

VI TELEFILTER**Filter specification****TFS 240P****1/5****Measurement condition**

Ambient temperature:	25	°C
Input power level:	0	dBm
Terminating impedance: *		
Input:	400 Ω -11,8 pF	
Output:	400 Ω -11,5 pF	

Characteristics**Remark:**

The nominal frequency f_N is fixed at 240,0 MHz. The insertion loss a_e is defined as loss value determined at f_N . Reference level for the relative attenuation a_{rel} of the TFS 240P is the insertion loss a_e . The centre frequency f_c is the arithmetic mean value of the upper and lower frequencies at the 3 dB filter attenuation level relative to the insertion loss a_e . All specified data are met within the operating temperature range.

D a t a		typ. value		tolerance / limit		
Insertion loss (reference level)	a_e	7,5	dB	max.	11,0	dB
Nominal frequency	f_N				240,0	MHz
Centre frequency at ambient temperature	f_c	-		240,00	$\pm$ 0,05	MHz
Passband	PB	-		f_c	$\pm$ 0,5	MHz
Pass band ripple	in any 20 kHz increment within the passband	0,1	dB	max.	1,0	dB
Relative attenuation	a_{rel}					
f_c	... $f_c \pm$ 0,5 MHz	1,3	dB	max.	3,0	dB
	$f_c \pm$ 1,0 MHz	18	dB	min.	9	dB
$f_c \pm$ 1,75 MHz	... $f_c \pm$ 2,5 MHz	54	dB	min.	44	dB
$f_c +$ 2,5 MHz	... $f_c +$ 5,0 MHz	51	dB	min.	48	dB
$f_c -$ 2,5 MHz	... $f_c -$ 3,5 MHz	60	dB	min.	48	dB
$f_c -$ 3,5 MHz	... $f_c -$ 5,0 MHz	53	dB	min.	50	dB
Group delay ripple within PB		70	ns	max.	200	ns
Operating temperature range	OTR	-		- 10 °C ... + 55°C		
Storage temperature range		-		- 40 °C ... + 85°C		
Frequency inversion temperature		20	°C	-		
Temperature coefficient of frequency	TC_f **	-0,036	ppm/K ²	-		

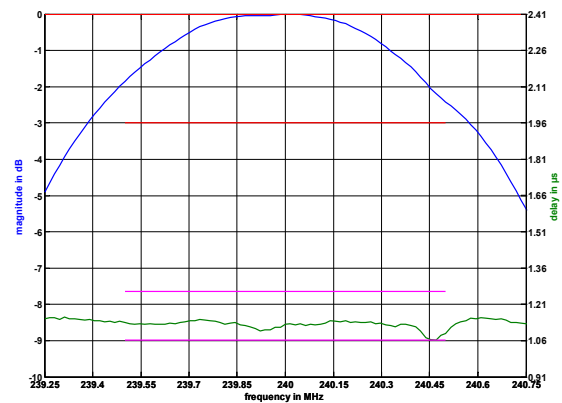
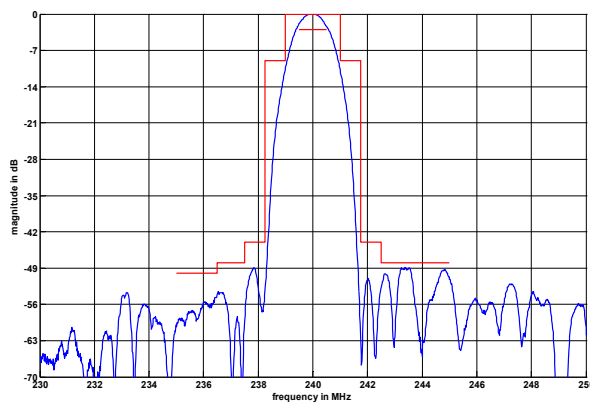
*) The terminating impedances depend on parasitics and q-values of matching elements and the board used, and are to be understood as reference values only. Should there be additional questions do not hesitate to ask for an application note or contact our design team.

**) $\Delta f(\text{Hz}) = TC_f(\text{ppm/K}^2) \times (T - T_0)^2 \times f_{T0}(\text{MHz})$

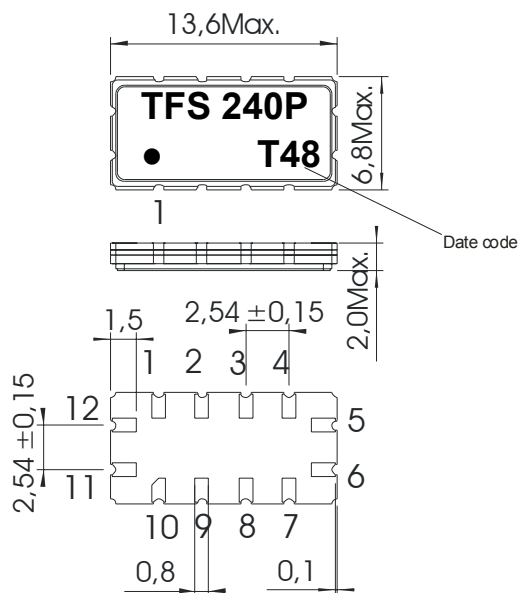
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VI TELEFILTER**Filter specification****TFS 240P****2/5****Filter characteristic****Construction and pin connection**

(All dimensions in mm)



1	Ground
2	Ground
3	Ground
4	Ground
5	Output
6	Output RF Return
7	Ground
8	Ground
9	Ground
10	Ground
11	Input
12	Input RF Return

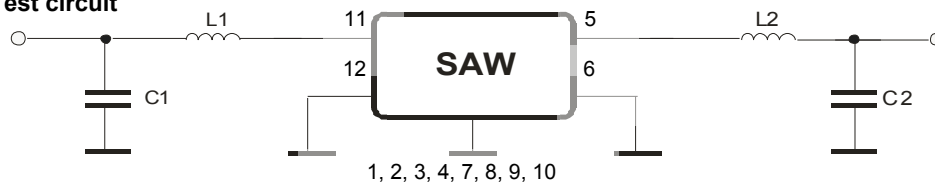
Date code: Year + week

T 2005

U 2006

V 2007

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50 Ω Test circuit

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VI TELEFILTER**Filter specification****TFS 240P****3/5****Stability characteristics, reliability**

After the following tests the filter shall meet the whole specification:

1. Shock: 500g, 1 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0,35 mm or 5 g respectively, 1 octave per min, 10 cycles per plan, 3 plans;
DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 30 min. each / 10 cycles
DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: twice max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;

This filter is RoHS compliant (2002/95/EG, 2005/618/EG)

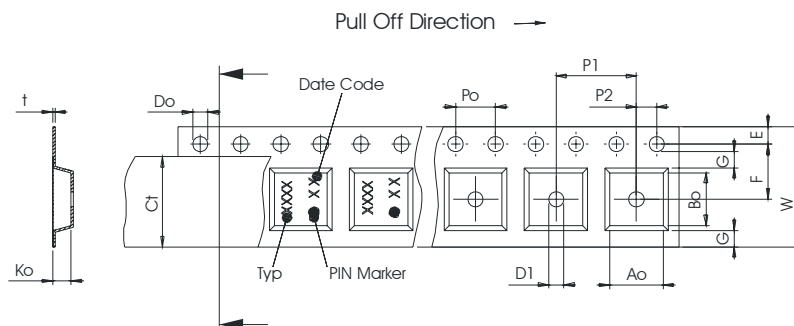
Packing

Tape & Reel: IEC 286 – 3, with exeption of value for N and minimum bending radius;
tape type II, embossed carrier tape with top cover tape on the upper side;

max. pieces of filters peer reel:	<MAXPIECESPERREEL>
reel of empty components at start:	min. 300 mm
reel of empty components at start including leader:	min. 500 mm
trailer:	min. 300 mm

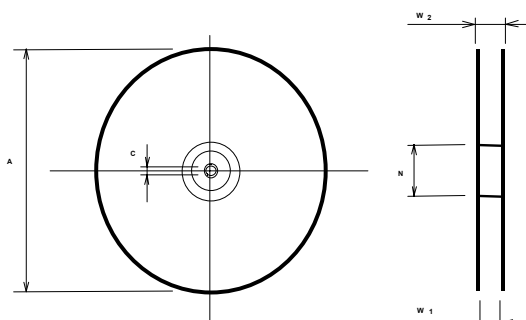
Tape (all dimensions in mm)

W	: 24,00 +0,30/-0,10
Po	: 4,00 ± 0,1
Do	: 1,50 +0,1/-0
E	: 1,75 ± 0,10
F	: 11,50 ± 0,10
G(min)	: 0,60
P2	: 2,00 ± 0,1
P1	: 12,00 ± 0,1
D1(min)	: 1,50
Ao	: 7,10 ± 0,10
Bo	: 13,90 ± 0,10
Ct	: 21,5 ± 0,1



Reel (all dimensions in mm)

A	: 330
W1	: 24,4 +2/-0
W2(max)	: 30,4
N(min)	: 60
C	: 13,0 +0,5/-0,2



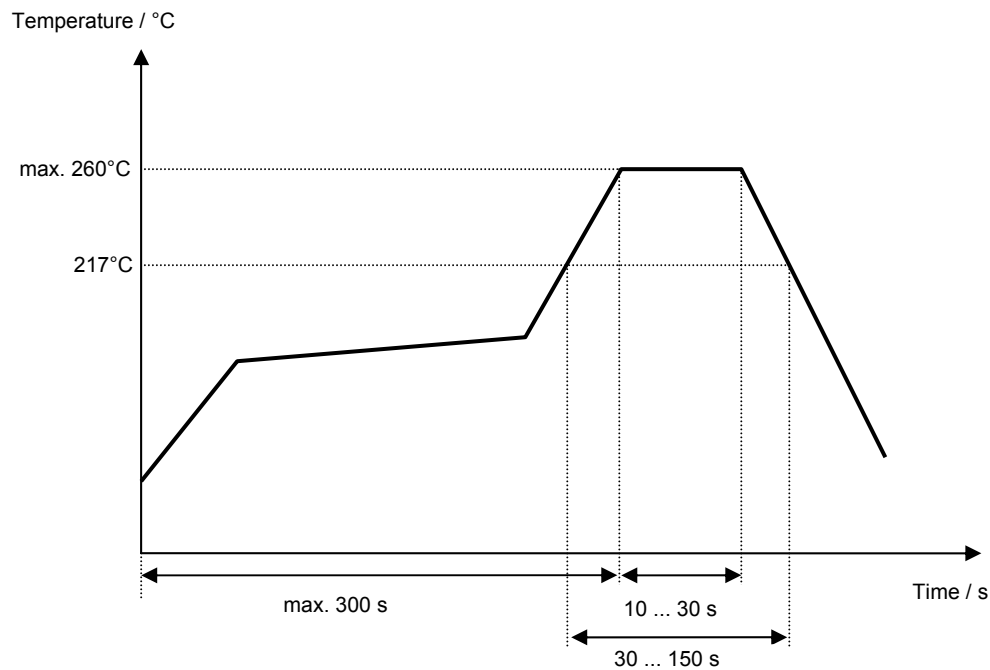
The minimum bending radius is 45 mm.

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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

VI TELEFILTER**Filter specification****TFS 240P****5/5****History**

Version	Reason of Changes	Name	Date
1.0	- Generation of development specification	Strehl	06.09.2005
1.1	- relative attenuation in upper stop band changed - terminating impedance, typical values and filter characteristic added - stability characteristics modified	Pfeiffer	25.11.2005