

**VI TELEFILTER**

**Preliminary specification**

**TFS 465D**

**Measurement condition**

Ambient temperature: 23 °C  
 Input power level: 0 dBm  
 Terminating impedances:  
     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 465,0 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 (within PB)</b>                                    | $a_e = a_{max}$ | 2,5 dB            | max. 3,8 dB             |
| <b>Nominal frequency</b>   | $f_N$           | -                 | 465 MHz                 |
| <b>Passband</b>  | PB              | -                 | $f_N \pm 2,5$ MHz       |
| <b>Absolute attenuation (withinOTR)</b>                              |                 |                   |                         |
| 300 kHz ... 452,5 MHz  |                 | 52 dB             | min. 48 dB              |
| 452,5 MHz ... 457,5 MHz  |                 | 47 dB             | min. 35 dB              |
| <b>Absolute attenuation(within temperatur range:+15° C ...40° C)</b> |                 |                   |                         |
| 452,5 MHz ... 457,5 MHz  |                 | 44 dB             | min. 40 dB              |
| 480 MHz ... 485 MHz  |                 | 43 dB             | min. 30 dB              |
| 485 MHz ... 507,5 MHz  |                 | 53 dB             | min. 45 dB              |
| 507,5 MHz ... 1000 MHz   |                 | 50 dB             | min. 45 dB              |
| 1000 MHz ... 1200 MHz  |                 | 45 dB             | min. 40 dB              |
| 1200 MHz ... 1700 MHz  |                 | 40 dB             | min. 32 dB              |
| 1700 MHz ... 2000 MHz  |                 | 27 dB             | min. 20 dB              |
| <b>VSWR</b> within PB at ambiente temperature                        |                 | 1,5:1             | max. 2,1:1              |
| <b>Temperature coefficient of frequency</b>                          | $TC_f^*$        | T.B.D.            | ppm/K                   |
| <b>Operating temperature range</b>                                   | OTR             |                   | -10 °C ... + 85 °C      |
| <b>Storage temperature range</b>                                     |                 |                   | -30 °C ... + 85 °C      |
| <b>Input power level</b>   |                 | -                 | max. 25 dBm             |

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

**generated** :

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**checked / approved** :

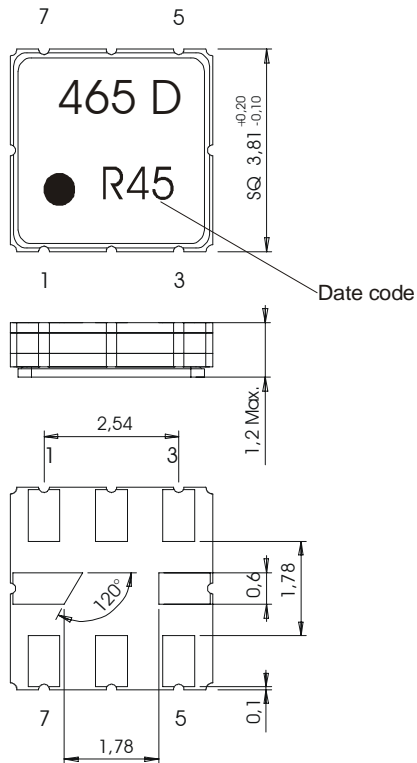
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**Construction, pin configuration**

(All dimensions in mm)



Date code:            Year + week

|     |      |
|-----|------|
| N   | 2001 |
| P   | 2002 |
| R   | 2003 |
| ... |      |

- Pin 1 Ground
- Pin 2 Input
- Pin 3 Ground
- Pin 4 Ground
- Pin 5 Ground
- Pin 6 Output
- Pin 7 Ground
- Pin 8 Ground

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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 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;

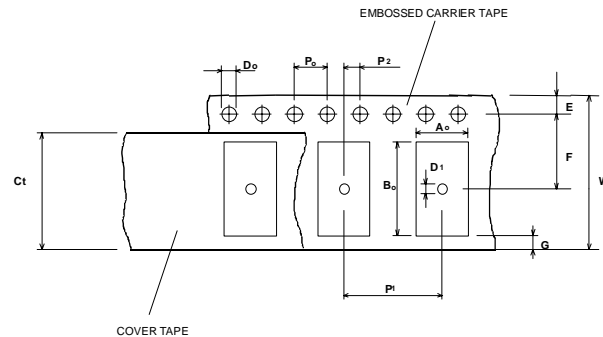
**Packing**

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:                   | 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 |

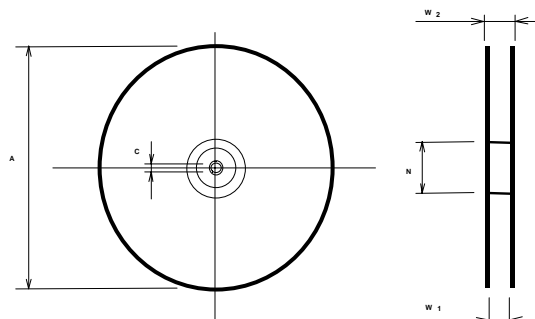
**Tape (all dimensions in mm)**

- W : 12,00 ± 0,3
- Po : 4,00 ± 0,1
- Do : 1,50 +0,1/-0
- E : 1,75 ± 0,1
- F : 5,50 ± 0,05
- G(min) : 0,75
- P2 : 2,00 ± 0,05
- P1 : 8,00 ± 0,1
- D1(min) : 1,50
- Ao : 4,30 ± 0,1
- Bo : 4,30 ± 0,1
- Ct : 9,5 ± 0,1



**Reel (all dimensions in mm)**

- A : 330
- W1 : 12,4 +2/-0
- W2(max) : 18,4
- N(min) : 50
- C : 13,0 0,5/-0,2



The minimum bending radius is 45 mm. The mounting surface of the filters faces the bottom side of the embossed carrier tape. Marking of the filters can be read if the upper side of the carrier tape is regarded with the sprocket holes on the right.

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**Air reflow temperature conditions**

1st and 2nd air reflow profile

|                     |                     |                      |                  |
|---------------------|---------------------|----------------------|------------------|
| <b>Name:</b>        | pre-heating periods | main-heating periods | peak temperature |
| <b>Temperature:</b> | 150 °C - 170 °C     | over 200 °C          | 255 °C ± 5 °C    |
| <b>Time:</b>        | 60 sec. - 90 sec.   | 20 sec. - 25 sec.    |                  |

**Chip-mount air reflow profile**

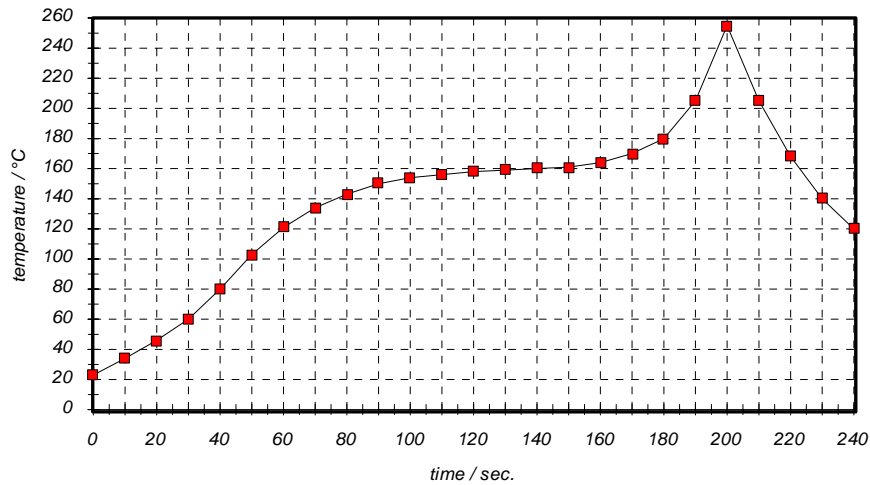


Table for temperature vs. time during the air reflow process

Tolerance of temperatures: ± 5 °C

| time / sec. | temperature / °C | time / sec. | temperature / °C |
|-------------|------------------|-------------|------------------|
| 0           | 23               | 140         | 160              |
| 10          | 34               | 150         | 161              |
| 20          | 46               | 160         | 164              |
| 30          | 60               | 170         | 170              |
| 40          | 80               | 180         | 180              |
| 50          | 103              | 190         | 205              |
| 60          | 121              | 195         | 230              |
| 70          | 134              | 200         | 255              |
| 80          | 143              | 205         | 230              |
| 90          | 150              | 210         | 205              |
| 100         | 154              | 215         | 180              |
| 110         | 156              | 220         | 165              |
| 120         | 158              | 230         | 140              |
| 130         | 159              | 240         | 120              |

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**History**

| <b>Version</b> | <b>Reason of Changes</b>                  | <b>Name</b> | <b>Date</b> |
|----------------|---|-------------|-------------|
| 1.0            | - Generation of preliminary specification | Roizengaft  | 4.11.2003   |

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