SAW Components

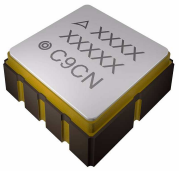
SAW RF filter for base stations

Series/type:	**B5338**
Ordering code:	**B39421B5338U310**
Date:	Nov 17, 2014
Version:	2.0

EPCOS AG is a TDK Group Company.

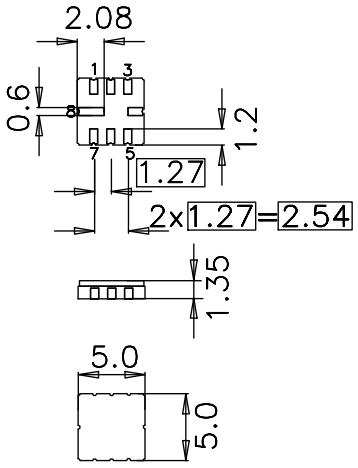
Application

- Low-loss 2-in-1 RF filter for Trunked radio
- Unbalanced to unbalanced operation
- Low amplitude ripple
- Usable passband:
  Filter 1 : 25 MHz
  Filter 2 : 25 MHz
- No matching required for operation at 50 Ω



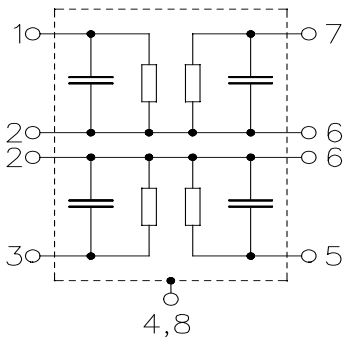
Features

- Package size 5.0 x 5.0 x 1.35 mm³
- Package code QCC8C
- RoHS compatible
- Approximate weight 0.1 g
- Package for **S**urface **M**ount **T**echnology (**SMT**)
- Ni, gold-plated terminals
- **E**lectrostatic **S**ensitive **D**evice (**ESD**)
- **M**oisture **S**ensitivity **L**evel 1
- Filter surface passivated



Pin configuration

■	1	Input [Filter 1]
■	7	Output [Filter 1]
■	3	Input [Filter 2]
■	5	Output [Filter 2]
■	2, 4, 6, 8	To be grounded



Characteristics of filter 1

Temperature range for specification: T = –30 ˚C to +70 ˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	392.5	—	MHz
Maximum insertion attenuation	α_{max}				
380.0 ... 405.0 MHz		—	2.2	3.0	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
380.0 ... 405.0 MHz		—	1.0	1.8	dB
Input return loss					
380.0 ... 405.0 MHz		8.5	11.5	—	dB
Output return loss					
380.0 ... 405.0 MHz		8.5	11.5	—	dB
Group delay ripple (p-p)	$\Delta\tau$				
380.0 ... 405.0 MHz		—	20	100	ns
Absolute attenuation	α_{abs}				
10.0 ... 150.0 MHz		35	38	—	dB
150.0 ... 330.0 MHz		25	30	—	dB
330.0 ... 360.0 MHz		15	21	—	dB
360.0 ... 370.5 MHz		5	9	—	dB
419.5 ... 461.0 MHz		7	18	—	dB
461.0 ... 487.0 MHz		20	29	—	dB
487.0 ... 542.0 MHz		25	32	—	dB
542.0 ... 568.0 MHz		25	30	—	dB
568.0 ... 1200.0 MHz		20	25	—	dB
1200.0 ... 1450.0 MHz		15	20	—	dB
1450.0 ... 1845.0 MHz		7	12	—	dB
1845.0 ... 1946.0 MHz		7	12	—	dB
1946.0 ... 2500.0 MHz		3	6	—	dB
2500.0 ... 4000.0 MHz		3	5	—	dB

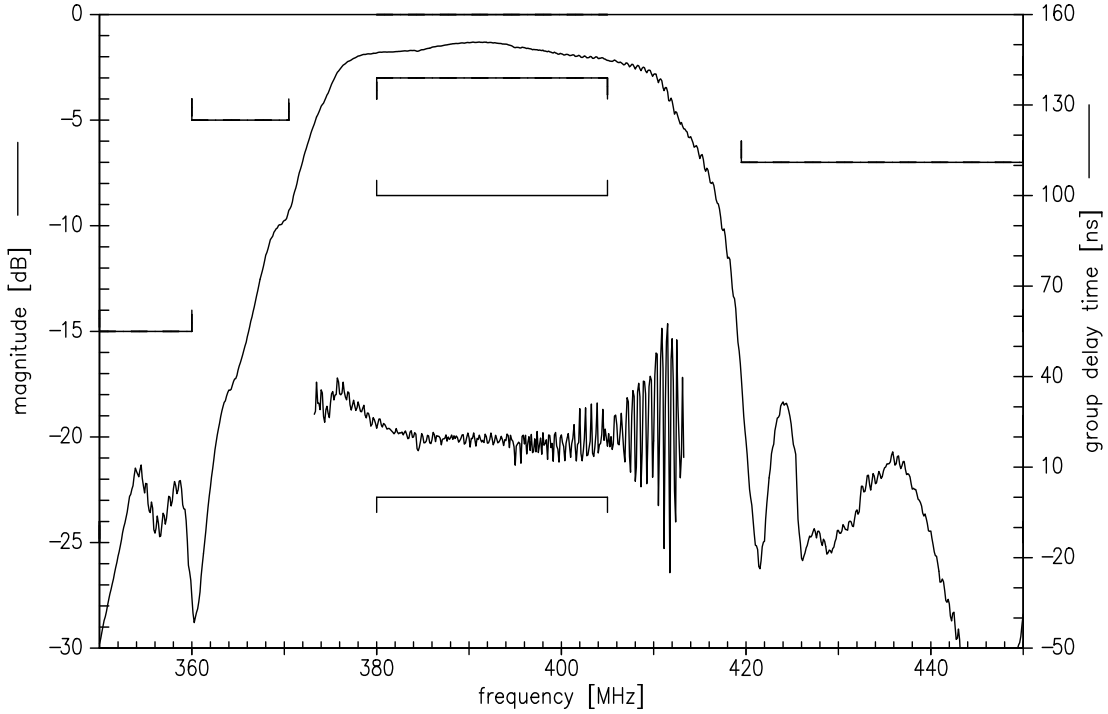
Maximum ratings of filter 1

Operable temperature range	T	–45/+125	˚C	
Storage temperature range	T_{stg}	–45/+125	˚C	
DC voltage	V_{DC}	6	V	
ESD voltage	V_{ESD}	150[1)]	V	Machine Model
		350[2)]	V	Human Body Model
Input power	P_{IN}			
380.0 ... 405.0 MHz		15	dBm	cw, 100000 h, 70 ˚C

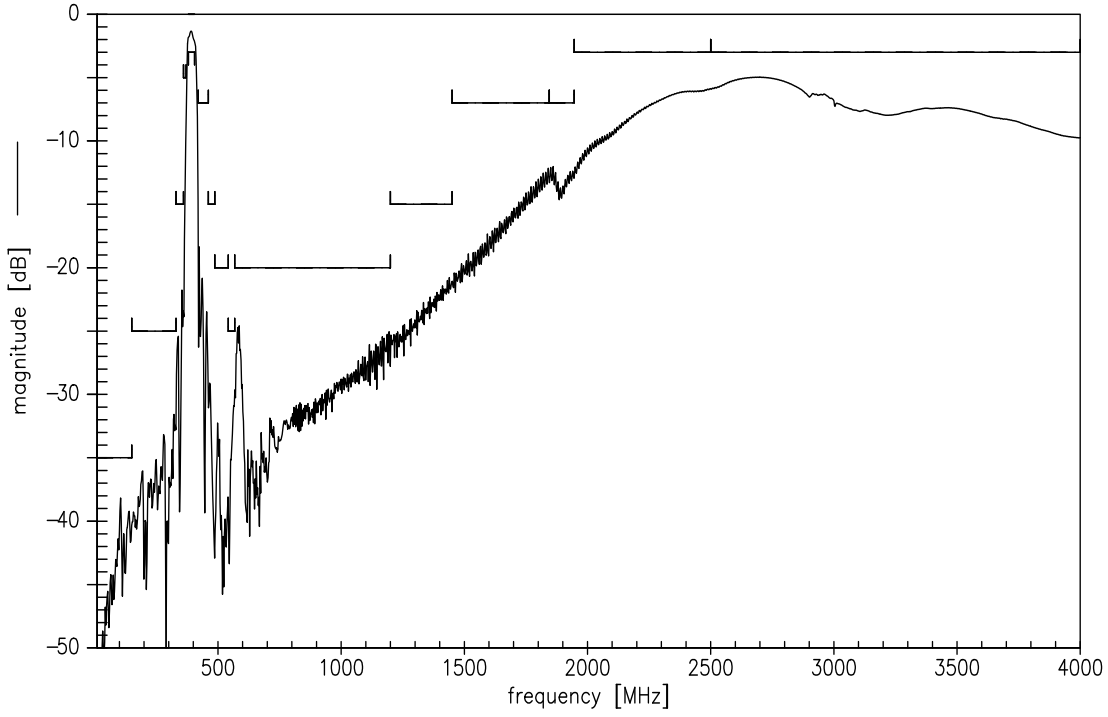
1) acc. to JESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses

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

Transfer function (S21, narrowband)

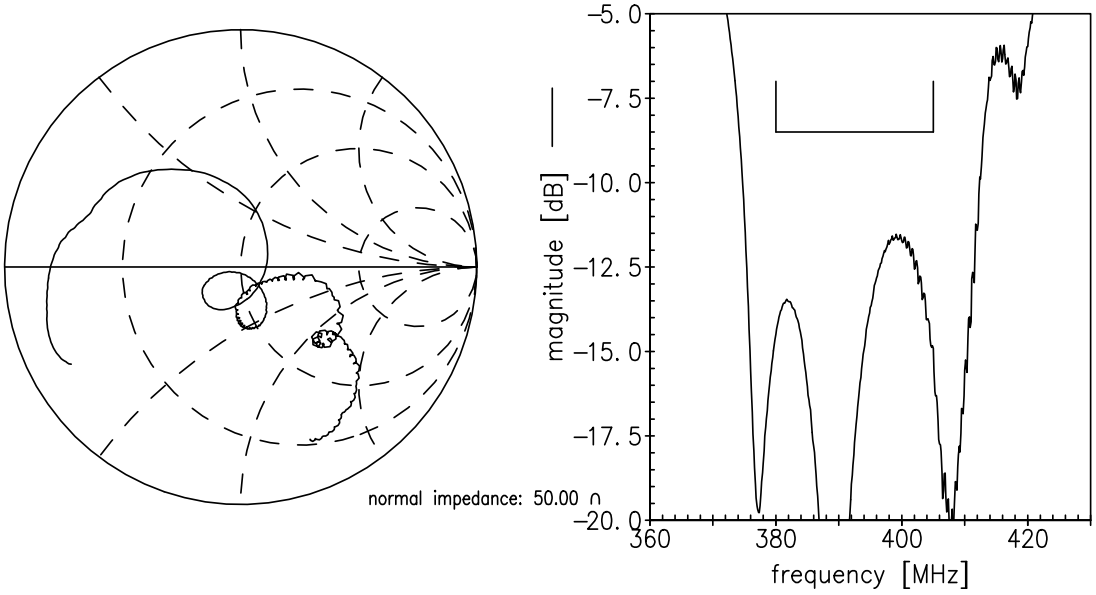


Transfer function (S21, wideband)

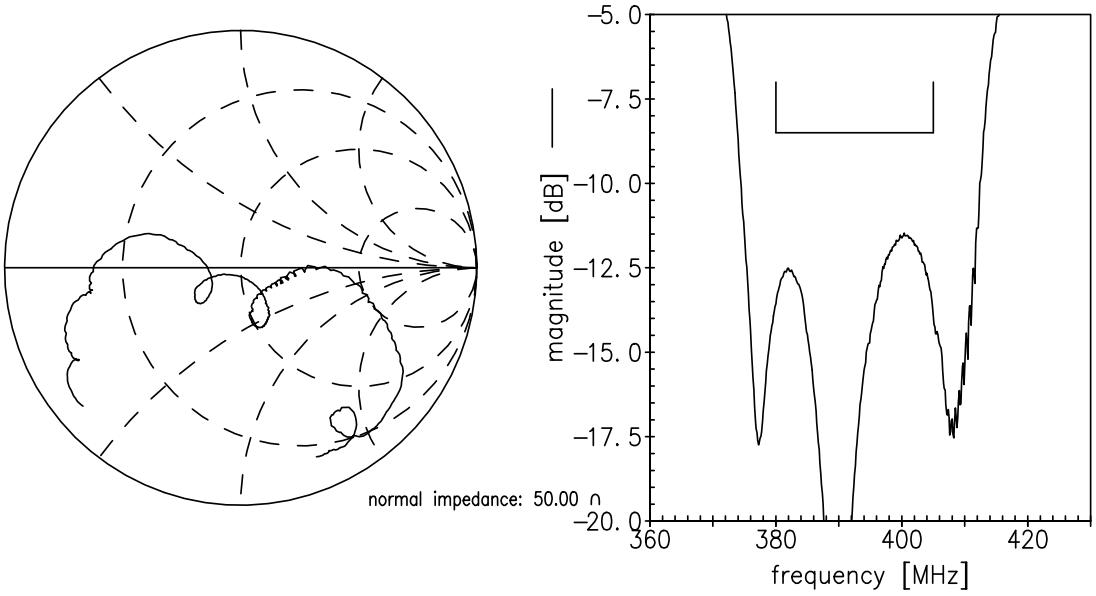


Smith charts

S_{11} function



S_{22} function



Characteristics of filter 2

Temperature range for specification: T = –30 ˚C to +70 ˚C
Terminating source impedance: Z_S = 50 Ω
Terminating load impedance: Z_L = 50 Ω

		min.	typ. @ 25 ˚C	max.	
Center frequency	f_C	—	417.5	—	MHz
Maximum insertion attenuation	α_{max}				
405.0 ... 430.0 MHz		—	2.2	3.0	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
405.0 ... 430.0 MHz		—	0.8	1.6	dB
Input Return loss					
405.0 ... 430.0 MHz		9.0	11.5	—	dB
Output Return loss					
405.0 ... 430.0 MHz		9.0	11.5	—	dB
Group delay ripple (p-p)	$\Delta\tau$				
405.0 ... 430.0 MHz		—	40	100	ns
Absolute Attenuation	α_{abs}				
10.0 ... 150.0 MHz		35	40	—	dB
150.0 ... 330.0 MHz		25	32	—	dB
330.0 ... 390.0 MHz		15	18	—	dB
390.0 ... 397.0 MHz		4	9	—	dB
440.0 ... 486.0 MHz		5	7	—	dB
486.0 ... 512.0 MHz		15	26	—	dB
512.0 ... 567.0 MHz		20	37	—	dB
567.0 ... 593.0 MHz		27	35	—	dB
593.0 ... 1200.0 MHz		20	26	—	dB
1200.0 ... 1500.0 MHz		15	21	—	dB
1500.0 ... 1945.0 MHz		6	11	—	dB
1945.0 ... 2046.0 MHz		6	11	—	dB
2046.0 ... 2500.0 MHz		3	5.5	—	dB
2500.0 ... 4000.0 MHz		3	4.5	—	dB

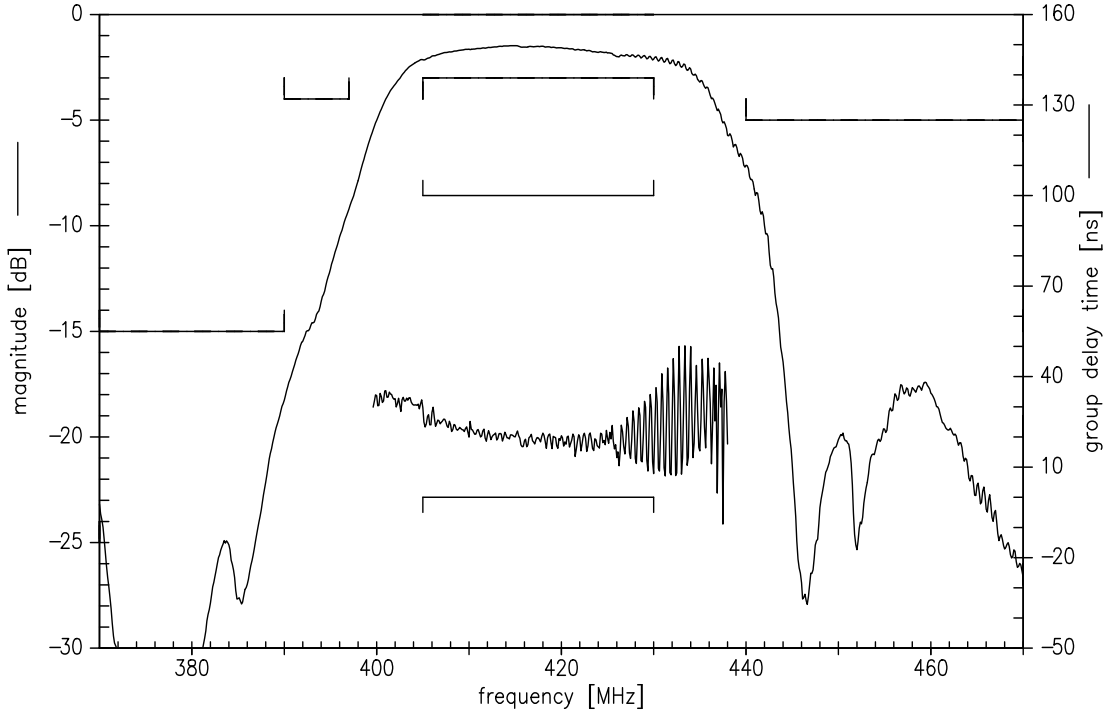
Maximum ratings of filter 2

Operable temperature range	T	–45/+125	˚C	
Storage temperature range	T_{stg}	–45/+125	˚C	
DC voltage	V_{DC}	6	V	
ESD voltage	V_{ESD}	150[1)]	V	Machine Model
		350[2)]	V	Human Body Model
Input power	P_{IN}			
405.0 ... 430.0 MHz		15	dBm	cw, 100000 h, 70 ˚C

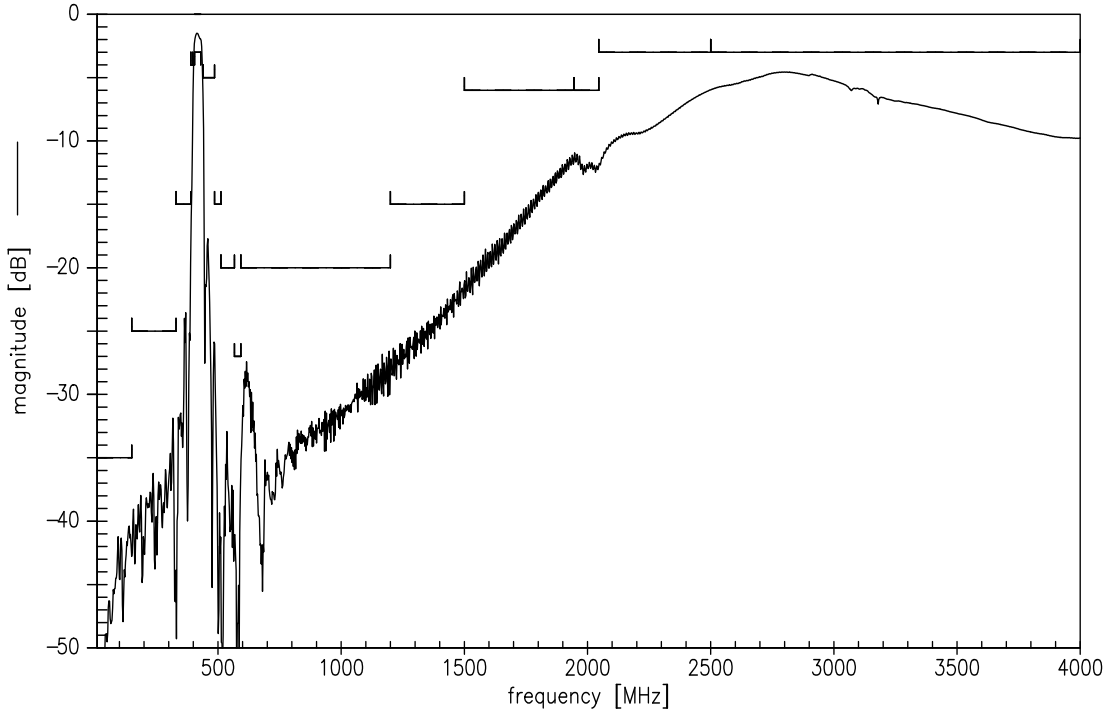
1) acc. to JESD22-A115B (MM - Machine Model), 10 negative & 10 positive pulses

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

Transfer function (S21, narrowband)

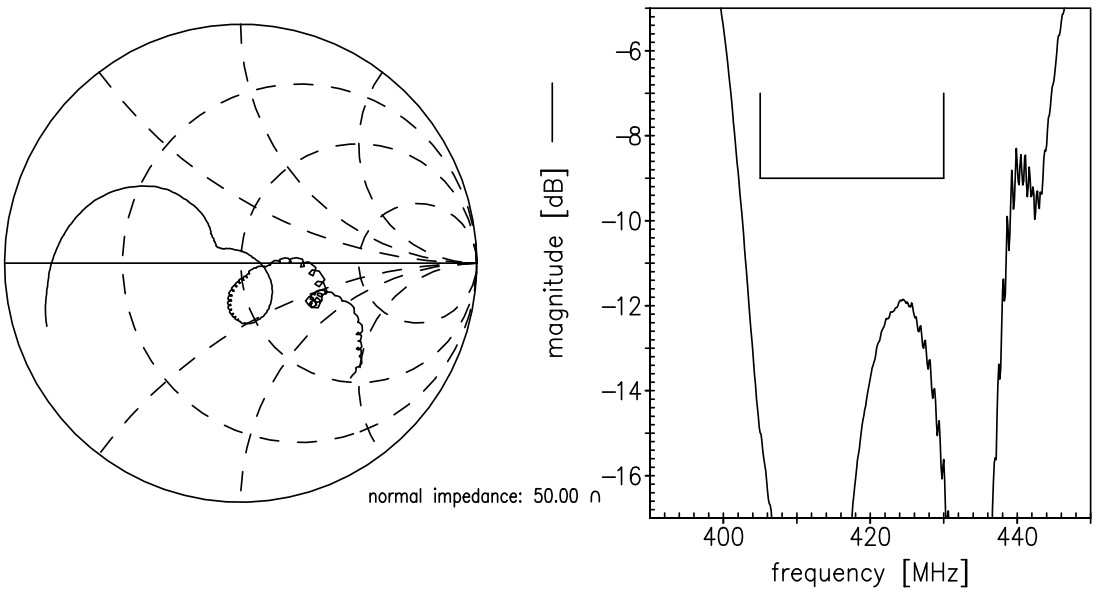


Transfer function (S21, wideband)

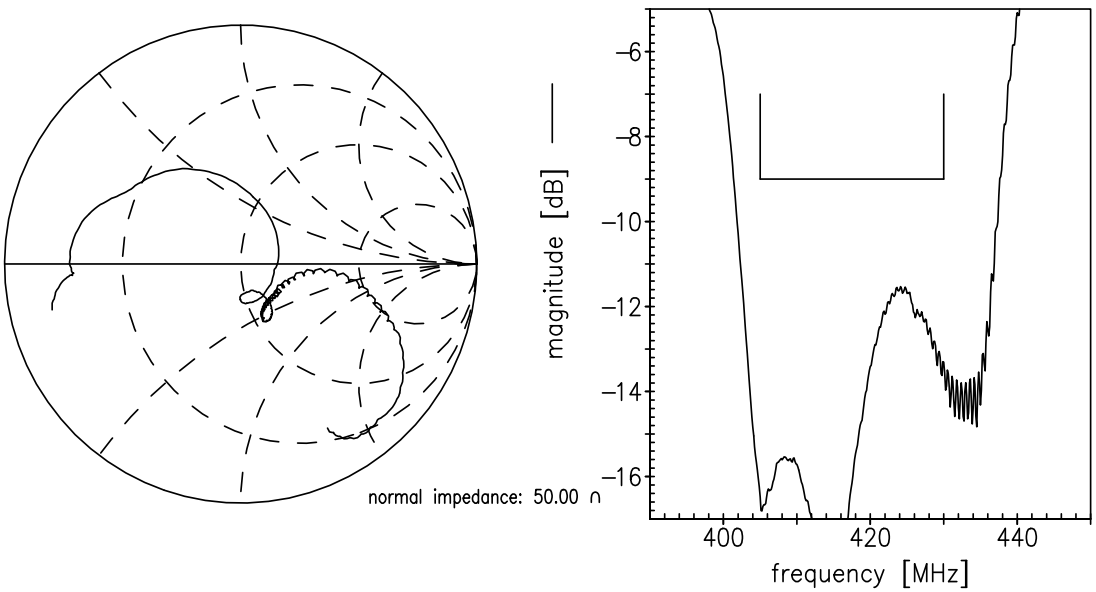


Smith charts

S_{11} function



S_{22} function



References

Type	B5338
Ordering code	B39421B5338U310
Marking and package	C61157-A7-A56
Packaging	F61074-V8230-Z000
Date codes	L_1126
S-parameters	B5338_NB.s4p B5338_WB.s4p 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.
Matching coils	See Inductor pdf-catalog 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.

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