SAW Components

SAW Tx Filter

WCDMA Band VIII

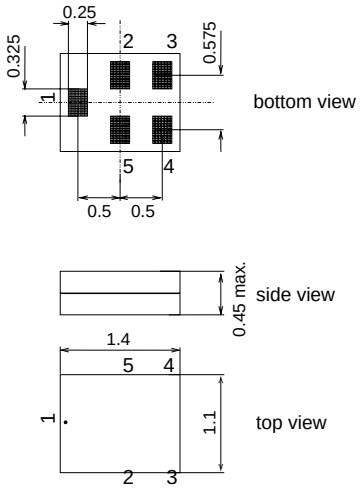
Series/type:	**B9442**
Ordering code:	**B39901B9442M410**
Date:	April 22, 2013
Version:	2.2

Application

- Low-loss RF filter for mobile telephone WCDMA 900 systems, transmit path (Tx)
- Usable passband: 35.0 MHz
- Unbalanced to unbalanced operation
- Low insertion attenuation
- Suitable for GPRS class 1 to 12

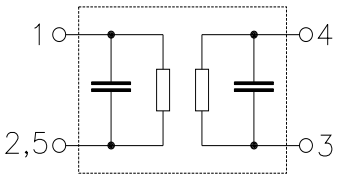
Features

- Package size 1.4 x 1.1 mm^2
- Max. Package height 0.45 mm
- RoHS compatible
- Approx. weight 0.003g
- 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

- 1 Input, unbalanced
- 4 Output, unbalanced
- 2,3,5 To be grounded



Data sheet SMD

Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

			min.	typ. @ 25˚C	max.	
Center frequency		f_C	—	897.5	—	MHz
Maximum insertion attenuation						
	880.0 ... 915.0 MHz	α_{max}	—	2.3	3.6	dB
	882.4 ... 912.6 MHz	α_{WCDMA} [1]	—	1.8	2.6	dB
Amplitude ripple (p-p)						
	880.0 ... 915.0 MHz	$\Delta\alpha$	—	1.3	2.6	dB
	880.0 ... 915.0 MHz	α_{5MHz} [2]	—	1.0	2.0	dB
Group delay ripple						
	880.0 ... 915.0 MHz	$\Delta\tau_{5MHz}$ [2]	—	30	120	ns
Error Vector Magnitude						
@$f_{carrier}$	882.4 ... 912.6 MHz	EVM [3]	—	2.6	4.0	%
Input VSWR						
	880.0 ... 915.0 MHz		—	2.0	2.3	
Output VSWR						
	880.0 ... 915.0 MHz		—	2.0	2.3	
Attenuation						
	10.0 ... 835.0 MHz		30	37	—	dB
	835.0 ... 870.0 MHz		15	23	—	dB
	925.0 ... 960.0 MHz		15	28	—	dB
@$f_{carrier}$	927.4 ... 957.6 MHz	α_{WCDMA} [1]	25 [4]	33	—	dB
	960.0 ... 1576.5 MHz		32	35	—	dB
	1576.5 ... 2400.0 MHz		38	42	—	dB
	2400.0 ... 2640.0 MHz		35	39	—	dB
	2640.0 ... 2800.0 MHz		38	43	—	dB
	2800.0 ... 6000.0 MHz		25	38	—	dB

1) Attenuation of WCDMA signal (“Powertransferfunction“). Please refer to annotation on the next page.
2) Ripple determined within any 5MHz channel.
3) Error Vector Magnitude (EVM) based on definition given in 3GPP TS 25.141.
4) Minimum attenuation of 28dB in the temperature range 0˚C to +85˚C.

Annotation for characteristics section

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

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

$f_{Carrier}$ according to 3GPP TS 25.101 (e.g. for Passband, $f_{Carrier}$ ranges from 882.4 MHz (lowest Tx channel) to 912.6 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:

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

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
		325[4)]	V	Human Body Model
		600[5)]	V	Charged Device Model
Input Power	P_{IN}	13	dBm	cw signal

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

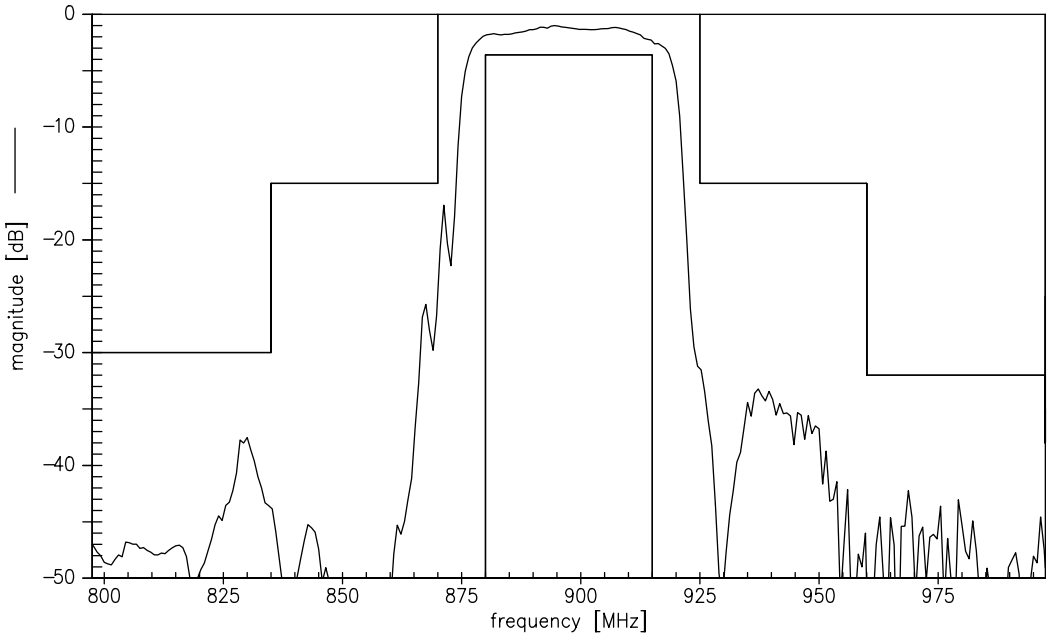
2) 168h Damp Heat Steady State acc. to IEC 60068-2-67 Cy

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

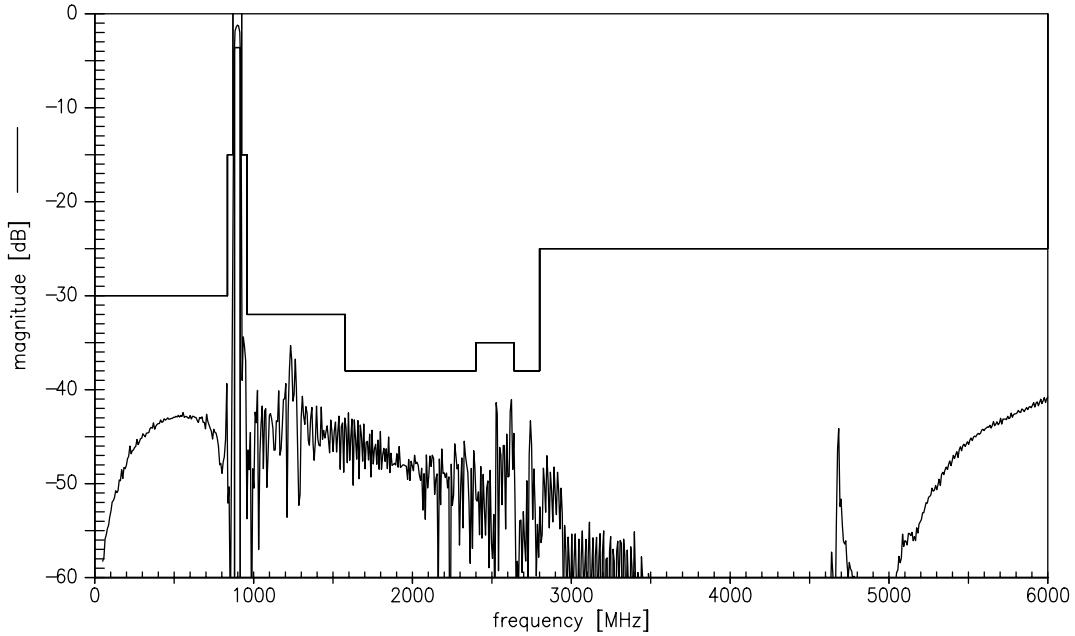
4) acc. to JESD22-A114F (HBM - Human Body Model), 1 negative & 1 positive pulses

5) acc. to JESD22-C101C (CDM - Field Induced Charged Device Model), 3 negative & 3 positive pulses

Transfer function (narrowband)

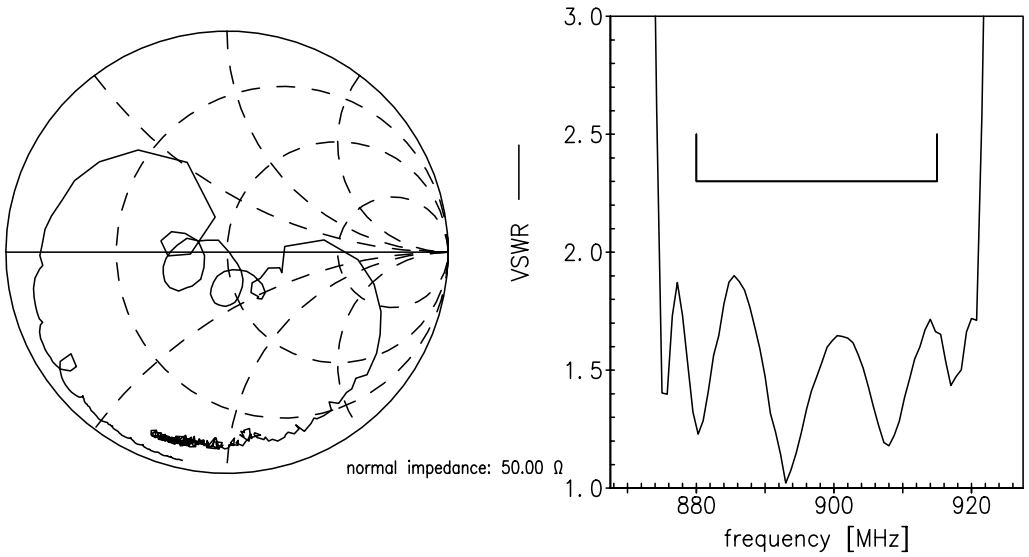


Transfer function (wideband)

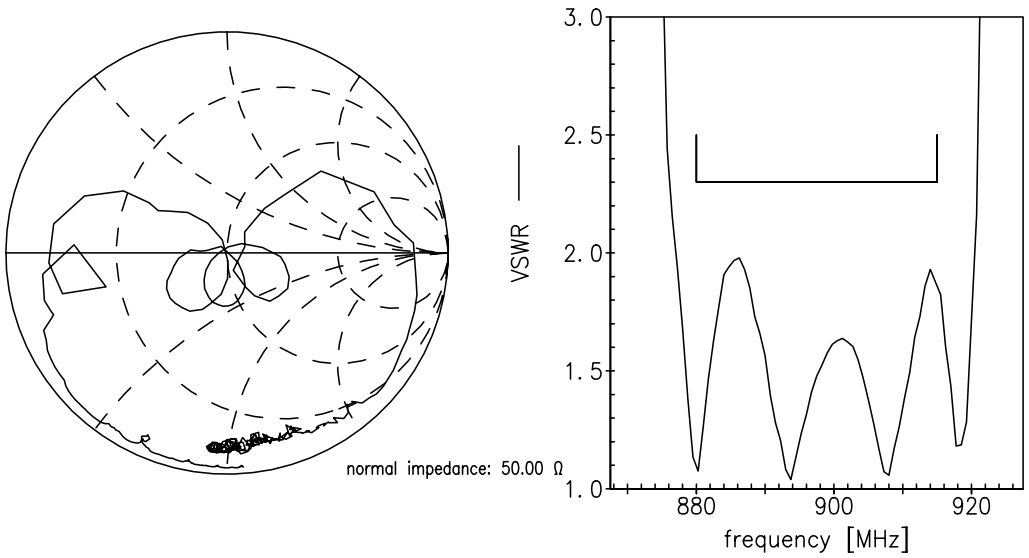


Smith Charts

S_{11} function



S_{22} function



References

Type	B9442
Ordering code	B39901B9442M410
Marking and package	C61157-A8-A3
Packaging	F61074-V8237-Z000
Date codes	L_1126
S-parameters	B9442_NB.s2p, B9442_WB.s2p 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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