

VI TELEFILTER

Filter specification

TFS 70L14A

Measurement condition

| | | |
|--------------------------|-------|----------|
| Ambient temperature: | 25 | °C |
| Input power level: | 0 | dBm |
| Terminating impedance: * | | |
| Input: | 178 Ω | -12,8 pF |
| Output: | 226 Ω | -12,2 pF |

Characteristics

Remark:

The reference level for the relative attenuation a_{rel} of the TFS 70L14A 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 3 dB filter attenuation level relative to the insertion loss a_e . The temperature coefficient of frequency TC_f is valid for both the reference frequency f_c and the frequency response of the filter in the operating temperature range. The frequency shift of the filter in the operating temperature range is not included in the production tolerance scheme.

| D a t a | | typ. value | | tolerance / limit | |
|--|-------------------|-------------------|-------|--------------------------|-----------|
| Insertion loss (reference level) | a_e | 11,5 | dB | max. | 12,5 dB |
| | | - | | | |
| Centre frequency | f_c | - | | 70,0 ± 0,1 | MHz |
| Passband | PB | - | | f_c | ± 6,5 MHz |
| Amplitude ripple in PB | p-p | 0,4 | dB | max. | 1 dB |
| Relative attenuation | a_{rel} | | | | |
| f_c | $f_c \pm 6,5$ MHz | 0,4 | dB | max. | 1 dB |
| $f_c \pm 6,5$ MHz | $f_c \pm 7$ MHz | 2,1 | dB | max. | 3 dB |
| $f_c - 20$ MHz | $f_c - 9,65$ MHz | 40 | dB | min. | 35 dB |
| $f_c + 10,35$ MHz | $f_c + 20$ MHz | 42 | dB | min. | 35 dB |
| Average group delay in PB | | 1,1 | µs | max. | 1,5 µs |
| Group delay ripple in $f_c \pm 6,3$ MHz | p-p | 60 | ns | max. | 90 ns |
| Phase linearity in $f_c \pm 6,3$ MHz | p-p | 6 | deg | max. | 11 deg |
| Operating temperature range | OTR | - | | -20 °C ... + 70 °C | |
| Storage temperature range | | - | | -40 °C ... + 85 °C | |
| Temperature coefficient of frequency | TC_f ** | -94 | ppm/K | - | |

*) 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.

**) $\Delta f_c(\text{Hz}) = TC_f(\text{ppm/K}) \times (T - T_0) \times f_{T_0}$ (MHz).

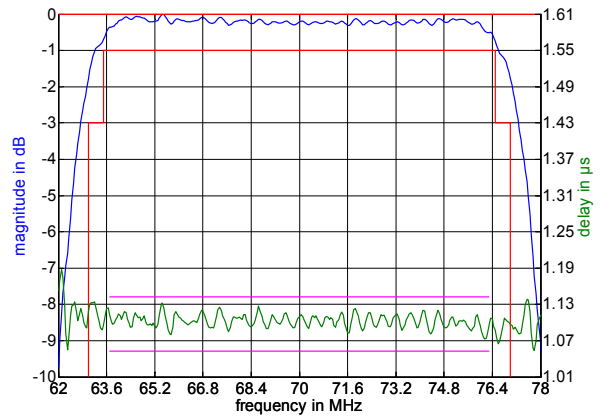
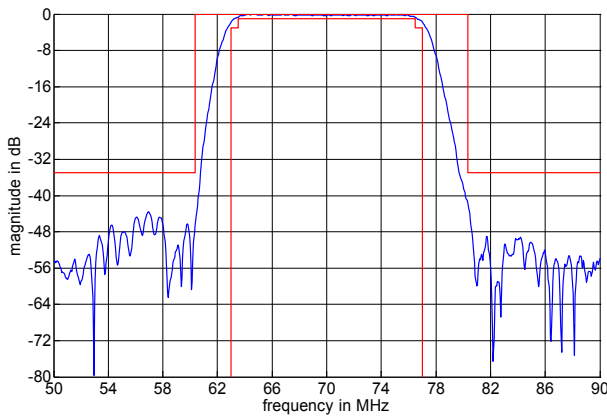
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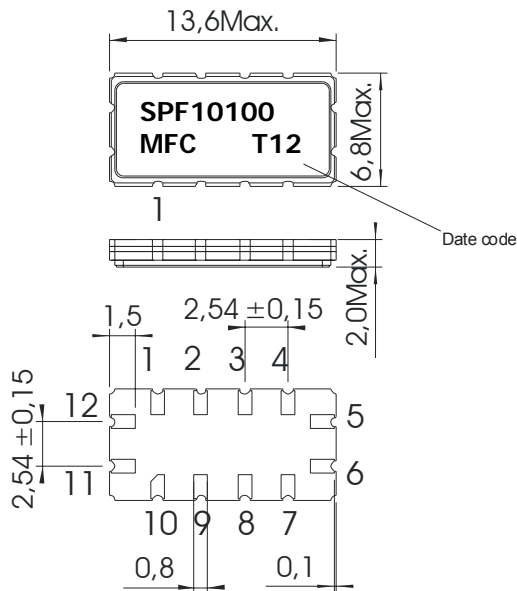
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Filter characteristic



Construction and pin connection

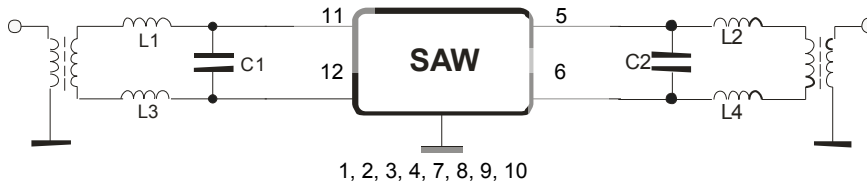
(All dimensions in mm)



| | |
|----|--------|
| 1 | Ground |
| 2 | Ground |
| 3 | Ground |
| 4 | Ground |
| 5 | Output |
| 6 | Output |
| 7 | Ground |
| 8 | Ground |
| 9 | Ground |
| 10 | Ground |
| 11 | Input |
| 12 | Input |

Date code: Year + week
 T 2005
 U 2006
 V 2007
 ...

50 Ω Test circuit



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Stability characteristics

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;

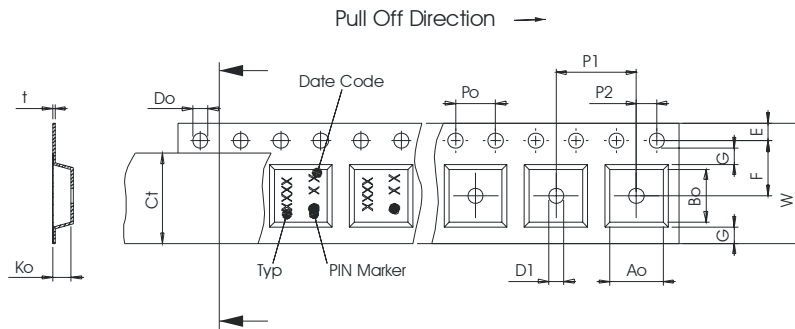
Packing

Tape & Reel: IEC 286 – 3, with exception 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: 1700
reel of empty components at start: min. 300 mm
reel of empty components at start including leader: min. 500 mm
trailer: min. 300 mm

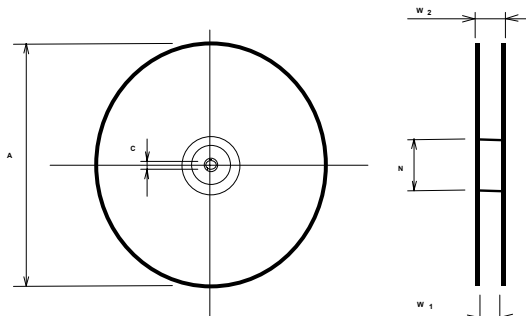
Tape (all dimensions in mm)

- 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.

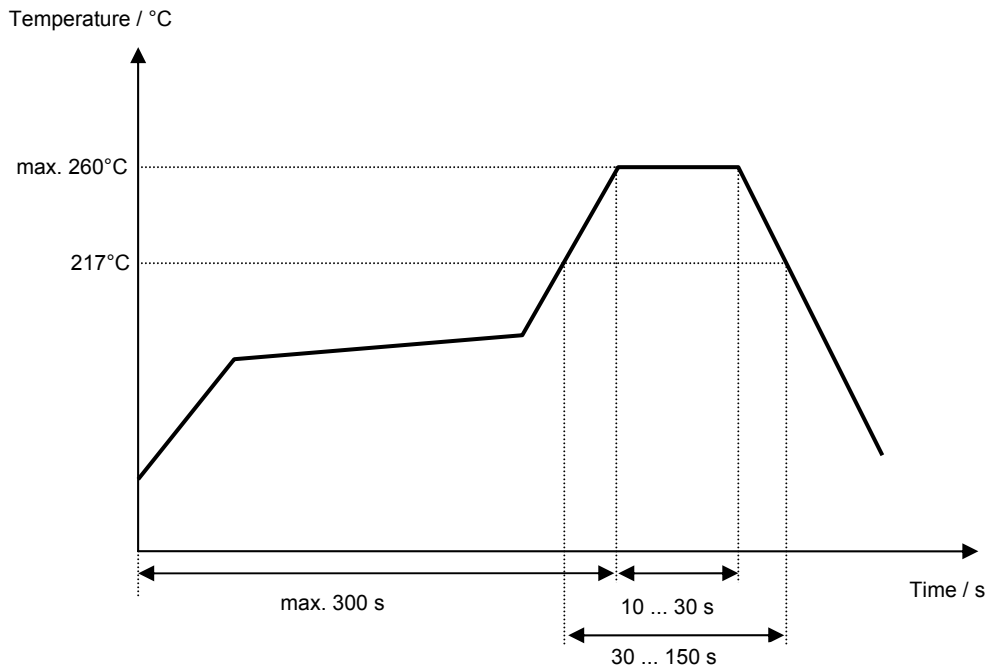
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Air reflow temperature conditions

| 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



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VI TELEFILTER**Filter specification****TFS 70L14A****5/5****History**

| Version | Reason of Changes | Name | Date |
|----------------|--|-------------|-------------|
| 1.0 | - specification according customer requirements generated | Pfeiffer | 04.03.2005 |
| 1.1 | - terminating impedances, typical values and filter characteristic added | Pfeiffer | 17.03.2005 |
| 1.2 | - limit for insertion loss corrected | Pfeiffer | 23.03.2005 |

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