



SAW Components

SAW GPS + GLONASS filter

Series/Type: B8(\$%

The following products presented in this data sheet are being withdrawn.

Ordering Code	Substitute Product	Date of Withdrawal	Deadline Last Orders	Last Shipments
B39162B8401P810	B39162B8(3/8)13P810	2014-02-28	2014-12-31	2015-02-27

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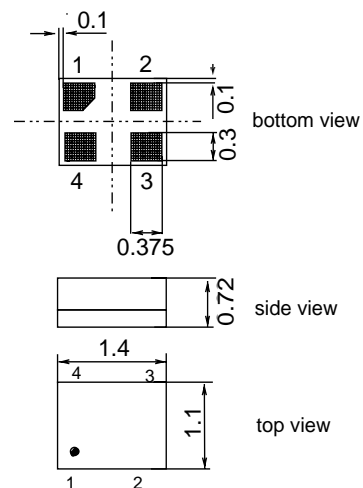
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Application

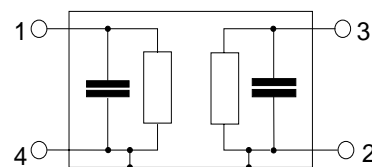
- ESD robust low-loss RF GPS + GLONASS filter with ESD protection at the Input
- Usable passbands: up to 8.0 MHz for GPS and 8.34 MHz for GLONASS
- Very low insertion attenuation
- Unbalanced to unbalanced operation
- No matching network required for operation at 50 Ω


Features

- Package size 1.4 x 1.1 x 0.72 mm³
- RoHS compatible
- Approximate weight 0.003 g
- Package for **Surface Mount Technology (SMT)**
- Ni, gold-plated terminals
- **Electrostatic Sensitive Device (ESD)**
- **Moisture Sensitivity Level 3**


Pin configuration

- 1 Input
- 3 Output
- 2,4 Case ground



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B8401
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1588.655 MHz

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Characteristics of Filter

Temperature range for specification: T = -30°C to $+85^{\circ}\text{C}$
 Terminating source impedance: Z_S = $50\ \Omega$
 Terminating load impedance: Z_L = $50\ \Omega$

		B8401			
		min.	typ. @ 25 °C	max.	
Center frequency	f_C	—	1588.65		MHz
Maximum insertion attenuation	α_{\max}				
1573.42 ... 1577.42 MHz		—	0.9	1.4	dB
1571.42 ... 1605.89 MHz		—	1.0	1.7	dB
Amplitude ripple (p-p)	$\Delta\alpha$				
1573.42 ... 1577.42 MHz		—	0.2	0.7	dB
1571.42 ... 1605.89 MHz		—	0.3	1.0	dB
VSWR Input					
1573.42 ... 1577.42 MHz		—	1.4	1.8	
1597.55 ... 1605.89 MHz		—	1.3	1.8	
VSWR Output					
1573.42 ... 1577.42 MHz		—	1.4	1.8	
1597.55 ... 1605.89 MHz		—	1.2	1.8	
Group delay ripple¹⁾ (p-p)	$\Delta\tau$				
1573.42 ... 1577.42 MHz		—	2	8	ns
1597.55 ... 1605.89 MHz		—	3	8	ns
Deviation within GLONASS band relative to L1 1575.42 MHz		—	-3	—	ns
Attenuation	α				
0.1 ... 698.0 MHz		40	51	—	dB
698.0 ... 716.0 MHz		40	51	—	dB
716.0 ... 776.0 MHz		45	50	—	dB
776.0 ... 787.0 MHz		46	50	—	dB
787.0 ... 824.0 MHz		46	50	—	dB
824.0 ... 849.0 MHz		45	49	—	dB
849.0 ... 880.0 MHz		45	49	—	dB
880.0 ... 915.0 MHz		45	49	—	dB
915.0 ... 1427.0 MHz		44	48	—	dB
1427.0 ... 1452.0 MHz		42	47	—	dB
1452.0 ... 1525.0 MHz		30	38	—	dB
1625.0 ... 1660.0 MHz		1.0	2.7	—	dB
1660.0 ... 1710.0 MHz		30	44	—	dB

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				B8401			
				min.	typ. @ 25 °C	max.	
1710.0	...	1785.0	MHz	45	50	—	dB
1785.0	...	1850.0	MHz	45	57	—	dB
1850.0	...	1920.0	MHz	45	56	—	dB
1920.0	...	1980.0	MHz	45	55	—	dB
1980.0	...	2010.0	MHz	40	54	—	dB
2010.0	...	2025.0	MHz	40	53	—	dB
2025.0	...	2305.0	MHz	40	48	—	dB
2305.0	...	2360.0	MHz	40	48	—	dB
2360.0	...	2402.0	MHz	40	47	—	dB
2402.0	...	2480.0	MHz	40	46	—	dB
2480.0	...	2496.0	MHz	40	46	—	dB
2496.0	...	2570.0	MHz	40	45	—	dB
2570.0	...	2690.0	MHz	30	44	—	dB
2690.0	...	3168.0	MHz	30	42	—	dB
3168.0	...	4224.0	MHz	15	31	—	dB
4224.0	...	4752.0	MHz	10	15	—	dB
4752.0	...	4900.0	MHz	10	18	—	dB
4900.0	...	5825.0	MHz	5	9	—	dB
5825.0	...	6336.0	MHz	—	11	—	dB
6336.0	...	8976.0	MHz	—	12	—	dB
H2 (2nd Harmonics)							
1 tone (cw) method:							
P _{in} @15dBm @F1= 777MHz..805MHz							
P _{out} @F2=2*F1							
				—	-104	—	dBm
IIP2 (2nd order Input Intercept Point)²⁾							
2 tone (cw) method:							
P1@14dBm @F1=824MHz..915MHz							
P2 @10dBm @F2=F1+1575.42MHz							
				—	126	—	dBm
IIP3 (3rd order Input Intercept Point)							
2 tone (cw) method:							
P1@14dBm @F1=1710MHz..1980MHz							
P2 @10dBm @F2=2*F1+1575.42MHz ³⁾							
				—	75	—	dBm
P1@10dBm @F1=1850MHz..1910MHz							
P2 @14dBm @F2=1712.71MHz..1742.71MHz ⁴⁾							
				—	71	—	dBm
P1@10dBm @F1=2444.58MHz..2474.58MHz							
P2 @14dBm @F2=2010MHz..2025MHz ⁴⁾							
				—	69	—	dBm

1) measured with an aperture of 2 MHz

2) IIP2=P1+P2-Poutimd2-IL

3) IIP3=P1+(P2-Poutimd3-IL)/2

4) IIP3=P2+(P1-Poutimd3-IL)/2

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Maximum ratings of Filter

Operable temperature range	T	-40/+85	°C	
Storage temperature range	T _{stg}	-40/+85	°C	
DC voltage	V _{DC}	5	V	
ESD voltage @ Input				
Contact Discharge	V _{ESD}	± 8 ¹⁾	kV	at input pin 1
Air Discharge	V _{ESD}	± 15 ²⁾	kV	at input pin 1
Machine Model	V _{ESD}	± 1000 ³⁾	V	at input pin 1
Machine Model	V _{ESD}	± 100 ³⁾	V	at output pin 3
Charge Device Model	V _{ESD}	± 750 ⁴⁾	V	at input and output (pin 1 and 3)
Human Body Model	V _{ESD}	± 1000 ⁵⁾	V	at input pin 1
Human Body Model	V _{ESD}	± 400 ⁵⁾	V	at output pin 3

¹⁾ acc. to IEC61000-4-2 (Contact discharge, R_s = 330 R, C_s = 150 pF)

²⁾ acc. to IEC61000-4-2 (Air discharge, R_s = 330 R, C_s = 150 pF)

³⁾ acc. to JESD22-A115A (machine model, R_s = 0 R, C_s = 200 pF)

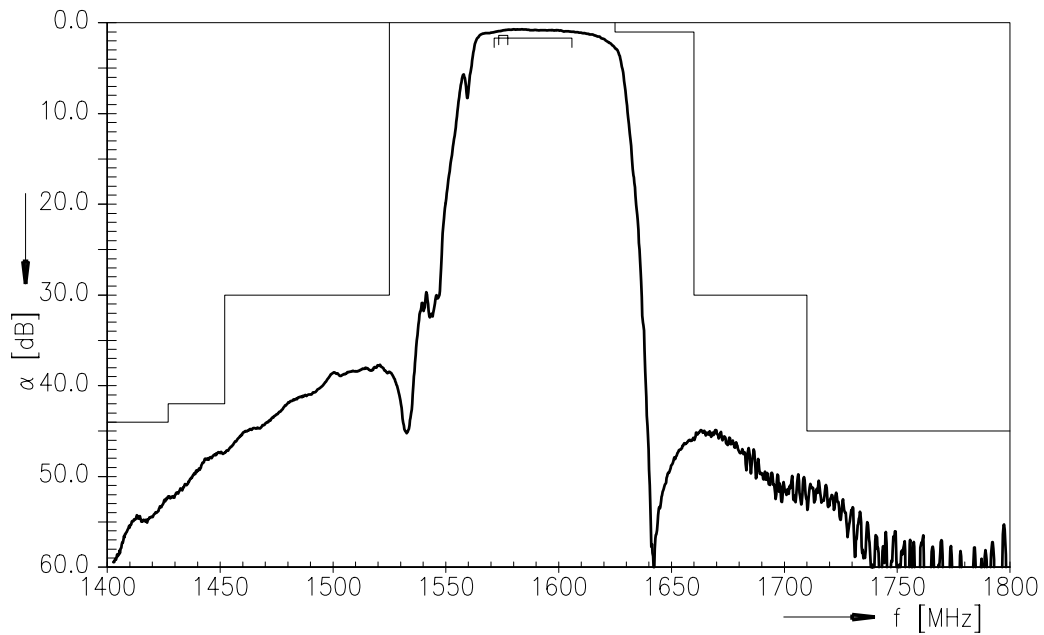
⁴⁾ acc. to JESD22-C101 (charge device model)

⁵⁾ acc. to JESD22-A114 (Human body model, R_s = 1500 R, C_s = 100 pF)

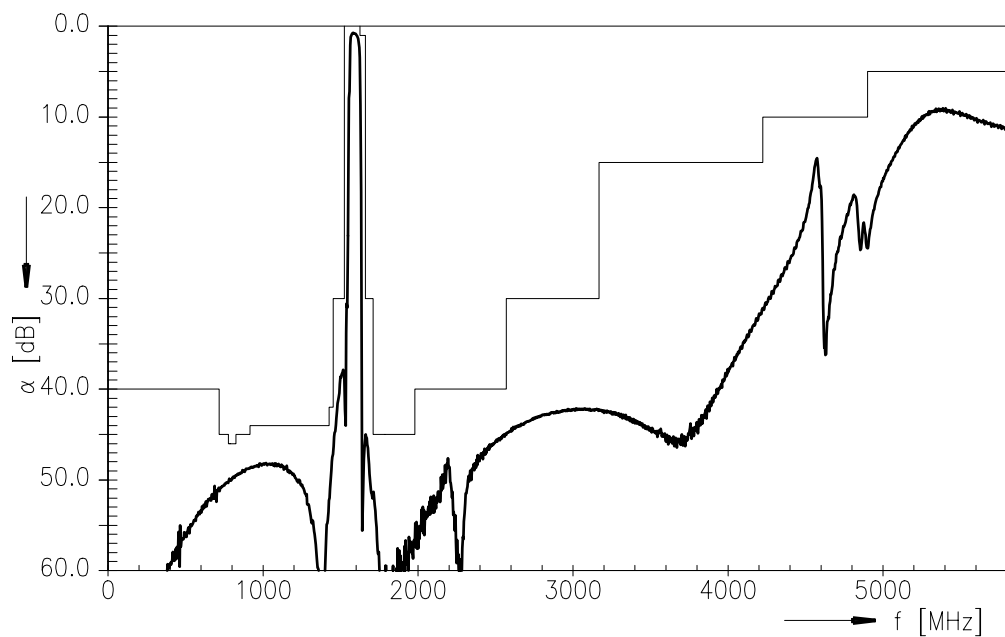
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Transfer function (passband)



Transfer function



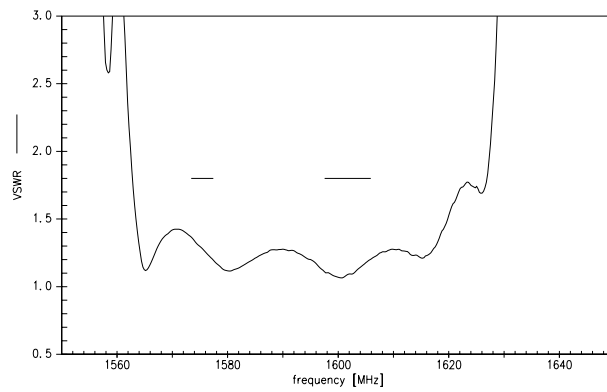
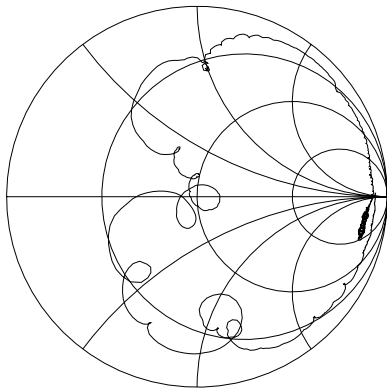
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Data sheet

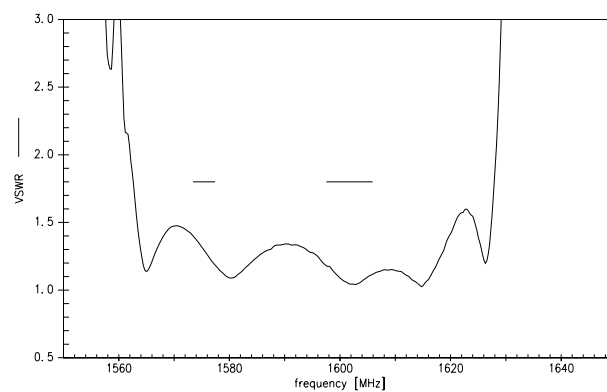
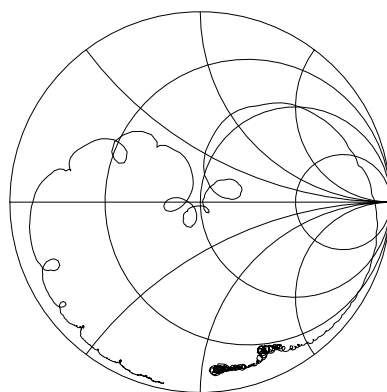


Smith chart / VSWR

S_{11} function



S_{22} function



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Type	B8401
Ordering code	B39162B8401P810
Marking and package	C61157-A8-A31
Packaging	F61074-V8249-Z000
Date codes	L_1126
S-parameters	B8401_NB.s2p, B8401_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 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.
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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

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

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