### Measurement condition

Ambient temperature $T_A$: 23 °C
Input power level: 0 dBm
Terminating impedance:
Input: 171 Ω || -13.5 pF
Output: 137 Ω || -18.5 pF

### Characteristics

Remark:
The reference level for the relative attenuation $a_{rel}$ of the TFS125R is the minimum of the pass band attenuation. This value is defined as the insertion loss $a_e$. The nominal frequency $f_N$ is fixed at 125 MHz without any tolerance. The values of relative attenuation $a_{rel}$ are guaranteed for the whole operating temperature range. The frequency shift of the filter in the operating temperature range is included in the production tolerance scheme.

| **D a t a** | | **typ. value** | | **tolerance / limit** | | |
|---|---|---|---|---|---|---|
| **Insertion loss** (reference level) | $a_e$ | 13.7 | dB | max. | 16 | dB |
| **Nominal frequency** | $f_N$ | | | | 125 | MHz |
| **Passband** | PB | | | $f_N$ ± | 15 | MHz |
| **Passband ripple** | | 0.25 | dB | max. | 1 | dB |
| **Bandwidth** | | | | | | |
| **1 dB** | | 35.5 | MHz | min. | 30 | MHz |
| **25 dB** | | 46.4 | MHz | max. | 56 | MHz |
| **Relative attenuation** | $a_{rel}$ | | | | | |
| $f_N$ - 15 MHz … $f_N$ + 15 MHz | | 0.25 | dB | max. | 1 | dB |
| $f_N$ - 100 MHz … $f_N$ - 40 MHz | | 49 | dB | min. | 40 | dB |
| $f_N$ - 40 MHz … $f_N$ - 28 MHz | | 33 | dB | min. | 25 | dB |
| $f_N$ + 28 MHz … $f_N$ + 40 MHz | | 33 | dB | min. | 25 | dB |
| $f_N$ + 40 MHz … $f_N$ + 100 MHz | | 46 | dB | min. | 40 | dB |
| **Group delay ripple in PB** | GDR | 15 | ns | max. | 30 | ns |
| **Return loss within PB** | | 9 | dB | min. | 6 | dB |
| **Operating temperature range** | OTR | | | -40 °C ... +85 °C | | |
| **Storage temperature range** | | | | -55 °C ... +125 °C | | |
| **Temperature coefficient of frequency** | $TC_f$ *) | -98 | ppm/K | | | |

*) $\Delta f = TC_f(T - T_A)f_N$

**Generated:**

**Checked / Approved:**

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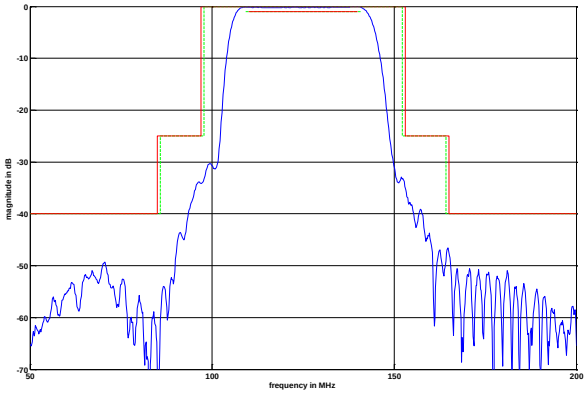
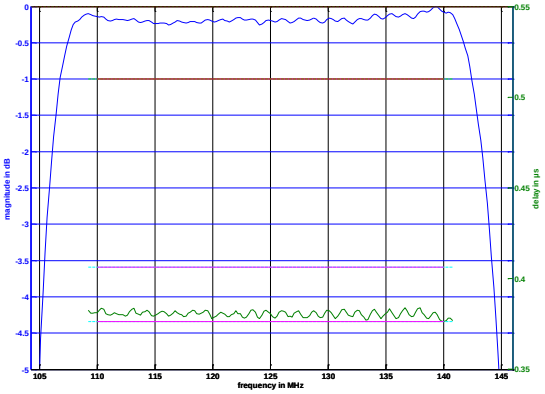
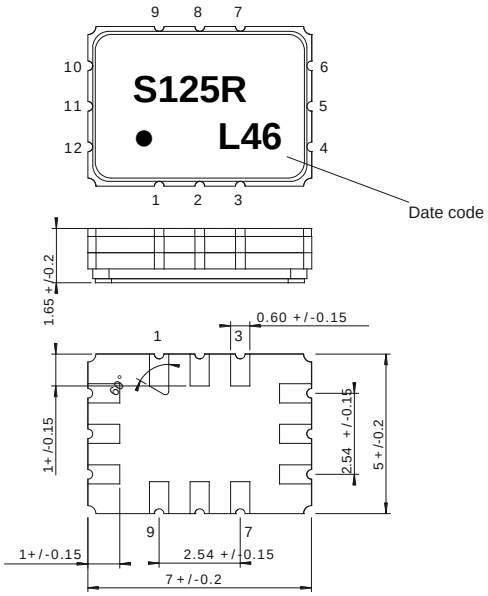
## Filter characteristic




## Construction and pin connection

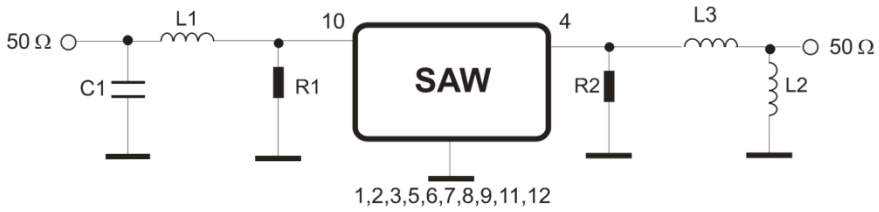
(All dimensions in mm)




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

| Date code: | Year + week |
|---|---|
| L | 2019 |
| M | 2020 |
| N | 2021 |
| ... | |

## 50 Ω Test circuit

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### Stability characteristics, reliability

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

1. Shock: 500 g, 1 ms, half sine wave, 3 shocks each plane;
   DIN IEC 60068 T2 - 27

2. Vibration: 10 Hz to 2000 Hz, 0.35 mm or 5 g respectively, 1 octave per min, 10 cycles per plane, 3 planes; DIN IEC 60068 T2 - 6

3. Change of temperature: -55 °C to 125 °C / 15 min. each / 100 cycles
   DIN IEC 60068 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;

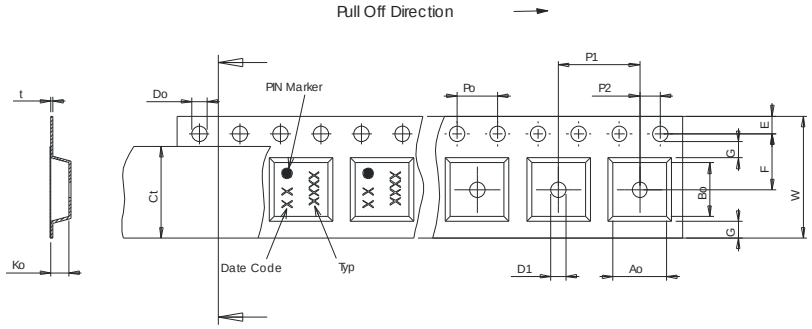
5. SAW devices are Electrostatic Discharge (ESD) sensitive devices.

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;

| | |
|---|---|
| reel of empty components at start: | min. 300 mm |
| reel of empty components at start including leader: | min. 500 mm |
| trailer: | min. 300 mm |

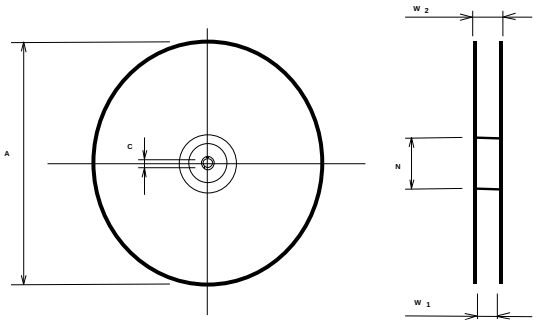



**Tape (all dimensions in mm)**

| | | | |
|---|---|---|---|
| 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) | : | 0.75 | |
| P2 | : | 2.00 | ±0.1 |
| P1 | : | 8.00 | ±0.1 |
| D1(min) | : | 1.50 | |
| Ao | : | 5.40 | ±0.1 |
| Bo | : | 7.60 | ±0.1 |
| Ct | : | 13.30 | ±0.1 |
| Ko | : | 2.00 | ±0.1 |
| t | : | 0.30 | ±0.05 |

**Reel (all dimensions in mm)**

| | | | |
|---|---|---|---|
| A | : | 330 | or 180 |
| W1 | : | 16.4 | +2/-0 |
| W2(max) | : | 22.40 | |
| N(min) | : | 50.00 | |
| C | : | 13.0 | +0.5/-0.2 |




The minimum bending radius is 45 mm.

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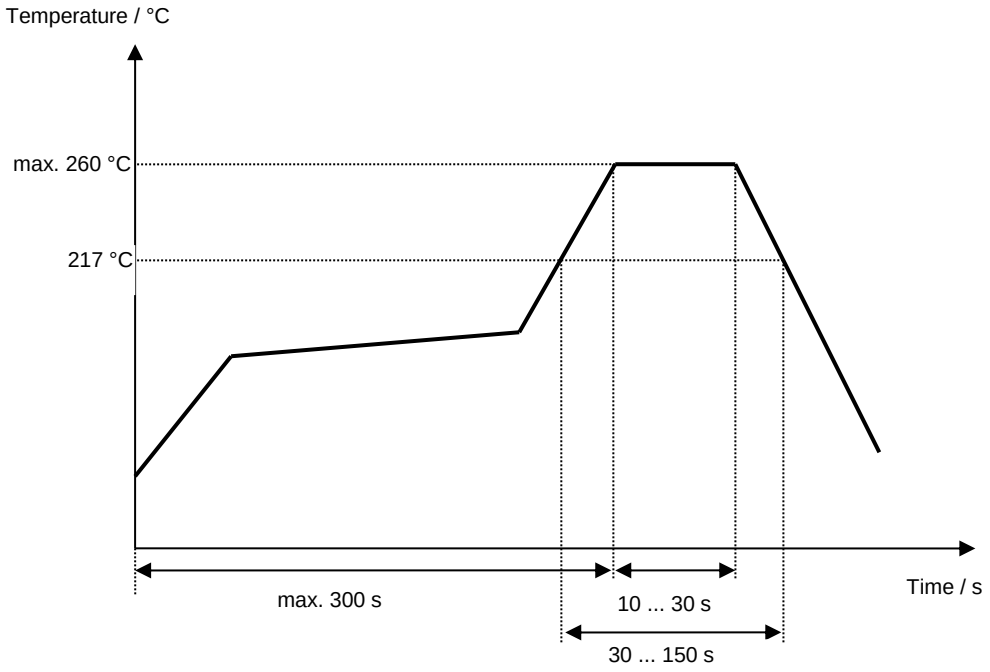
**Air reflow temperature conditions**

| **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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## History

| Version | Reason of Changes | Name | Date |
|---|---|---|---|
| 1.0 | - Generation of development specification | Chilla | 23.06.2010 |
| 1.1 | - Created filter specification<br>- Added terminating impedance<br>- Added typical values<br>- Added filter characteristic<br>- Added test circuit | Chilla | 29.11.2011 |
| 1.2 | - Change storage temperature range<br>- Correct typos<br>- Change construction and pin connection | Bonnen | 29.09.2017 |
| 2.0 | - Changed package | P. Jaster | 13.11.2019 |

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