



SAW Components

SAW 2in1 filter

Band 39 / Band 34

Series/type:	B9916
Ordering code:	B39202B9916P810
Date:	November 18, 2013
Version:	2.1



Data sheet



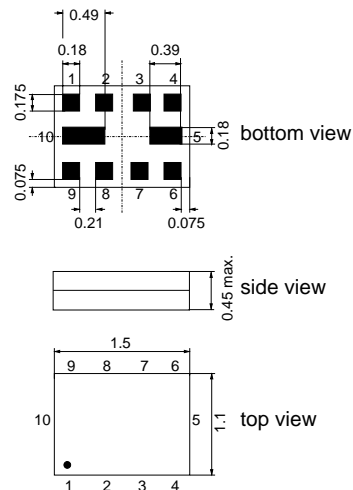
Application

- Low-loss 2in1 RF filter for mobile telephone Band 39 and Band 34 systems
- Usable passband:
Band 39: 40 MHz
Band 34: 15 MHz
- Unbalanced to balanced operation for both filters
- Impedance transformation from 50 Ω to 100 Ω for both filters
- Low amplitude ripple



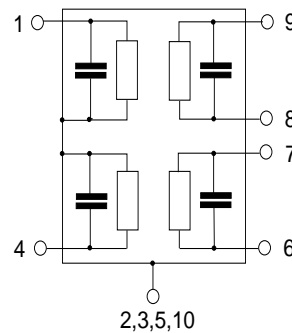
Features

- Package size 1.5 x 1.1 mm²
- Maximum package height 0.45 mm
- RoHS compatible
- Approx. weight 0.003g
- Package for Surface Mount Technology (SMT)
- Ni, gold-plated terminals
- Electrostatic Sensitive Device (ESD)
- Moisture Sensitive Level 3



Pin configuration

- 1 Input [Band 39]
- 4 Input [Band 34]
- 6,9 Output Diplex [Band 39 and Band 34]
- 7,8 To be ground
- 2,3,5,10 Case ground





Data sheet



Characteristics of Band 39

Temperature range for specification: $T = -20\text{ °C to }+85\text{ °C}$
 Terminating source impedance: $Z_S = 50\ \Omega$
 Terminating load impedance: $Z_L = 100\ \Omega \parallel 8.2\text{ nH}$

				min.	typ. @ 25°C	max.	
Center frequency	f_C			—	1900.0	—	MHz
Maximum insertion attenuation	α_{max}	1880.0 ... 1920.0	MHz	—	2.0	2.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$	1880.0 ... 1920.0	MHz	—	0.5	1.0	dB
Input VSWR		1880.0 ... 1920.0	MHz	—	1.6	2.0	
Output VSWR		1880.0 ... 1920.0	MHz	—	1.5	2.0	
Common mode rejection ratio		1880.0 ... 1920.0	MHz	24	30	—	dB
Attenuation	α						
		50.0 ... 824.0	MHz	60	78	—	dB
GSM850 Band 5 Tx		824.0 ... 849.0	MHz	60	79	—	dB
		849.0 ... 880.0	MHz	60	80	—	dB
GSM900 Band 8 Tx		880.0 ... 915.0	MHz	60	80	—	dB
		915.0 ... 1710.0	MHz	42	50	—	dB
DCS1800 Band 3 Tx		1710.0 ... 1785.0	MHz	43	52	—	dB
Band 34		2010.0 ... 2025.0	MHz	42	47	—	dB
		2025.0 ... 2300.0	MHz	40	45	—	dB
Band 40		2300.0 ... 2400.0	MHz	36	44	—	dB
ISM Band		2400.0 ... 2500.0	MHz	35	43	—	dB
		2500.0 ... 4900.0	MHz	27	33	—	dB
ISM Band		4900.0 ... 5950.0	MHz	18	22	—	dB
		5950.0 ... 6000.0	MHz	18	22	—	dB



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Maximum ratings of Band 39

Storage temperature range	T_{stg}	-40/85	°C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50 ¹⁾	V	Machine Model
Input Power				
1880.0 ... 1920.0 MHz	P_{IN}	13	dBm	continuous wave

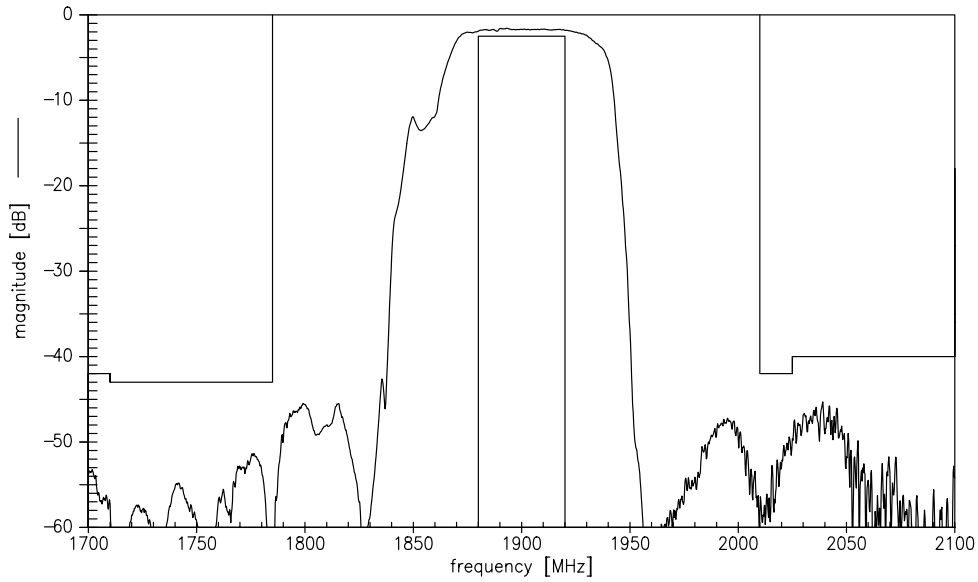
¹⁾ acc. to JESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses



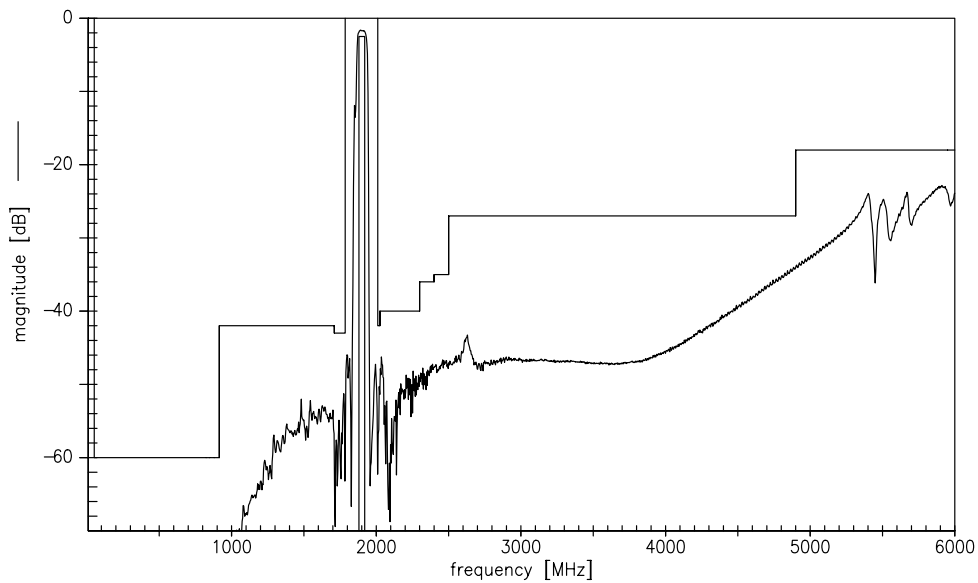
Data sheet



Transfer function of Band 39



Transfer function (wideband) of Band39



Please read *cautions and warnings* and *important notes* at the end of this document.

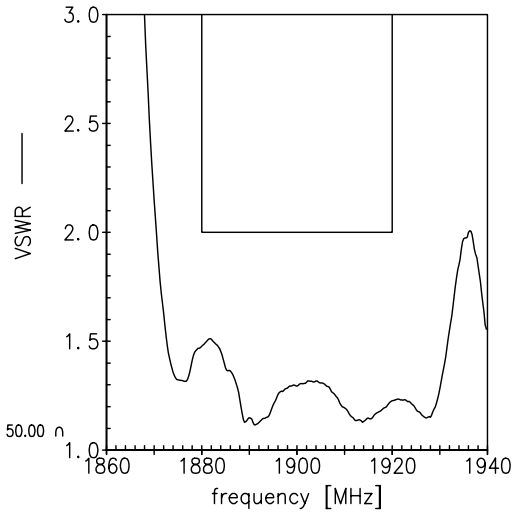
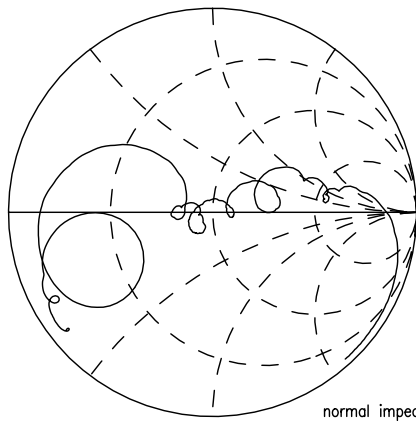


Data sheet

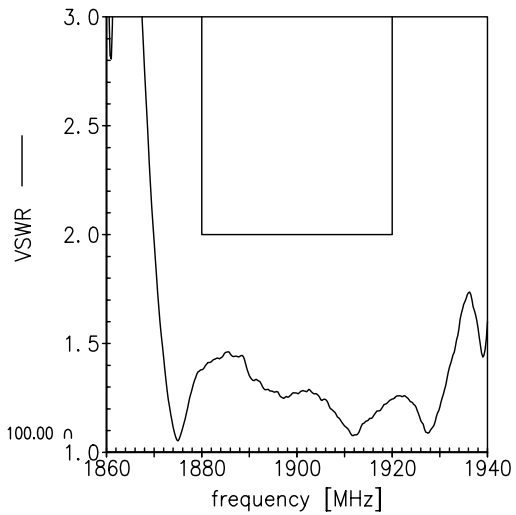
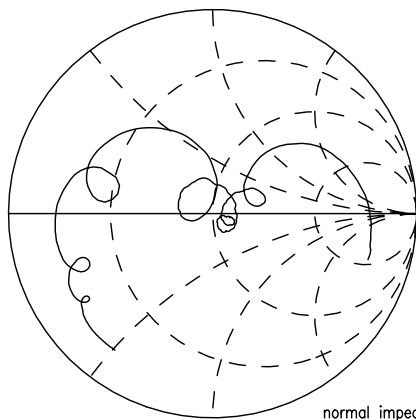


Smith charts of Band 39

S₁₁ function



S₂₂ function



Please read *cautions and warnings and important notes* at the end of this document.



Data sheet



Characteristics of Band 34

Temperature range for specification: $T = -20\text{ °C to }+85\text{ °C}$
 Terminating source impedance: $Z_S = 50\ \Omega$
 Terminating load impedance: $Z_L = 100\ \Omega \parallel 8.2\text{ nH}$

				min.	typ. @ 25°C	max.	
Center frequency	f_C			—	2017.5	—	MHz
Maximum insertion attenuation	α_{max}			—	2.2	2.7	dB
		2010.0 ... 2025.0	MHz				
Amplitude ripple (p-p)	$\Delta\alpha$			—	0.3	0.8	dB
		2010.0 ... 2025.0	MHz				
Input VSWR				—	1.4	2.0	
		2010.0 ... 2025.0	MHz				
Output VSWR				—	1.4	2.0	
		2010.0 ... 2025.0	MHz				
Common mode rejection ratio				19	22	—	dB
		2010.0 ... 2025.0	MHz				
Attenuation	α						
		50.0 ... 704.0	MHz	60	80	—	dB
Band 17 Tx		704.0 ... 716.0	MHz	60	85	—	dB
		716.0 ... 1880.0	MHz	35	40	—	dB
Band 39		1880.0 ... 1920.0	MHz	35	41	—	dB
Band 40		2300.0 ... 2400.0	MHz	34	41	—	dB
		2400.0 ... 2500.0	MHz	32	41	—	dB
		2500.0 ... 2570.0	MHz	31	41	—	dB
Band 38		2570.0 ... 2620.0	MHz	28	42	—	dB
		2620.0 ... 3000.0	MHz	31	42	—	dB
		3000.0 ... 4000.0	MHz	32	37	—	dB
		4000.0 ... 6000.0	MHz	15	20	—	dB



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Maximum ratings of Band 34

Storage temperature range	T_{stg}	-40/85	°C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50 ¹⁾	V	Machine Model
Input Power				
2010.0 ... 2025.0 MHz	P_{IN}	12	dBm	continuous wave

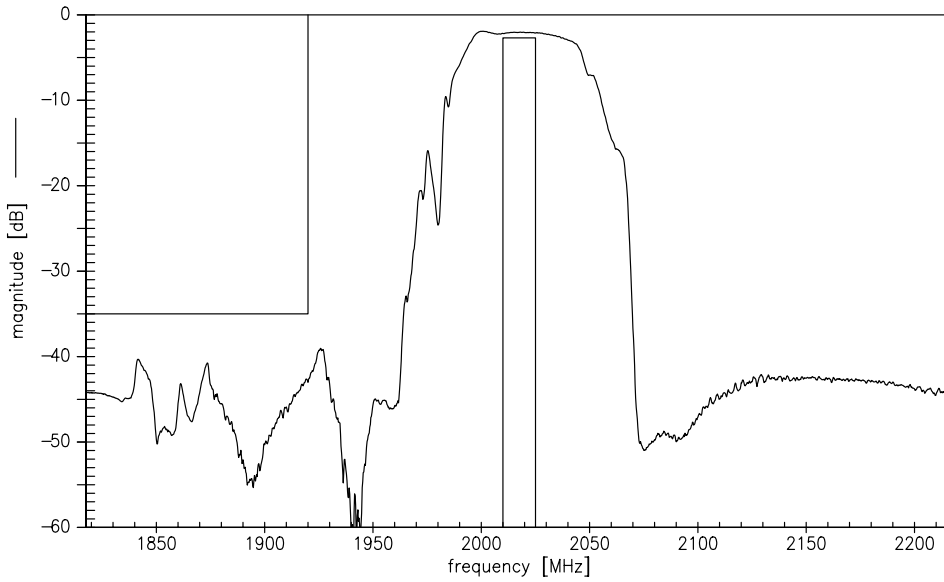
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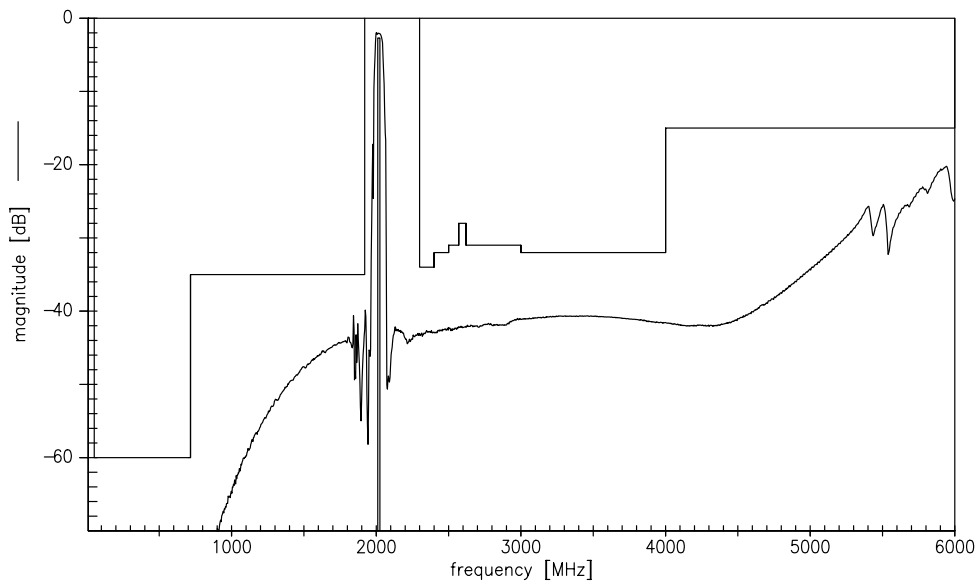
Data sheet



Transfer function of Band 34

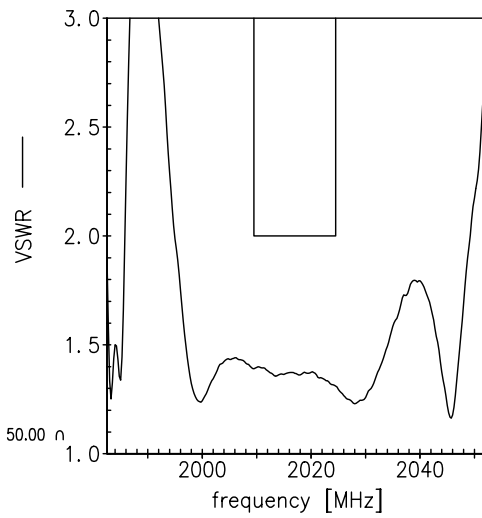
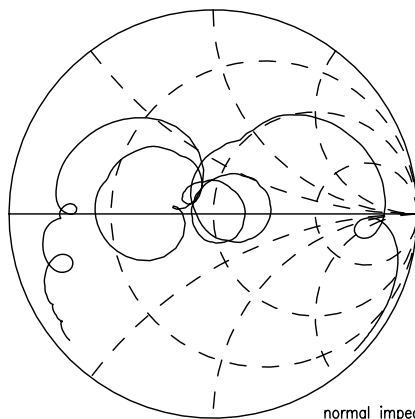


Transfer function (wideband) of Band 34

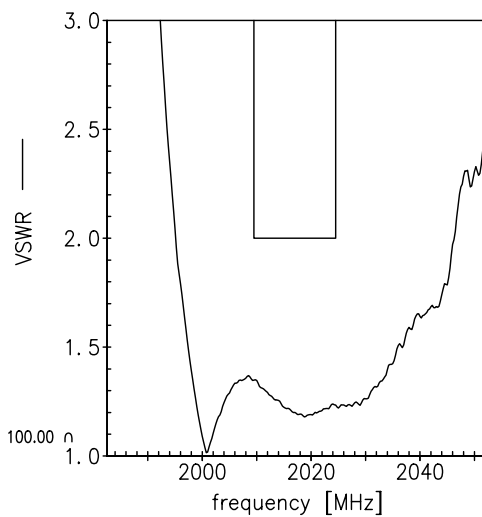
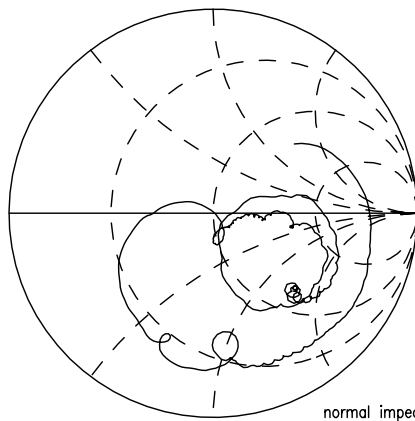


Smith charts of Band 34

S₁₁ function



S₂₂ function



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**References**

Type	B9916
Ordering code	B39202B9916P810
Marking and package	C61157-A8-A71
Packaging	F61074-V8227-Z000
Date codes	L_1126
S-parameters	B9916_LB_NB.s3p, B9916_LB_WB.s3p B9916_UB_NB.s3p, B9916_UB_WB.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 8 th , 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 http://www.tdk.co.jp/tefe02/coil.htm#aname1 and Data Library for circuit simulation http://www.tdk.co.jp/etvcl/index.htm for a large variety of matching coils

For further information please contact your local EPCOS sales office or visit our webpage at www.epcos.com.

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