MtronPTI
...when timing matters

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Specification for a 4-Pole 5x7mm SMD Monolithic Crystal Filter MtronPTI P/N: XF9402R

I. General & Electrical Requirements

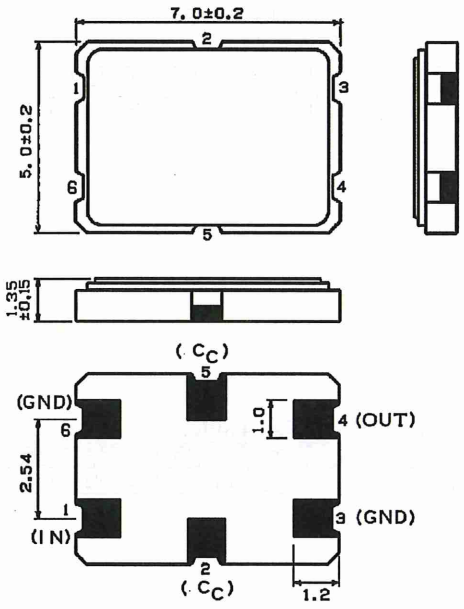
1. Center Frequency (F_O): 21.4MHz
2. Passband @ 3dB: F_O ±9.0kHz minimum
3. Insertion Loss (@F_O): 4.0dB maximum
4. Passband Ripple (peak-valley): 1.0dB maximum
5. Group Delay Variation:
   Over F_O ±7.5kHz: ≤ 25*μsec*
   Over F_O ±9.0kHz: ≤ 35 *μsec*
6. Attenuation (minimum relative to IL at F_O):
   20dB: F_O ±24.0kHz maximum
   40dB: F_O ±49.0kHz maximum
   60dB: F_O ±125.00kHz maximum
7. Ultimate Attenuation: 60dB minimum, F_O -910kHz
8. Spurious Response: 17dB minimum
9. Coupling Capacitance (C_C): 2.5*pF*
10. Input Signal Level: ≤ 0dBm
11. Insulation Resistance (100V_{DC}): > 500MΩ
12. Z_S/Z_L: 2800Ω // 0.7pF typical

MtronPTI MODEL: XF9402R
ENG APPROVAL: _____
DATE: _____
MFG APPROVAL _____
DATE: 10/17/13

Note 1: All electrical performance specifications are to be met over the -40°C to +85°C Operating Temperature Range.

II. Environmental, Test & Physical Requirements:

1. Temperature Range:
   Operating: -40°C to +85°C
   Storage: -55°C to +105°C
2. Solderability: Peak Reflow Temperature +240°C ±5°C
3. Humidity: 95% ±3% @ +40°C for 96-hours
4. Seal: Hermetic
5. Shock (survival): RTCA DO-160F Section 8, Category B
6. Vibration (survival): RTCA DO-160F Section 7,
   Category S Test Curves C, B3, L & M.
   Category U Test Curve G
7. Temperature Cycle: -40°C 30-minutes/cycle; +85°C 30-minutes/cycle
8. Package: Single 5x7mm (ref drawing)
9. RoHS: Full RoHS Compliance



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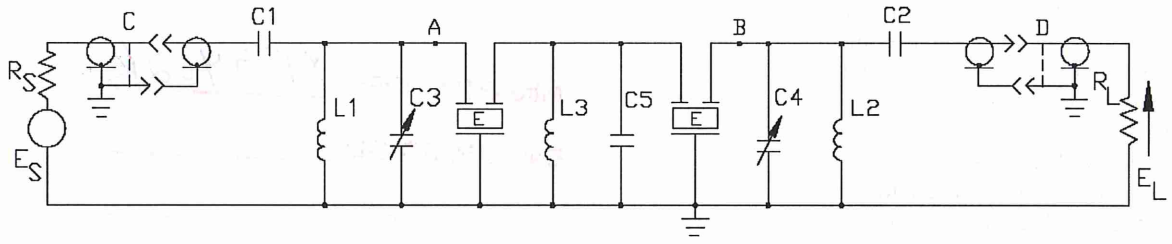
III. 50Ω Matching Network:



RS = RL = 50 OHMS

C1 = 19.5 pF NOM. (SELECT FOR CORRECT SOURCE PARALLEL RESISTANCE.)

C2 = 19.5 pF NOM. (SELECT FOR CORRECT LOAD PARALLEL RESISTANCE.)

C3 = C4 = 0.8 - 10 pF (TRIMMER)

L1 = L2 = 29T #28 AWG ON T25-6 CORE

L3 = SELECT AT TEST FIXTURE BUILD TO ENSURE CORRECT Z_C.

Z SOURCE = 2800 // +0.7PF

Z LOAD = 2800 // +0.7PF

Z_C = C5 = 2.5PF

Z SOURCE AND Z LOAD ARE THE IMPEDANCES AT POINTS A AND B, RESPECTIVELY, WITH THE FILTER REMOVED AND THE TEST FIXTURE TERMINATED WITH A 50 OHM RESISTIVE LOAD.

NOTES: 1.) C_3 AND C_4 ARE ADJUSTED FOR (CHECK ONE):

__X__ OPTIMUM PASSBAND CHARACTERISTIC
____ SPECIFIED SOURCE AND LOAD REACTANCE OF_____ pF.

C_5 ADJUSTED FOR (CHECK ONE):

__X__ OPTIMUM PASSBAND CHARACTERISTIC
____ FIXED JUNCTION CAPACITANCE OF_____ pF.

2.) FLAT LOSS IS THE RATIO OF POWER DELIVERED TO THE LOAD, TO THE AVAILABLE POWER, EXPRESSED IN dB.

A. EXCLUDING TEST FIXTURE LOSS (EQUAL SOURCE & LOAD RESISTANCE): FLAT LOSS = $20 \log_{10} (E_{L1}/E_{L2})$

E_{L1} = E_L WITH FILTER REPLACED BY A SHORT FROM A TO B & C_3, C_4 TUNED FOR MAX E_L AT Fon.

E_{L2} = E_L WITH FILTER INSTALLED, C_3 & C_4 TUNED PER NOTE 1, AND FREQUENCY PER NOTE 2.

B. INCLUDING TEST FIXTURE LOSS

FLAT LOSS = $20 \log_{10} (E_{L3}/E_{L2})$

E_{L3} = E_L WITH TEST FIXTURE REMOVED & C CONNECTED TO D.

3.) INITIAL LEVEL OF E SUCH THAT E_{L3} = 0.224 VOLTS ±10%. (SOURCE POWER = 0 ± 1 dBm.) E_S HELD CONSTANT DURING ALL MEASUREMENT.

IV. Datasheet Revision Table:

Date	Rev.	Orig.	Details of Revision
10/16/13	E	BRM	Updated with 50Ω matching network diagram.