

Coaxial Bandpass Filter

ZX75BP-2150-S+

50Ω 2050 to 2250 MHz

The Big Deal

- Fast roll-off on the upper sideband
- Good Matching and low loss in the pass band
- Connectorized package



Generic photo used for illustration purposes only
CASE STYLE: KE1467

Product Overview

ZX75BP-2150-S+ is a wideband bandpass filter in a rugged connectorized package covering 2050 to 2250 MHz. This is designed for asymmetric rejection applications such as super-heterodyne receivers. By having asymmetric band, faster roll-off at upper side band is achieved in a comparatively smaller package and lower pass band insertion loss. It has repeatable performance across lots and consistent performance across temperature

Key Features

| Feature | Advantages |
|---|---|
| Fast roll-off on the upper side band | Wide bandwidth filter with fast-roll off on the upper side band, which increases selectivity on the adjacent channel. |
| Good matching and low loss in pass band | This filter has good matching and low loss in the pass band |
| Connectorized package | Connectorized package is easy to interface with other devices and well suited for test setups. |
| High power handling | This model uses high Q capacitors and high current handling inductors which is well suited for high power applications. |

Notes

- A. Performance and quality attributes and conditions not expressly stated in this specification document are intended to be excluded and do not form a part of this specification document.
B. Electrical specifications and performance data contained in this specification document are based on Mini-Circuit's applicable established test performance criteria and measurement instructions.
C. The parts covered by this specification document are subject to Mini-Circuits standard limited warranty and terms and conditions (collectively, "Standard Terms"); Purchasers of this part are entitled to the rights and benefits contained therein. For a full statement of the Standard Terms and the exclusive rights and remedies thereunder, please visit Mini-Circuits' website at www.minicircuits.com/MCLStore/terms.jsp



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| Connectors | Model |
|------------|----------------|
| SMA-MF | ZX75BP-2150-S+ |

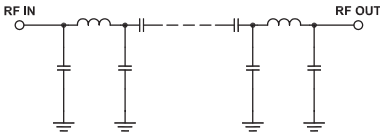
Features

- Fast roll-off on the upper side band
- Good matching in the pass band
- Connectorized package

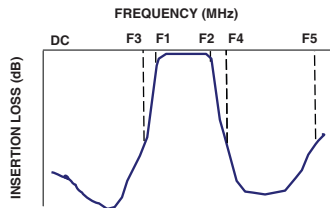
Applications

- Defense systems
- Fixed microwave
- IMT
- Auxiliary broadcasting
- Private and public land mobile

Functional Schematic



Typical Frequency Response



Electrical Specifications at 25°C

| Parameter | F# | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|------------------|------------------|-----------------|-----------|------|------|------|
| Pass Band | Center Frequency | - | - | 2150 | - | MHz |
| | Insertion Loss | F1-F2 | 2050-2250 | 0.8 | 2.0 | dB |
| | VSWR | F1-F2 | 2050-2250 | 1.3 | 1.78 | :1 |
| Stop Band, Lower | Insertion Loss | DC-F3 | DC - 600 | 29 | - | dB |
| | VSWR | DC-F3 | DC - 600 | 20 | - | :1 |
| Stop Band, Upper | Insertion Loss | F4-F5 | 2720-4500 | 29 | - | dB |
| | VSWR | F4-F5 | 2720-4500 | 20 | - | :1 |

Maximum Ratings

| | |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -55°C to 100°C |
| RF Power Input | 6.3 W max. |

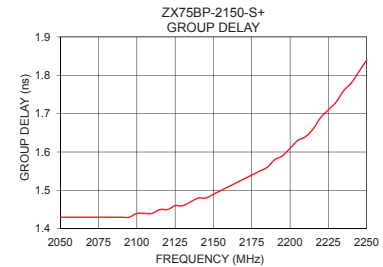
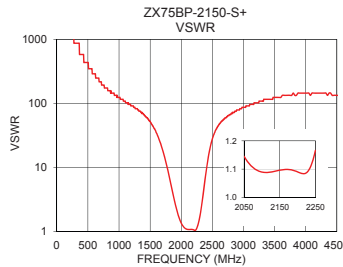
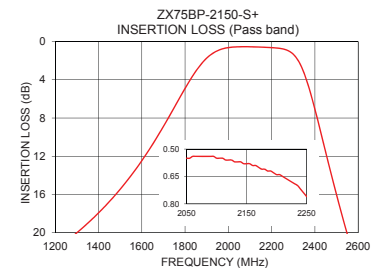
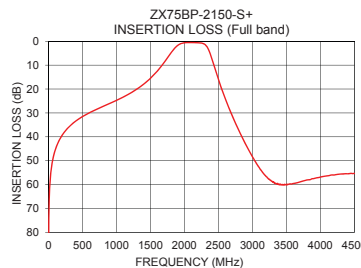
Permanent damage may occur if any of these limits are exceeded.

Typical Performance Data at 25°C

| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) | Frequency (MHz) | Group Delay (nsec) |
|-----------------|---------------------|-----------|-----------------|--------------------|
| 1 | 85.06 | 1737.18 | 2050 | 1.43 |
| 50 | 51.32 | 1737.18 | 2060 | 1.43 |
| 525 | 31.10 | 347.44 | 2070 | 1.43 |
| 600 | 29.95 | 289.53 | 2080 | 1.43 |
| 1250 | 20.93 | 86.86 | 2090 | 1.43 |
| 1500 | 15.46 | 52.65 | 2100 | 1.44 |
| 1725 | 7.90 | 15.39 | 2110 | 1.44 |
| 1850 | 3.09 | 4.62 | 2120 | 1.45 |
| 1900 | 1.73 | 2.79 | 2130 | 1.46 |
| 2050 | 0.55 | 1.15 | 2140 | 1.48 |
| 2150 | 0.58 | 1.08 | 2150 | 1.49 |
| 2250 | 0.76 | 1.14 | 2160 | 1.51 |
| 2310 | 1.57 | 1.98 | 2170 | 1.53 |
| 2350 | 3.30 | 3.70 | 2180 | 1.55 |
| 2400 | 7.07 | 8.77 | 2200 | 1.61 |
| 2500 | 16.02 | 28.03 | 2210 | 1.64 |
| 2560 | 20.97 | 39.49 | 2220 | 1.69 |
| 2720 | 32.37 | 59.91 | 2230 | 1.73 |
| 3500 | 60.08 | 124.09 | 2240 | 1.78 |
| 4500 | 55.33 | 133.63 | 2250 | 1.84 |

+RoHS Compliant

The +Suffix identifies RoHS Compliance. See our web site for RoHS Compliance methodologies and qualifications



Notes

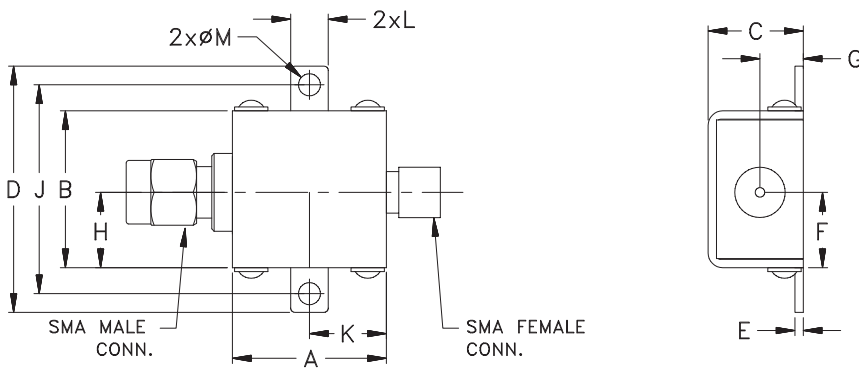
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Coaxial Connections

| | |
|--------|------------|
| INPUT | SMA-MALE |
| OUTPUT | SMA-FEMALE |

Outline Drawing



Outline Dimensions ($\frac{\text{inch}}{\text{mm}}$)

| A | B | C | D | E | F | G |
|-------|-------|-------|-------|------|-------|------|
| .74 | .75 | .46 | 1.18 | .04 | .362 | .21 |
| 18.80 | 19.05 | 11.68 | 29.97 | 1.02 | 9.19 | 5.33 |
| H | J | K | L | M | Wt. | |
| .362 | 1.00 | .37 | .18 | .11 | grams | |
| 9.19 | 25.40 | 9.40 | 4.57 | 2.79 | 24.4 | |

Note: Please refer to case style drawing for details

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Typical Performance Data

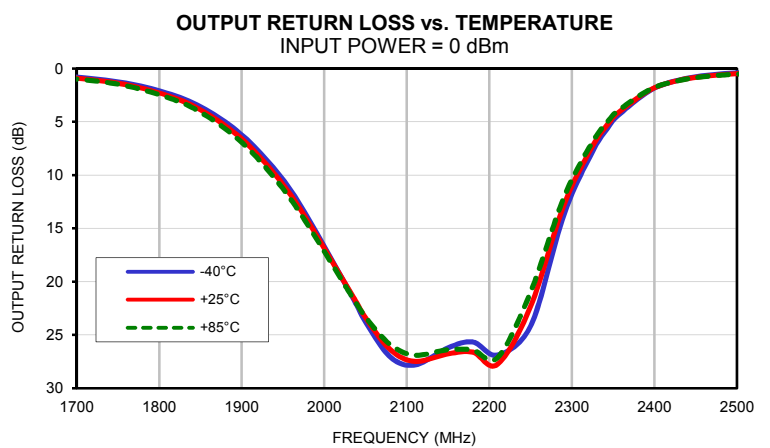
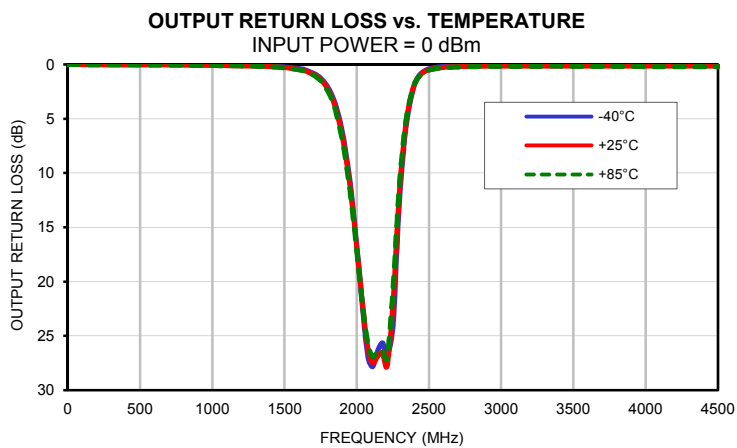
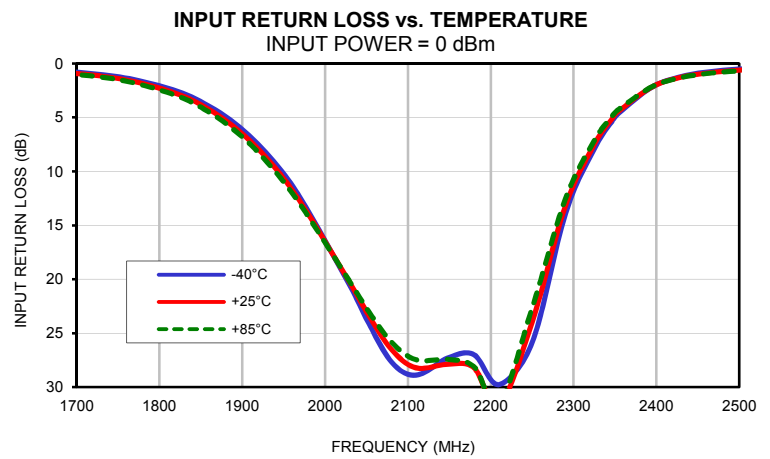
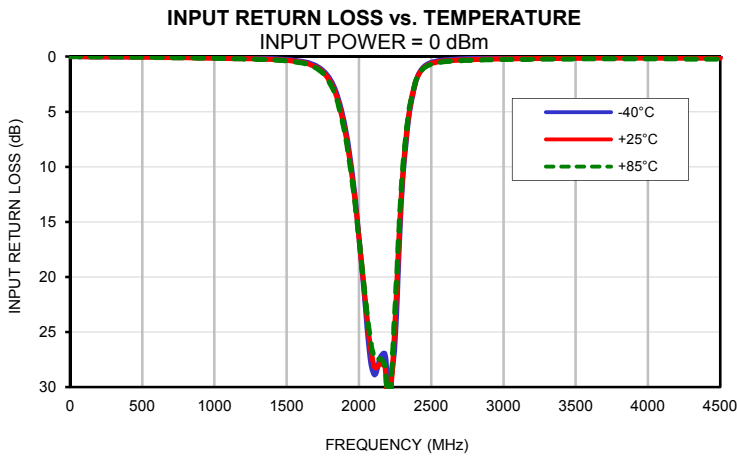
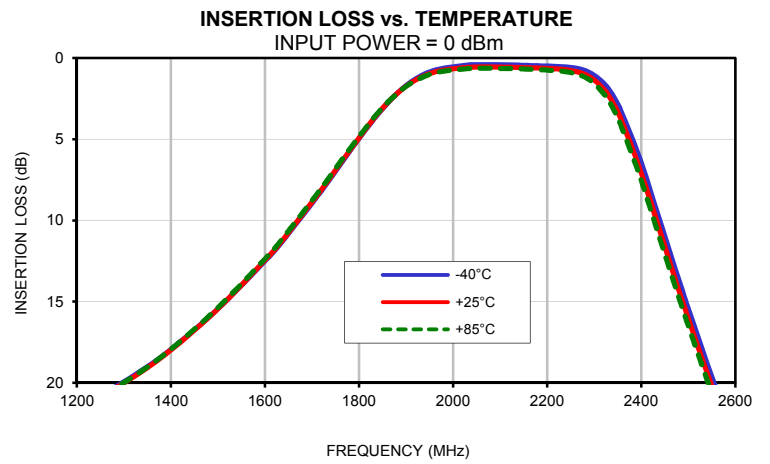
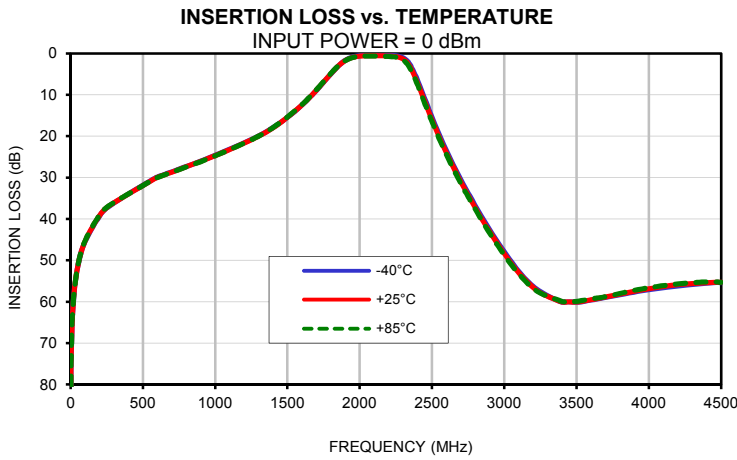
| FREQ. (MHz) | INSERTION LOSS | | | INPUT RETURN LOSS | | | OUTPUT RETURN LOSS | | |
|--------------------|----------------|--------|--------|-------------------|--------|--------|--------------------|--------|--------|
| | (dB) | | | (dB) | | | (dB) | | |
| | @-40°C | @+25°C | @+85°C | @-40°C | @+25°C | @+85°C | @-40°C | @+25°C | @+85°C |
| 1 | 84.54 | 85.06 | 85.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 2 | 78.43 | 79.18 | 79.95 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 4 | 73.31 | 73.25 | 73.07 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 10 | 65.44 | 65.37 | 65.02 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 20 | 59.23 | 59.33 | 59.23 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 35 | 54.38 | 54.36 | 54.39 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 55 | 50.52 | 50.51 | 50.41 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 95 | 45.85 | 45.74 | 45.67 | 0.00 | 0.00 | 0.01 | 0.00 | 0.00 | 0.00 |
| 185 | 40.11 | 39.98 | 39.87 | 0.01 | 0.01 | 0.01 | 0.01 | 0.00 | 0.01 |
| 265 | 36.93 | 36.90 | 36.82 | 0.01 | 0.01 | 0.02 | 0.01 | 0.01 | 0.01 |
| 590 | 30.02 | 30.09 | 30.14 | 0.02 | 0.06 | 0.06 | 0.00 | 0.02 | 0.04 |
| 600 | 29.88 | 29.95 | 29.99 | 0.02 | 0.06 | 0.07 | 0.00 | 0.02 | 0.04 |
| 970 | 25.06 | 25.12 | 25.17 | 0.08 | 0.13 | 0.14 | 0.03 | 0.07 | 0.08 |
| 1295 | 20.03 | 20.10 | 20.08 | 0.15 | 0.21 | 0.24 | 0.09 | 0.14 | 0.15 |
| 1465 | 16.36 | 16.38 | 16.31 | 0.23 | 0.30 | 0.34 | 0.18 | 0.23 | 0.26 |
| 1605 | 12.35 | 12.30 | 12.21 | 0.42 | 0.51 | 0.56 | 0.39 | 0.46 | 0.50 |
| 1645 | 10.99 | 10.93 | 10.83 | 0.53 | 0.64 | 0.70 | 0.51 | 0.59 | 0.64 |
| 1720 | 8.17 | 8.10 | 8.00 | 0.94 | 1.08 | 1.17 | 0.95 | 1.06 | 1.14 |
| 1770 | 6.15 | 6.09 | 6.00 | 1.50 | 1.68 | 1.81 | 1.52 | 1.67 | 1.79 |
| 1820 | 4.18 | 4.14 | 4.08 | 2.53 | 2.78 | 2.96 | 2.58 | 2.80 | 2.98 |
| 1850 | 3.11 | 3.09 | 3.05 | 3.53 | 3.82 | 4.05 | 3.59 | 3.87 | 4.10 |
| 1885 | 2.06 | 2.08 | 2.08 | 5.20 | 5.56 | 5.84 | 5.30 | 5.65 | 5.95 |
| 1920 | 1.28 | 1.35 | 1.39 | 7.57 | 7.99 | 8.30 | 7.72 | 8.14 | 8.50 |
| 1965 | 0.71 | 0.82 | 0.88 | 11.84 | 12.22 | 12.51 | 12.09 | 12.50 | 12.90 |
| 2030 | 0.43 | 0.57 | 0.65 | 20.58 | 20.33 | 20.24 | 20.87 | 20.78 | 20.96 |
| 2050 | 0.41 | 0.55 | 0.63 | 23.67 | 23.01 | 22.67 | 23.79 | 23.39 | 23.34 |
| 2080 | 0.41 | 0.54 | 0.63 | 27.65 | 26.49 | 25.81 | 27.07 | 26.39 | 25.92 |
| 2110 | 0.41 | 0.55 | 0.64 | 28.88 | 28.21 | 27.46 | 27.83 | 27.49 | 26.91 |
| 2150 | 0.44 | 0.58 | 0.67 | 27.23 | 27.85 | 27.43 | 26.22 | 26.78 | 26.39 |
| 2180 | 0.47 | 0.61 | 0.71 | 27.00 | 28.22 | 28.12 | 25.67 | 26.62 | 26.43 |
| 2210 | 0.50 | 0.65 | 0.76 | 29.76 | 31.71 | 31.53 | 26.90 | 27.76 | 27.13 |
| 2250 | 0.57 | 0.76 | 0.89 | 25.88 | 23.96 | 22.65 | 24.18 | 22.32 | 20.97 |
| 2290 | 0.88 | 1.14 | 1.33 | 13.98 | 13.23 | 12.58 | 13.79 | 12.87 | 12.15 |
| 2325 | 1.69 | 2.07 | 2.36 | 7.89 | 7.50 | 7.14 | 7.78 | 7.28 | 6.89 |
| 2345 | 2.56 | 3.02 | 3.38 | 5.51 | 5.27 | 5.03 | 5.39 | 5.07 | 4.82 |
| 2355 | 3.11 | 3.61 | 4.00 | 4.58 | 4.39 | 4.22 | 4.46 | 4.21 | 4.01 |
| 2395 | 6.02 | 6.63 | 7.10 | 2.17 | 2.16 | 2.14 | 2.04 | 1.99 | 1.95 |
| 2430 | 9.12 | 9.76 | 10.24 | 1.21 | 1.27 | 1.30 | 1.07 | 1.10 | 1.12 |
| 2460 | 11.85 | 12.49 | 12.96 | 0.80 | 0.89 | 0.94 | 0.67 | 0.73 | 0.76 |
| 2485 | 14.10 | 14.72 | 15.17 | 0.60 | 0.70 | 0.76 | 0.48 | 0.55 | 0.59 |
| 2500 | 15.41 | 16.02 | 16.47 | 0.52 | 0.62 | 0.69 | 0.40 | 0.47 | 0.51 |
| 2555 | 20.01 | 20.58 | 21.00 | 0.35 | 0.45 | 0.52 | 0.24 | 0.32 | 0.36 |
| 2620 | 24.98 | 25.52 | 25.91 | 0.26 | 0.36 | 0.42 | 0.16 | 0.24 | 0.27 |
| 2695 | 30.21 | 30.72 | 31.10 | 0.20 | 0.30 | 0.36 | 0.13 | 0.19 | 0.23 |
| 2720 | 31.84 | 32.37 | 32.74 | 0.19 | 0.29 | 0.35 | 0.11 | 0.18 | 0.21 |
| 2845 | 39.53 | 40.02 | 40.37 | 0.14 | 0.24 | 0.30 | 0.09 | 0.16 | 0.18 |
| 2950 | 45.38 | 45.81 | 46.12 | 0.11 | 0.21 | 0.27 | 0.08 | 0.14 | 0.16 |
| 3035 | 49.63 | 50.10 | 50.39 | 0.09 | 0.20 | 0.25 | 0.07 | 0.14 | 0.16 |
| 3120 | 53.50 | 53.73 | 54.05 | 0.07 | 0.18 | 0.24 | 0.07 | 0.13 | 0.16 |
| 3230 | 57.12 | 57.40 | 57.53 | 0.05 | 0.17 | 0.23 | 0.07 | 0.13 | 0.16 |
| 3390 | 60.00 | 59.99 | 59.80 | 0.03 | 0.15 | 0.21 | 0.06 | 0.13 | 0.15 |
| 3440 | 59.99 | 60.04 | 60.10 | 0.03 | 0.15 | 0.21 | 0.06 | 0.13 | 0.16 |
| 3515 | 60.11 | 60.04 | 59.85 | 0.02 | 0.14 | 0.20 | 0.06 | 0.13 | 0.16 |
| 3600 | 59.60 | 59.52 | 59.30 | 0.02 | 0.14 | 0.20 | 0.06 | 0.13 | 0.16 |
| 3700 | 58.98 | 58.86 | 58.79 | 0.01 | 0.13 | 0.19 | 0.06 | 0.13 | 0.16 |
| 3925 | 57.52 | 57.32 | 57.07 | 0.01 | 0.12 | 0.19 | 0.06 | 0.13 | 0.18 |
| 4175 | 56.26 | 55.97 | 55.79 | 0.00 | 0.12 | 0.20 | 0.05 | 0.13 | 0.19 |
| 4350 | 55.70 | 55.51 | 55.30 | 0.00 | 0.13 | 0.21 | 0.04 | 0.14 | 0.20 |
| 4450 | 55.37 | 55.31 | 55.20 | 0.00 | 0.13 | 0.22 | 0.03 | 0.14 | 0.20 |
| 4500 | 55.35 | 55.33 | 55.32 | 0.00 | 0.13 | 0.23 | 0.03 | 0.14 | 0.20 |



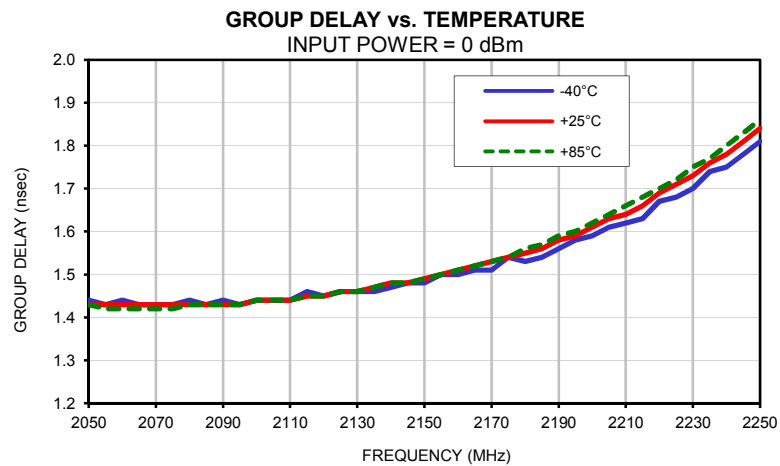
Typical Performance Data

| FREQ. (MHz) | GROUP DELAY | | |
|--------------------|-------------|--------|--------|
| | (nsec) | | |
| | @-40°C | @+25°C | @+85°C |
| 2050 | 1.44 | 1.43 | 1.43 |
| 2055 | 1.43 | 1.43 | 1.42 |
| 2060 | 1.44 | 1.43 | 1.42 |
| 2065 | 1.43 | 1.43 | 1.42 |
| 2070 | 1.43 | 1.43 | 1.42 |
| 2075 | 1.43 | 1.43 | 1.42 |
| 2080 | 1.44 | 1.43 | 1.43 |
| 2085 | 1.43 | 1.43 | 1.43 |
| 2090 | 1.44 | 1.43 | 1.43 |
| 2095 | 1.43 | 1.43 | 1.43 |
| 2100 | 1.44 | 1.44 | 1.44 |
| 2105 | 1.44 | 1.44 | 1.44 |
| 2110 | 1.44 | 1.44 | 1.44 |
| 2115 | 1.46 | 1.45 | 1.45 |
| 2120 | 1.45 | 1.45 | 1.45 |
| 2125 | 1.46 | 1.46 | 1.46 |
| 2130 | 1.46 | 1.46 | 1.46 |
| 2135 | 1.46 | 1.47 | 1.47 |
| 2140 | 1.47 | 1.48 | 1.48 |
| 2145 | 1.48 | 1.48 | 1.48 |
| 2150 | 1.48 | 1.49 | 1.49 |
| 2155 | 1.50 | 1.50 | 1.50 |
| 2160 | 1.50 | 1.51 | 1.51 |
| 2165 | 1.51 | 1.52 | 1.52 |
| 2170 | 1.51 | 1.53 | 1.53 |
| 2175 | 1.54 | 1.54 | 1.54 |
| 2180 | 1.53 | 1.55 | 1.56 |
| 2185 | 1.54 | 1.56 | 1.57 |
| 2190 | 1.56 | 1.58 | 1.59 |
| 2195 | 1.58 | 1.59 | 1.60 |
| 2200 | 1.59 | 1.61 | 1.62 |
| 2205 | 1.61 | 1.63 | 1.64 |
| 2210 | 1.62 | 1.64 | 1.66 |
| 2215 | 1.63 | 1.66 | 1.68 |
| 2220 | 1.67 | 1.69 | 1.70 |
| 2225 | 1.68 | 1.71 | 1.72 |
| 2230 | 1.70 | 1.73 | 1.75 |
| 2235 | 1.74 | 1.76 | 1.77 |
| 2240 | 1.75 | 1.78 | 1.80 |
| 2245 | 1.78 | 1.81 | 1.83 |
| 2250 | 1.81 | 1.84 | 1.86 |

Typical Performance Curves



Typical Performance Curves



Outline Dimensions



| CASE #. | A | B | C | D | E | F | G | H | J | K | L | M |
|---------|----------------|----------------|----------------|-----------------|---------------|----------------|---------------|----------------|-----------------|---------------|---------------|---------------|
| KE1467 | .74 (18.80) | .75 (19.05) | .46 (11.68) | 1.18 (29.97) | .04 (1.02) | .362 (9.19) | .21 (5.33) | .362 (9.19) | 1.00 (25.40) | .37 (9.40) | .18 (4.57) | .11 (2.79) |

| CASE #. | WT. GRAM |
|---------|----------|
| KE1467 | 24.4 |

Dimensions are in inches (mm). Tolerances: 2Pl. $\pm .03$; 3Pl. $\pm .015$

Tolerance on hole size and interaxes dimensions to be $\pm .005$.

Note:

1. Case material: Brass
2. Case finish: Gold
3. Cover: Nickel plated.

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| Specification | Test/Inspection Condition | Reference/Spec |
|----------------------------|---|---|
| Operating Temperature | -55° to 100°C Ambient Environment | Individual Model Data Sheet |
| Storage Temperature | -55° to 100° C Ambient Environment | Individual Model Data Sheet |
| Humidity | 90 to 95% RH, 40°C, 96 hours; Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103, Condition B |
| Thermal Shock | -55° to 100°C, 100 cycles | MIL-STD-202, Method 107, Condition A-3, except +100°C |
| Vibration (High Frequency) | 20g peak, 10-2000 Hz, 12 times in each of three perpendicular directions (total 36) | MIL-STD-202, Method 204, Condition D |
| Mechanical Shock | 50g, 11ms half-sine, 3 shocks each direction 3 axes (total 18) | MIL-STD-202, Method 213, Condition A |