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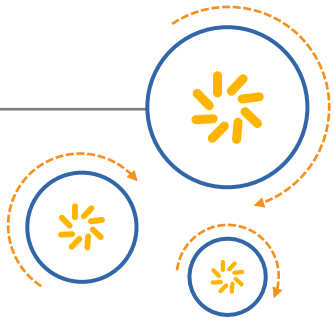

SAW Components

SAW Duplexer

Cellular / WCDMA Band V

Series/type:	B8577
Ordering code:	B39881B8577P810
Date:	June 4, 2013
Version:	2.0

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RF360 Europe GmbH, Anzinger Str. 13, München, Germany

SAW Components

SAW Duplexer

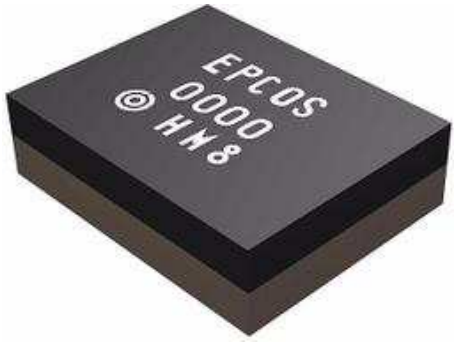
Cellular / WCDMA Band V

Series/type:	**B8577**
Ordering code:	**B39881B8577P810**
Date:	June 4, 2013
Version:	2.0

Data sheet SMD

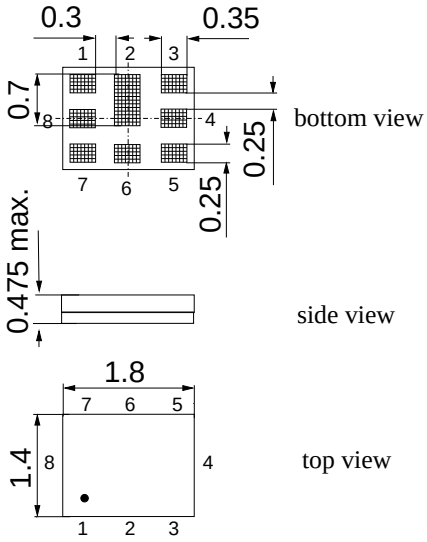
Application

- Multimode SAW duplexer for mobile telephone Cellular / WCDMA Band V systems
- Low insertion attenuation
- Low amplitude ripple
- High Tx band isolation
- Single ended to balanced transformation in Antenna - Rx path
- Impedance transformation from 50 Ω to 100 Ω in Antenna - RX path



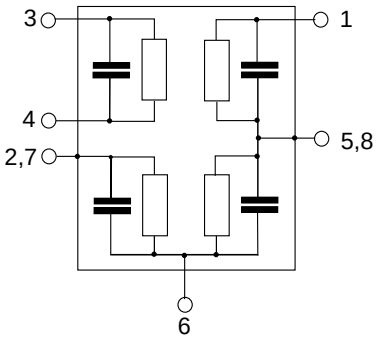
Features

- Package size 1.8 x 1.4 mm²
- Max. package height 0.475 mm
- RoHS compatible
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, Au-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitivity **L**evel **3**



Pin configuration

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



Data sheet SMD

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT}= 50 Ω ll 8.2 nH
RX terminating impedance: Z_{RX} = 100 Ω (balanced)
TX terminating impedance: Z_{TX} = 50Ω

Characterisitcs TX - ANT		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	836.5	—	MHz
Maximum insertion attenuation	α_{max}				
824.0 ... 849.0 MHz		—	1.5	2.3	dB
@$f_{Carrier}$ 826.4 ... 846.6 MHz	α_{WCDMA} [1)]	—	1.3	2.1	dB
Amplitude ripple	$\Delta\alpha$				
824.0 ... 849.0 MHz		—	0.6	1.4	dB
Error Vector Magnitude					
@$f_{Carrier}$ 826.4 ... 846.6 MHz	EVM [2)]	—	2.1	4.0	%
Input VSWR (TX port)					
824.0 ... 849.0 MHz		—	1.5	2.0	
Output VSWR (ANT port)					
824.0 ... 849.0 MHz		—	1.4	2.0	

1) Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on page (8).
2) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT} = 50 Ω ll 8.2 nH
RX terminating impedance: Z_{RX} = 100 Ω (balanced)
TX terminating impedance: Z_{TX} = 50Ω

Characterisitcs TX - ANT			min.	typ. @ 25 ˚C	max.	
Absolute attenuation		α				
	10.0 ... 420.0 MHz		40	45	—	dB
	420.0 ... 494.0 MHz		38	42	—	dB
	494.0 ... 701.0 MHz		35	39	—	dB
	701.0 ... 728.0 MHz		35	40	—	dB
	728.0 ... 764.0 MHz		35	41	—	dB
	764.0 ... 804.0 MHz		30	37	—	dB
	860.0 ... 869.0 MHz		3	10	—	dB
	869.0 ... 894.0 MHz		45	52	—	dB
@$f_{Carrier}$	871.4 ... 891.6 MHz	α_{WCDMA} [1)]	48	53	—	dB
	1236.0 ... 1341.0 MHz		40	47	—	dB
	1574.0 ... 1577.0 MHz		35	39	—	dB
	1638.0 ... 1708.0 MHz		33	36	—	dB
	1844.9 ... 1879.9 MHz		30	34	—	dB
	1884.5 ... 1919.6 MHz		30	34	—	dB
	1930.0 ... 1990.0 MHz		30	33	—	dB
	2110.0 ... 2170.0 MHz		28	31	—	dB
	2400.0 ... 2557.0 MHz		25	28	—	dB
	3286.0 ... 3406.0 MHz		20	25	—	dB
	4110.0 ... 4255.0 MHz		20	24	—	dB
	4934.0 ... 5350.0 MHz		10	14	—	dB
	5725.0 ... 5953.0 MHz		5	10	—	dB

1) Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on page (8).

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT} = 50 Ω ll 8.2 nH
RX terminating impedance: Z_{RX} = 100 Ω (balanced)
TX terminating impedance: Z_{TX} = 50Ω

Characterisitcs ANT - RX		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	881.5	—	MHz
Maximum insertion attenuation	α_{max}				
869.0 ... 894.0 MHz		—	1.7	2.4	dB
@$f_{Carrier}$ 871.4 ... 891.6 MHz	α_{WCDMA} [1)]		1.5	2.2	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
869.0 ... 894.0 MHz		—	0.5	1.2	dB
Error Vector Magnitude					
@$f_{Carrier}$ 871.4 ... 891.6 MHz	EVM [2)]	—	1.7	3.5	%
Input VSWR (ANT port)					
869.0 ... 894.0 MHz		—	1.7	2.0	
Output VSWR (RX port)					
869.0 ... 894.0 MHz		—	1.6	2.0	
Common mode rejection ratio					
869.0 ... 894.0 MHz	CMRR	23 [3)]	27	—	dB

1) Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on page (8).
2) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.
3) A combination of 10˚ phase balance and 1 dB amplitude balance corresponds to 19.6 dB CMRR

Data sheet SMD

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT} = 50 Ω ll 8.2 nH
RX terminating impedance: Z_{RX} = 100 Ω (balanced)
TX terminating impedance: Z_{TX} = 50 Ω

Characterisitcs ANT - RX			min.	typ. @ 25 ˚C	max.	
IMD product level limits[1]						
at f_{TX} = 836.5 MHz f_{RX} = 881.5 MHz						
Blocker 1	45.0 MHz		—	-125	—	dBm
Blocker 2	791.5 MHz		—	-106	—	dBm
Blocker 3	1718.0 MHz		—	-106	—	dBm
Blocker 4	2554.5 MHz		—	-115	—	dBm
Attenuation		α				
	10.0 ... 447.0 MHz		45	75	—	dB
	447.0 ... 824.0 MHz		45	61	—	dB
	824.0 ... 849.0 MHz		50	60	—	dB
@$f_{Carrier}$	826.4 ... 846.6 MHz	α_{WCDMA}[2]	55	61	—	dB
	849.0 ... 854.0 MHz		10	56	—	dB
	854.0 ... 871.5 MHz		0.9	1.3	—	dB
	909.0 ... 914.0 MHz		10	20	—	dB
	914.0 ... 940.0 MHz		20	27	—	dB
	940.0 ... 1000.0 MHz		40	49	—	dB
	1000.0 ... 1693.0 MHz		40	53	—	dB
	1693.0 ... 1850.0 MHz		45	54	—	dB
	1850.0 ... 1920.0 MHz		40	54	—	dB
	1920.0 ... 5000.0 MHz		40	46	—	dB
	5000.0 ... 6000.0 MHz		30	41	—	dB

[1] Power levels: 21.5 dBm Tx signal, -15dBm blocker at antenna port.
[2] Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on page (8).

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
Antenna terminating impedance: Z_{ANT} = 50 Ω ll 8.2 nH
RX terminating impedance: Z_{RX} = 100 Ω (balanced)
TX terminating impedance: Z_{TX} = 50 Ω

Characterisitcs TX - RX		min.	typ. @ 25 ˚C	max.	
Isolation	α				
824.0 ... 849.0 MHz		54	63	—	dB
@$f_{Carrier}$ 826.4 ... 846.6 MHz	α_{WCDMA} 3)	57	64	—	dB
869.0 ... 894.0 MHz		50	55	—	dB
@$f_{Carrier}$ 871.4 ... 891.6 MHz	α_{WCDMA} 1)	52	56	—	dB
1574.0 ... 1577.0 MHz		40	64	—	dB
1638.0 ... 1708.0 MHz		40	62	—	dB
2462.0 ... 2557.0 MHz		40	56	—	dB
Common Mode Isolation					
824.0 ... 849.0 MHz		42	47	—	dB
@$f_{Carrier}$ 826.4 ... 846.6 MHz	α_{WCDMA} 3)	42	48	—	dB

1) Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on page (8).

Annotation for characteristics section

Attenuation of WCDMA signal ("Powertransferfunction", α_{WCDMA}) is determined by

$$\int_{\infty}^{\infty} \left| S_{ds21}(f) H_{RRC}(f - f_{Carrier}) \right|^2 df$$

$f_{Carrier}$ according to 3GPP TS 25.101 (e.g. for WCDMA Band 5-Passband, $f_{Carrier}$ ranges from 826.4 MHz (lowest TX channel) to 846.6 MHz (highest TX channel)). $H_{RRC}(f)$ is the transfer function of the root-raised cosine transmit pulse shaping filter according to 3GPP TS 25.101 with the following normalization:

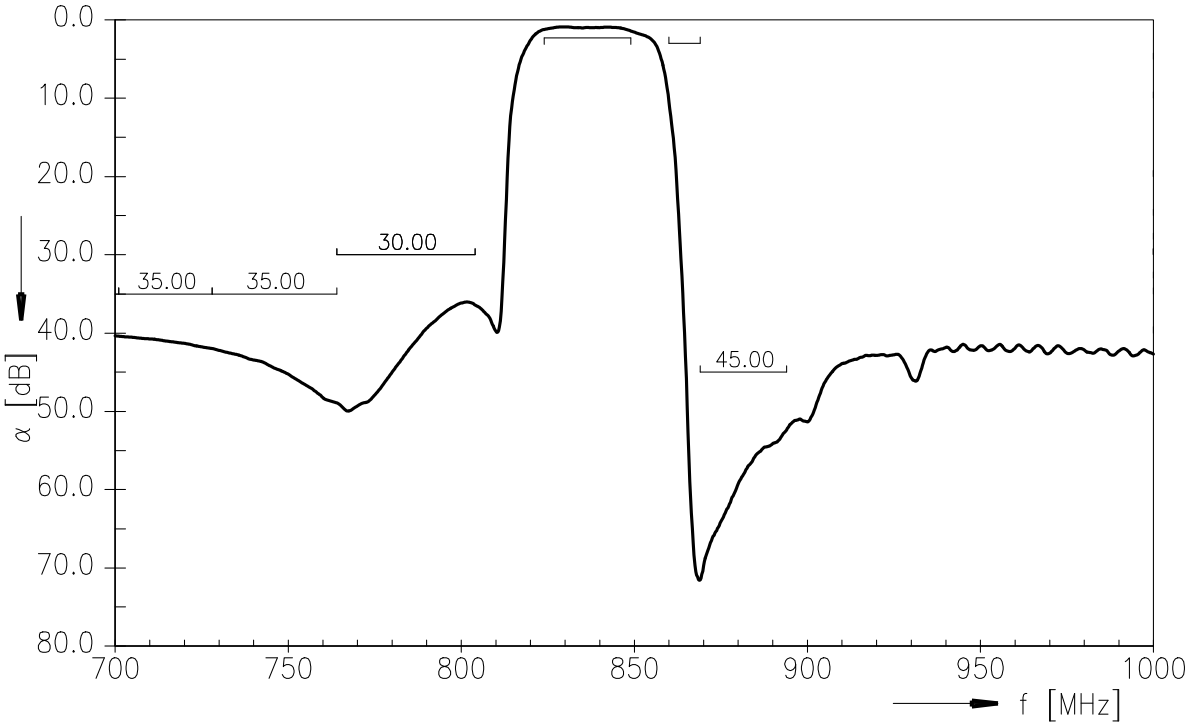
$$\int_{\infty}^{\infty} \left| H_{RRC}(f) \right|^2 df = 1$$

Maximum ratings

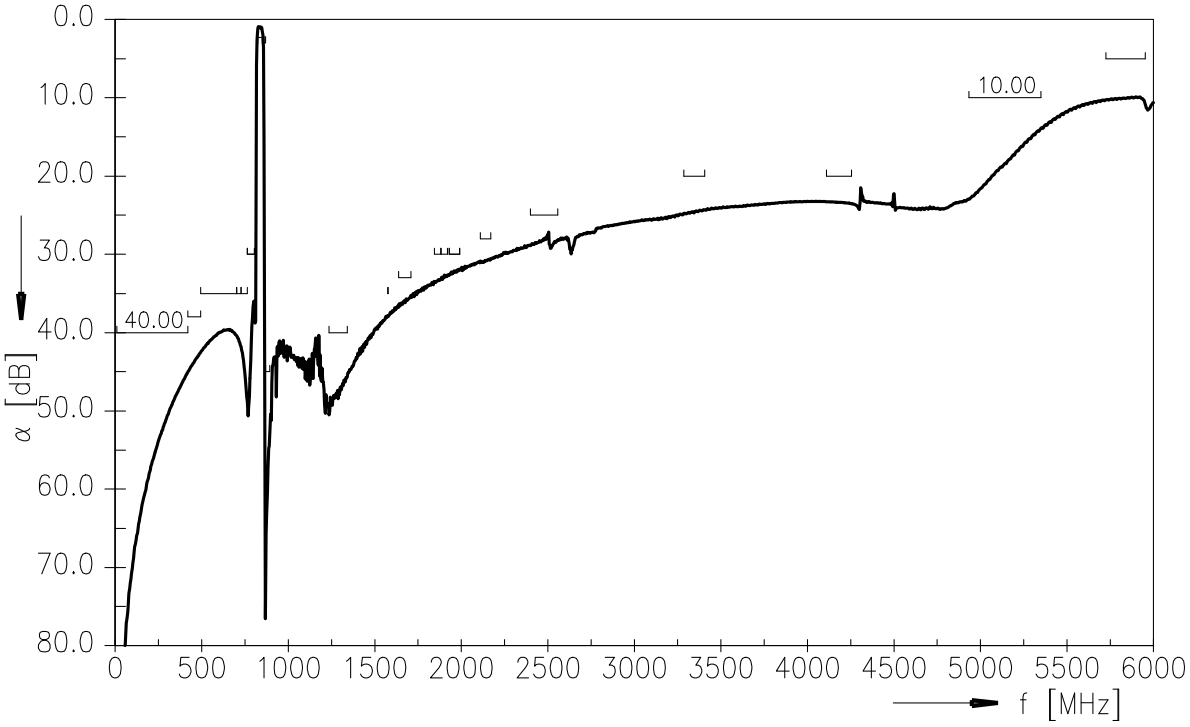
Storage temperature range	T_{stg}	–40/+85[1)]	˚C	
DC voltage	V_{DC}	5[2)]	V	
ESD voltage	V_{ESD}	100[3)]	V	Machine Model
Input power	P_{IN}			source and load impedance 50 Ω
824.0 ... 849.0 MHz		28	dBm	} continuous wave
elsewhere		10	dBm	} T = 50˚C, 3000 h

1) extended upperlimit: 168h@125˚C acc. to IEC 60068-2-2 Bb
2) 168h Damp Heat Steady State acc. to IEC 60068-2-67 Cy
3) acc. to JESD22-A115B (MM - Machine Model), 10 negative and 10 positive pulses.

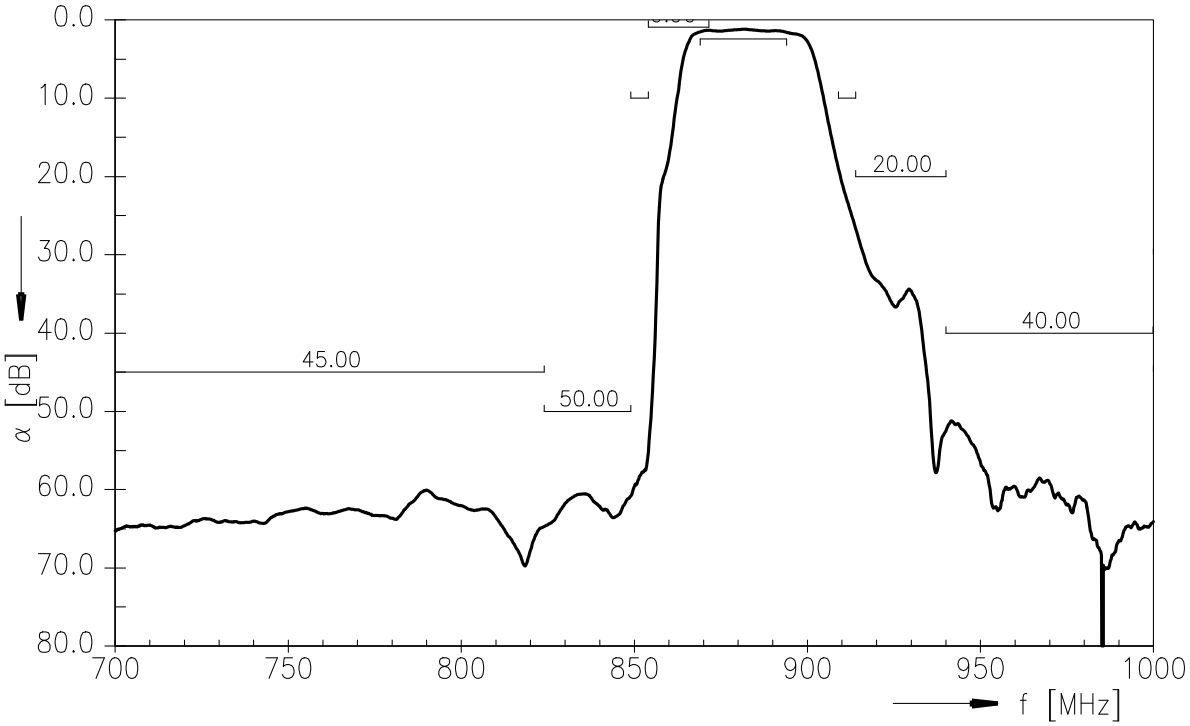
Transfer function TX (Power transfer function)



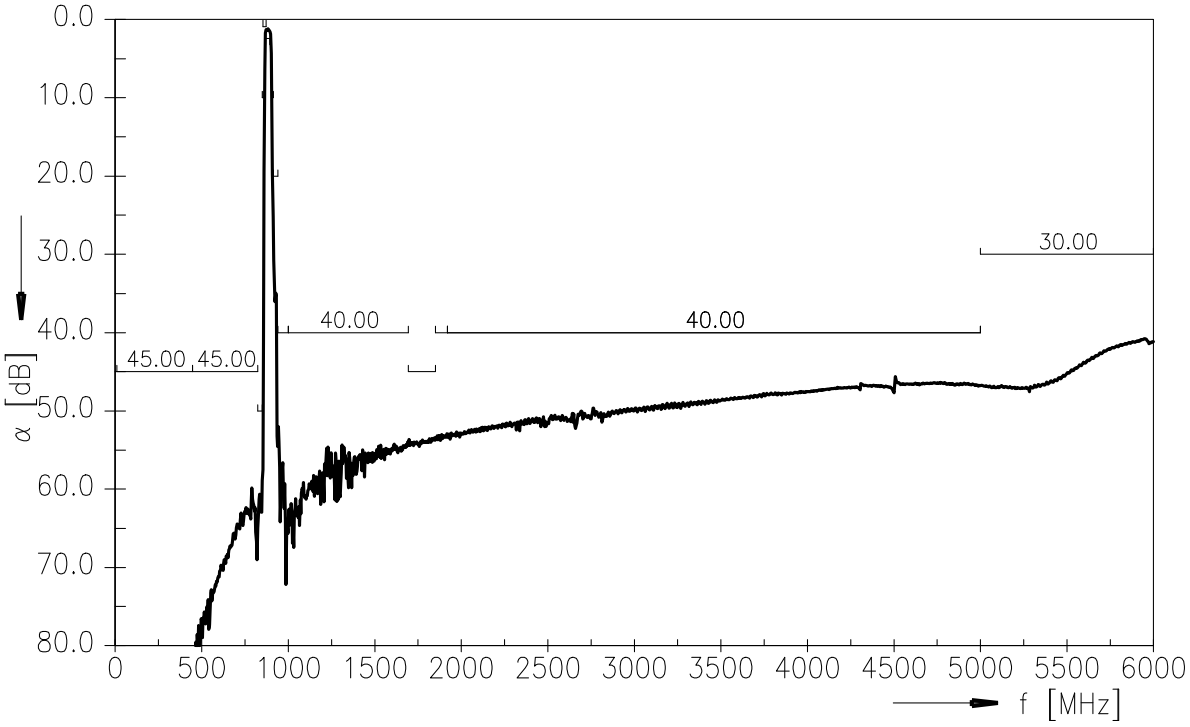
Transfer function TX (wideband)



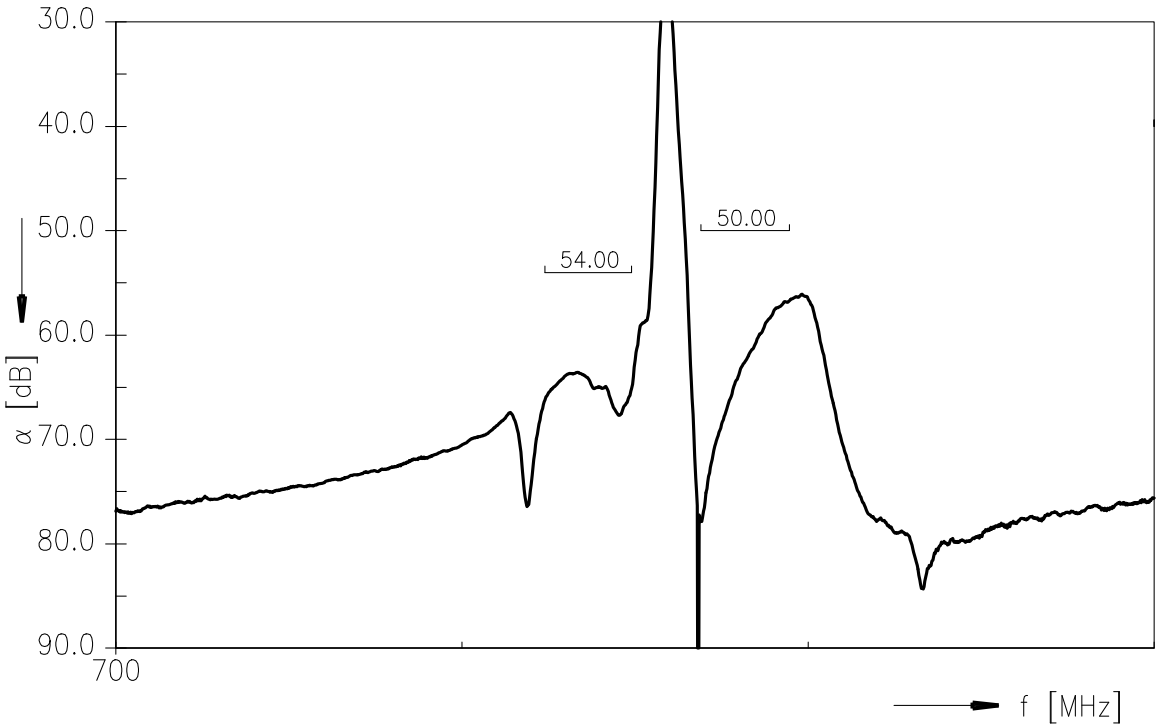
Transfer function RX (Power transfer function)



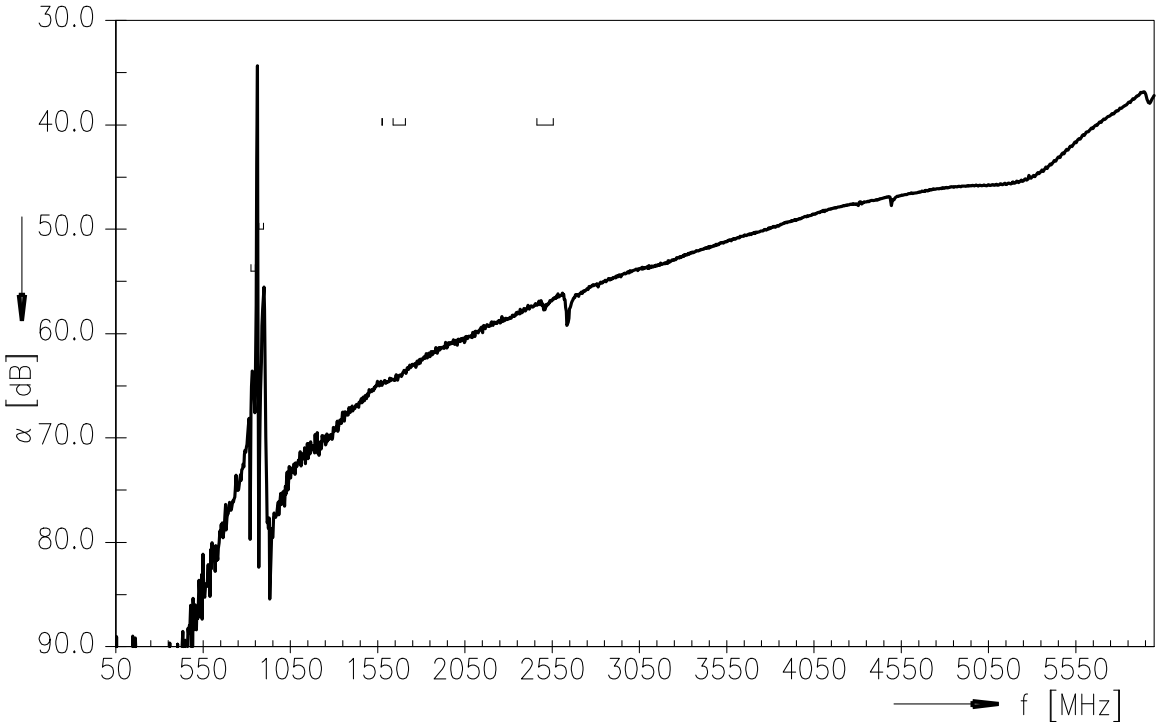
Transfer function RX (wideband)



Isolation TX-RX (Power transfer function)

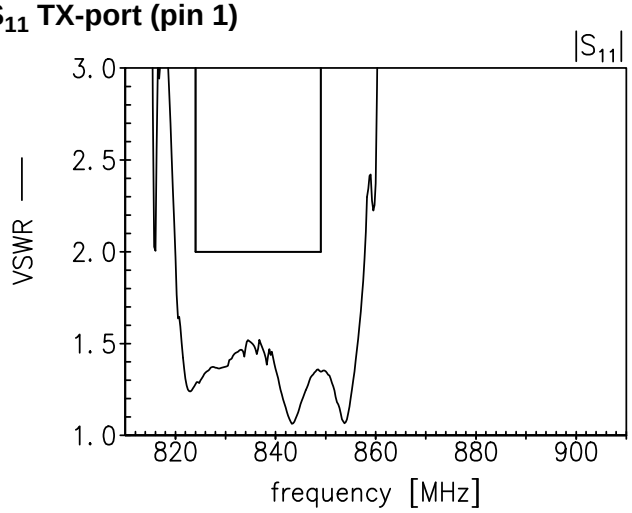


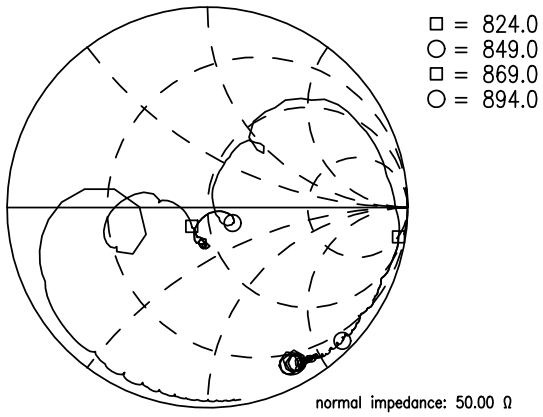
Isolation TX-RX (wideband)



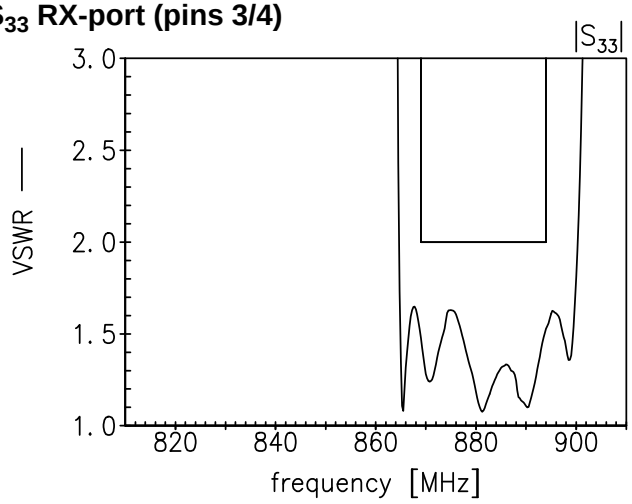
Smith charts

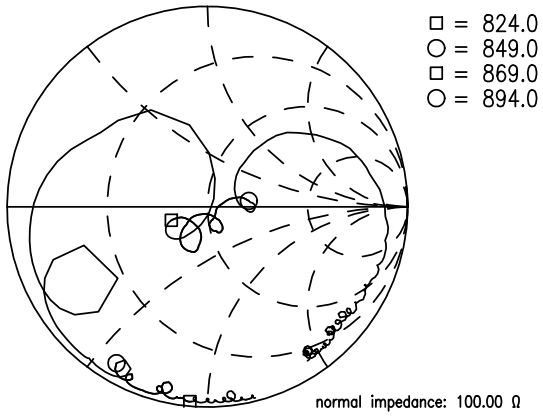
S_{11} TX-port (pin 1)



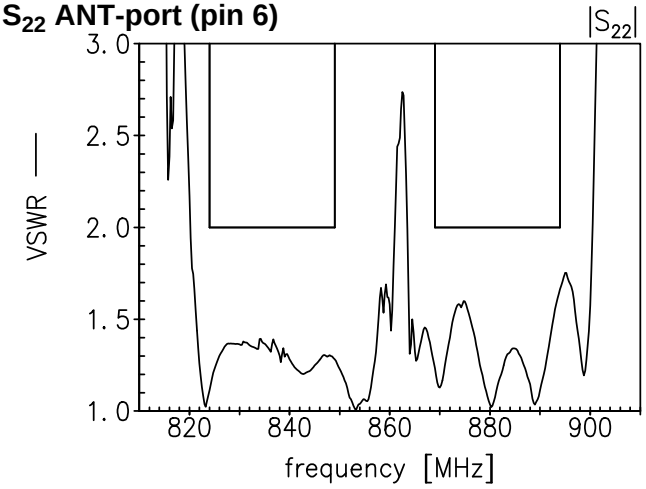


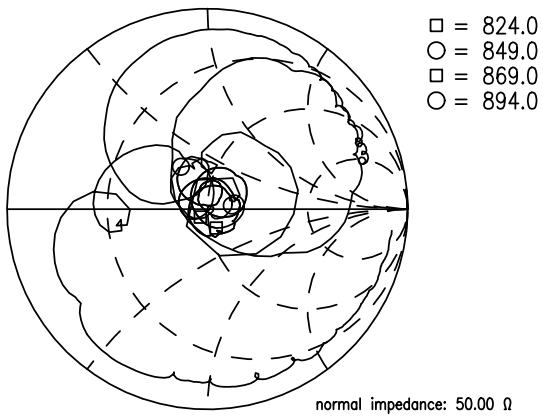
S_{33} RX-port (pins 3/4)





S_{22} ANT-port (pin 6)





References

Type	B8577
Ordering code	B39881B8577P810
Marking and package	C61157-A8-A69
Packaging	F61074-V8259-Z000
Date codes	L_1126
S-parameters	B8577_NB_UN.s4p; B8577_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 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.
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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