



SAW Components

SAW Rx filter

LTE Band 20 Rx / LTE Band 8 Rx

Series/Type:	B9845
Ordering code:	B39941B9845P810
Date:	February 25, 2015
Version:	2.1

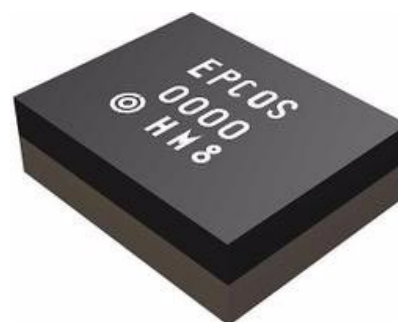
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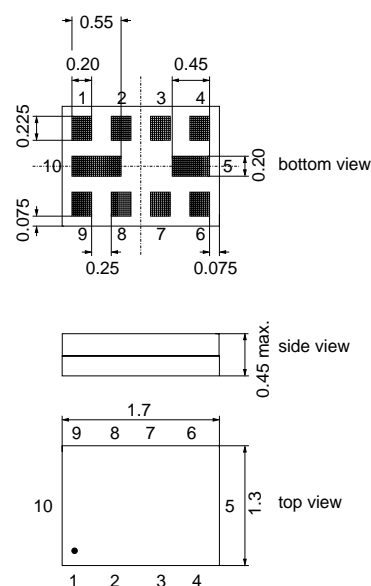
Data sheet


Application

- Low-loss SAW RF 2in1 filter for mobile telephone
LTE Band 20 Rx and Band 8 Rx
- Usable passband :
Filter 1 (LTE Band 20) : 30 MHz
Filter 2 (LTE Band 8) : 35 MHz
- Single-ended to balanced operation
- Good insertion attenuation
- High out of band selectivity
- Filter impedance 50 Ω


Features

- Package size 1.7 x 1.3 mm²
- Package height : maximum 0.45 mm
- RoHS compatible
- Approximate weight 0.003 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitivity Level 3 (MSL 3)**


Pin configuration

- 1 Input Band 20 (unbalanced)
- 4 Input Band 8 (unbalanced)
- 6,7 Output (diplexed and balanced)
- 2,3,5,8,9,10 To be grounded

Data sheet


Characteristics of Filter 1 (LTE Band 20)

Temperature range for specification: $T = -30\text{ °C to }+85\text{ °C}$
 Terminating source impedance: $Z_S = 50\ \Omega$
 Terminating load impedance: $Z_L = 100\ \Omega \parallel 20\text{ nH}$

		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	806.0	—	MHz
Maximum insertion attenuation	α_{\max}	—	3.0	4.1	dB
791.0 ... 821.0 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	1.7	2.7	dB
791.0 ... 821.0 MHz					
Input VSWR		—	2.0	2.3	
791.0 ... 821.0 MHz					
Output VSWR		—	2.0	2.4	
791.0 ... 821.0 MHz					
Attenuation	α				
100.0 ... 731.0 MHz		40	60	—	dB
832.0 ... 833.0 MHz		30	42	—	dB
833.0 ... 847.0 MHz		40	42	—	dB
847.0 ... 862.0 MHz		42	47	—	dB
862.0 ... 915.0 MHz		40	60	—	dB
915.0 ... 980.0 MHz		36	40	—	dB
980.0 ... 2401.0 MHz		40	50	—	dB
2401.0 ... 2495.0 MHz		54	57	—	dB
2495.0 ... 3500.0 MHz		40	51	—	dB
3500.0 ... 6000.0 MHz		27	30	—	dB


Maximum ratings

Storage temperature range	T_{stg}	-40/+85 ¹⁾	°C	Machine Model Continuous Wave @ 55°C 2000h
DC voltage	V_{DC}	5 ²⁾	V	
ESD voltage	V_{ESD}	100 ³⁾	V	
Input power at	P_{IN}			
832.0 ... 862.0MHz		15	dBm	
880.0 ... 915.0MHz		15	dBm	

1) extended upperlimit: 168h@125°C acc. to IEC to IEC 60068-2-2 Bb.

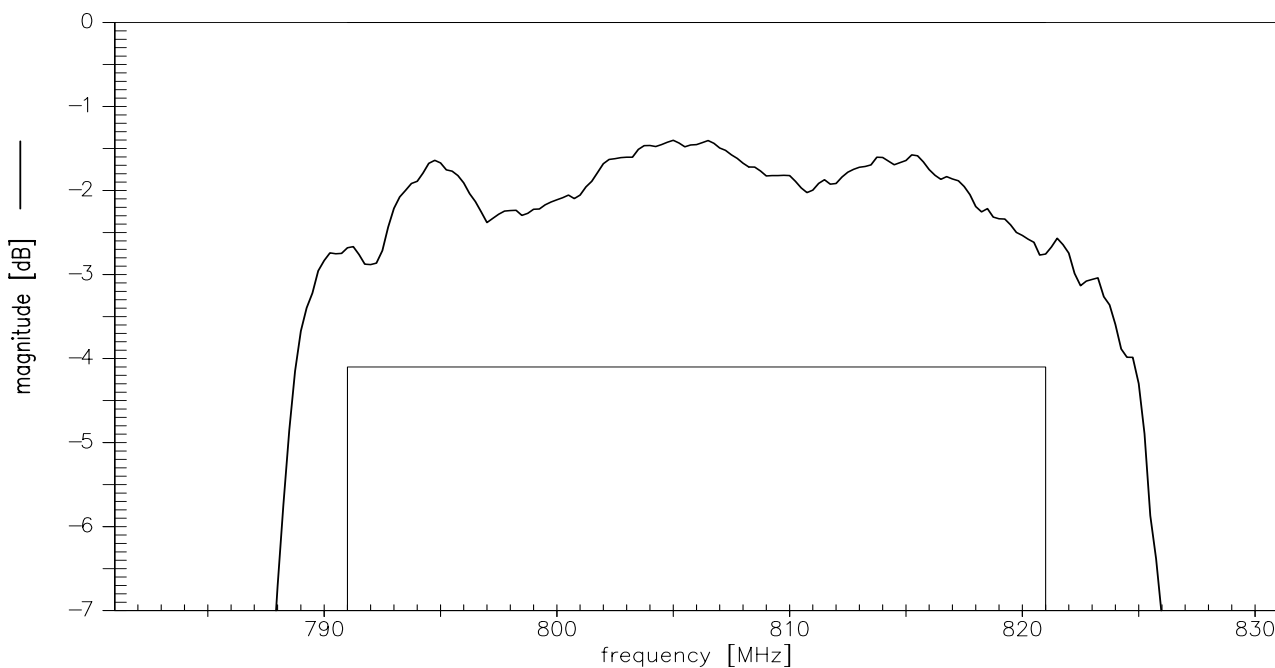
2) 168h Damp Heat Steady State acc. to IEC 60068-2-67 Cy.

3) acc. to JESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses.

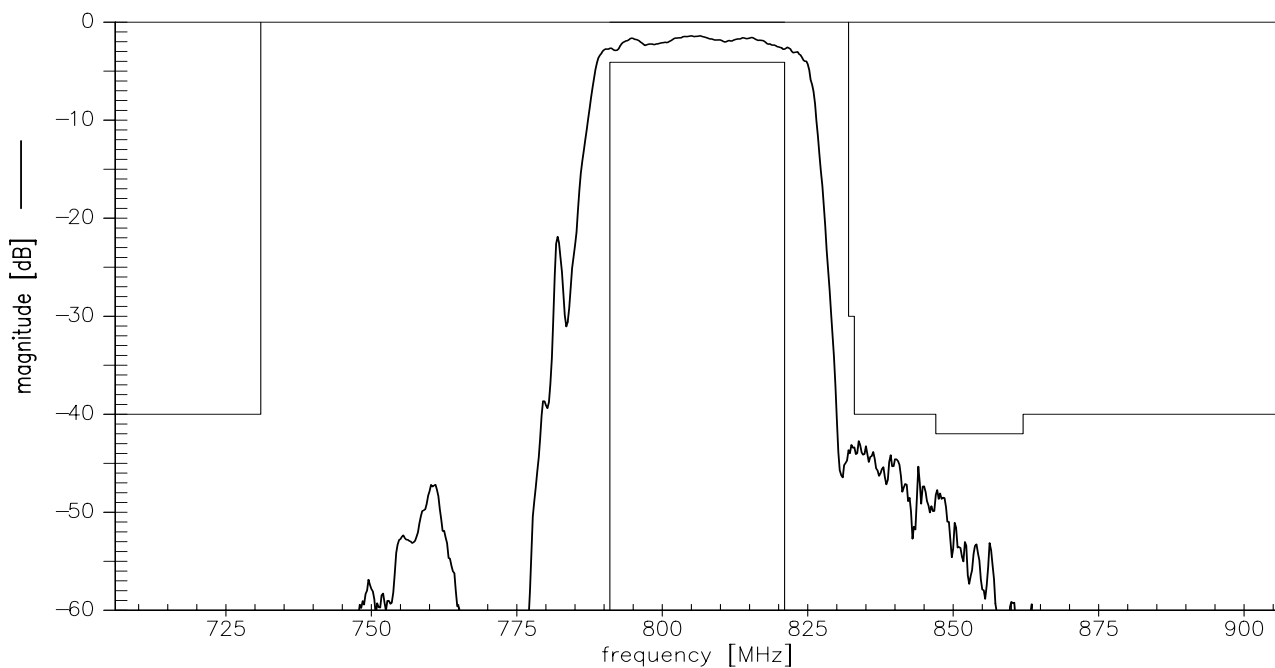
Data sheet



Transfer function Filter 1 (narrowband)



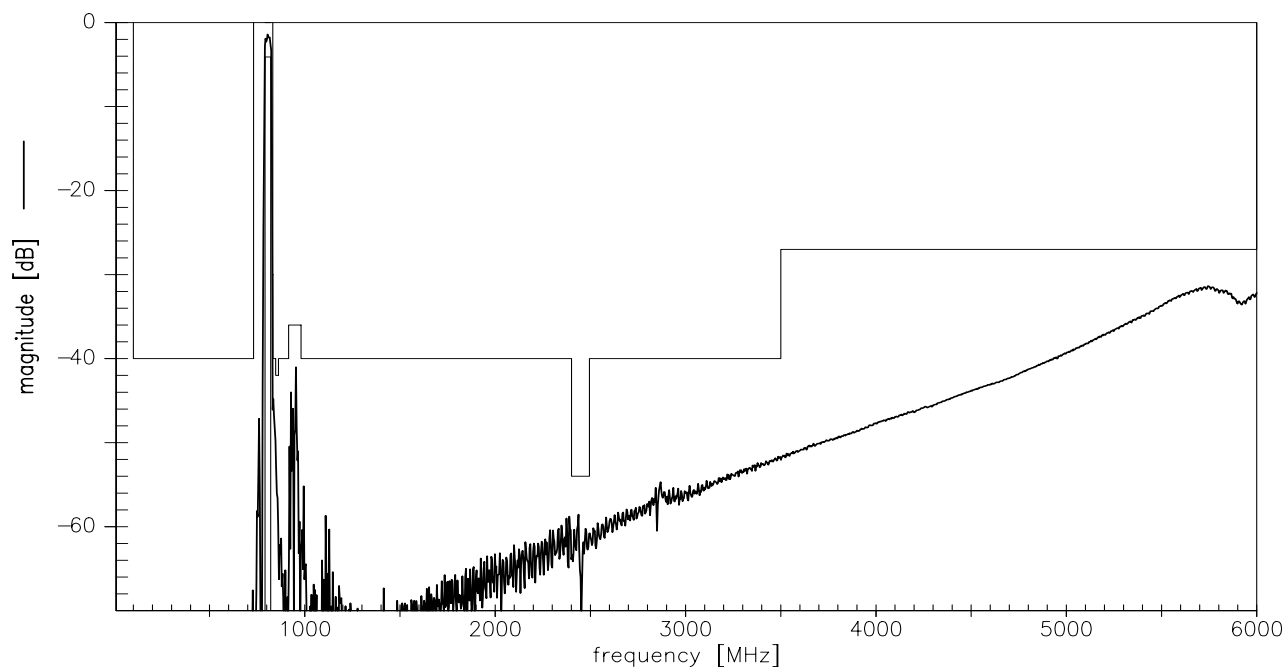
Transfer function Filter 1 (narrowband)



Data sheet



Transfer function Filter 1 (wideband)

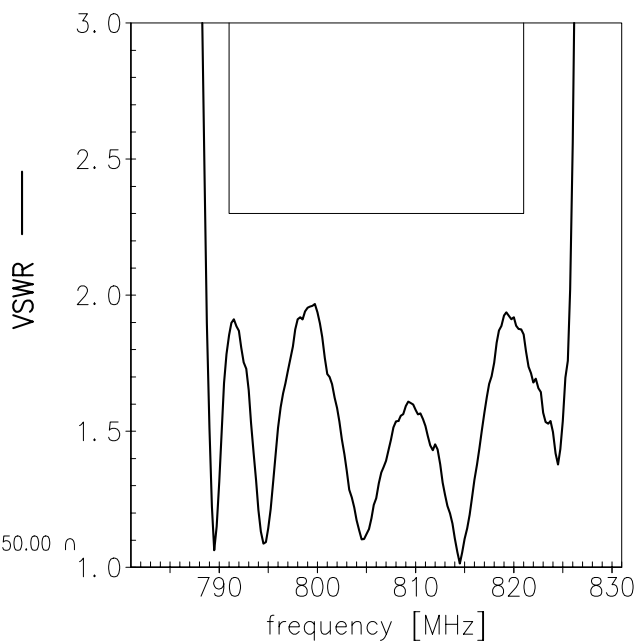
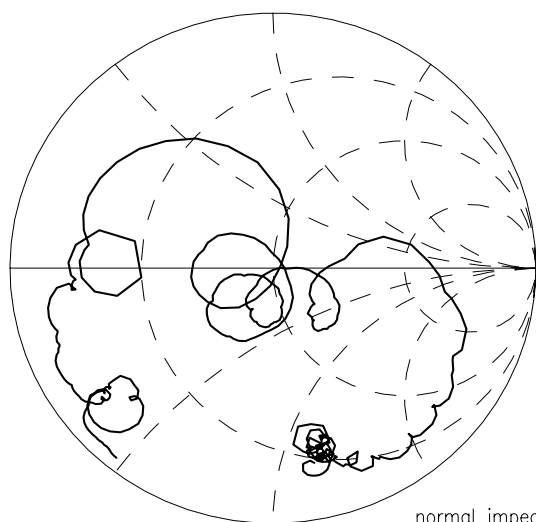


Data sheet

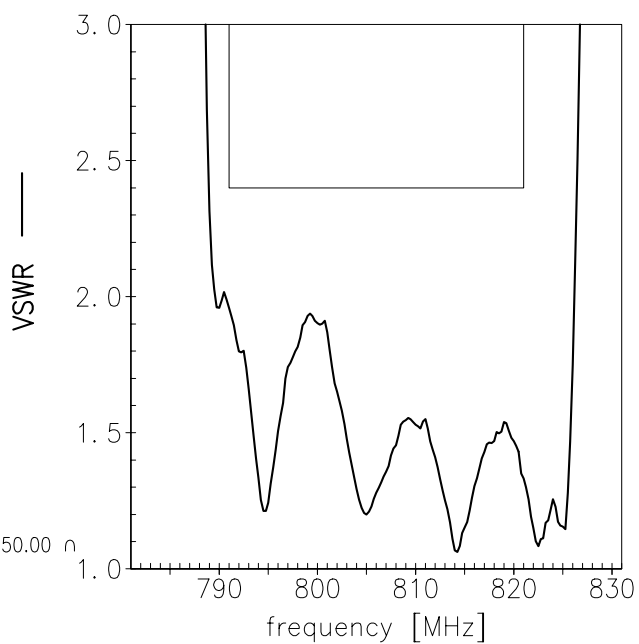
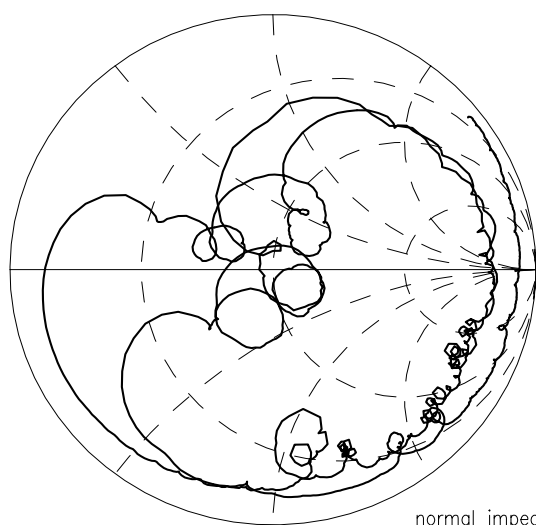


Smith charts Filter 1

S₁₁ function



S₂₂ function



Data sheet


Characteristics of Filter 2 (LTE Band 8)

Temperature range for specification: $T = -30\text{ °C to }+85\text{ °C}$
 Terminating source impedance: $Z_S = 50\ \Omega$
 Terminating load impedance: $Z_L = 100\ \Omega \parallel 20\text{ nH}$

		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	942.5	—	MHz
Maximum insertion attenuation	α_{\max}	—	2.7	4.1	dB
925.0 ... 960.0 MHz					
Amplitude ripple (p-p)	$\Delta\alpha$	—	1.1	2.8	dB
925.0 ... 960.0 MHz					
Input VSWR					
925.0 ... 926.0 MHz		—	1.65	2.2	
926.0 ... 960.0 MHz		—	1.85	2.2	
Output VSWR					
925.0 ... 926.0 MHz		—	2.35	2.9	
926.0 ... 960.0 MHz		—	2.18	2.4	
Attenuation	α				
100.0 ... 880.0 MHz		40	48	—	dB
880.0 ... 897.5 MHz		48	53	—	dB
897.5 ... 914.0 MHz		43	47	—	dB
914.0 ... 915.0 MHz		29	40	—	dB
1020.0 ... 2500.0 MHz		40	48	—	dB
2500.0 ... 5000.0 MHz		36	41	—	dB
5000.0 ... 6000.0 MHz		25	28	—	dB


Maximum ratings

Storage temperature range	T_{stg}	-40/+85 ¹⁾	°C	Machine Model Continuous Wave @ 55°C 2000h
DC voltage	V_{DC}	5 ²⁾	V	
ESD voltage	V_{ESD}	100 ³⁾	V	
Input power at	P_{IN}			
832.0 ... 862.0MHz		15	dBm	
880.0 ... 915.0MHz		15	dBm	

1) extended upperlimit: 168h@125°C acc. to IEC to IEC 60068-2-2 Bb.

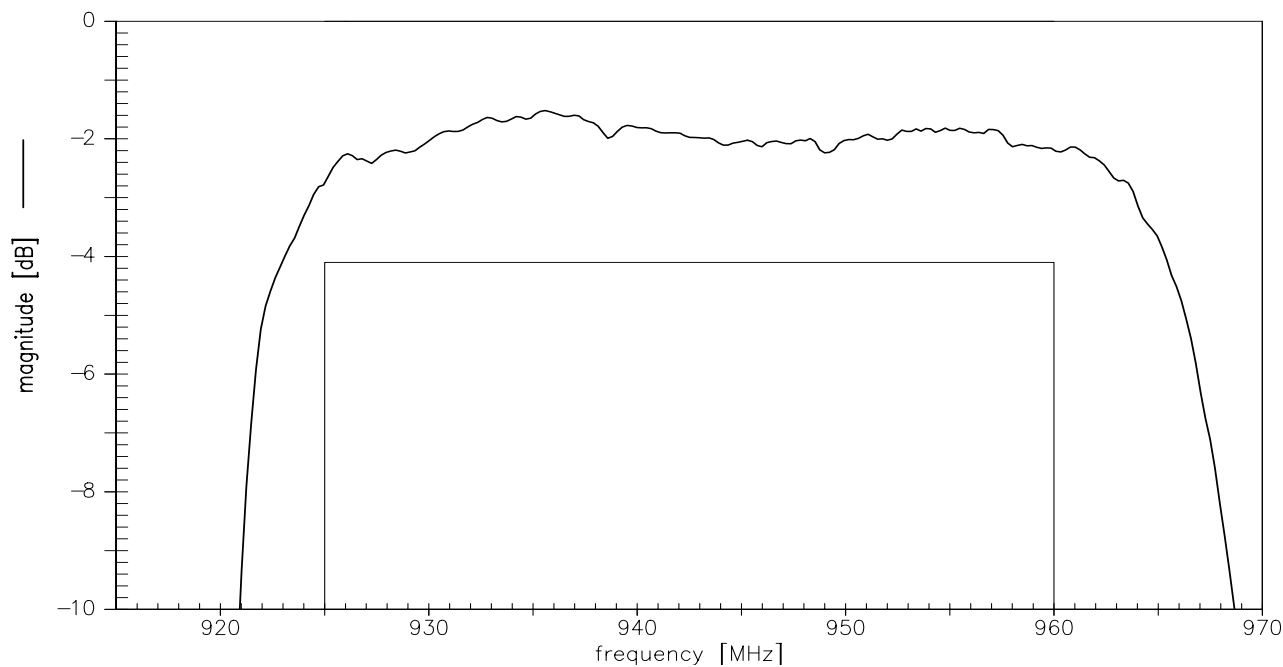
2) 168h Damp Heat Steady State acc. to IEC 60068-2-67 Cy.

3) acc. to JESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses.

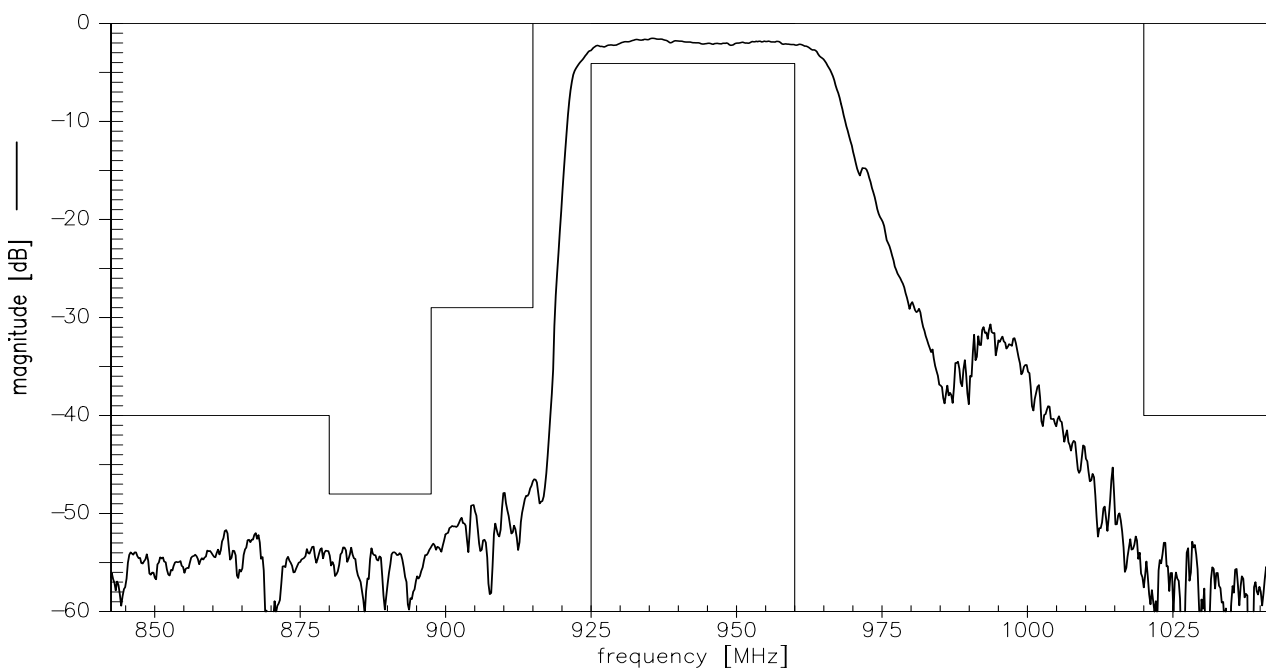
Data sheet



Transfer function Filter 2 (narrowband)



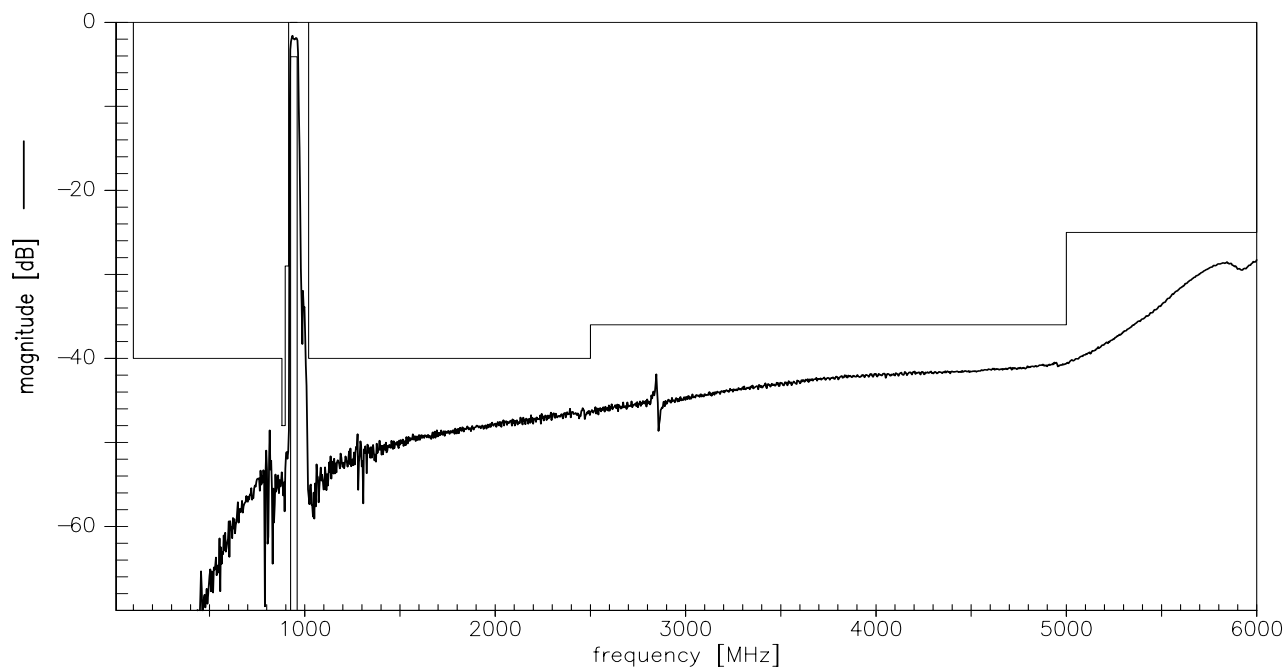
Transfer function Filter 2 (narrowband)



Data sheet



Transfer function Filter 2 (wideband)

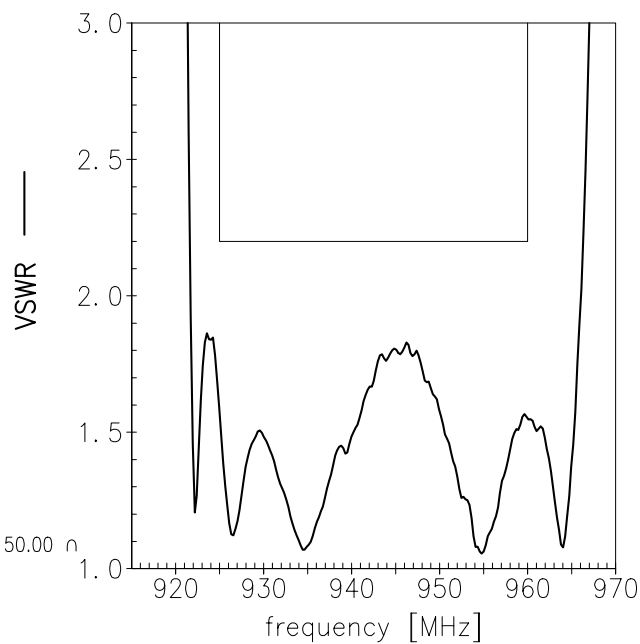
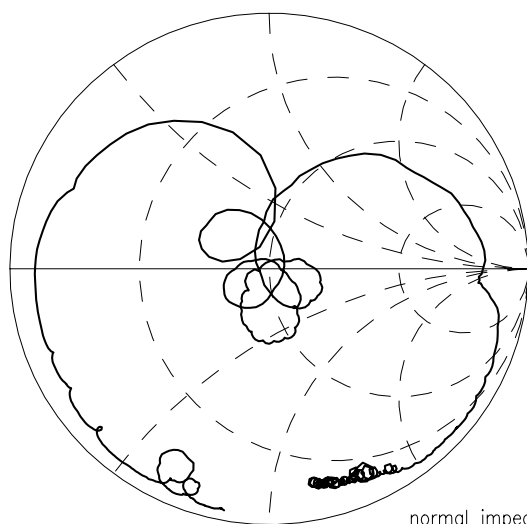


Data sheet

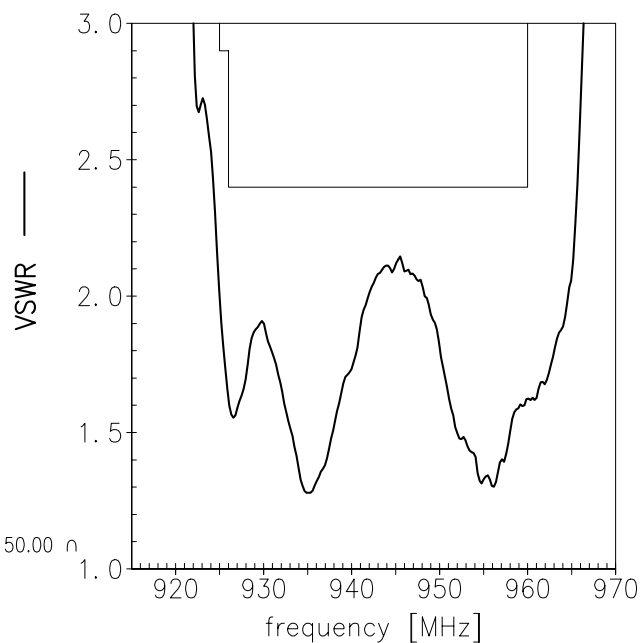
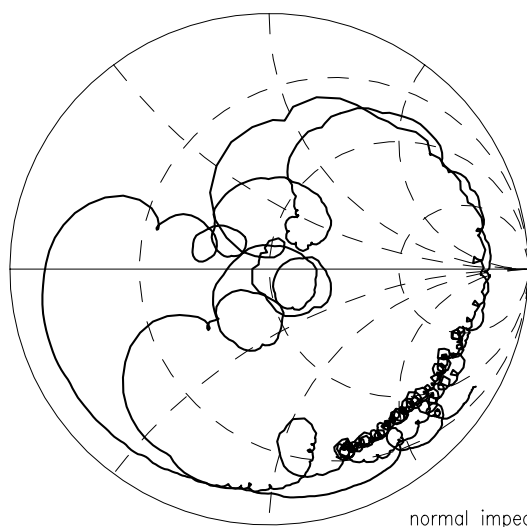


Smith charts Filter 2

S_{11} function



S_{22} function




References

Type	B9845
Ordering code	B39941-B9845-P810
Marking and package	C61157-A8-A151
Packaging	F61074-V8222-Z000
Date codes	L_1126
S-parameters	B9845_NB.s6p, B9845_WB.s6p B9845_NB_UN.s6p, B9845_WB_UN.s6p 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.
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Published by EPCOS AG
Systems, Acoustics, Waves Business Group
P.O. Box 80 17 09, 81617 Munich, GERMANY

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