

Measurement condition

Ambient temperature: 23 °C
 Input power level: 0 dBm
 Terminating impedance at f_C *: input: 880 Ω || - 4.5 pF
 output: 850 Ω || - 3.7 pF

Characteristics**Remark:**

The reference level for the relative attenuation a_{rel} of TFS380G is the minimum of the pass band attenuation a_{min} . This value 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 given values for the relative attenuation a_{rel} and the group delay ripple have to be reached at the frequencies given below, even if the centre frequency f_C is shifted due to the temperature coefficient of frequency TC_f in the operating temperature range and due to a production tolerance for the centre frequency f_C .

| D a t a | | typ. value | limit |
|--|------------------------|---------------------------|--------------------|
| Insertion loss | $a_e = a_{min}$ | 12.6 dB | max. 14 dB |
| Nominal frequency | f_N | - | 380 MHz |
| Centre frequency | f_C | 380 MHz | - |
| Relative attenuation a_{rel} | | | |
| f_N | ... $f_N \pm 1.72$ MHz | 0.5 dB | max. 1 dB |
| $f_N \pm 1.72$ kHz | ... $f_N \pm 1.92$ MHz | 1.0 dB | max. 1.5 dB |
| $f_N \pm 2.5$ kHz | ... $f_N \pm 3$ MHz | 8 dB | min. 5 dB |
| $f_N \pm 3$ MHz | ... $f_N \pm 4$ MHz | 28 dB | min. 22 dB |
| $f_N \pm 4$ MHz | ... $f_N \pm 6$ MHz | 41 dB | min. 35 dB |
| $f_N - 375$ MHz | ... $f_N - 50$ MHz | 60 dB | min. 55 dB |
| $f_N - 50$ MHz | ... $f_N - 14.5$ MHz | 53 dB | min. 50 dB |
| $f_N - 14.5$ MHz | ... $f_N - 6$ MHz | 45 dB | min. 40 dB |
| $f_N + 6$ MHz | ... $f_N + 50$ MHz | 43 dB | min. 40 dB |
| $f_N + 50$ MHz | ... $f_N + 3$ GHz | 45 dB | min. 40 dB |
| Group delay ripple | in $f_N \pm 1.92$ MHz | 65 ns | max. 100 ns |
| Phase linearity | in $f_N \pm 1.92$ MHz | 0.8 deg rms | max. 3 deg rms |
| Input power level | | - | max. + 20 dBm |
| Return loss | in $f_N \pm 1.92$ MHz | 16 dB | min. 12 dB |
| Operating temperature range | | - | -10 °C...+ 85 °C |
| Storage temperature range | | - | - 35 °C... + 85 °C |
| Temperature coefficient | TC ** | - 0.04 ppm/K ² | - |
| Frequency inversion temperature | T_0 | 45 °C | - |

*) 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

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

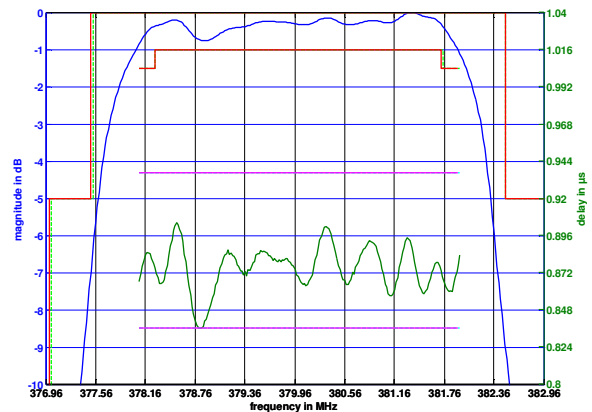
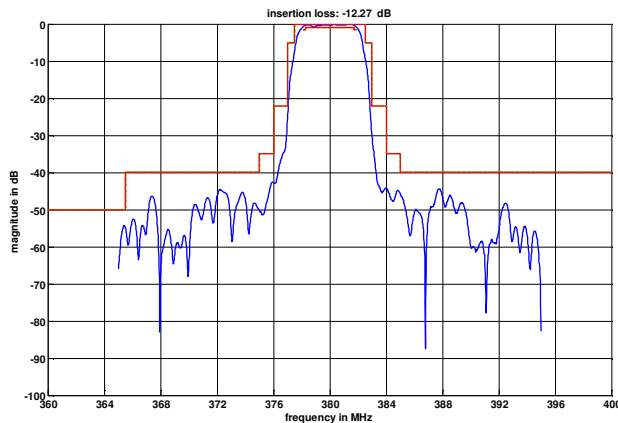
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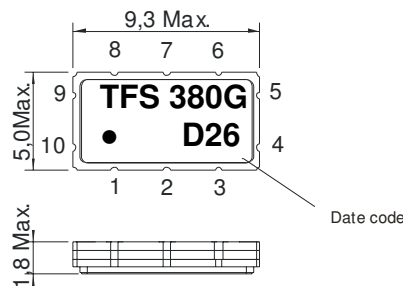
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Filter characteristic

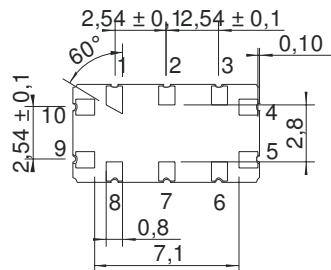


Construction and pin connection

(All dimensions in mm)

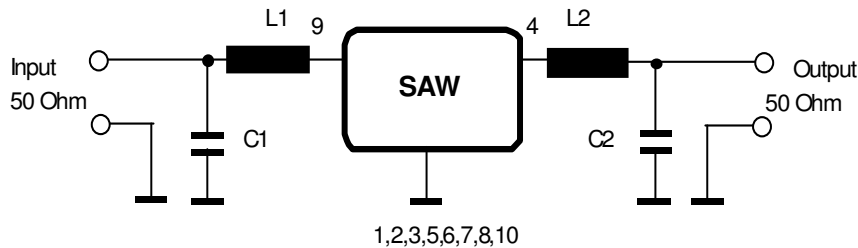


- 1 Ground
- 2 Ground
- 3 Ground
- 4 Output
- 5 Output rf return
- 6 Ground
- 7 Ground
- 8 Ground
- 9 Input
- 10 Input rf return



- Date code: Year + week
- D 2013
 - E 2014
 - F 2015
 - ...

50 Ω test circuit



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Stability characteristics

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

1. Shock: 500g, 18 ms, half sine wave, 3 shocks each plane;
DIN IEC 68 T2 - 27
2. Vibration: 10 Hz to 500 Hz, 0.35 mm or 5g respectively, 1 octave per min, 10 cycles per plane, 3 planes;
DIN IEC 68 T2 - 6
3. Change of temperature: -55 °C to 125°C / 15 min. each / 100 cycles
DIN IEC 68 part 2 – 14 Test N
4. Resistance to solder heat (reflow): reflow possible: three times max.;
for temperature conditions refer to the attached "Air reflow temperature conditions" on page 4;
5. ESD ANSI/ESD S20.20-1999, class 1A for HBM

This filter is RoHS compliant (2011/65/EU)

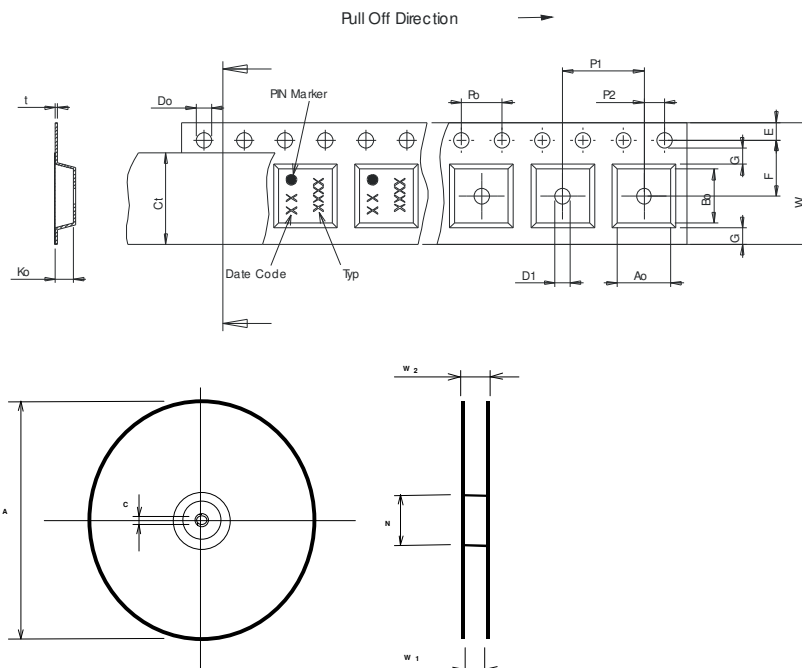
Packing

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: | 3000 |
| 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 : 16.00 +0.3/-0.1
- Po : 4.00 ± 0,1
- Do : 1.50 +0.1/-0
- E : 1.75 ± 0.1
- F : 7.50 ± 0.1
- G(min) : 0.60
- P2 : 2.00 ± 0.1
- P1 : 8.00 ± 0.1
- D1(min) : 1.50
- Ao : 5.30 ± 0.1
- Bo : 9.70 ± 0.1
- Ct : 13.5 ± 0.1



The minimum bending radius is 45 mm.

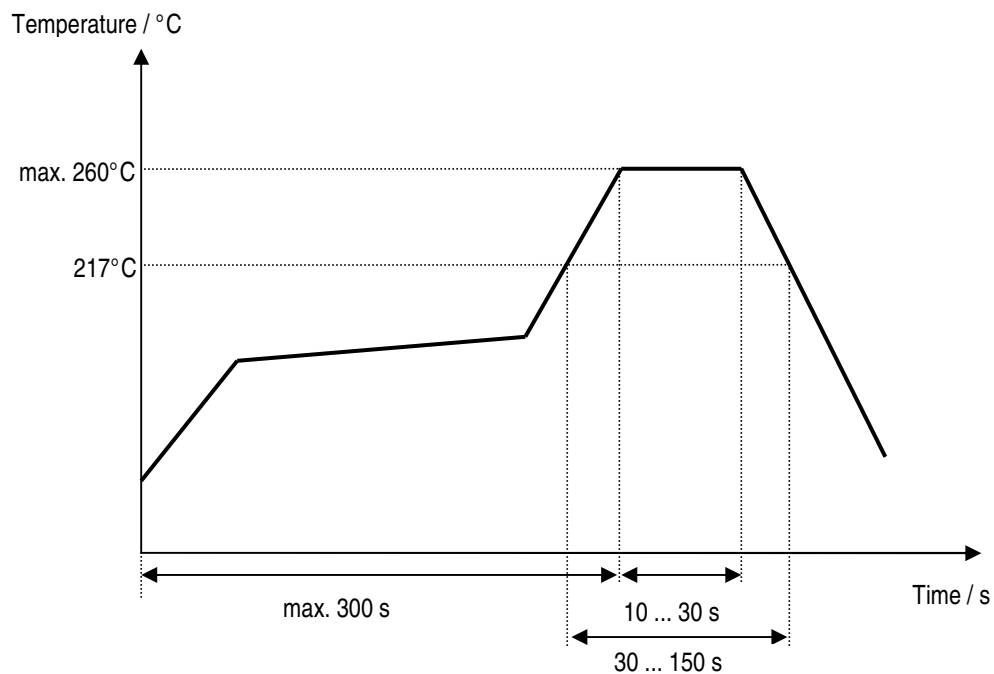
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Air reflow temperature conditions

| 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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History

| Version | Reason of Changes | Name | Date |
|----------------|--|-------------|-------------|
| 1.0 | generate development specification | Pfeiffer | 29.07.2003 |
| 1.1 | typical values, matching configuration and terminating impedance added | Pfeiffer | 10.09.2003 |
| 1.2 | Update typos, format and tape & reel. | TCUK | 19.11.2013 |

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