SAW Components

SAW Duplexer

LTE / E-UTRA Band 3

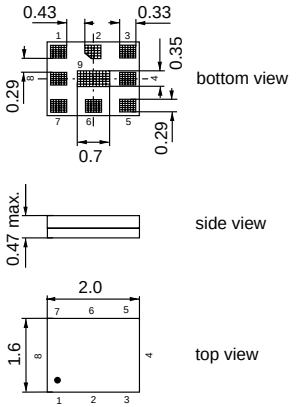
Series/type:	**B8533**
Ordering code:	**B39182B8533P810**
Date:	December 10, 2014
Version:	2.0

Application

- Low-loss SAW duplexer for mobile telephone LTE / E-UTRA Band 3 systems
- Low insertion attenuation
- Low amplitude ripple
- Usable passband 75 MHz
- high Tx - Rx isolation

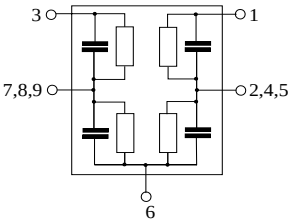
Features

- Package size 2.0 x 1.6 mm²
- Package height 0.47mm max.
- RoHS compatible
- Approximate weight 4.2mg
- 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



Pin configuration

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



Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω || 3.5 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characteristics TX-ANT [1]			min.	typ. @ 25˚C	max.	
Center frequency	f_C		–	1747.5	–	MHz
Maximum insertion attenuation	α_{max}					
1712.5 ... 1782.5 MHz	α_{LTE} [2)3)]		–	2.0	2.8	dB
1712.5 ... 1782.5 MHz	α_{LTE} [2)]		–	2.0	3.2	dB
Amplitude ripple per 5MHz channel	$\Delta\alpha$					
1710.24 ... 1784.76 MHz			–	0.5	–	dB
Input VSWR (Tx port)						
1710.24 ... 1784.76 MHz	[3)]		–	1.7	2.2	
1710.24 ... 1784.76 MHz			–	1.7	2.3	
Output VSWR (Ant Port)						
1710.24 ... 1784.76 MHz	[3)]		–	1.5	2.0	
1710.24 ... 1784.76 MHz			–	1.5	2.3	
Attenuation	α					
10.0 ... 1565.42 MHz			32	36	–	dB
703.0 ... 748.0 MHz			40	46	–	dB
716.0 ... 756.0 MHz			40	46	–	dB
814.0 ... 849.0 MHz			38	43	–	dB
824.0 ... 849.0 MHz			38	43	–	dB
830.0 ... 845.0 MHz			38	43	–	dB
832.0 ... 862.0 MHz			38	43	–	dB
880.0 ... 915.0 MHz			36	42	–	dB
925.0 ... 960.0 MHz			36	41	–	dB
1226.0 ... 1250.0 MHz			32	37	–	dB
1496.0 ... 1511.0 MHz			35	39	–	dB
1559.0 ... 1563.0 MHz			38	43	–	dB
1565.42 ... 1573.374MHz			38	44	–	dB
1573.374... 1577.466MHz			40	46	–	dB
1577.466... 1585.42 MHz			40	46	–	dB
1597.5515...1605.886MHz			40	52	–	dB
1605.886... 1680.0 MHz			22	37	–	dB
1807.5 ... 1877.5 MHz	α_{LTE} [2)]		44	50	–	dB
1920.0 ... 1980.0 MHz			25	37	–	dB
2110.0 ... 2170.0 MHz			27	36	–	dB

Characteristics TX-ANT [1]			min.	typ. @ 25˚C	max.	
2400.0	... 2500.0	MHz	24	38	–	dB
2440.0	... 2494.0	MHz	24	38	–	dB
2500.0	... 2570.0	MHz	23	37	–	dB
2620.0	... 2690.0	MHz	21	35	–	dB
3420.0	... 3570.0	MHz	18	28	–	dB
4900.0	... 5950.0	MHz	8	23	–	dB
5100.0	... 5385.0	MHz	8	28	–	dB
5130.0	... 5355.0	MHz	8	28	–	dB
6840.0	... 7140.0	MHz	–	24	–	dB
8550.0	... 8925.0	MHz	–	28	–	dB
10260.0	...10710.0	MHz	–	34	–	dB
11970.0	...12495.0	MHz	–	25	–	dB

1) Specified values are valid for a testing power of +10dBm
2) Averaged value of linear s-parameter over 5 MHz
3) Valid in the temperature range from 0˚C to 85˚C

Data sheet SMD

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω || 3.5 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characteristics ANT-RX[1]				min.	typ. @ 25˚C	max.	
Center frequency		f_C		–	1842.5	–	MHz
Maximum insertion attenuation		α_{max}					
1807.5 ... 1877.5	MHz	α_{LTE} [2)3)]		–	2.6	3.8	dB
1807.5 ... 1877.5	MHz	α_{LTE} [2)]		–	2.6	4.2	dB
Amplitude ripple per 5MHz channel		$\Delta\alpha$					
1805.24 ... 1879.76	MHz			–	0.7	–	dB
Input VSWR (Ant port)							
1805.24 ... 1879.76	MHz			–	1.5	2.2	
Output VSWR (Rx Port)							
1805.24 ... 1879.76	MHz			–	1.9	2.5	
Attenuation		α					
10.0 ... 1710.0	MHz			40	48	–	dB
95.0	MHz			50	80	–	dB
718.0 ... 748.0	MHz			40	59	–	dB
814.0 ... 849.0	MHz			40	57	–	dB
832.0 ... 862.0	MHz			40	57	–	dB
880.0 ... 915.0	MHz			40	56	–	dB
1447.0 ... 1463.0	MHz			40	50	–	dB
1615.0 ... 1690.0	MHz			46	54	–	dB
1712.5 ... 1782.5	MHz	α_{LTE}[2)]		45	57	–	dB
1785.0 ... 1790.0	MHz			10	49	–	dB
1920.0 ... 2000.0	MHz			30	55	–	dB
2000.0 ... 2400.0	MHz			30	44	–	dB
2400.0 ... 2500.0	MHz			37	54	–	dB
2500.0 ... 2570.0	MHz			46	58	–	dB
2570.0 ... 3515.0	MHz			40	49	–	dB
3515.0 ... 3665.0	MHz			47	53	–	dB
3665.0 ... 3760.0	MHz			40	52	–	dB
3760.0 ... 6000.0	MHz			34	42	–	dB
4900.0 ... 5950.0	MHz			34	42	–	dB
5205.0 ... 5660.0	MHz			34	46	–	dB
6000.0 ... 13025.0	MHz			–	34	–	dB

Characteristics ANT-RX[1)]			min.	typ. @ 25°C	max.	
7220.0	... 7520.0	MHz	–	45	–	dB
9025.0	... 9400.0	MHz	–	43	–	dB
10830.0	...11280.0	MHz	–	36	–	dB
12635.0	...13160.0	MHz	–	36	–	dB

1) Specified values are valid for a testing power of +10dBm
2) Averaged value of linear s-parameter over 5 MHz
3) Valid in the temperature range from 0°C to 85°C

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
ANT terminating impedance: Z_{ANT} = 50 Ω || 3.5 nH
RX terminating impedance: Z_{RX} = 50 Ω
TX terminating impedance: Z_{TX} = 50 Ω

Characteristics TX-RX[1]				min.	typ. @ 25˚C	max.	
Isolation			α				
1712.5 ... 1782.5	MHz	α_{LTE}[2)3)]		52	59	–	dB
1712.5 ... 1782.5	MHz	α_{LTE}[2)]		50	59	–	dB
1807.5 ... 1877.5	MHz	α_{LTE}[2)4)]		50	54	–	dB
1807.5 ... 1877.5	MHz	α_{LTE}[2)]		48	54	–	dB

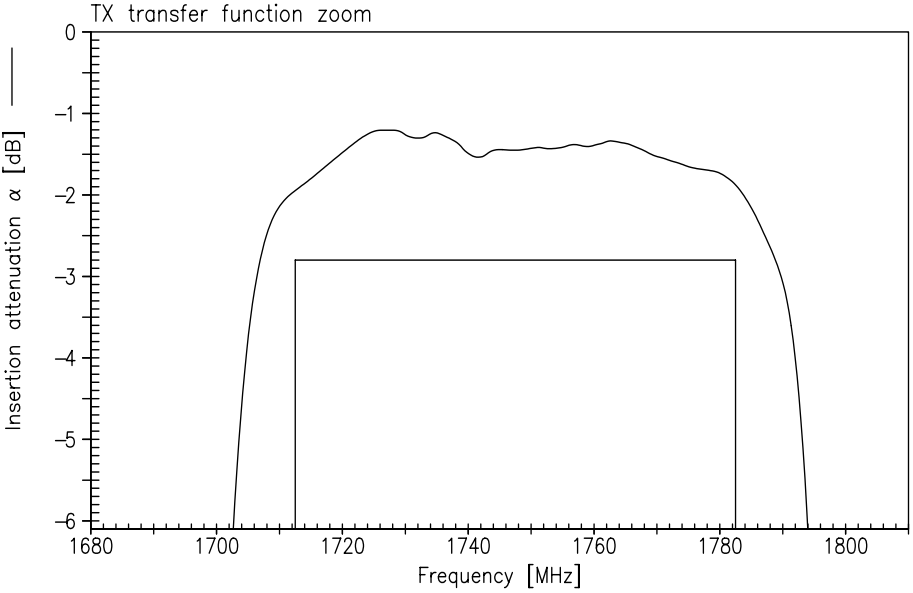
1) Specified values are valid for a testing power of +10dBm
2) Averaged value of linear s-parameter over 5 MHz
3) Valid in the temperature range from -30˚C to 55˚C
4) Valid in the temperature range from 0˚C to 85˚C

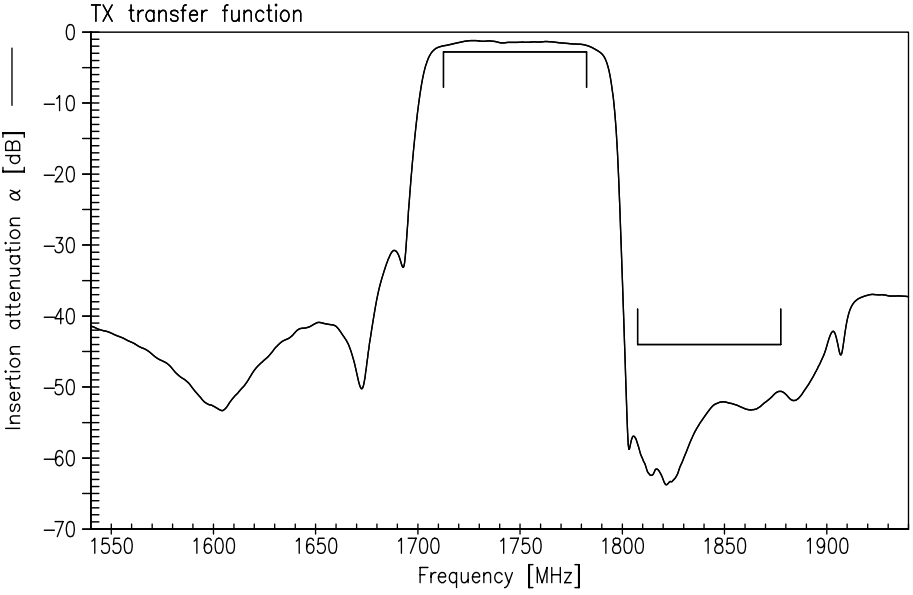
Maximum ratings

Storage temperature range	T_{stg}	–40/+90	˚C	
DC voltage	V_{DC}	0 [1)]	V	
ESD voltage	V_{ESD}	50 [2)]	V	Machine Model
	V_{ESD}	300 [3)]	V	Human Body Model
	V_{ESD}	500 [4)]	V	Charge Device Model
Input Power 1712.5 ... 1782.5 MHz	P_{IN}	29	dBm	5 MHz LTE uplink @ 50˚C, 5000h

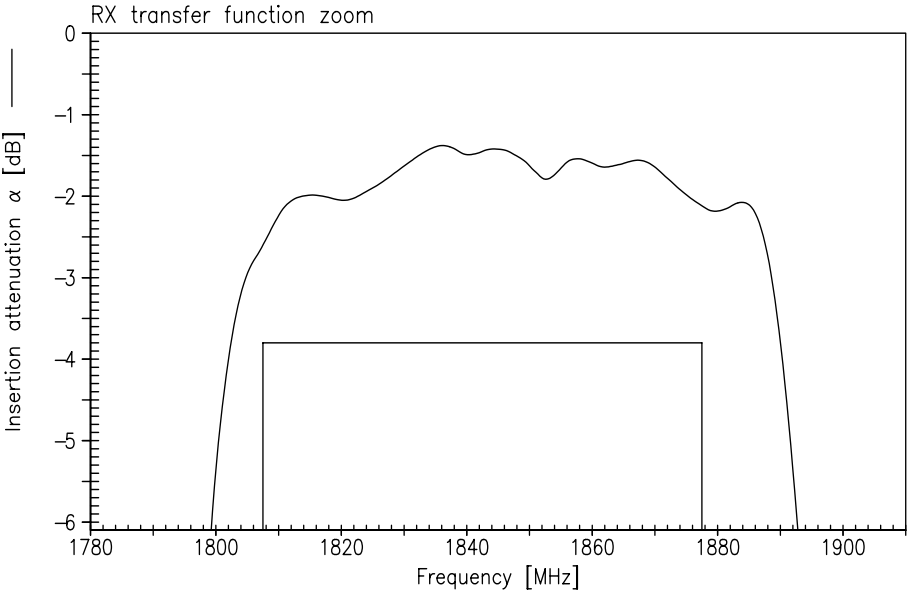
1) DC resistance at RX output might be less than 100 MΩ at elevated temperatures. Hence, we recommend usage of blocking capacitors.
2) Acc. to JESD22-A115B (machine model), 10 negative & 10 positive pulses.
3) Acc. to JESD22-A114F (human body model), 1 negative & 1 positive pulses.
4) Acc. to JESD22-C101C (charge device model), 3 negative & 3 positive pulses.

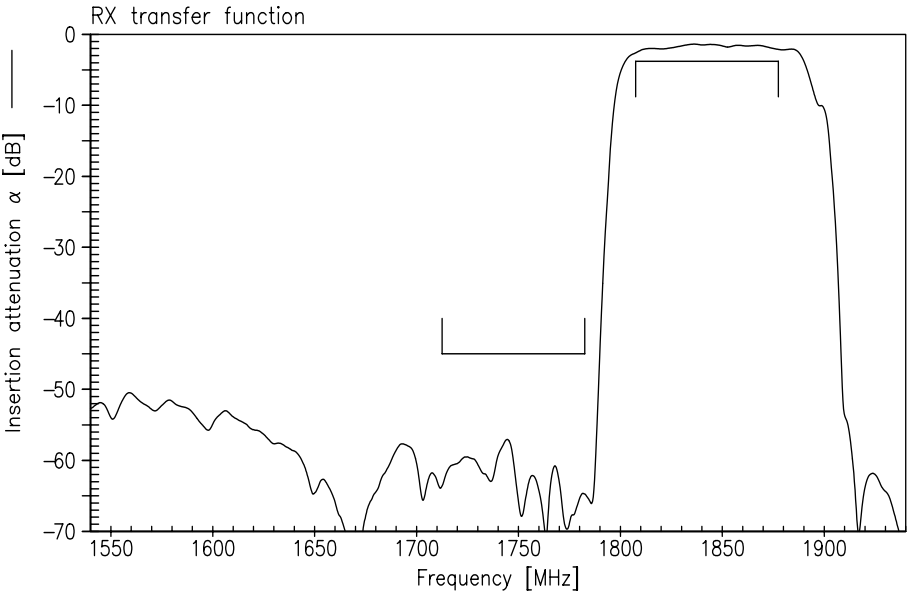
Frequency response TX - ANT



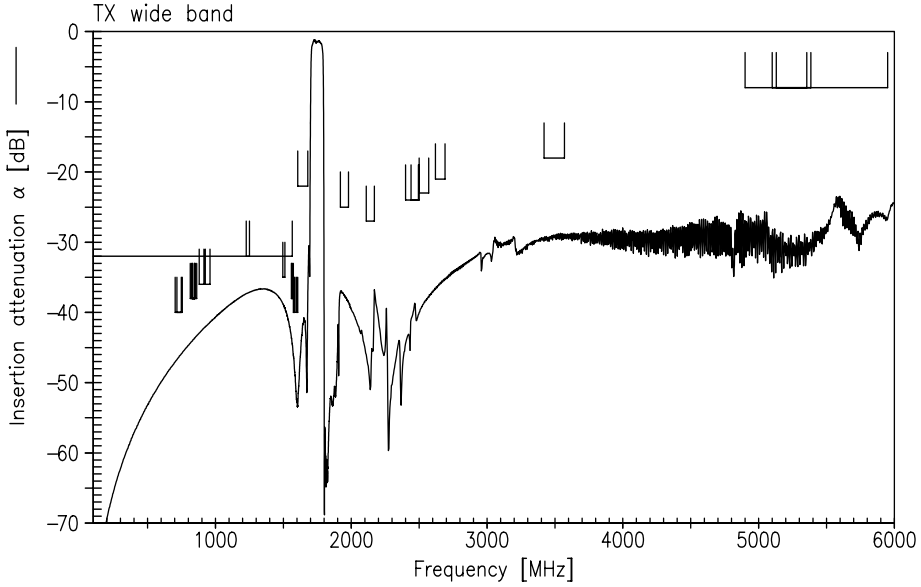


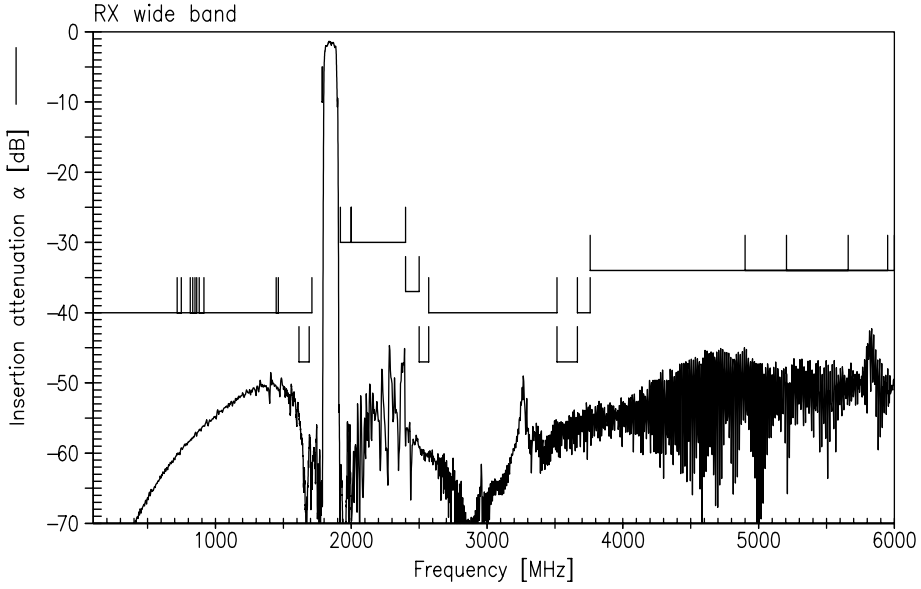
Frequency response ANT - RX



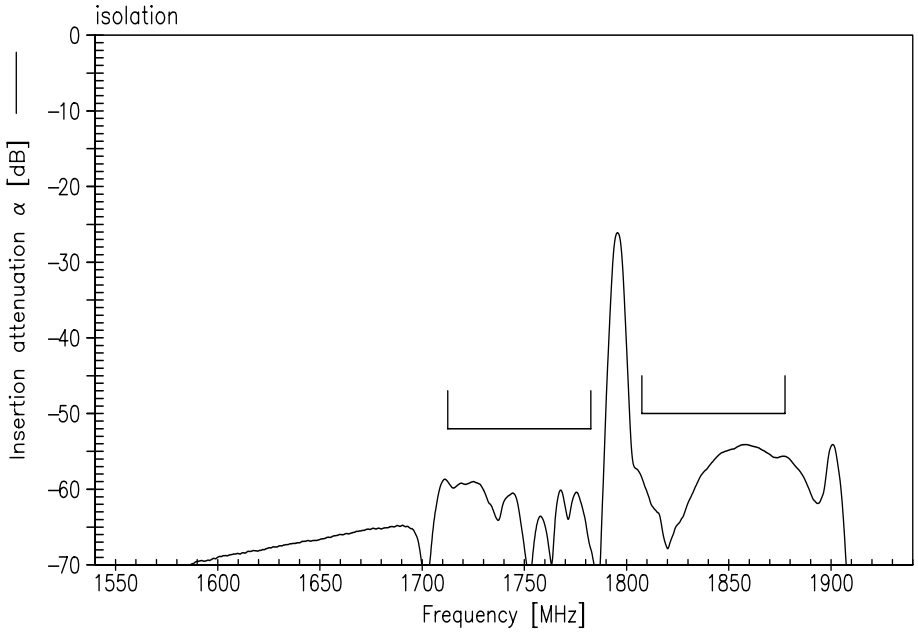


Wide band frequency response TX - ANT and ANT - RX

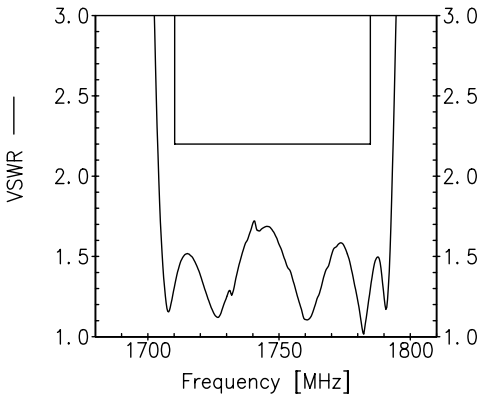


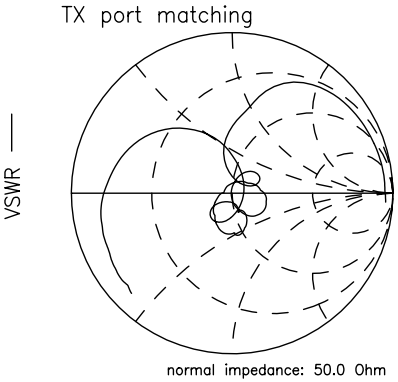


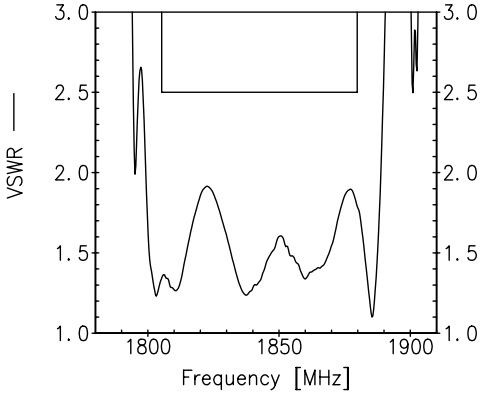
Frequency Response TX - RX

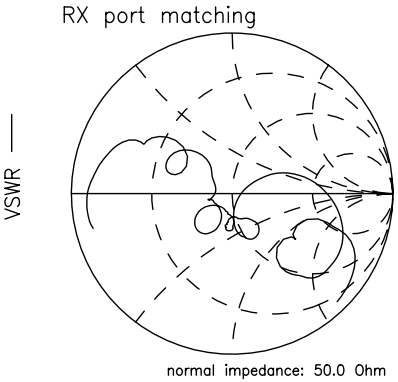


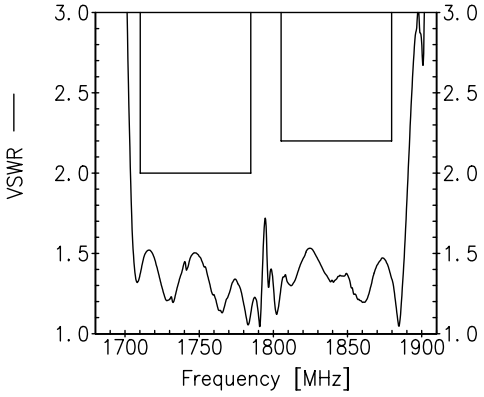
VSWR of TX-port, RX-port and ANT-port

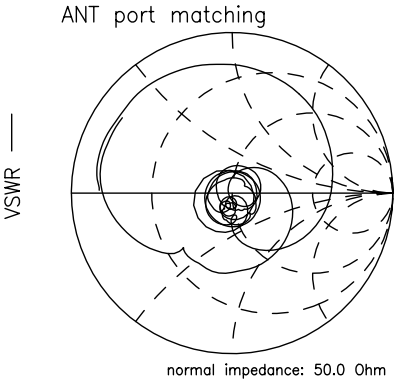












References

Type	B8533
Ordering code	B39182B8529P810
Marking and Package	C61157-A8-A153
Packaging	F61074-V8247-Z000
Date Codes	L_1126
S-Parameters	B8529_NB_UN.s4p (narrow band, unmatched), B8529_WB_UN.s4p (wide band, unmatched), B8529_HD_WB_UN.s4p (HD wide band, unmatched) 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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