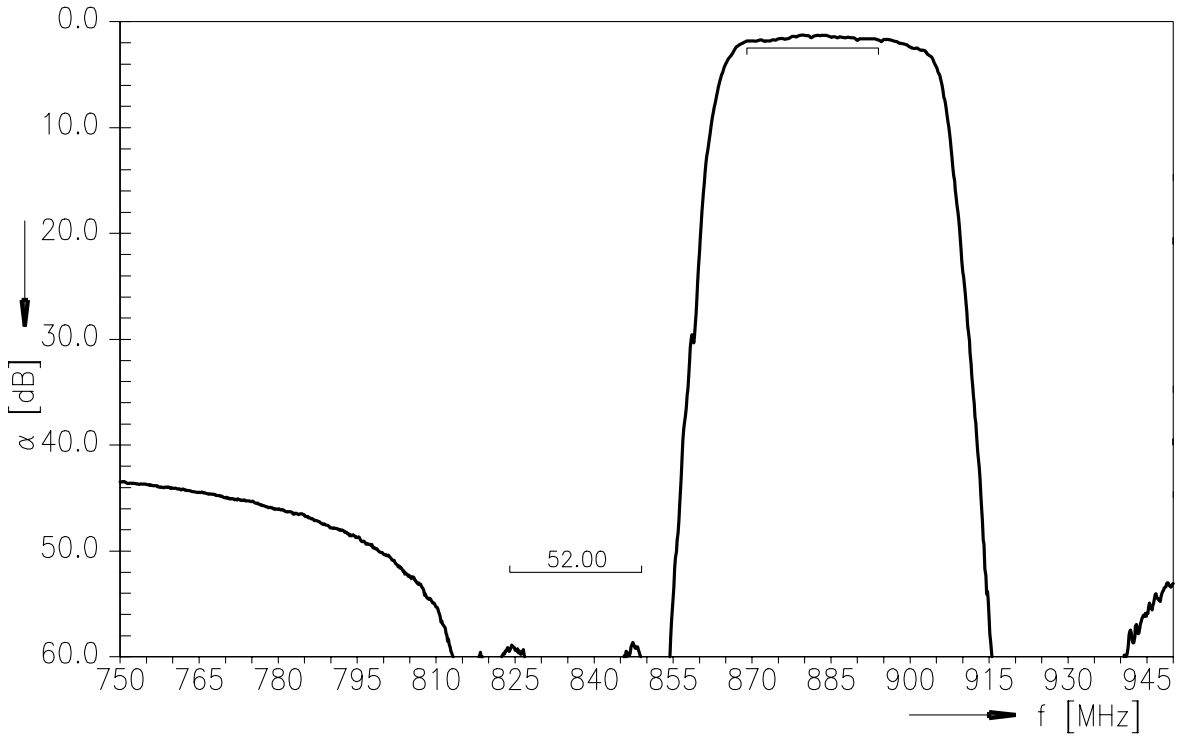
Characteristics Tx-Rx		min.	typ. @ 25 ˚C	max.	
Attenuation	α				
869.0 ... 894.0 MHz		53	56	—	dB
824.0 ... 849.0 MHz		52	58	—	dB

Maximum Ratings

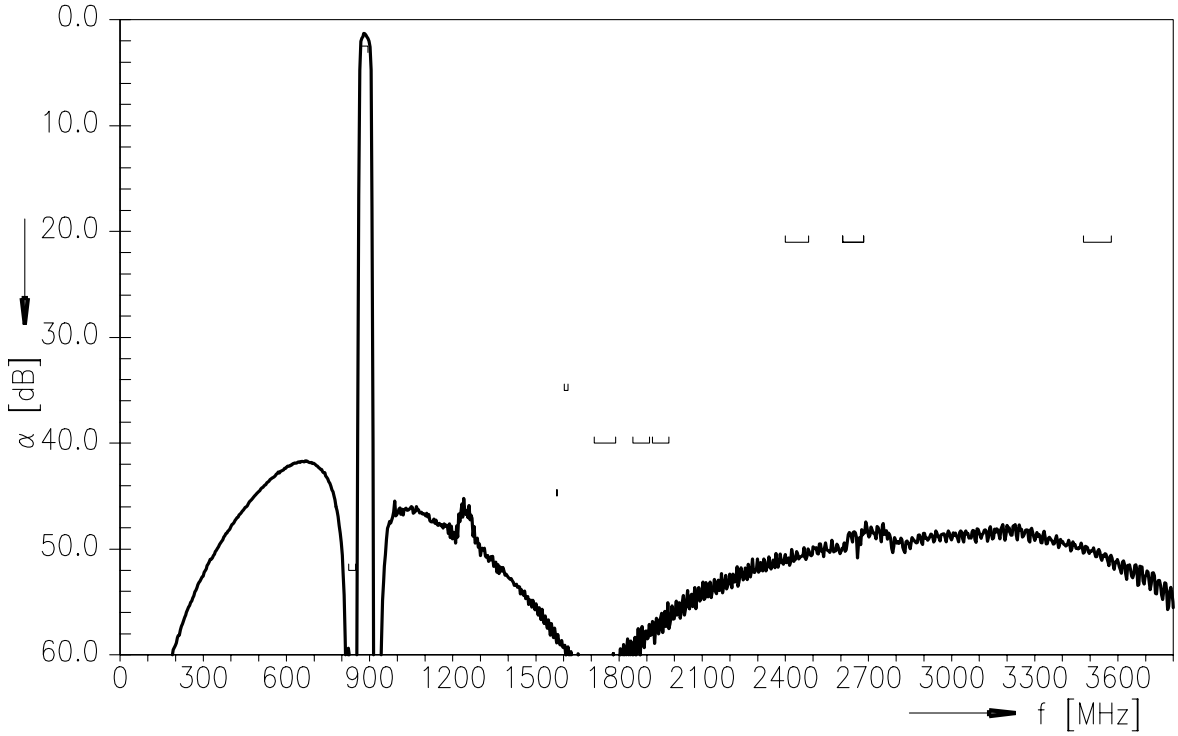
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	0	V	
ESD voltage	V_{ESD}	100[1)]	V	machine model, 1 pulse
Input power at pin 1				Source and load impedance 50 Ω
871.5 ... 891.5 MHz	P_{in}	28[2)]	dBm	} Pin 28dBm average - 39dBm peak LTE 5 MHz dowlink T = 55˚C, 100 000 hrs
elsewhere	P_{in}	10	dBm	
Operating lifetime with Ouput power at antenna				Source and load impedance 50 Ω
871.5 ... 891.5 MHz		24[3)]	dBm	Continuous wave T = 55˚C, 100k hrs

1) acc. to JESD22-A115B (machine model), +/-1 pulse.
2) Time to failure (TTF) according to accelerated power durability test, and wear out models.
3) according to accelerated High Temperating Operating Life (HTOL) test.

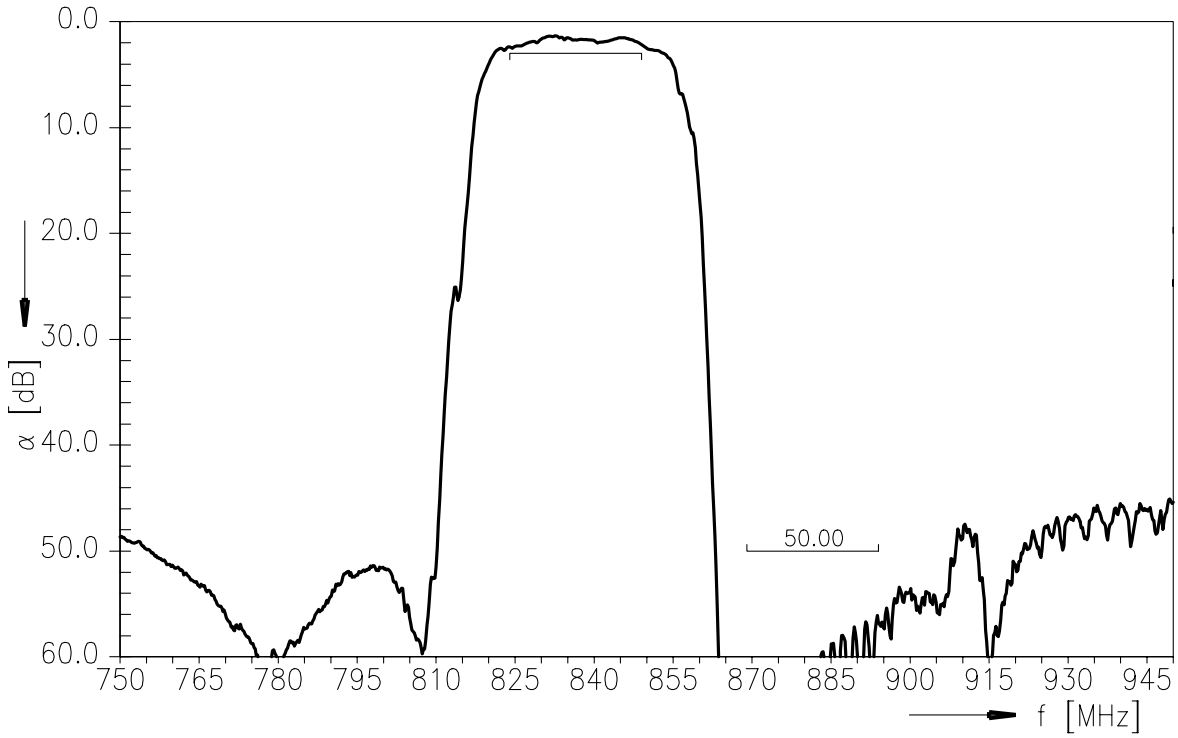
Frequency response TX-ANT



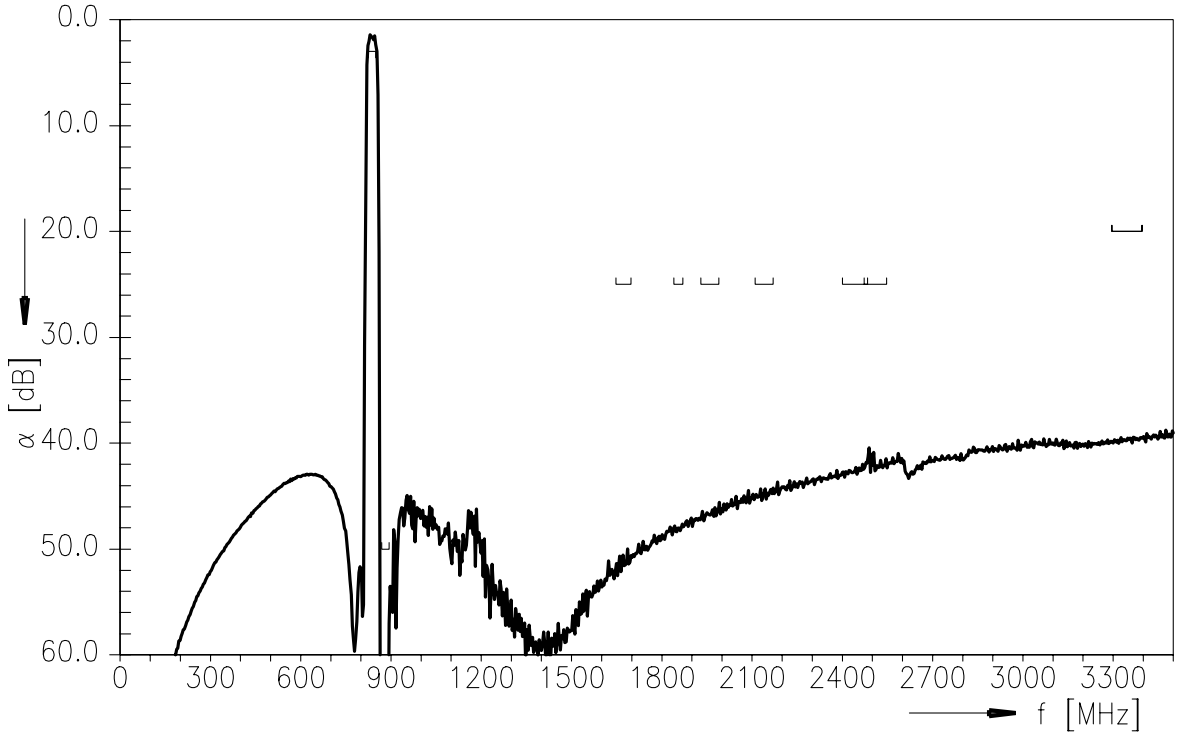
Frequency response TX-ANT (wideband)



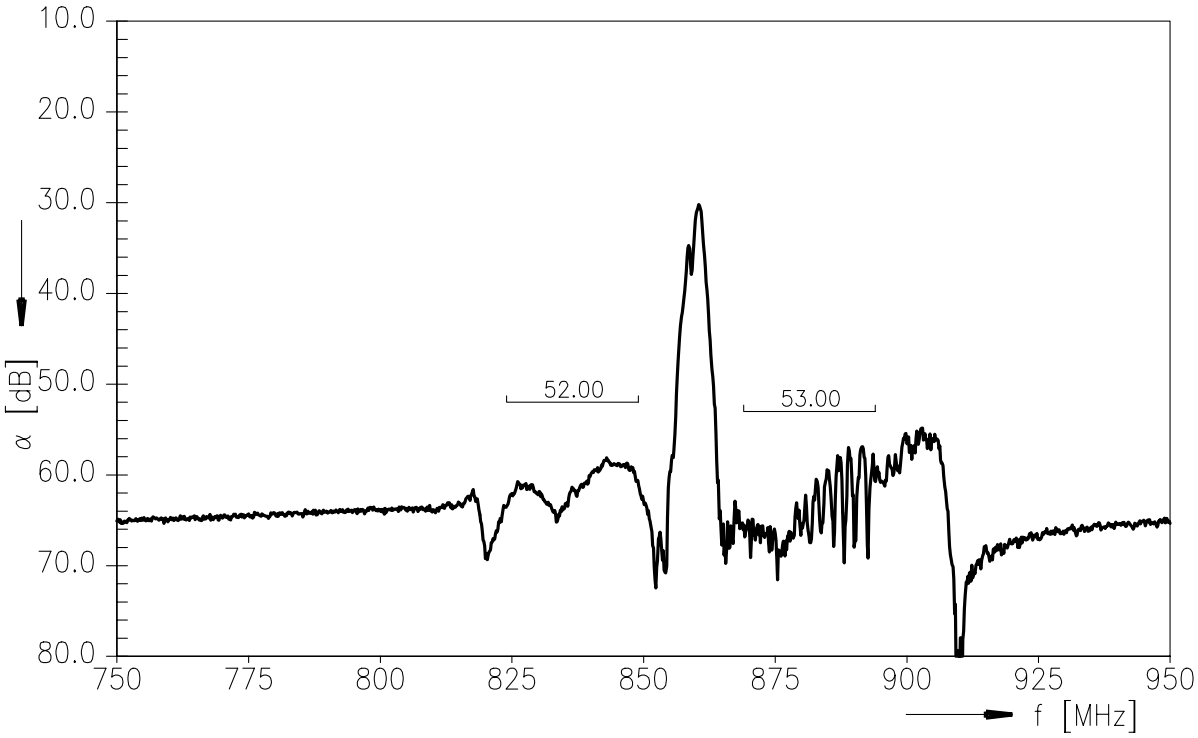
Frequency response ANT-RX



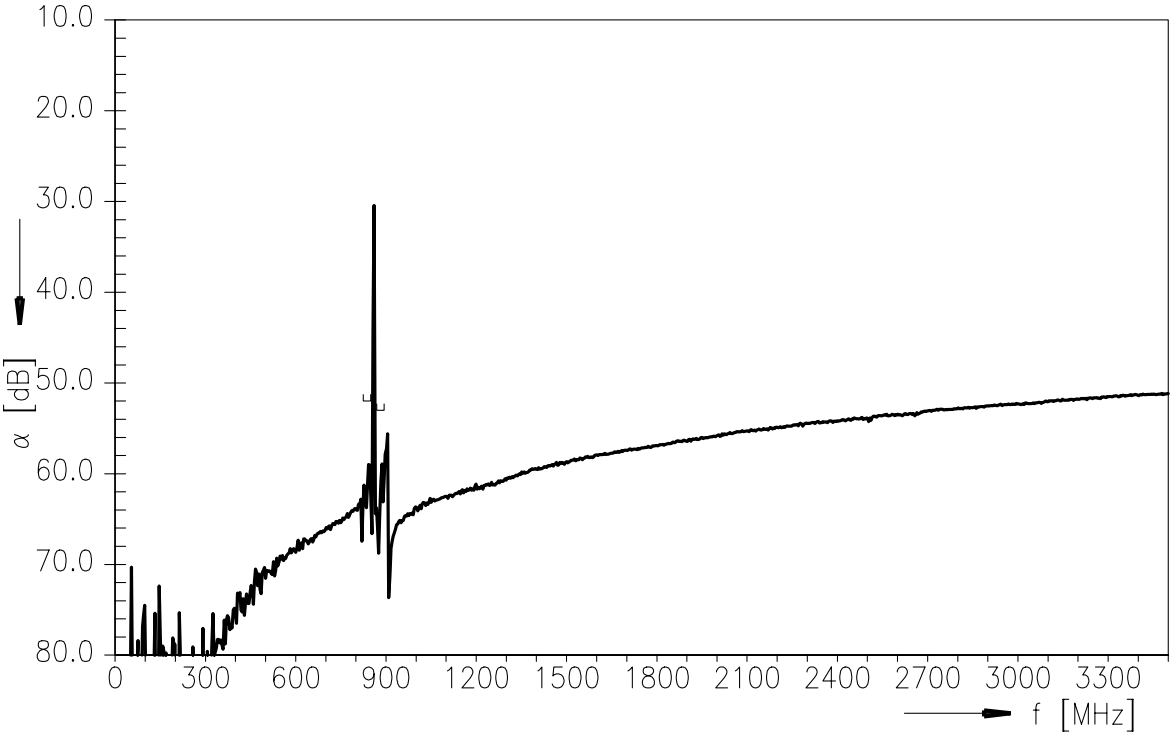
Frequency response ANT-RX (wideband)



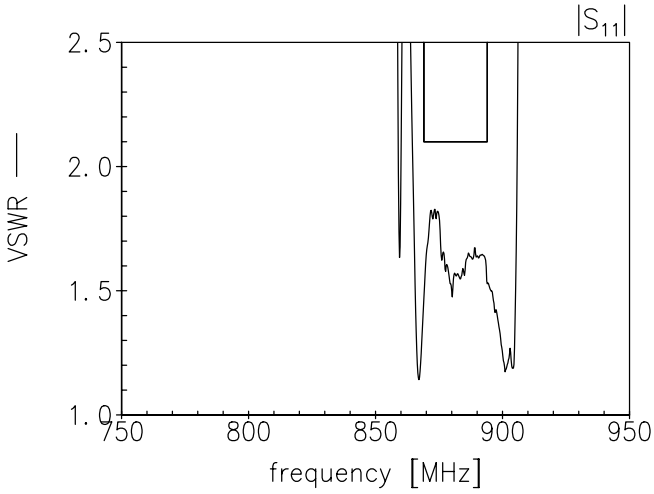
Frequency response TX-RX

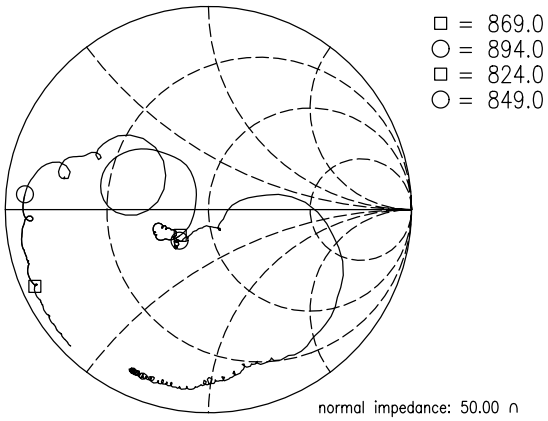


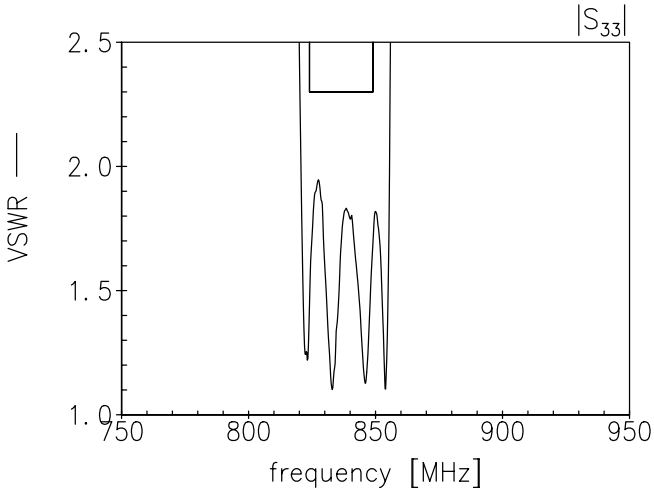
Frequency response TX-RX (wideband)

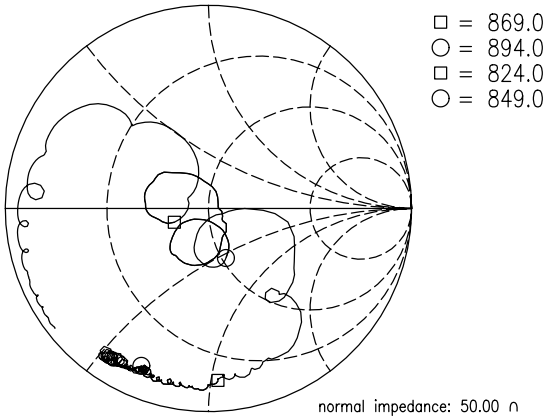


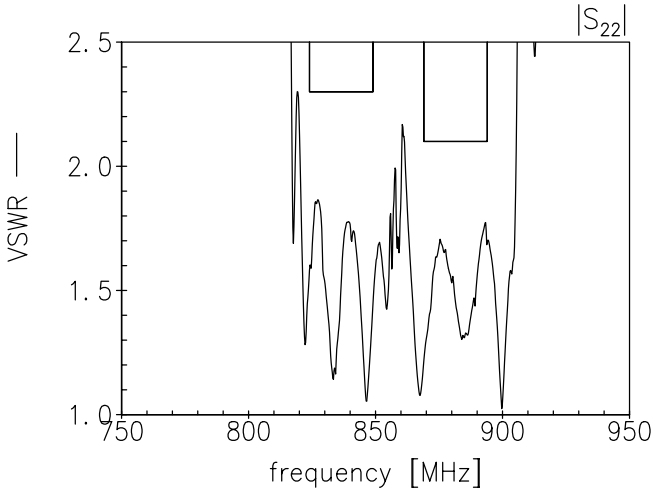
Return Loss **S_{11} TX- port** **S_{22} ANT-port** **S_{33} RX-port**

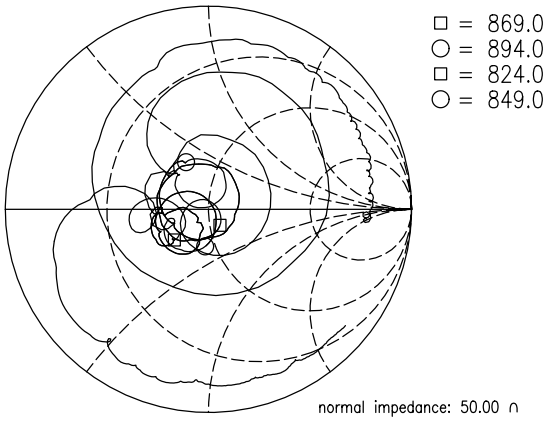












References

Type	B8013
Ordering code	B39881B8013P810
Marking and package	C61157-A3-A27
Packaging	F61074-V8232-Z000
Date codes	L_1126
S-parameters	B8013_NB_UN.s3p, B8013_WB_UN.s3p 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 8th, 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.
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