

# SPECIFICATION

COMMERCIALLY AVAILABLE

CERAMIC BAND PASS

PART NUMBER: CF-16000504B

No Pure Tin

| ISSUED / REVISION         | ENGINEER APPROVED | DOCUMENT CHECKED | DRAFTSMAN |
|---------------------------|-------------------|------------------|-----------|
| 2/2/15 TG <sup>(kn)</sup> |                   |                  |           |
|                           |                   |                  |           |
|                           |                   |                  |           |

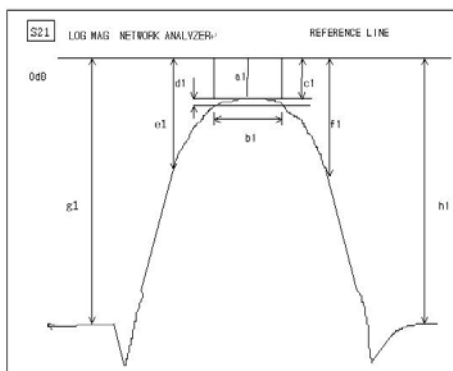
***FILTRONETICS Inc***

## 1. Part Number: CF-16000504B

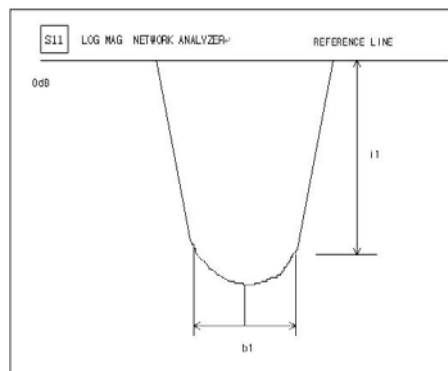
## 2. Electrical Specifications:

| NO | ITEMS                           |               | Ref. | SPECIFICATION                                 |
|----|---------------------------------|---------------|------|-----------------------------------------------|
| 1  | Center Frequency (Fo)           |               | a1   | 1600 MHz                                      |
| 2  | 3.0dB Band Width                |               | b1   | 50 MHz +/-10%                                 |
| 3  | Insertion Loss                  | AT Fo         | a1   | 3.2 dB Max                                    |
| 4  | V.S.W.R                         | AT Fo+/-20MHz | -    | 1.75:1 Min                                    |
| 5  | Attenuation<br>[absolute value] | At 1550 MHz   | -    | 20 dB Min                                     |
|    |                                 | At 1650 MHz   | -    | 19 dB Min                                     |
| 6  | Group Delay Variation           | AT Fo+/-20MHz | -    | 30ns Max                                      |
| 7  | Impedance                       |               | -    | 50Ω                                           |
| 8  | Maximum Input Power             |               | -    | 1 W (+30dBm)                                  |
| 9  | Operating Temperature Range     |               | -    | -40 ~ +85°C                                   |
| 10 | Storage Temperature             |               | -    | -54 to +85°C                                  |
| 11 | Workmanship                     |               | -    | IPC-610 class 3                               |
| 12 | Process Temperature             |               | -    | +150°C for 1 hour or<br>+230°C for 10 minutes |

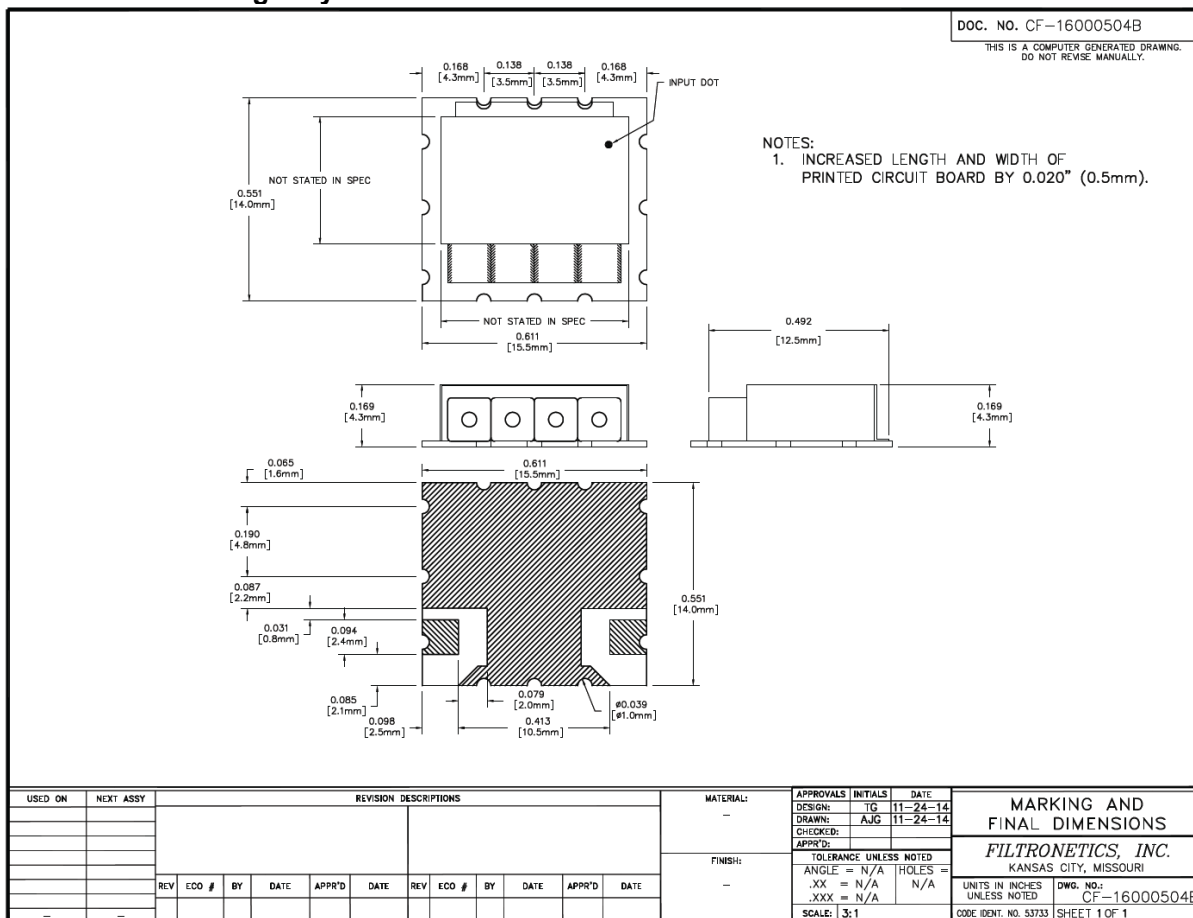
## S21 LOG MAG NETWORK ANALYZER



## S11 LOG MAG NETWORK ANALYZER



### 3. Mechanical Package Style:



#### MATERIAL SPECIFICATION

##### 1 PCB

- 1) MATERIAL: FR4
- 2) TERMINALS: Sn/Pb, HASL

##### 2. METAL CASE

- 1) Ag or Ni plated brass

##### 3. RESONATOR

- 1) COATING MATERIAL: silver plate, 8~30um

##### 4. INTERNAL SOLDER

- 1) Sn96.5/Ag3.5 Lead Free solder,  
221 deg C melting

##### 5. RESONATORS TABS

- 1) Sn/Pb(9:1) Plated or Ag brass

##### 6. NO PURE TIN ALLOWED

#### MARKING

Label Material: High temp polyimide

Marking:

CF-16000504B

Filtronetics

Date Code

UNIT: MM

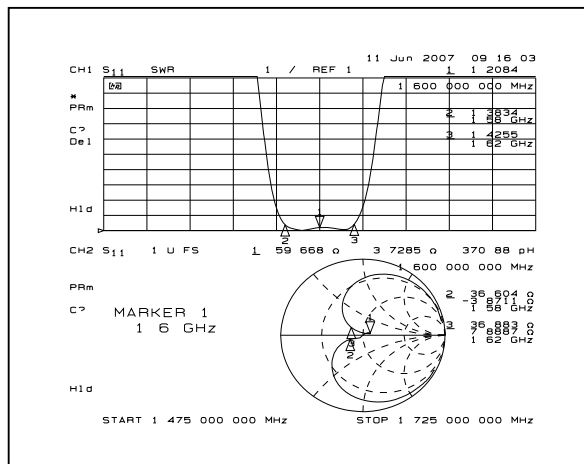
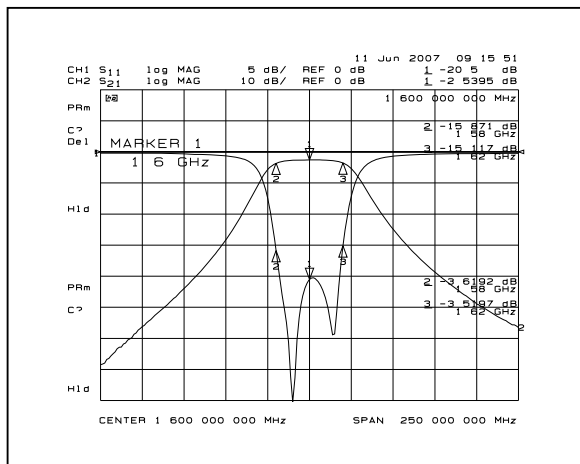
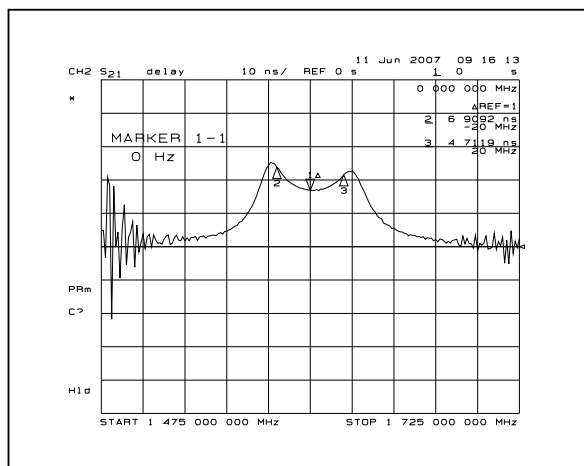
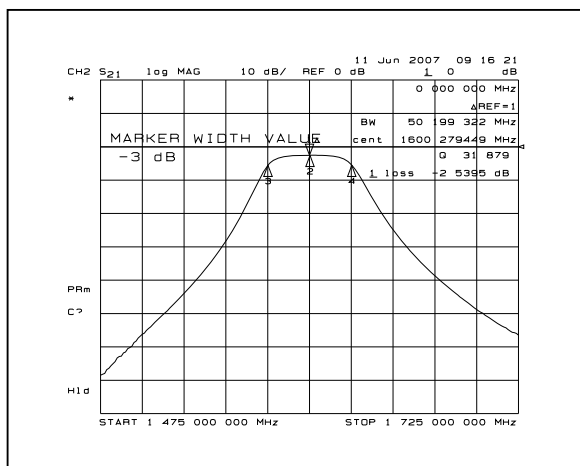
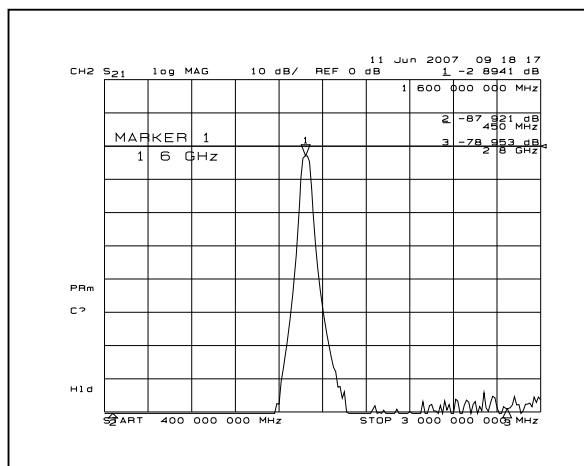
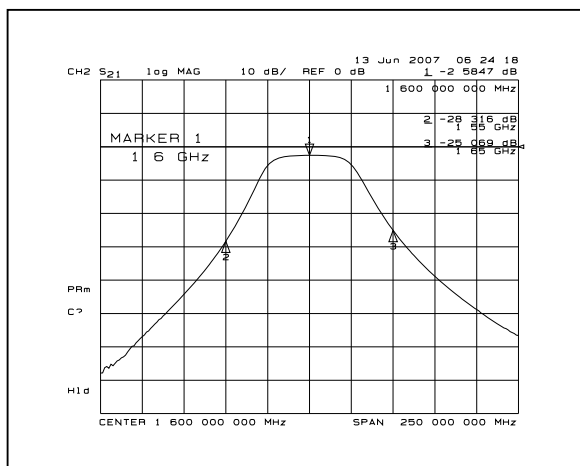
TOLERANCE: +/-0.5MM

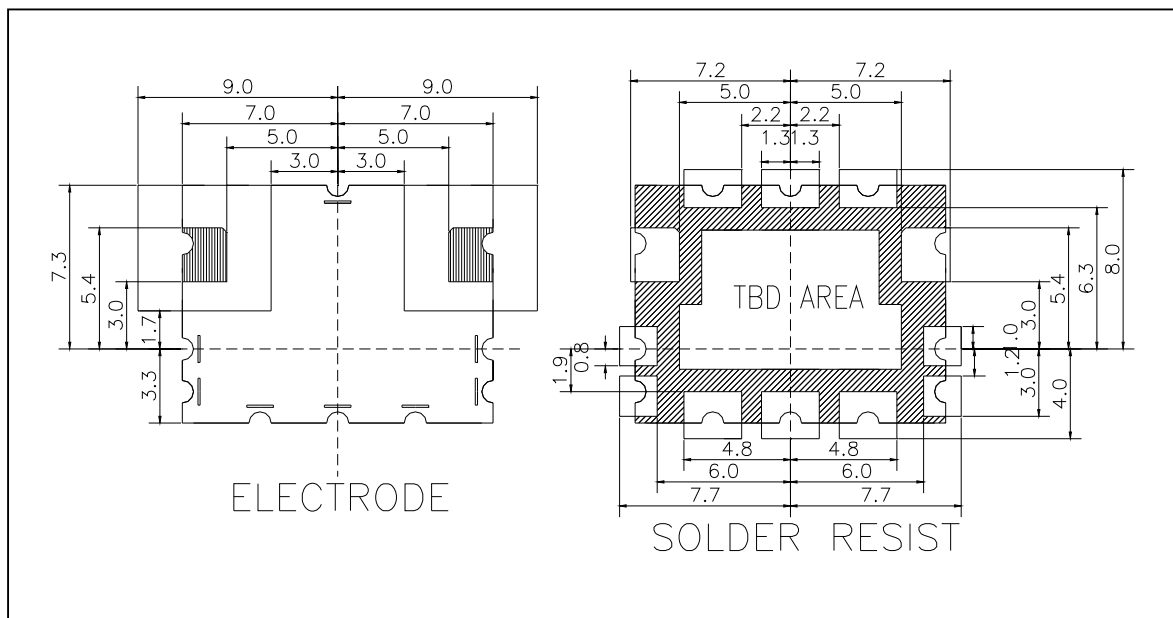
IN/OUT LAND: +/-0.3MM

#### CAUTIONS:

1. When handling products, be careful not to damage the outer-electrode.
2. When handling these products, be careful not to touch the outer-electrode with bare hands or solder-ability is reduced.
3. Do not apply excessive pressure or shock to product in handling or in transportation or damage to the ceramic filters may result.

## 4. Graphs

**S21 vs. S11 (INSERTION LOSS, RETURN LOSS, V.S.W.R, SMITH CHART)****S21 (3dB BAND WIDTH, GROUP DELAY)****S21 (ATTENUATION, OUT BAND ATTENUATION)**

**Recommended Solder Pattern:**

**Quality Conformance Test 100% Final inspection**  
**100% Test Data \*\*\***

|    |                                                                             |
|----|-----------------------------------------------------------------------------|
| 1) | Visual mechanical to IPC-610 Class 3. Including inspection for cleanliness. |
| 2) | Thermal Shock -54 to +85°C 10 cycles                                        |
| 3) | Electrical Specifications at ambient                                        |

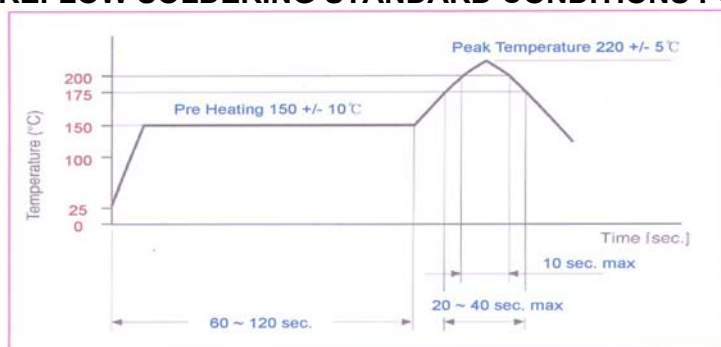
**5. DEFINITIONS:**

| TERMS                | DESCRIPTION                                                                                                                                                      | SPECIFICATION    |
|----------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| Center Frequency     | The midpoint of through band pass filter pass band, normally expressed as the arithmetic mean of the -3dB point. Also called Fo.                                 | 3. SPECIFICATION |
| Pass Band Width      | The width of the pass band of a filter referenced to the minimum insertion loss point in the pass band. The pass band of a filter is stated as -1.0dB bandwidth. |                  |
| Insertion Loss       | The loss of the filter, in dB, measured at center frequency relative to a through line (0 dB).                                                                   |                  |
| Attenuation          | Reduction of RF power through a filter measured in dB, at desired band and referenced to 0 dB. (Filter to be removed from circuit)                               |                  |
| Pass Band Ripple     | Variations in loss in the pass band of the filter, superimposed upon the fundamental shape of the pass band.                                                     |                  |
| V.S.W.R in Pass Band | The ratio of the maximum value of a standing wave to its minimum value, related to the return loss in pass band.                                                 |                  |

## 6. RELIABILITY TEST AND CONDITIONS

| ITEM                                    | TEST CONDITIONS                                                                                                                                                                                                                                                  | REQUIREMENTS                                                                                                                                                            |
|-----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Resistance to solder heat               | Preheat temperature : 120 to 150°C<br>Preheat time: 1 to 1.5 min<br>Solder temperature: 260 +/- 10°C<br>Dipping time: 10 +/- 0.5 sec<br><b>→Soldering Time : 5sec.max.per each terminal</b>                                                                      | No damage such as cracks should be caused in chip element.                                                                                                              |
| Solderability                           | Preheat temperature: 120 to 150°C<br>Preheat time: 1 to 1.5 min<br>Solder temperature: 235 +/- 5°C<br>Dipping time: 5 +/- 1 sec                                                                                                                                  | More than 80% of the terminal electrode shall be covered with new solder                                                                                                |
| Heat resistance (High-temperature Load) | Temperature: 85 +/- 2°C<br>Applied voltage: Rated voltage<br>Applied current: Rated current<br>Recovery: 1 to 2hrs of recovery under the standard condition after the removal from test chamber.                                                                 | No mechanical damage. After test, the device shall satisfy the specification in section 3.<br><b>Standard condition is 25+/-5°C and Less than 65% relative humidity</b> |
| Thermal shock (Temperature cycle)       | Conditions for 1 cycle<br>Step 1: + 85°C 15 min<br>Step 2 : - 54°C 15 min<br>Number of cycle: 10                                                                                                                                                                 | No mechanical damage. After test, the device shall satisfy the specification in section 3.                                                                              |
| Humidity Resistance                     | Temperature: 40 +/- 2°C<br>Humidity: 90 to 95% RH<br>Duration: 96 +/- 5 hrs<br>Recovery: 1 to 2hrs of recovery under the standard condition after the removal from test chamber.                                                                                 | No mechanical damage. After test, the device shall satisfy the specification in section 3.                                                                              |
| Vibration                               | The device is subjected to vibration of 2 sweeps in each of three mutually perpendicular planes<br>Frequency shall be varied within 10~50Hz with 1.5mm double amplitude and within 50~500 Hz With 10G's acceleration. Sweep time of Frequency Shall be 15minutes | No mechanical damage. After test, the device shall satisfy the specification in section 3.                                                                              |
| Shock                                   | The device is subjected to 3 shocks in each direction of six mutually perpendicular planes Each shock shall be a half-sine wave shaped with a magnitude of 30G's and a duration of 11msec.                                                                       | No mechanical damage. After test, the device shall satisfy the specification in section 3.                                                                              |

## 7. REFLOW SOLDERING STANDARD CONDITIONS FOR TIN/LEAD



- Measuring point of temperature in-out terminals of the device.
- Reflow Soldering
- Both convection and infrared rays
- Hot air
- Hot plates
- Solder Cream: Sn64/Pb36