

Microchip

Filter specification

TFS 398F

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Measurement condition

Ambient temperature T_A :	23	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	812 Ω	-4.3 pF
Output:	733 Ω	-4.6 pF

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 398F is the minimum of the pass band attenuation a_{min} . The minimum of the pass band attenuation a_{min} is defined as the insertion loss a_e . The centre frequency f_C is the arithmetic mean value of the upper and lower frequencies at the 1 dB filter attenuation level relative to the insertion loss a_e . The nominal frequency f_N is fixed at 398 MHz without any tolerance. The given values for both the relative attenuation a_{rel} and the group delay ripple have to be achieved at the frequencies given below even if the centre frequency f_C is shifted due to the temperature coefficient of frequency TC_f within the operating temperature range and due to a production tolerance for the centre frequency f_C .

D a t a		typ. value		tolerance / limit	
Insertion loss (reference level)	$a_e = a_{min}$	10	dB	max.	14 dB
Nominal frequency	f_N	-		398.0	MHz
Passband	PB	-		$f_N \pm$	2.5 MHz
Pass band ripple	p-p	0.3	dB	max.	1 dB
Relative attenuation	a_{rel}				
f_N ... $f_N \pm$	2,5 MHz	0.5	dB	max.	1 dB
$f_N \pm$ 5 MHz ... $f_N \pm$	6,5 MHz	40	dB	min.	35 dB
$f_N \pm$ 6,5 MHz ... $f_N \pm$	50 MHz	43	dB	min.	40 dB
Group delay ripple within PB		45	ns	max.	60 ns
Operating temperature range	OTR	-		- 20 °C ... + 85 °C	
Storage temperature range		-		- 55 °C ... + 125 °C	
Frequency inversion temperature		28	°C		
Temperature coefficient of frequency	TC_f **	-0.036	ppm/K ²		-

*) The terminating impedances depend on parasitics and q-values of matching elements and the board used and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.

***) $\Delta f = TC_f(T - T_0)^2 f_N$

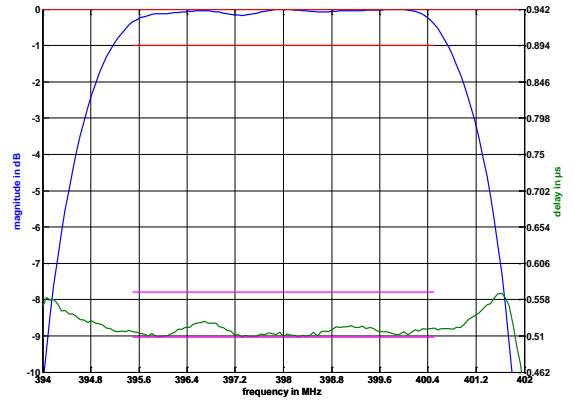
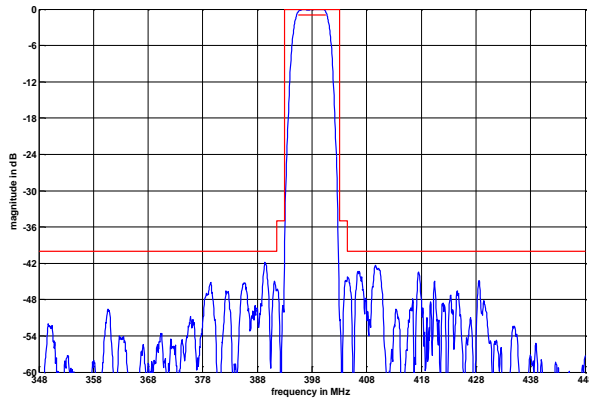
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Microchip Frequency Technology GmbH
Potsdamer Straße 18
D 14 513 TELTOW / Germany
Tel: (+49) 3328 4784-0 / Fax: (+49) 3328 4784-30

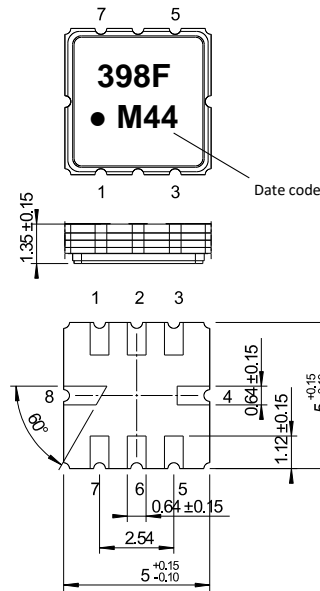
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Filter characteristic



Construction and pin connection

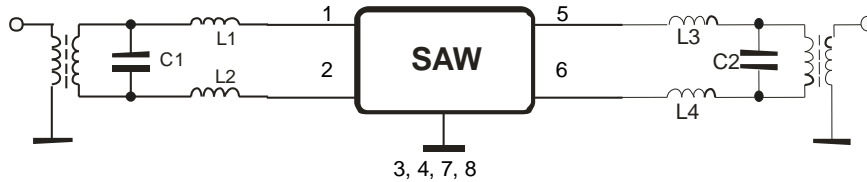
(All dimensions in mm)



- 1 Input
- 2 Input
- 3 Ground
- 4 Ground
- 5 Output
- 6 Output
- 7 Ground
- 8 Ground

Date code: Year + week
 M 2020
 N 2021
 P 2022
 ...

50 Ω Test circuit



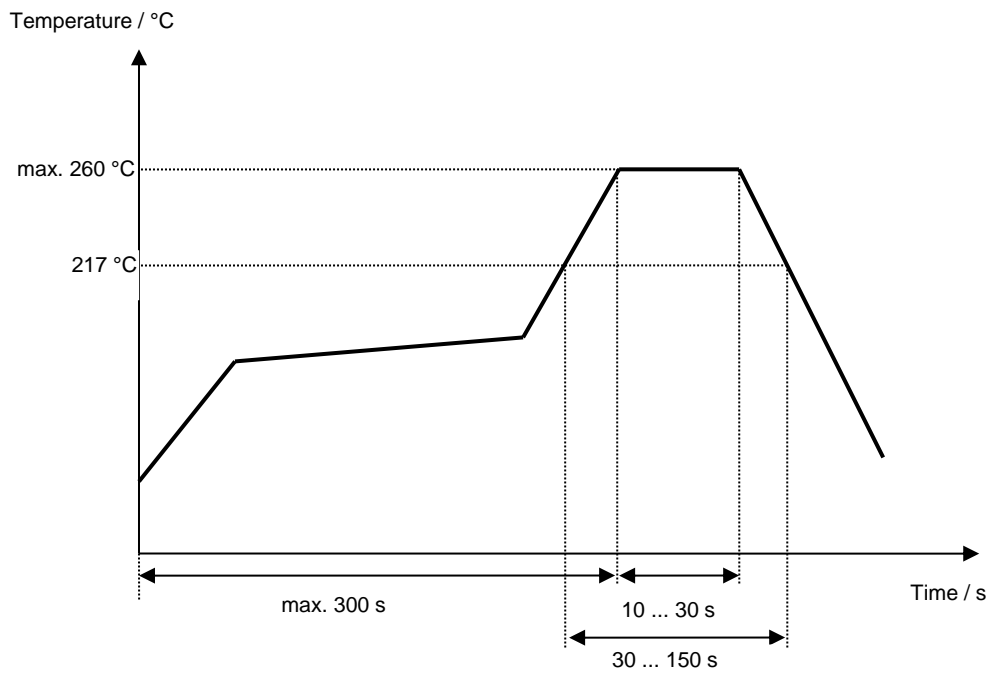
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Air reflow temperature conditions

Conditions	Exposure
Average ramp-up rate (30 °C to 217 °C)	less than 3 °C / second
> 100 °C	between 300 and 600 seconds
> 150 °C	between 240 and 500 seconds
> 217 °C	between 30 and 150 seconds
Peak temperature	max. 260 °C
Time within 5 °C of actual peak temperature	between 10 and 30 seconds
Cool-down rate (Peak to 50 °C)	less than 6 °C / second
Time from 30 °C to Peak temperature	no greater than 300 seconds

Chip-mount air reflow profile



Microchip**Filter specification****TFS 398F****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generate of development specification	Strehl	12.07.2006
1.1	- Change OTR	Strehl	17.08.2006
1.2	- terminating impedances (preliminary values), typical values, filter characteristic added - matching configuration modified	Pfeiffer	08.09.2006
1.3	- terminating impedances, filter characteristics and matching configuration changed - change of turn over temperature	Pfeiffer	05.02.2007
2.0	- correct terminating impedance	Bonnen	28.10.2020

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