

VI TELEFILTER**Filter Specification****TFS 70H12 - 1/4****1. 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.

2. Characteristics :

Remark:

Reference level for the relative attenuation a_{rel} of the TFS 70H12 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 | 21,5 dB | max. 23 dB |
| Centre frequency f_C at ambient temperature (f_{CTA}) | 70,0 MHz | 70,0 \pm 0,08 MHz |
| Pass band (PB) : | | $f_C \dots f_C \pm 4,0$ MHz |
| Amplitude ripple in : $f_C - 3,6$ MHz ... $f_C + 3,6$ MHz | 0,4 dB | max. 0,8 dB |
| Bandwidth (BW) : at ambient temperature T_A | | |
| 0,8 dB - band width | 7,45 MHz | min. 7,2 MHz |
| 1,5 dB - band width | 7,75 MHz | min. 7,6 MHz |
| 3 dB - band width | 8,05 MHz | min. 8,0 MHz |
| 20 dB - band width | 9,28 MHz | |
| 25 dB - band width | 9,47 MHz | max. 9,5 MHz |
| 30 dB - band width | 9,62 MHz | |
| 40 dB - band width | 9,88 MHz | max. 10 MHz |
| 50 dB - band width | 10,11 MHz | max. 10,5 MHz |
| Relative attenuation a_{rel} | | |
| $f_C \pm 3,6$ MHz $f_C \pm 3,8$ MHz | - | max. 0,8 dB |
| $f_C \pm 3,8$ MHz $f_C \pm 4,0$ MHz | - | max. 1,5 dB |
| $f_C \pm 4,75$ MHz $f_C \pm 5,0$ MHz | 27 dB | max. 3 dB |
| $f_C \pm 5,0$ MHz $f_C \pm 5,25$ MHz | 45 dB | min. 25 dB |
| $f_C \pm 5,25$ MHz $f_C \pm 9$ MHz | 54 dB | min. 40 dB |
| $f_C - 50$ MHz $f_C - 12$ MHz | 55...60 dB | min. 50 dB |
| $f_C - 12$ MHz $f_C - 9$ MHz | 45...50 dB | min. 45 dB |
| $f_C + 9$ MHz $f_C + 50$ MHz | 55...60 dB | min. 40 dB |
| $f_C - 68$ MHz $f_C - 50$ MHz | 45...50 dB | min. 45 dB |
| $f_C + 50$ MHz $f_C + 90$ MHz | 45...55 dB | |
| $f_C + 90$ MHz $f_C + 145$ MHz | 55...58 dB | |
| $f_C + 145$ MHz $f_C + 155$ MHz | 0 dB | |
| $f_C + 155$ MHz $f_C + 210$ MHz | 55...60 dB | |
| Group delay (mean value in PB): | 2,09 μ s | max. 2,5 μ s |
| Group delay ripple in PB (p-p): | 55...65 ns | max. 90 ns |
| Deviation from linear phase in PB : | 3 ° (r.m.s. 0,8 °) | max. 4 ° |
| Triple transit attenuation compared to main signal | 50...52 dB | |
| Crosstalk | 70...75 dB | |
| 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:**Wadim Duzow****Checked/Approved:****Dr. Bert Wall****VI TELEFILTER**

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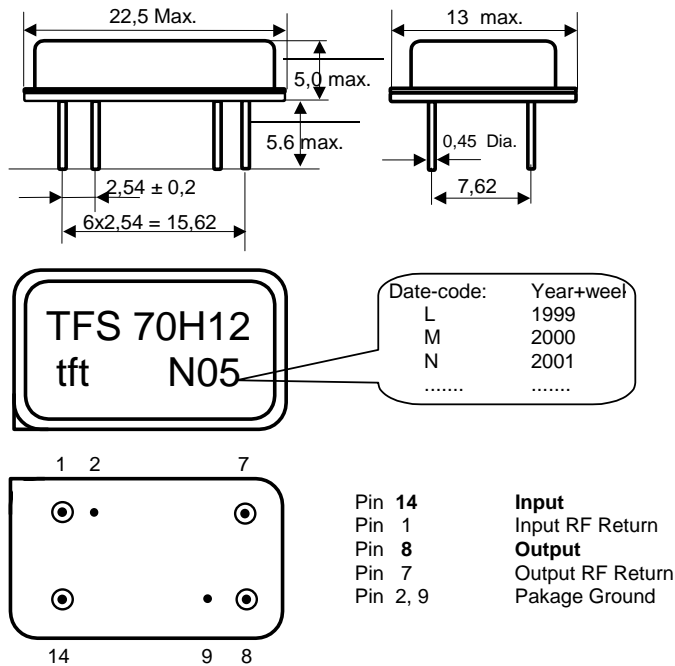
Hudson, NH 03051 / USA

Tel: (603) 598-0070 Fax: (603) 598-0075

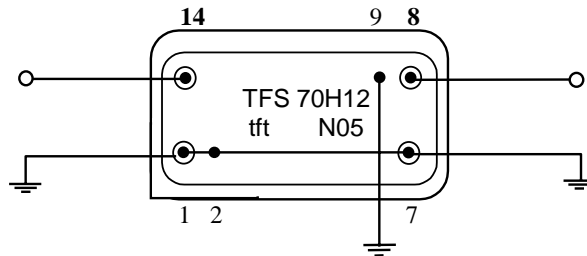
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3. Package and pin connection : (All dimensions in mm)



4. 50 Ω matching network :



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5. 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

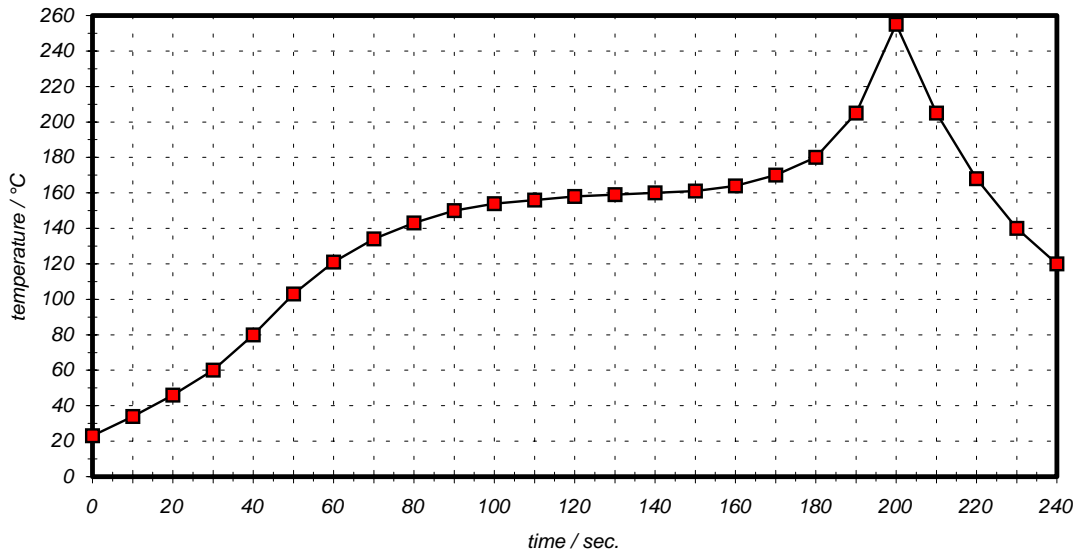


Table for temperature vs. time during the air reflow process

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 |

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VI TELEFILTER**Filter Specification****TFS 70H12 - 4/4****History**

| Version | Reason of changes | Name | Date |
|----------------|---|-------------|-------------|
| 1.0 | Generate Filter Specification . | Dunzow W. | 25.07.2000. |
| 1.1 | Change the following parameters according to customer requirements - add band width 1,5 dB : min. 7,6 MHz; | Dunzow W. | 19.02.2001 |

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