



SAW Components

Data Sheet X 9650 M

Data Sheet

EPCOS



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X 9650 M

Bandpass Filter

44,00 MHz

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Standard

Plastic package **SIP5K**

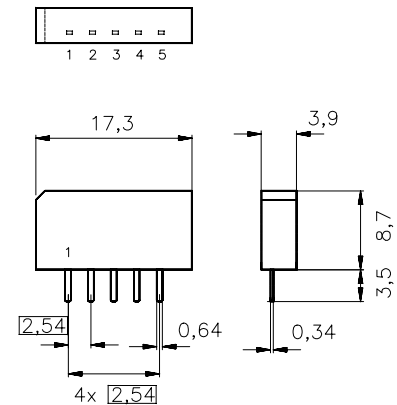
- DVB-DAVIC

Features

- Bandpass filter for digital cable TV with two channels
- Channel 1: 3dB bandwidth 1,8 MHz
- Channel 2: 3dB bandwidth 1,1 MHz
- Constant group delay

Terminals

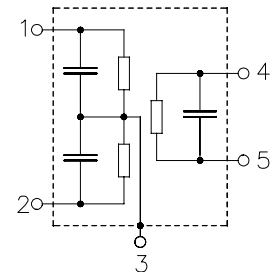
- Tinned CuFe alloy



Dimensions in mm, approx. weight 1,0 g

Pin configuration

- | | |
|---|-----------------------|
| 1 | Input |
| 2 | Switching input |
| 3 | Chip carrier - ground |
| 4 | Output |
| 5 | Output |



Type	Ordering code	Marking and package according to	Packing according to
X 9650 M	B39440-X9650-M100	C61157-A1-A15	F61074-V8067-Z000

Maximum ratings

Operable temperature range	T_A	-25/+65	°C	
Storage temperature range	T_{stg}	-40/+85	°C	
DC voltage	V_{DC}	5	V	between any terminals
AC voltage	V_{pp}	10	V	between any terminals



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Characteristics of channel 1 (switching input pin 2 connected to ground pin 3)

Reference temperature:	$T_A = 25 (45) ^\circ\text{C}$
Terminating source impedance:	$Z_S = 50 \Omega$
Terminating load impedance:	$Z_L = 2 \text{ k}\Omega \parallel 3 \text{ pF}$

		min.	typ.	max.	
Center frequency (center between 3 dB points)	f_C	—	44,00	—	MHz
Insertion attenuation Reference level for the following data	α 44,06 (44,00) MHz	13,0	14,5	16,0	dB
Pass bandwidth					
$\alpha_{\text{rel}} \leq 1 \text{ dB}$	$B_{1\text{dB}}$	—	1,6	—	MHz
$\alpha_{\text{rel}} \leq 3 \text{ dB}$	$B_{3\text{dB}}$	—	1,8	—	MHz
$\alpha_{\text{rel}} \leq 30 \text{ dB}$	$B_{30\text{dB}}$	—	2,7	—	MHz
Relative attenuation	α_{rel}				
Lower sidelobe					
35,06 ... 40,26 (35,00 ... 40,20) MHz		38,0	43,0	—	dB
40,26 ... 42,56 (40,20 ... 42,50) MHz		32,0	37,0	—	dB
Upper sidelobe					
45,56 ... 48,66 (45,50 ... 48,60) MHz		24,0	30,0	—	dB
48,66 ... 55,06 (48,60 ... 55,00) MHz		36,0	40,0	—	dB
Group delay ripple (p-p)	$\Delta\tau$				
43,16 ... 44,96 (43,10 ... 44,90) MHz		—	50	—	ns
Impedance at 44,06 MHz					
Input: $Z_{\text{IN}} = R_{\text{IN}} \parallel C_{\text{IN}}$		—	0,9 $\parallel$ 13,3	—	k Ω $\parallel$ pF
Output: $Z_{\text{OUT}} = R_{\text{OUT}} \parallel C_{\text{OUT}}$		—	0,8 $\parallel$ 6,1	—	k Ω $\parallel$ pF
Temperature coefficient of frequency	TC_f	—	-72	—	ppm/K



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Characteristics of channel 2 (switching input pin 2 connected to input pin 1)

Reference temperature:	$T_A = 25 (45) ^\circ \text{C}$
Terminating source impedance:	$Z_S = 50 \Omega$
Terminating load impedance:	$Z_L = 2 \text{ k}\Omega \parallel 3 \text{ pF}$

		min.	typ.	max.	
Center frequency (center between 3 dB points)	f_C	—	44,00	—	MHz
Insertion attenuation Reference level for the following data	α 44,06 (44,00) MHz	13,5	15,0	16,5	dB
Pass bandwidth					
$\alpha_{\text{rel}} \leq 1 \text{ dB}$	$B_{1\text{dB}}$	—	0,8	—	MHz
$\alpha_{\text{rel}} \leq 3 \text{ dB}$	$B_{3\text{dB}}$	—	1,2	—	MHz
$\alpha_{\text{rel}} \leq 30 \text{ dB}$	$B_{30\text{dB}}$	—	2,4	—	MHz
Relative attenuation	α_{rel}				
Lower sidelobe 35,06 ... 42,66 (35,00 ... 42,60) MHz		34,0	39,0	—	dB
Upper sidelobe 45,36 ... 47,36 (45,30 ... 47,30) MHz		25,0	29,0	—	dB
47,36 ... 55,06 (47,30 ... 55,00) MHz		34,0	39,0	—	dB
Group delay ripple (p-p)	$\Delta\tau$				
43,46 ... 44,66 (43,40 ... 44,60) MHz		—	50	—	ns
Impedance at 44,06 MHz					
Input: $Z_{\text{IN}} = R_{\text{IN}} \parallel C_{\text{IN}}$		—	0,5 $\parallel$ 18,1	—	k Ω $\parallel$ pF
Output: $Z_{\text{OUT}} = R_{\text{OUT}} \parallel C_{\text{OUT}}$		—	0,8 $\parallel$ 6,1	—	k Ω $\parallel$ pF
Temperature coefficient of frequency	TC_f	—	-72	—	ppm/K



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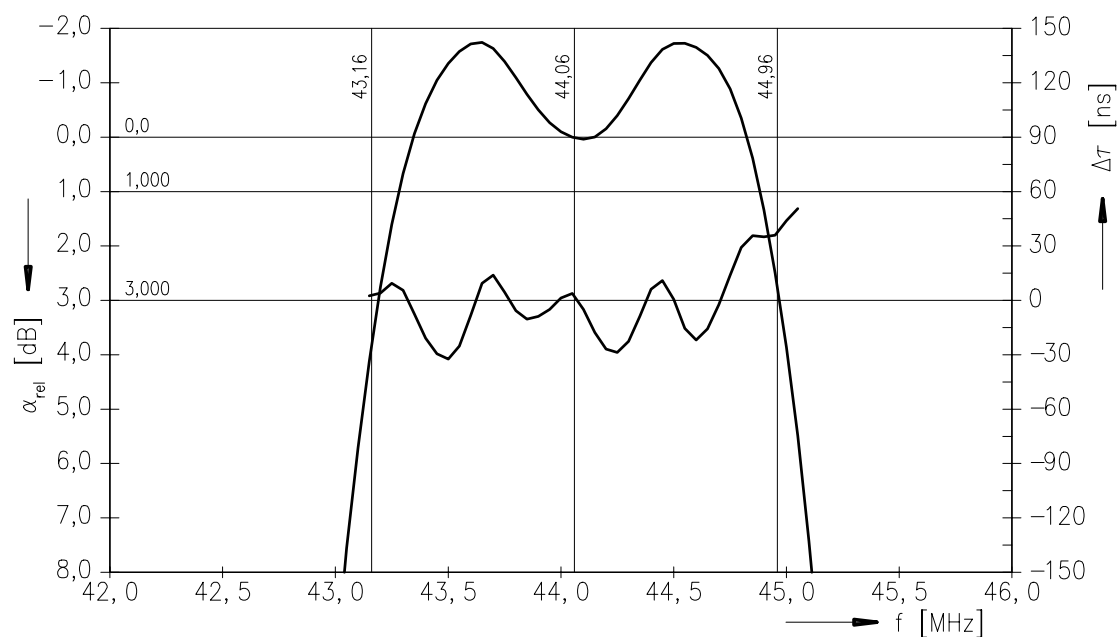
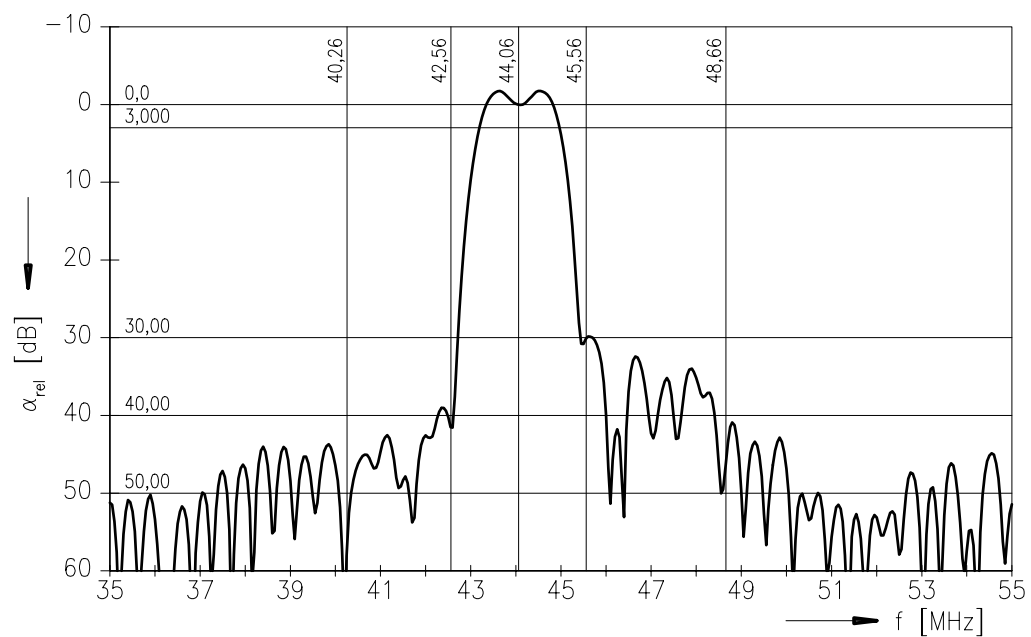
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Frequency response of channel 1 (switching input pin 2 connected to ground pin 3)





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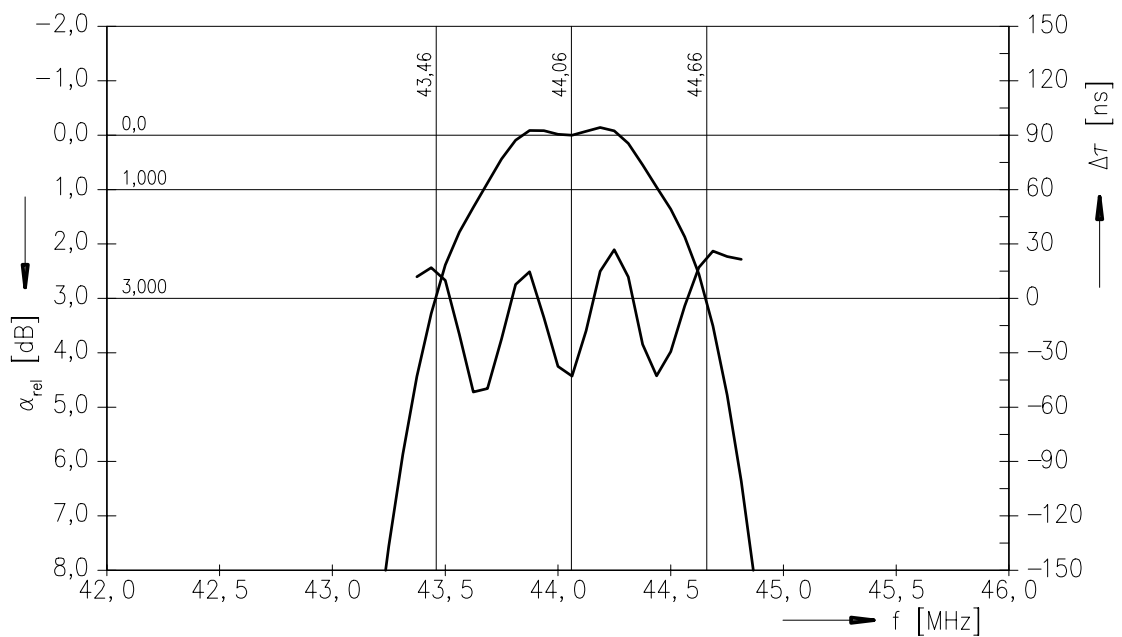
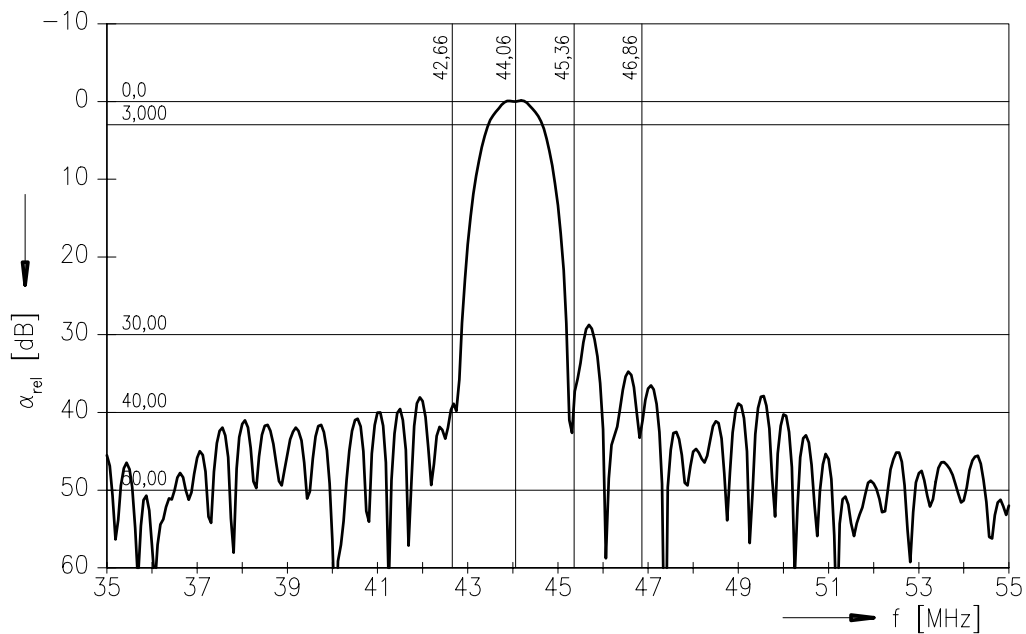
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Frequency response of channel 2 (switching input pin 2 connected to input pin 1)





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