

VI TELEFILTER**Filter Specification****TFS 150G3 1/3****1. Measurement condition**

Ambient temperature T_A : 23 °C
 Input power level: 0 dBm
 Terminating impedances at f_C :
 for input: 67 Ω || - 3,07 pF. (typical)
 for output: 56 Ω || - 22,1 pF. (typical)
 Q-value of matching elements: 30

2. Characteristics

Remark:

Reference level for the relative attenuation a_{rel} of the **TFS150G3** 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 **22,5 dB** filter attenuation level relative to the insertion loss a_e . The temperature coefficient of frequency Tc_f 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 | 28 dB | max 30 dB |
| Reference frequency f_C at ambient temperature (f_{CTA}) | 150,25 MHz | 150,25 \pm 0,075 MHz |
| Pass band (PB) at ambient temperature T_A : | $f_C - 14,80$ MHz..... $f_C + 14,80$ MHz | |
| Amplitude ripple in PB (p-p): | 0,9 dB | max. 1,0 dB |
| Bandwidth at ambient temperature: | | |
| 1,5 dB - band width | 30,05 MHz | min. 30,00 MHz |
| 3 dB - band width | 30,16 MHz | |
| 22,5 dB - band width | 30,77 MHz | max. 30,80 MHz |
| 30 dB - band width | 31,20 MHz | max. 32,00 MHz |
| Relative attenuation a_{rel} | | |
| f_C | $f_C \pm 14,8$ MHz | - max. 1,0 dB |
| $f_C \pm 14,8$ MHz | $f_C \pm 14,99$ MHz | - max. 1,5 dB |
| $f_C \pm 15,4$ MHz | $f_C \pm 16,0$ MHz | 24 dB min. 22,5 dB |
| $f_C + 16$ MHz | $f_C + 150$ MHz | 50...55 dB min. 30 dB |
| $f_C - 16$ MHz | $f_C - 120$ MHz | 45...50 dB min. 30 dB |
| $f_C - 120$ MHz | $f_C - 145$ MHz | 55...70 dB min. 30 dB |
| Group delay (mean value in PB): 2,5 | μ s max 3 | μ s |
| Group delay ripple in PB (p-p): | 80 ns | max. 180 ns |
| Deviation from linear phase in PB : | 8° p-p...(1,5° r.m.s.) | |
| Triple transit attenuation compared to main signal Crosstalk | 62 dB | 57 dB |
| Substrate material | LiNbO ₃ | |
| Temperature coefficient of frequency (Tc_f) | -87 | -94 ppm/K |
| Frequency deviation of f_C over temperature | $\Delta f_C(\text{Hz}) = Tc_f(\text{ppm/K}) \times (T - T_A) \times f_{CTA}(\text{MHz})$ | |
| Operating temperature range | - 25 °C ... + 80 °C | |
| Storage temperature range | - 40 °C ... + 85 °C | |

Generated: _____ Dunzow W.P.

Checked/Approved: _____ Dr. Bert Wall

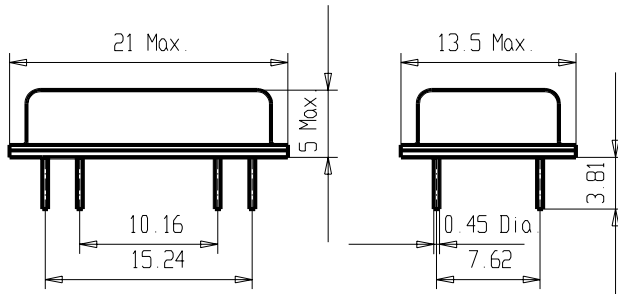
VI TELEFILTER
 Potsdamer Straße 18
 D 14 513 TELTOW / Germany
 Tel: (+49) 3328 4784-52 / Fax: (+49) 3328 4784-30
 E-Mail: tft@telefilter.com

Vectron International, Inc.
 267 Lowell Road
 Hudson, NH 03051 / USA
 Tel: (603) 598-0070 Fax: (603) 598-0075
 E-Mail: vti@vtinh.com

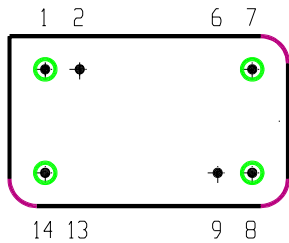
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Construction and pin connection

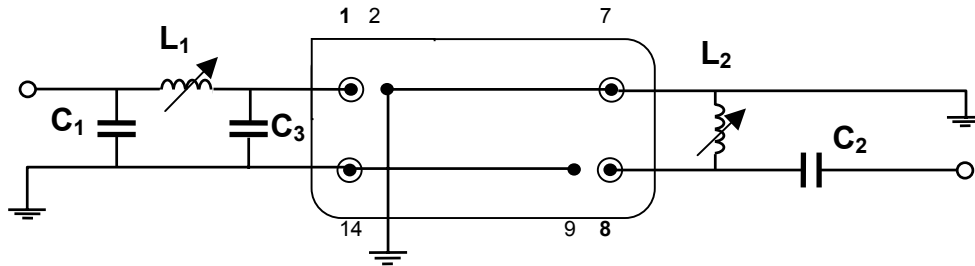
(All dimensions in mm)



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



50 Ω - Matching network:



C_1, L_1, C_3 ; C_2, L_2 - to see Application Note.

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

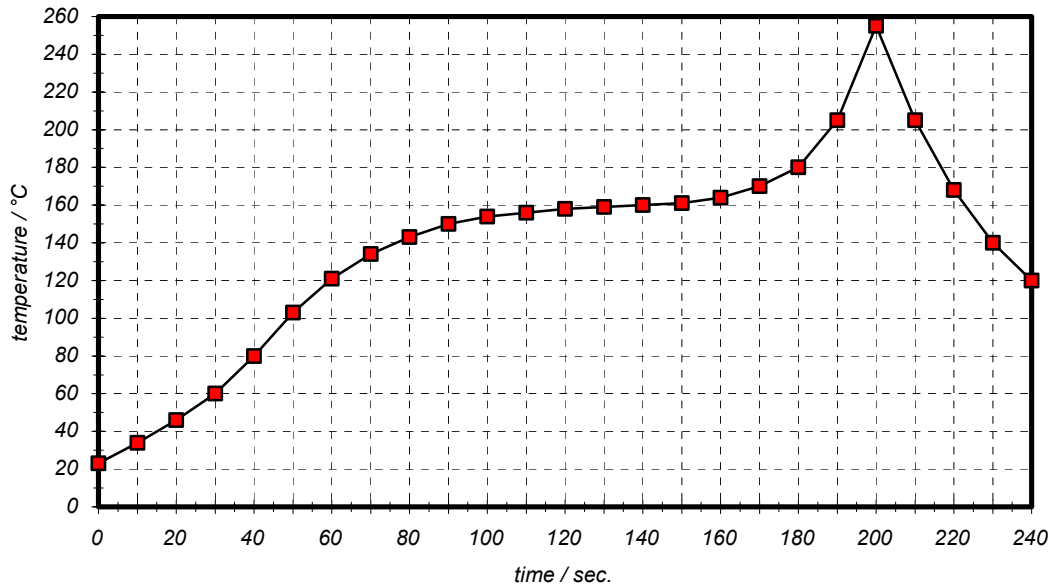


Table for temperature vs. time during the air reflow process

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 |