SAW Components

SAW Duplexer

LTE Band 17

Series/type:	**B7924**
Ordering code:	**B39741B7924P810**
Date:	October 06, 2011
Version:	2.0

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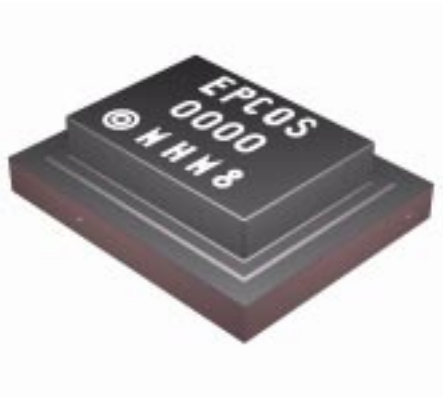
Data sheet SMD

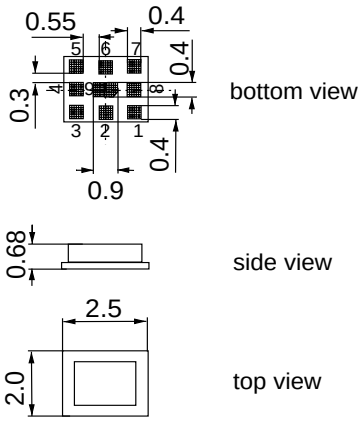
Application

- Low-loss SAW duplexer for mobile telephone LTE Band 17 systems
- High attenuation
- High Isolation
- Low amplitude ripple
- Usable passband 12 MHz
- Single-ended to balanced transformation in Antenna-Rx path
- Impedance transformation 50 Ω to 100 Ω in Antenna-Rx path
- Very small size and low height



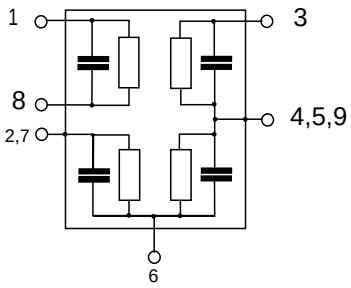
Features

- Package size 2.5 * 2.0 * 0.68 mm³
- 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

■	3	Tx input
■	1, 8	Rx output (balanced)
■	6	Antenna
■	2, 4, 5, 7, 9	To be grounded



Data sheet SMD

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
TX terminating impedance: Z_{Tx} = 50 Ω
ANT terminating impedance: Z_{Ant} = 50 Ω || 10 nH
RX teminating impedance: Z_{Rx} = 100 Ω (balanced)

Characteristics Tx-Antenna		min.	typ. @ 25 ˚C	max.	
Center frequency	f_c		710.0		MHz
Maximum insertion attenuation	α				
704.0 ... 716.0 MHz			1.6	2.5	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
704.0 ... 716.0 MHz			0.6	1.6	dB
Error Vector Magnitude					
@ $f_{Carrier}$ 706.4 ... 712.0 MHz	EVM[1)]		1.4	3.5	%
@ $f_{Carrier}$ 712.0 ... 713.6 MHz	EVM[1)]		1.3	4.0	%
Input VSWR (Tx port)					
704.0 ... 716.0 MHz			1.5	2.0	
Output VSWR (Ant Port)					
704.0 ... 716.0 MHz			1.5	2.0	

1) Error Vector Magnitude (EVM) based on definition in 3GPP TS 25.141

Data sheet SMD

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
TX terminating impedance: Z_{Tx} = 50 Ω
ANT terminating impedance: Z_{Ant} = 50 Ω || 10 nH
RX teminating impedance: Z_{Rx} = 100 Ω (balanced)

Characteristics Tx-Antenna				min.	typ. @ 25 ˚C	max.	
Absolute attenuation			α				
10.0	...	692.0	MHz	30	46		dB
692.0	...	698.0	MHz	4	10		dB
722.0	...	728.0	MHz	4	13		dB
728.0	...	734.0	MHz	26	37		dB
734.0	...	746.0	MHz	50	57		dB
746.0	...	768.0	MHz	30	48		dB
768.0	...	805.0	MHz	25	44		dB
869.0	...	894.0	MHz	30	44		dB
1408.0	...	1432.0	MHz	30	57		dB
1565.0	...	1607.0	MHz	45	50		dB
1930.0	...	1990.0	MHz	35	43		dB
2110.0	...	2130.0	MHz	27	35		dB
2130.0	...	2170.0	MHz	35	42		dB
2300.0	...	2400.0	MHz	30	40		dB
2400.0	...	2497.0	MHz	32	40		dB
2497.0	...	2690.0	MHz	20	39		dB
2816.0	...	2864.0	MHz	20	38		dB
3300.0	...	3800.0	MHz	20	38		dB
4224.0	...	4296.0	MHz	20	25		dB
4928.0	...	5012.0	MHz	12	18		dB
5150.0	...	5632.0	MHz	12	18		dB
5632.0	...	5728.0	MHz	14	19		dB
5728.0	...	5850.0	MHz	14	21		dB
5850.0	...	6000.0	MHz	14	21		dB

Data sheet SMD

Characteristics

Temperature range for specification: T = –30˚C to +85 ˚C
TX terminating impedance: Z_{Tx} = 50 Ω
ANT terminating impedance: Z_{Ant} = 50 Ω || 10nH
RX teminating impedance: Z_{Rx} = 100 Ω (balanced)

Characteristics Antenna-Rx		min.	typ. @ 25 ˚C	max.	
Center frequency	f_c		740		MHz
Maximum insertion attenuation	α				
734.0 ... 746.0 MHz			2.2	2.7	dB
Amplitude ripple (p-p)	Δα				
734.0 ... 746.0 MHz			0.4	1.6	dB
Input VSWR (Ant port)					
734.0 ... 746.0 MHz			1.6	2.0	
Output VSWR (Rx Port)					
734.0 ... 746.0 MHz			1.8	2.0	
Common mode rejection ratio					
734.0 ... 746.0 MHz		23	29		dB
Absolute attenuation	α				
10.0 ... 674.0 MHz		35	72		dB
674.0 ... 686.0 MHz		53	72		dB
686.0 ... 704.0 MHz		35	70		dB
704.0 ... 716.0 MHz		55	60		dB
716.0 ... 722.0 MHz		40	65		dB
722.0 ... 724.0 MHz		30	48		dB
724.0 ... 727.0 MHz		15	30		dB
727.0 ... 728.0 MHz		10	24		dB
776.0 ... 805.0 MHz		35	42		dB
1000.0 ... 2300.0 MHz		40	69		dB
2300.0 ... 2690.0 MHz		50	64		dB
2690.0 ... 3300.0 MHz		40	60		dB
3300.0 ... 3800.0 MHz		48	59		dB
3800.0 ... 5150.0 MHz		40	58		dB
5150.0 ... 5850.0 MHz		41	59		dB
5850.0 ... 6000.0 MHz		40	58		dB

Data sheet SMD

Characteristics

Temperature range for specification: T = –30 ˚C to +85 ˚C
TX terminating impedance: Z_{Tx} = 50 Ω
ANT terminating impedance: Z_{Ant} = 50 Ω || 10nH
RX teminating impedance: Z_{Rx} = 100 Ω (balanced)

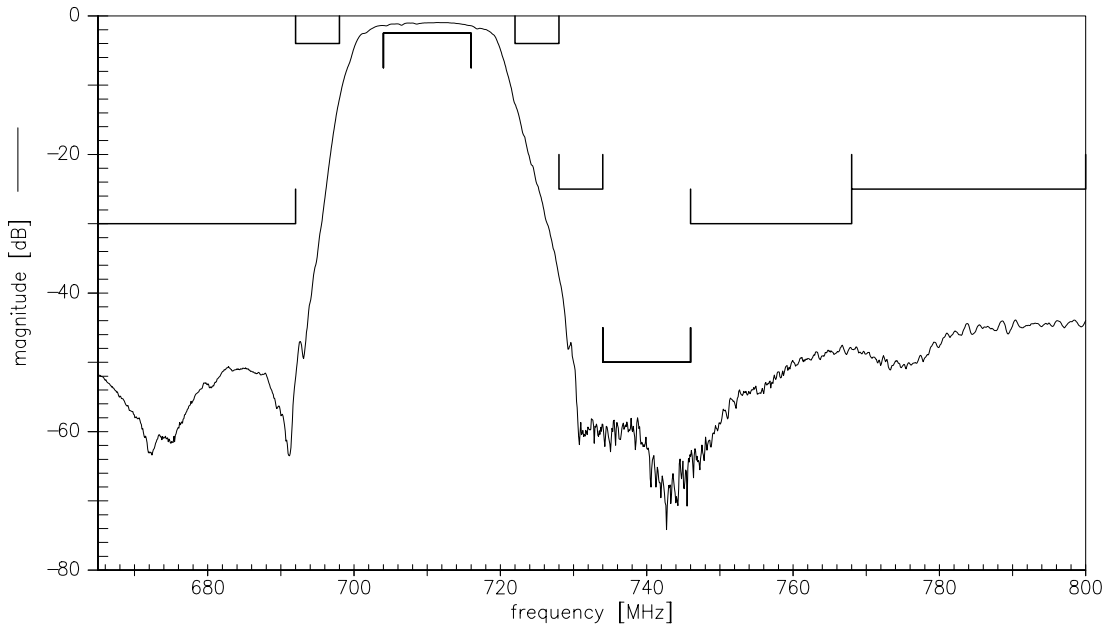
Characteristics Tx-Rx		min.	typ. @ 25 ˚C	max.	
Differential mode isolation	α				
704.0 ... 716.0 MHz		60	65		dB
734.0 ... 738.0 MHz		55	61		dB
738.0 ... 742.0 MHz		55	63		dB
742.0 ... 748.0 MHz		55	61		dB
1408.0 ... 1432.0 MHz		30	74		dB
2112.0 ... 2148.0 MHz		30	64		dB
2816.0 ... 2864.0 MHz		30	62		dB
Common mode isolation	α				
704.0 ... 712.0 MHz		48	53		dB
712.0 ... 716.0 MHz		46	51		dB

Maximum Ratings

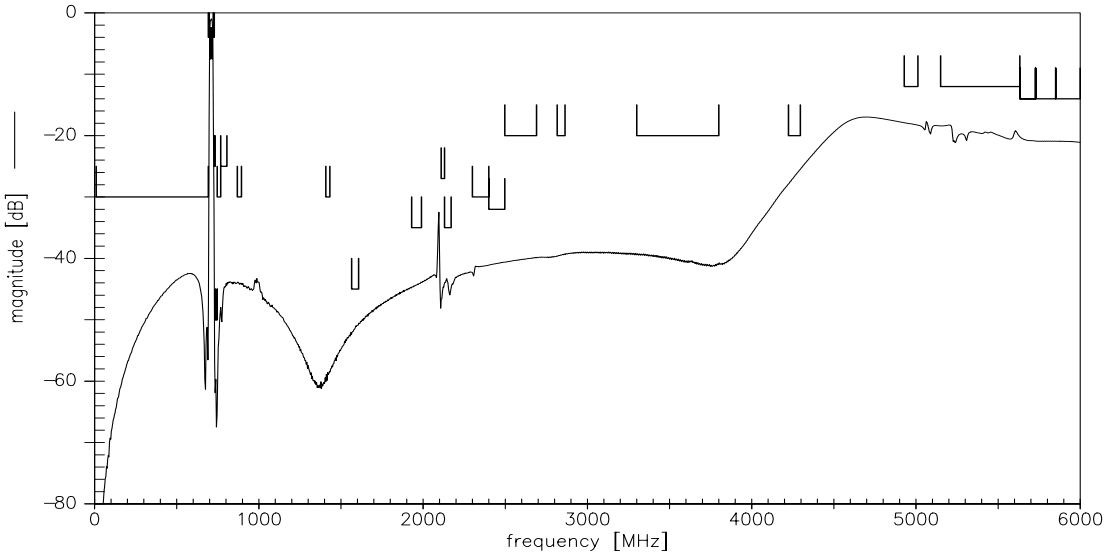
Storage temperature range	T_{stg}	–40/+85	˚C	
DC voltage	V_{DC}	5	V	
ESD voltage	V_{ESD}	100[1)]	V	machine model, 1 pulse
Input power at Tx Port				
706.5 ...713.5 MHz	P_{in}	28	dBm	} LTE Up Link Signal
elsewhere	P_{in}	10	dBm	55 ˚C, 50000h

1) According to JESD22-A115A (machine model), 1 negative and 1 positive pulses.

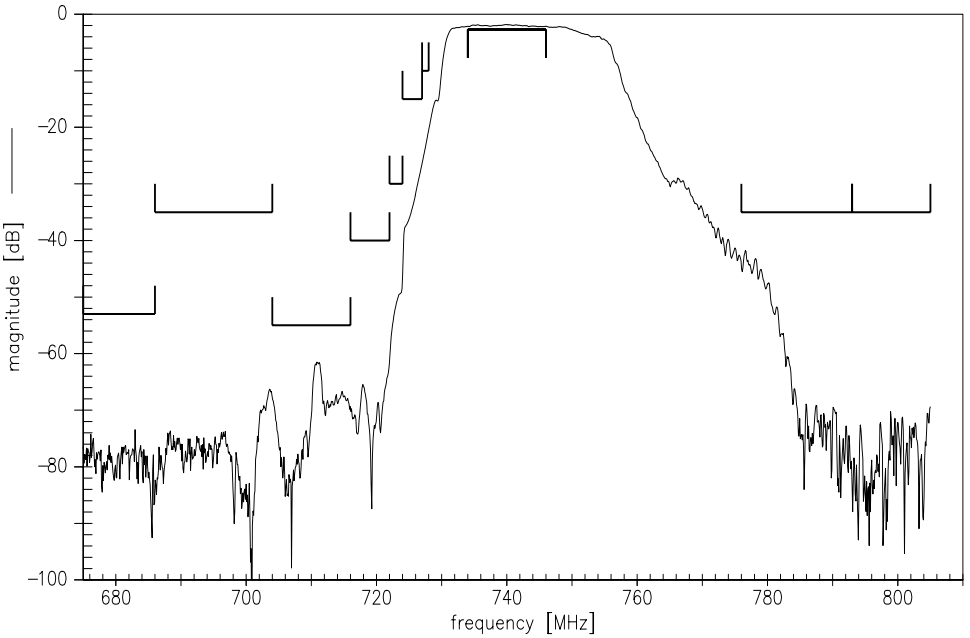
Frequency Response TX-ANT



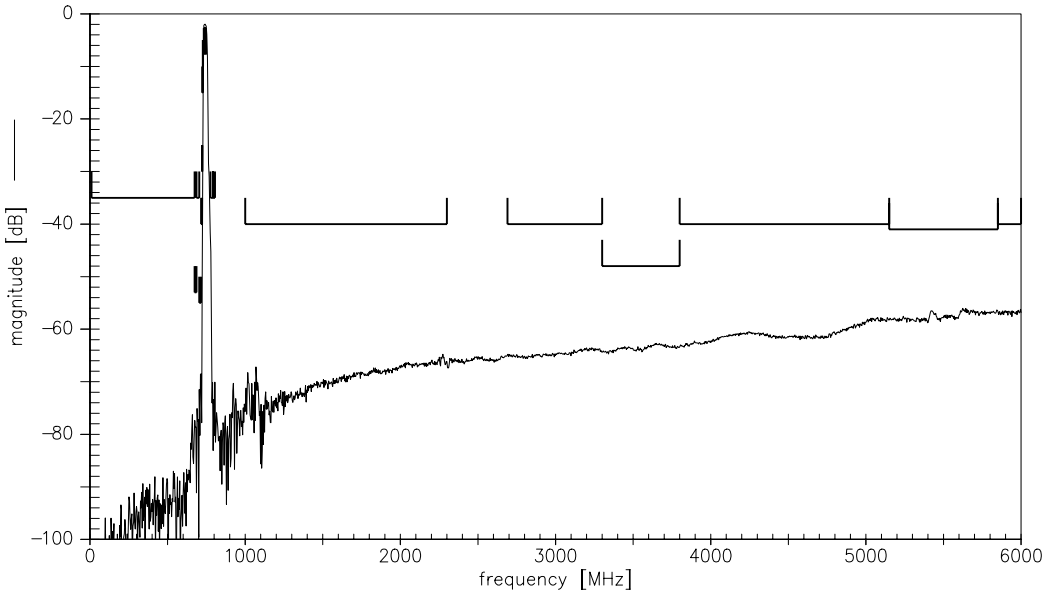
Frequency Response TX-ANT



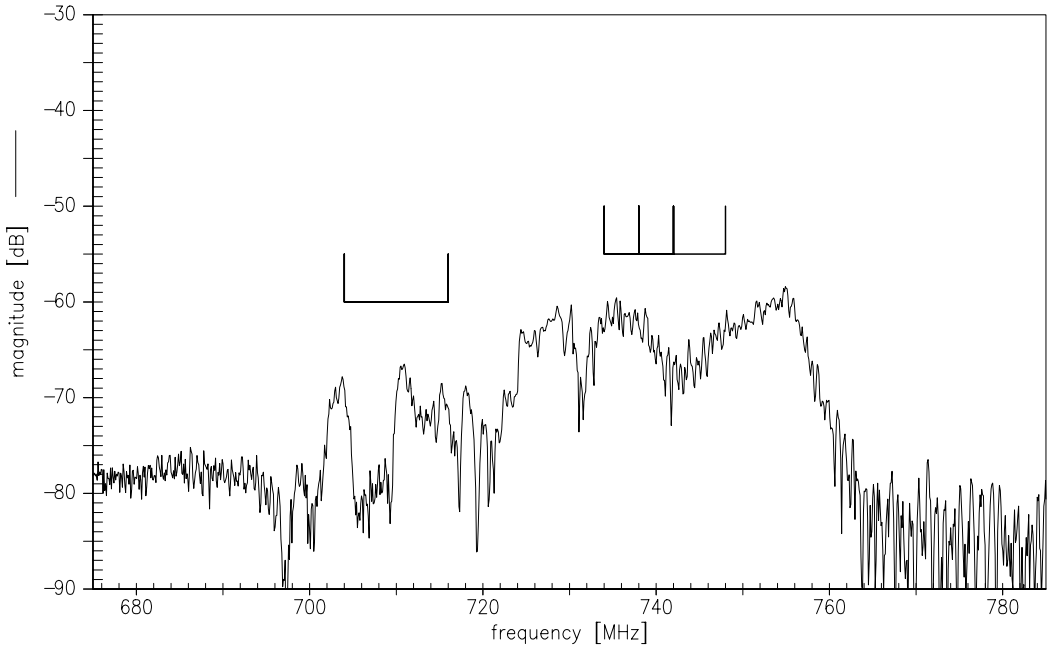
Frequency Response ANT-RX



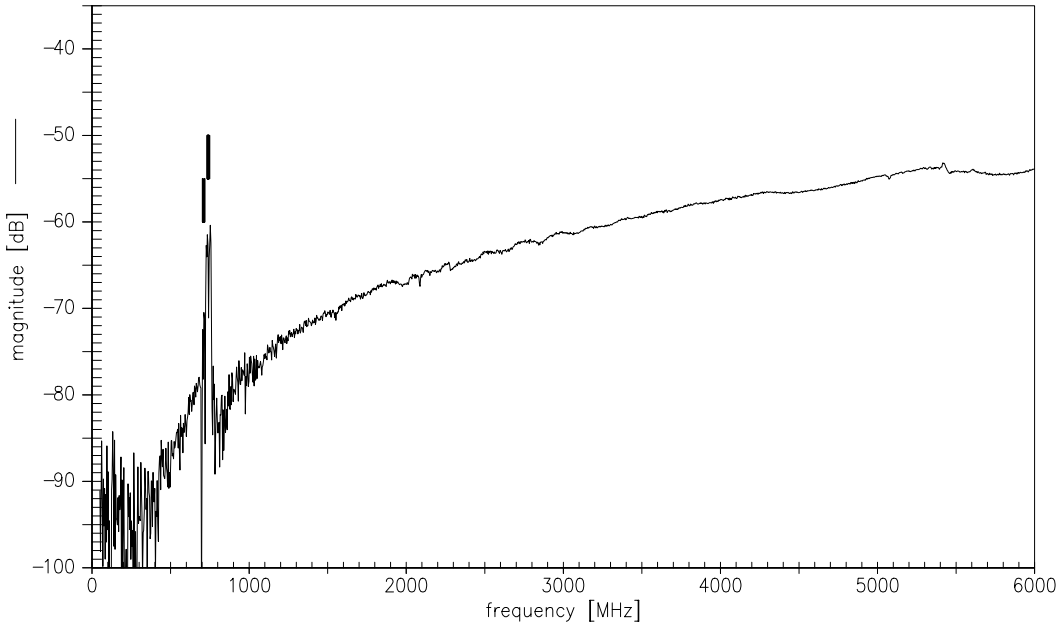
Frequency Response ANT-RX



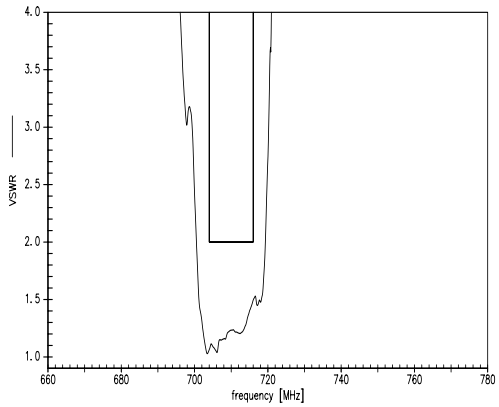
Frequency Response TX-RX

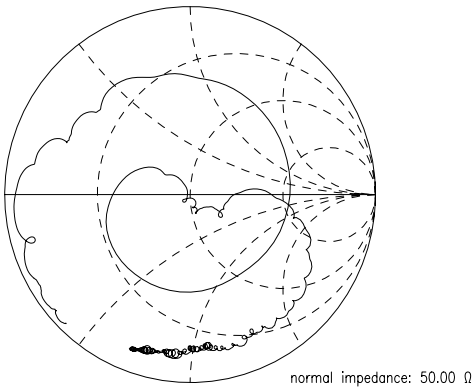


Frequency Response TX-RX

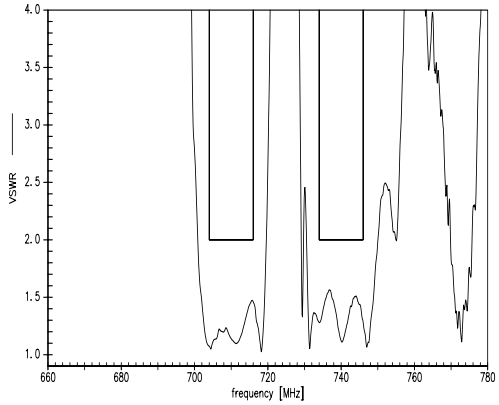


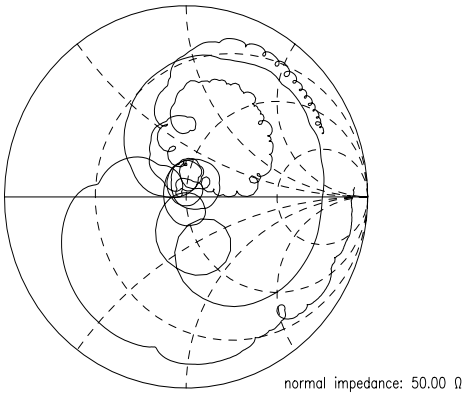
S11 VSWR (TX)



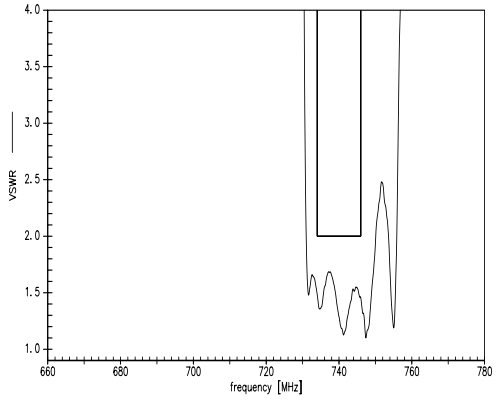


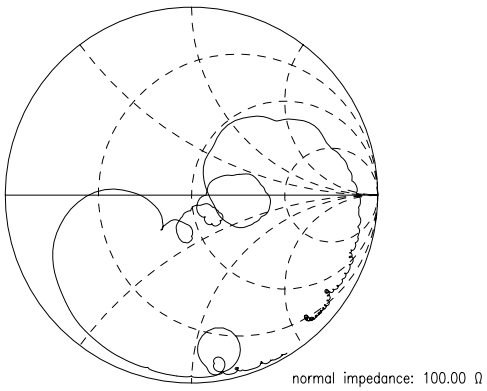
S22 VSWR (ANT)





S33 VSWR (RX)





References

Type	B7924
Ordering code	B39741B7924P810
Marking and package	C61157-A3-A61
Packaging	F61074-V8153-Z000
Date codes	L_1126
S-parameters	B7924_NB.s4p B7924_WB.s4p
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."
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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