SAW Components

SAW Tx filter

Cellular/WCDMA band III

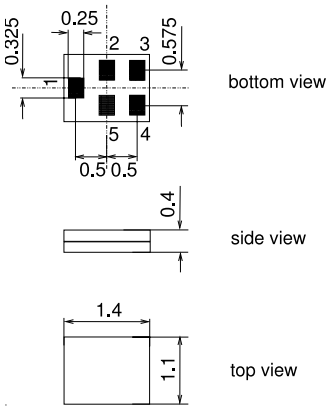
Series/Type:	**B9489**
Ordering code:	**B39172B9489P810**
Date:	Mar 05, 2012
Version:	2.0

Application

- Low-loss filter for mobile telephone WCDMA Band III /Cellular systems, Transmit path (Tx)
- Low amplitude ripple
- Unbalanced to unbalanced operation
- Usable passband 75 MHz
- Impedance 50 Ω input and output

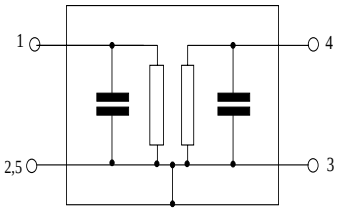
Features

- Package size 1.4 x 1.1 x 0.4 mm^3
- 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 Case-ground



Data sheet SMD

Characteristics

Temperature range for specification: T = –20 ˚C to +85 ˚C
Terminating source impedance: Z_S = 50 Ω + 1.0nH
Terminating load impedance: Z_L = 50 Ω + 1.0nH

		min.	typ. @ 25˚C	max.	
Center frequency	f_C	—	1747.5	—	MHz
Maximum insertion attenuation	α_{max}				
1710.0 ... 1785.0 MHz		—	2.2	3.6	dB CTQ
1712.4 ... 1782.6 MHz	α_{WCDMA} [1]	—	2.0	3.3	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1710.0 ... 1785.0 MHz		—	1.6	3.0	dB
1712.4 ... 1782.6 MHz	$\Delta\alpha_{5Mhz}$ [2]	—	1.4	2.7	dB
Input VSWR					
1710.0 ... 1785.0 MHz		—	1.8	2.2	
Output VSWR					
1710.0 ... 1785.0 MHz		—	1.8	2.2	
Attenuation	α				
0 ... 1574.0 MHz		18	22	—	dB
1574.0 ... 1577.0 MHz		30	33	—	dB
1577.0 ... 1690.0 MHz		12	25	—	dB
1805.0 ... 1880.0 MHz		9	29	—	dB
1920.0 ... 1980.0 MHz		24	27	—	dB
2110.0 ... 2170.0 MHz		26	29	—	dB
2400.0 ... 2500.0 MHz		25	29	—	dB
3420.0 ... 3570.0 MHz		18	24	—	dB
5130.0 ... 5355.0 MHz		13	18	—	dB

[1] Attenuation of WCDMA signal (“Powertransferfunction”). Please refer to annotation on the next page.

[2] Ripple determined within any 5MHz channel.

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 1712.4 MHz (lowest Tx channel) to 1782.6 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:

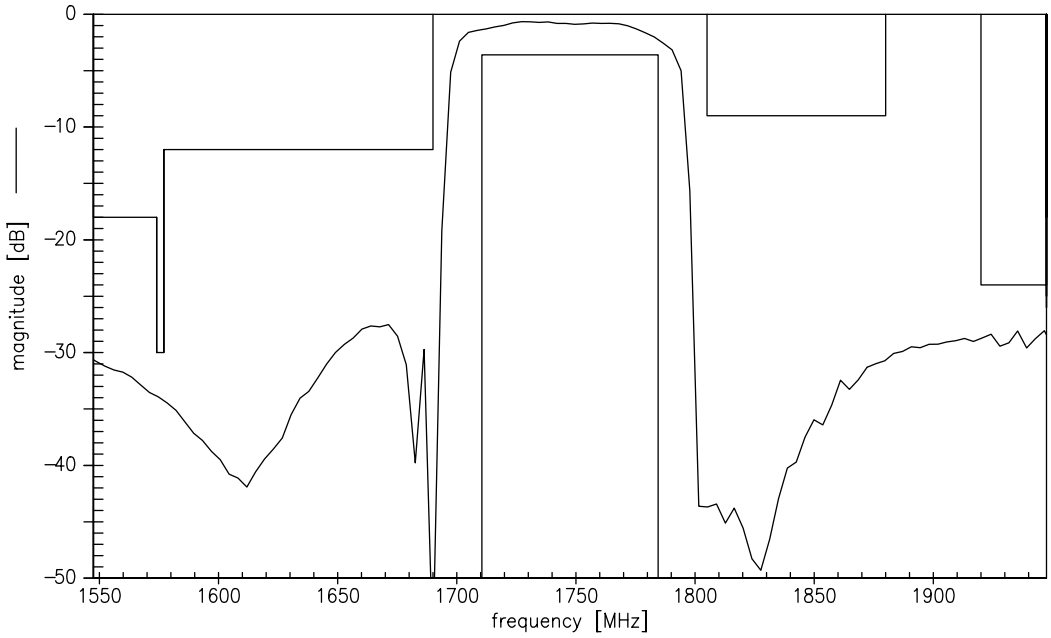
$$\int_{\infty}^{\infty} |H_{RRC}(f)|^2 df = 1$$

Maximum ratings

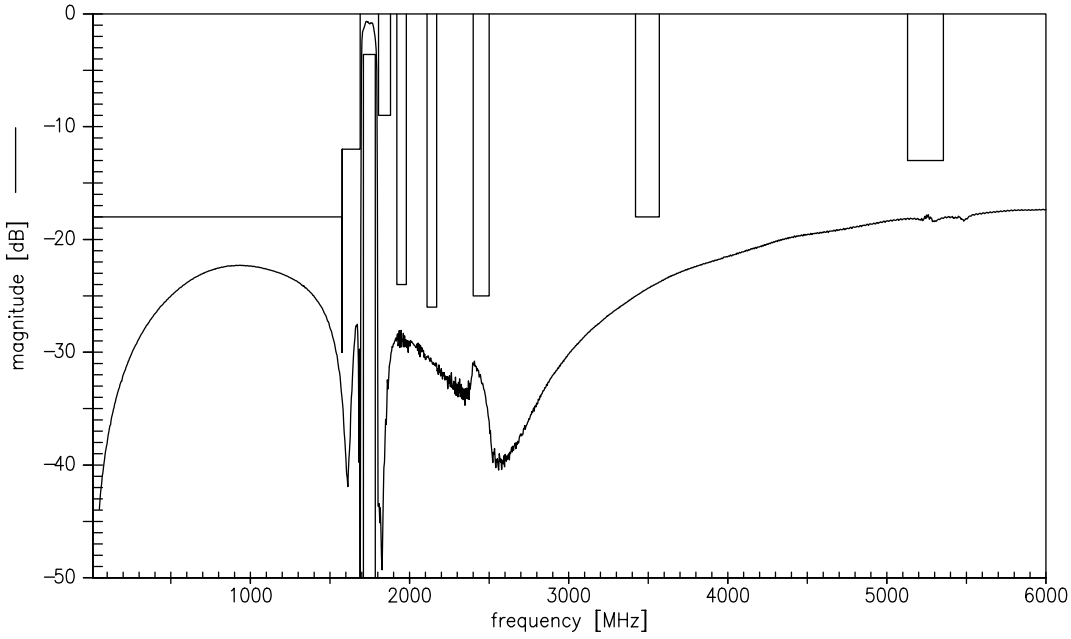
Operable temperature range	T	–40/+85	°C	
Storage temperature range	T_{stg}	–40/+85	°C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	50 [1)]	V	machine model, 1 pulse
Input Power	P_{IN}	15	dBm	cw signal

1) acc. to JESD22-A115A (machine model), 1 negative & 1 positive pulse.

Transfer function (S21, Narrowband)

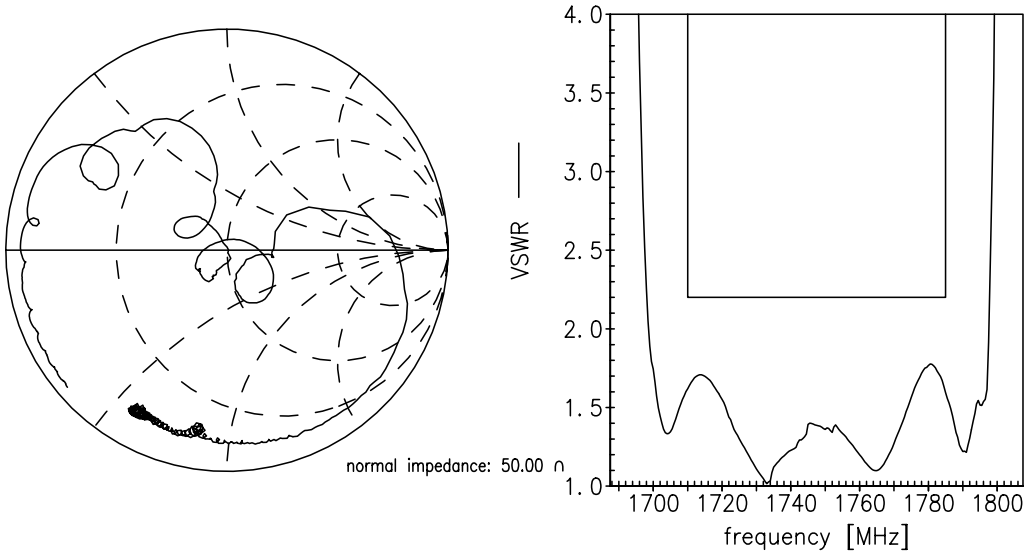


Transfer function (S21, Wideband)

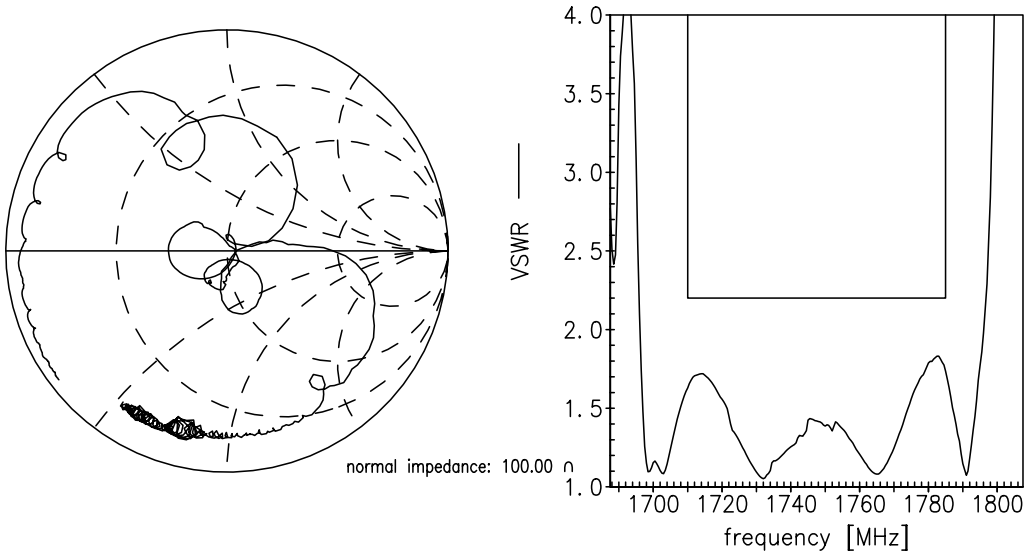


Smith chart

S_{11} function (unbalanced input)



S_{22} function (unbalanced output)



References

Type	B9489
Ordering code	B39172B9489P810
Marking and package	C61157-A8-A3
Packaging	F61074-V8237-Z000
Date codes	L_1126
S-parameters	B9489_NB_UN.s2p, B9489_WB_UN.s2p see file header for port/pin assignment table
Soldering profile	S_6001
RoHS compatible	defined as compatible with the following documents: "DIRECTIVE 2002/95/EC OF THE EUROPEAN PARLIAMENT AND OF THE COUNCIL of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment. 2005/618/EC from April 18th, 2005, amending Directive 2002/95/EC of the European Parliament and of the Council for the purposes of establishing the maximum concentration values for certain hazardous substances in electrical and electronic equipment."
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Matching coils	See http://www.tdk.co.jp/tefe02/coil.htm#aname1 http://www.tdk.co.jp/etvcl/index.htm for a large variety of matching coils.

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