

**Microchip****Filter specification****TFS 781A****1/5****Measurement condition**

|                        |    |     |
|------------------------|----|-----|
| Ambient temperature:   | 23 | °C  |
| Input power level:     | 0  | dBm |
| Terminating impedance: |    |     |
| Input:                 | 50 | Ω   |
| Output:                | 50 | Ω   |

**Characteristics**

## Remark:

The maximum attenuation in the pass band is defined as the insertion loss  $a_e$ . The nominal frequency  $f_N$  is fixed at 781,5 MHz without any tolerance or limit. The values of absolute attenuation  $a_{abs}$  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.

| <b>D a t a</b>                              |                 | <b>typ. value</b> |     | <b>tolerance / limit</b> |                     |           |
|---------------------------------------------|-----------------|-------------------|-----|--------------------------|---------------------|-----------|
| <b>Insertion loss</b><br>(reference level)  |                 | $a_e$             | 1,6 | dB                       | max.                | 3,0 dB    |
| <b>Nominal frequency</b>                    |                 | $f_N$             | -   |                          |                     | 781,5 MHz |
| <b>Passband</b>                             |                 | PB                | -   |                          | $f_N \pm$           | 5,5 MHz   |
| <b>Pass band ripple</b>                     |                 | p-p               | 0,5 | dB                       | max.                | 1,5 dB    |
| <b>Relative attenuation</b>                 |                 | $a_{rel}$         |     |                          |                     |           |
| 734                                         | MHz ... 757 MHz |                   | 37  | dB                       | min.                | 25 dB     |
| 851                                         | MHz ... 894 MHz |                   | 35  | dB                       | min.                | 20 dB     |
| <b>Return loss within PB</b>                |                 |                   | 16  | dB                       | min.                | 10 dB     |
| <b>Input power level</b>                    |                 |                   | -   |                          | max.                | 15** dBm  |
| <b>Operating temperature range</b>          |                 | OTR               | -   |                          | - 25 °C ... + 85 °C |           |
| <b>Storage temperature range</b>            |                 |                   | -   |                          | - 40 °C ... + 85 °C |           |
| <b>Temperature coefficient of frequency</b> |                 | $TC_f$ *          | -39 | ppm/K                    |                     | -         |

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

\*\*) 25dBm short term in frequency range 734MHz...757MHz

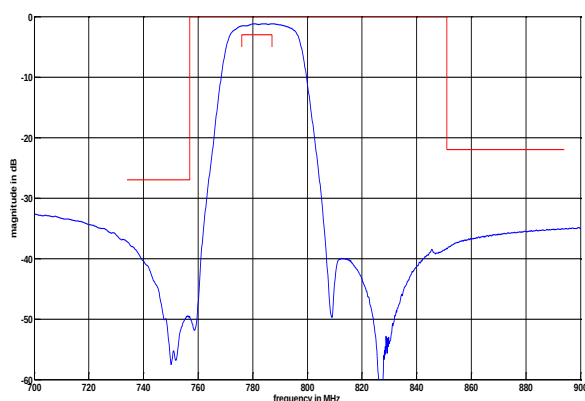
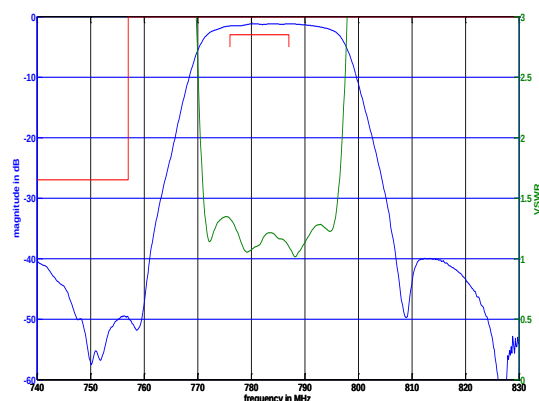
**Generated:**

**Checked / Approved:**

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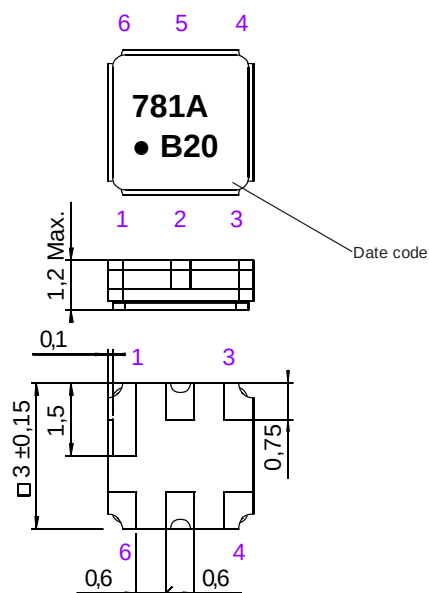
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## Filter characteristic



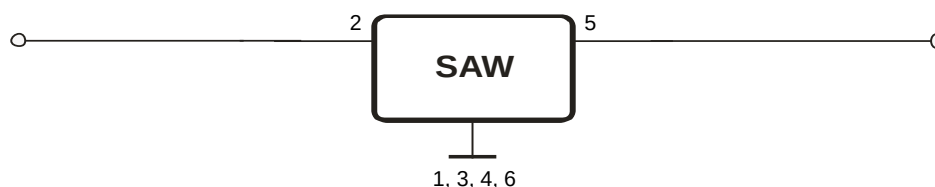
## Construction and pin connection

(All dimensions in mm)



|   |        |
|---|--------|
| 1 | Ground |
| 2 | Input  |
| 3 | Ground |
| 4 | Ground |
| 5 | Output |
| 6 | Ground |

Date code: Year + week  
 B 2011  
 C 2012  
 D 2013  
 ...

50  $\Omega$  Test circuit

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**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 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: 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 (2002/95/EG, 2005/618/EG)

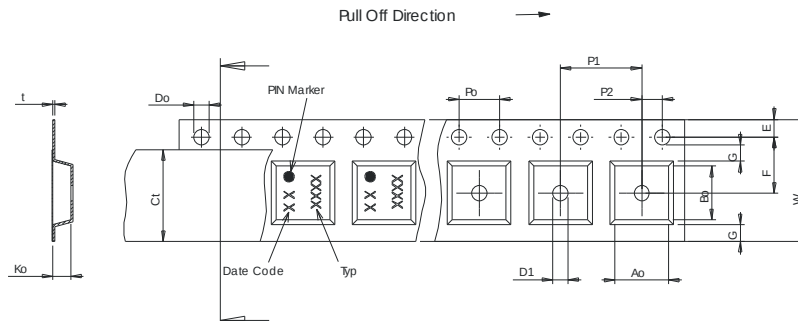
**Packing**

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;

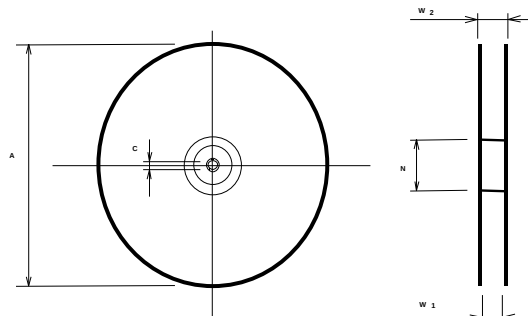
|                                                     |             |
|-----------------------------------------------------|-------------|
| max. pieces of filters per reel:                    | 3000        |
| reel of empty components at start:                  | min. 300 mm |
| reel of empty components at start including leader: | min. 500 mm |
| trailer:                                            | min. 300 mm |

**Tape (all dimensions in mm)**

|         |                |
|---------|----------------|
| W       | : 8,00 ± 0,3   |
| Po      | : 4,00 ± 0,1   |
| Do      | : 1,50 +0,1/-0 |
| E       | : 1,75 ± 0,1   |
| F       | : 3,50 ± 0,05  |
| G(min)  | : 0,75         |
| P2      | : 2,00 ± 0,05  |
| P1      | : 4,00 ± 0,1   |
| D1(min) | : 1,50         |
| Ao      | : 3,25 ± 0,1   |
| Bo      | : 3,25 ± 0,1   |
| Ct      | : 5,3 ± 0,1    |

**Reel (all dimensions in mm)**

|         |               |
|---------|---------------|
| A       | : 180         |
| W1      | : 8,4 +1,5/-0 |
| W2(max) | : 14,4        |
| N(min)  | : 60          |
| C       | : 13,0 ± 0,2  |



The minimum bending radius is 45 mm.

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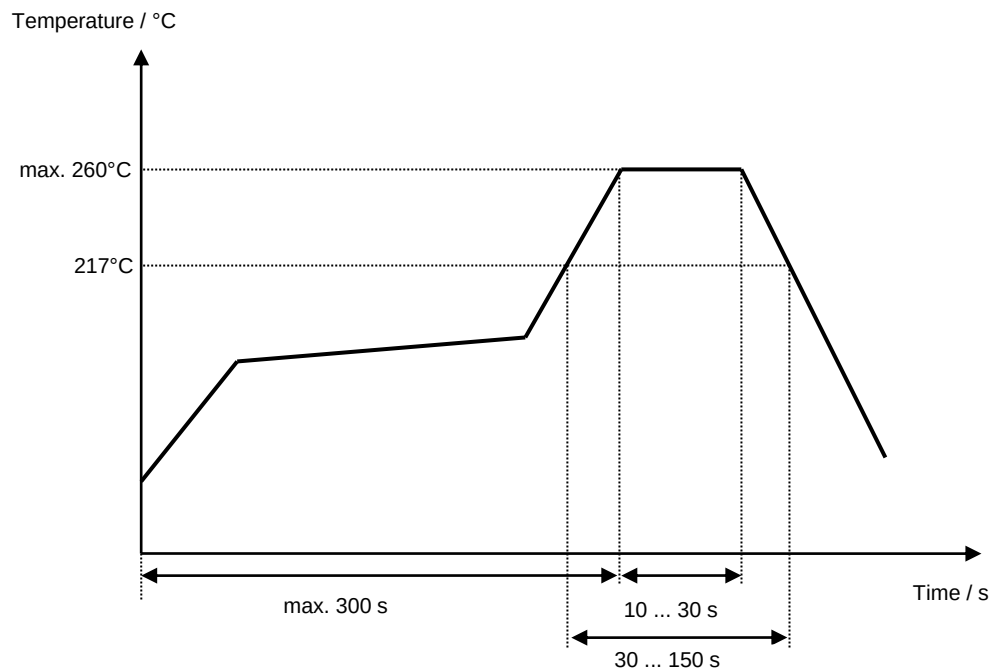
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**Air reflow temperature conditions**

| <b>Conditions</b>                          | <b>Exposure</b>             |
|--------------------------------------------|-----------------------------|
| 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 781A****5/5****History**

| <b>Version</b> | <b>Reason of Changes</b>                                                                                                                           | <b>Name</b>   | <b>Date</b> |
|----------------|----------------------------------------------------------------------------------------------------------------------------------------------------|---------------|-------------|
| 1.0            | - Generation of development specification                                                                                                          | Strehl        | 04.08.2008  |
| 1.1            | - Change construction                                                                                                                              | Strehl        | 12.08.2008  |
| 1.2            | - add of typical values and filter characteristics                                                                                                 | Pfeiffer      | 27.04.2009  |
| 2.0            | - Adding additional stop band criteria @734MHz...757MHz<br>- Adding short term input power level of 25dBm<br>- Change of tape and reel orientation | S.Springfeldt | 10.05.2011  |

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