

VI TELEFILTER**Filter specification****TFS 70H14****1/5****Measurement condition :**

| | | |
|-----------------------------------|-------------|---------------------|
| Ambient temperature T_A : | 25 | °C |
| Input power level: | 0 | dBm |
| Terminating impedances in f_C : | for input: | 50 Ω // 0 pF |
| | for output: | 50 Ω // 0 pF |

Characteristics :

Remark:

Reference level for the relative attenuation a_{rel} of the **TFS 70H14** 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 reference frequency f_C is the arithmetic mean value of the upper and lower frequencies at the **20 dB** filter attenuation level relative to the insertion loss a_e . The temperature coefficient of frequency T_{Cf} is valid both for 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.

| Data | | typ. value | tolerance / limit |
|--|--------------------------|---|---------------------|
| Insertion loss (Reference level) | a_e | | max. 25 dB |
| Centre frequency at ambient temperature (f_{CTA}) | f_C | 70,0 MHz | 70,0 \pm 0,1 MHz |
| Pass band : | PB | | $f_C \pm 3,85$ MHz |
| Amplitude ripple in PB : | | | max. 0,8 dB |
| Bandwidth at ambient temperature T_A : | BW | | |
| 1 dB - band width | | | min. 8,0 MHz |
| 3 dB - band width | | 8,9 MHz | min. 8,5 MHz |
| 40 dB - band width | | 10,9 MHz | max. 11,1 MHz |
| Relative attenuation | a_{rel} | | |
| f_C | $f_C \pm 4,0$ MHz | - | max. 1 dB |
| $f_C \pm 4,0$ MHz | $f_C \pm 4,25$ MHz | - | max. 3 dB |
| $f_C \pm 5,55$ MHz | $f_C \pm 20$ MHz | 45 dB | min. 40 dB |
| Group delay (mean value in PB): | | 1,8 μ s | max. 2,5 μ s |
| Group delay ripple in PB (p-p): | | 33 ns | max. 100 ns |
| Deviation from linear phase in PB : | | 0,6 ° | max. 5 ° |
| Temperature coefficient of frequency (T_{Cf}): | | -87 ppm/K ² | |
| Frequency deviation of f_C over temperature : | | $\Delta f_C(\text{Hz}) = T_{Cf}(\text{ppm/K}) \times (T - T_0) \times f_{CTA} (\text{MHz})$ | |
| Operating temperature range | | | - 25 °C ... + 80 °C |
| Storage temperature range | | | - 40 °C ... + 85 °C |

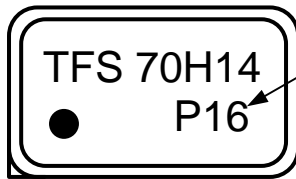
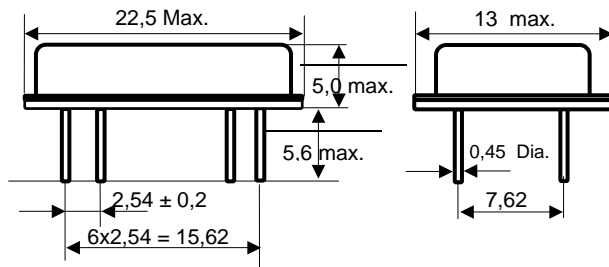
generated:**checked / approved:**

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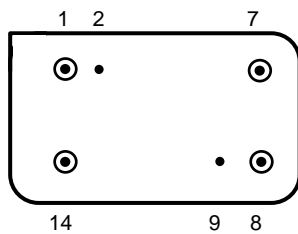
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Package and pin connection : (All dimensions in mm)

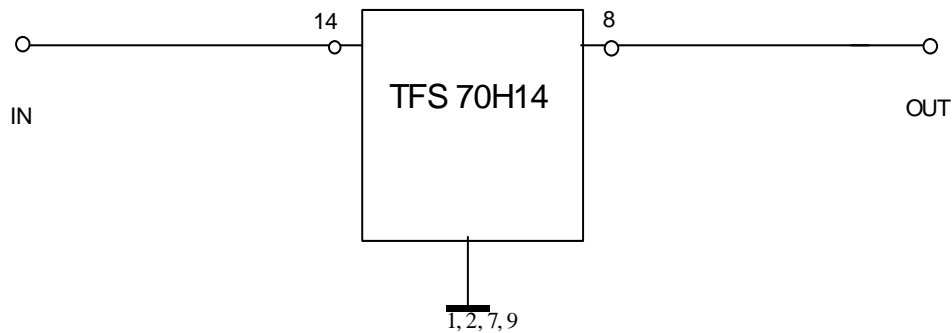


date code: year + week
 M 2000
 N 2001
 P 2002



Pin 14 **Input**
 Pin 1 Input RF Return
 Pin 8 **Output**
 Pin 7 Output RF Return
 Pin 2, 9 Package Ground

50 Ω matching network :



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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 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, please refer to the attached "Air reflow temperature conditions" on page 4;

Air reflow temperature conditions :

1st and 2nd air reflow profile

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

Air reflow profile

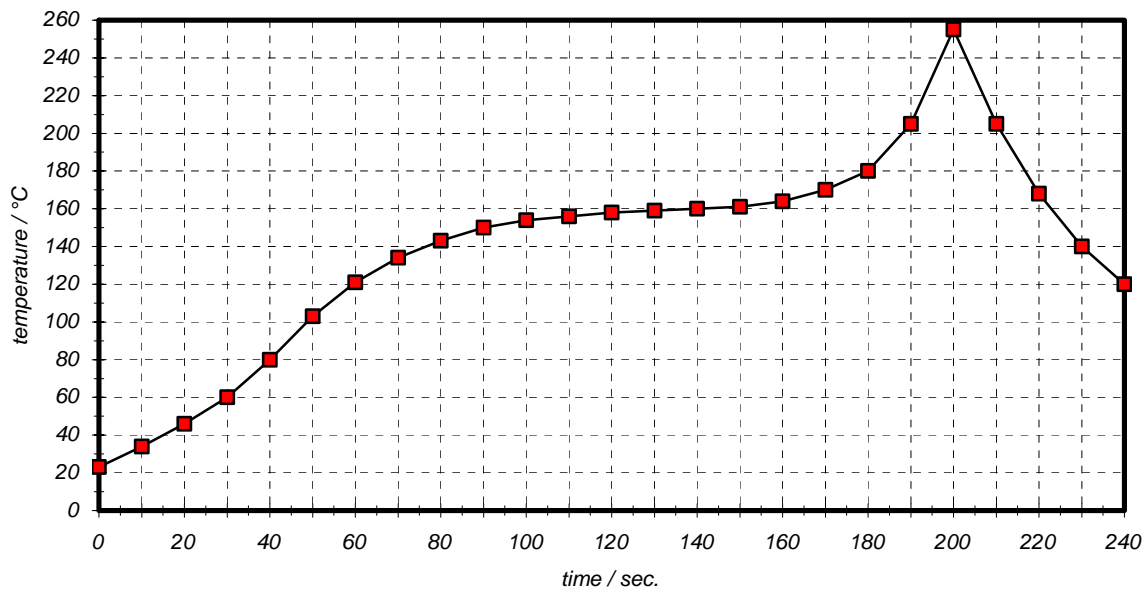


Table for temperature vs. time during the air reflow process

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 |

VI TELEFILTER**Filter specification****TFS 70H14****5/5****History**

| Version | Reason of changes | Name | Date |
|----------------|--------------------------------------|-------------|-------------|
| 1.0 | Generate preliminary specification . | Dunzow W. | 23.11.2001 |
| 1.1. | typical values added | Pfeiffer | 16.04.2002 |

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