

# Coaxial High Pass Filter

## ZX75HP-225-S+

50Ω      360 to 3000 MHz

### The Big Deal

- Low insertion loss
- High rejection
- Connectorized package



*Generic photo used for illustration purposes only*  
CASE STYLE: KE1467

### Product Overview

ZX75HP-225-S+ is a High pass filter in a rugged connectorized package covering 360 to 3000 MHz. This filter will find its application in TV Broadcast, point-to-point military radio and cordless telephones. It has repeatable performance across production lots and consistent performance across temperature.

### Key Features

| Feature               | Advantages                                                                                           |
|-----------------------|------------------------------------------------------------------------------------------------------|
| Low insertion loss    | Can be used in high performance applications.                                                        |
| Good rejection        | This enables the filter to attenuate spurious signals and reject harmonics for broad band frequency. |
| Connectorized package | The connectorized package is easy to interface with other devices and well suited for test setups.   |

#### 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.  
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# Coaxial High Pass Filter

50Ω 360 to 3000 MHz

## ZX75HP-225-S+



Generic photo used for illustration purposes only

CASE STYLE: KE1467

| Connectors | Model         |
|------------|---------------|
| SMA-MF     | ZX75HP-225-S+ |

### Features

- Wide band, 360 MHz to 3000 MHz
- High rejection
- Connectorized package

### Applications

- TV Broadcast
- Point-to-point military radio
- Cordless telephones

### Electrical Specifications at 25°C

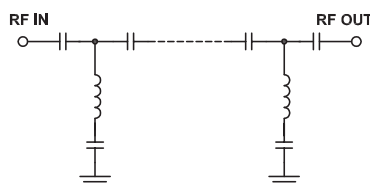
|           | Parameter      | F#    | Frequency (MHz) | Min. | Typ. | Max. | Unit |
|-----------|----------------|-------|-----------------|------|------|------|------|
| Stop Band | Rejection Loss | DC-F1 | DC-159          | 20   | 30   | -    | dB   |
|           | VSWR           | DC-F1 | DC-159          | -    | 67   | -    | :1   |
| Pass Band | Insertion Loss | F2-F3 | 360-3000        | -    | 0.5  | 1.5  | dB   |
|           | VSWR           | F2-F3 | 360-3000        | -    | 1.4  | -    | :1   |

### Maximum Ratings

|                       |                |
|-----------------------|----------------|
| Operating Temperature | -40°C to 85°C  |
| Storage Temperature   | -55°C to 100°C |
| RF Power Input        | 0.5 W.         |

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

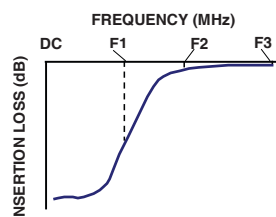
### Functional Schematic



### Typical Performance Data at 25°C

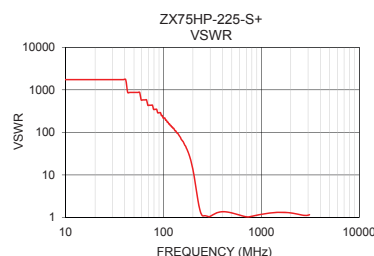
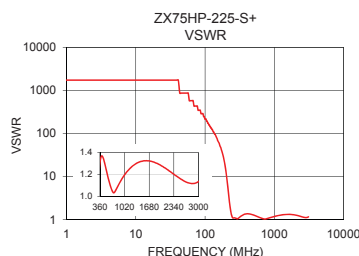
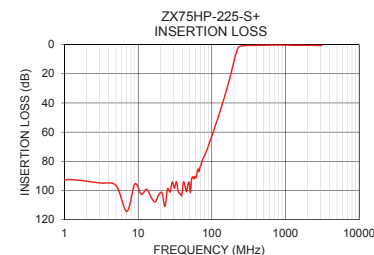
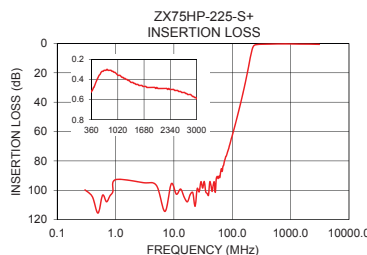
| Frequency (MHz) | Insertion Loss (dB) | VSWR (:1) |
|-----------------|---------------------|-----------|
| 0.30            | 99.73               | 1737.18   |
| 65.19           | 85.29               | 579.06    |
| 91.27           | 68.46               | 289.53    |
| 129.39          | 45.72               | 115.81    |
| 159.00          | 30.71               | 60.40     |
| 191.57          | 15.17               | 20.70     |
| 209.63          | 7.23                | 7.20      |
| 215.65          | 5.09                | 4.72      |
| 225.00          | 2.74                | 2.53      |
| 245.74          | 1.01                | 1.16      |
| 300.00          | 0.57                | 1.06      |
| 360.00          | 0.52                | 1.31      |
| 525.00          | 0.38                | 1.24      |
| 800.00          | 0.31                | 1.07      |
| 1350.00         | 0.43                | 1.30      |
| 1750.00         | 0.48                | 1.32      |
| 2275.00         | 0.50                | 1.22      |
| 2575.00         | 0.52                | 1.15      |
| 2900.00         | 0.57                | 1.12      |
| 3000.00         | 0.59                | 1.13      |

### Typical Frequency Response



#### +RoHS Compliant

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



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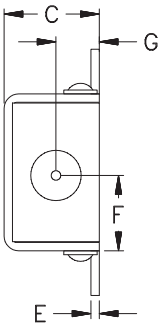
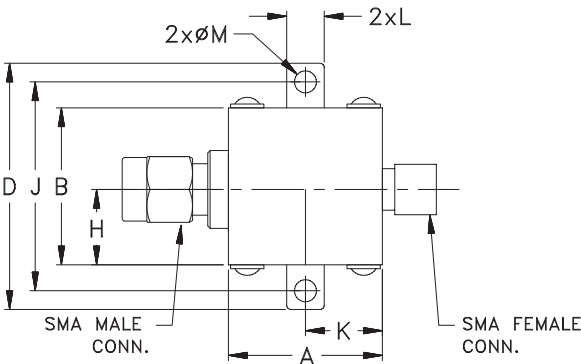
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ZX75HP-225-S+  
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Coaxial Connections

|        |            |
|--------|------------|
| INPUT  | SMA-Male   |
| OUTPUT | SMA-Female |

Outline Drawing



Outline Dimensions ( inch )

|       |       |       |       |      |      |       |
|-------|-------|-------|-------|------|------|-------|
| 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. | INSERTION LOSS |        |        | INPUT RETURN LOSS |        |        | OUTPUT RETURN LOSS |        |        |
|-------|----------------|--------|--------|-------------------|--------|--------|--------------------|--------|--------|
| (MHz) | (dB)           |        |        | (dB)              |        |        | (dB)               |        |        |
|       | @-40°C         | @+25°C | @+85°C | @-40°C            | @+25°C | @+85°C | @-40°C             | @+25°C | @+85°C |
| 0     | 92.49          | 99.73  | 99.10  | 0.00              | 0.00   | 0.00   | 0.02               | 0.01   | 0.03   |
| 1     | 92.98          | 115.54 | 96.28  | 0.00              | 0.00   | 0.00   | 0.01               | 0.01   | 0.02   |
| 1     | 112.83         | 107.84 | 101.84 | 0.00              | 0.00   | 0.00   | 0.01               | 0.01   | 0.01   |
| 1     | 105.85         | 100.97 | 101.02 | 0.00              | 0.00   | 0.00   | 0.00               | 0.00   | 0.01   |
| 3     | 108.21         | 94.83  | 102.08 | 0.00              | 0.00   | 0.00   | 0.00               | 0.00   | 0.00   |
| 7     | 105.98         | 114.41 | 107.41 | 0.00              | 0.00   | 0.00   | 0.00               | 0.00   | 0.00   |
| 11    | 98.06          | 102.68 | 97.40  | 0.00              | 0.00   | 0.00   | 0.00               | 0.00   | 0.00   |
| 23    | 100.19         | 110.91 | 106.84 | 0.01              | 0.01   | 0.01   | 0.01               | 0.01   | 0.01   |
| 33    | 100.66         | 94.04  | 96.76  | 0.01              | 0.01   | 0.01   | 0.01               | 0.01   | 0.01   |
| 45    | 91.96          | 100.79 | 101.41 | 0.02              | 0.02   | 0.02   | 0.01               | 0.02   | 0.02   |
| 53    | 103.96         | 92.22  | 96.94  | 0.02              | 0.03   | 0.03   | 0.02               | 0.02   | 0.02   |
| 65    | 87.26          | 85.29  | 86.84  | 0.03              | 0.04   | 0.04   | 0.02               | 0.03   | 0.04   |
| 75    | 79.19          | 78.87  | 78.22  | 0.04              | 0.05   | 0.06   | 0.03               | 0.04   | 0.05   |
| 87    | 71.52          | 71.32  | 70.88  | 0.05              | 0.07   | 0.07   | 0.04               | 0.06   | 0.07   |
| 95    | 65.81          | 65.50  | 65.37  | 0.07              | 0.08   | 0.09   | 0.05               | 0.07   | 0.08   |
| 101   | 62.05          | 61.92  | 61.63  | 0.08              | 0.10   | 0.11   | 0.06               | 0.08   | 0.09   |
| 109   | 57.29          | 57.02  | 56.77  | 0.09              | 0.12   | 0.13   | 0.08               | 0.10   | 0.11   |
| 121   | 50.29          | 50.11  | 49.89  | 0.12              | 0.15   | 0.16   | 0.10               | 0.13   | 0.15   |
| 129   | 45.90          | 45.72  | 45.54  | 0.15              | 0.18   | 0.19   | 0.12               | 0.15   | 0.17   |
| 135   | 42.72          | 42.56  | 42.38  | 0.17              | 0.20   | 0.22   | 0.14               | 0.17   | 0.20   |
| 141   | 39.60          | 39.47  | 39.29  | 0.19              | 0.22   | 0.25   | 0.16               | 0.19   | 0.22   |
| 149   | 35.53          | 35.42  | 35.26  | 0.23              | 0.27   | 0.29   | 0.20               | 0.23   | 0.27   |
| 157   | 31.54          | 31.46  | 31.32  | 0.27              | 0.31   | 0.34   | 0.24               | 0.28   | 0.32   |
| 159   | 30.79          | 30.71  | 30.58  | 0.28              | 0.33   | 0.35   | 0.25               | 0.29   | 0.34   |
| 159   | 30.55          | 30.48  | 30.35  | 0.28              | 0.33   | 0.35   | 0.25               | 0.29   | 0.34   |
| 165   | 27.62          | 27.56  | 27.45  | 0.32              | 0.37   | 0.41   | 0.29               | 0.35   | 0.39   |
| 174   | 23.74          | 23.70  | 23.62  | 0.40              | 0.45   | 0.49   | 0.37               | 0.43   | 0.48   |
| 178   | 21.81          | 21.80  | 21.72  | 0.45              | 0.51   | 0.55   | 0.43               | 0.49   | 0.55   |
| 184   | 18.94          | 18.94  | 18.88  | 0.54              | 0.61   | 0.66   | 0.53               | 0.60   | 0.67   |
| 194   | 14.21          | 14.23  | 14.20  | 0.82              | 0.91   | 0.98   | 0.83               | 0.93   | 1.01   |
| 202   | 10.55          | 10.58  | 10.58  | 1.26              | 1.39   | 1.47   | 1.30               | 1.44   | 1.55   |
| 212   | 6.43           | 6.47   | 6.49   | 2.46              | 2.66   | 2.81   | 2.58               | 2.80   | 2.98   |
| 220   | 3.87           | 3.92   | 3.97   | 4.40              | 4.73   | 4.95   | 4.62               | 4.99   | 5.27   |
| 224   | 2.93           | 2.99   | 3.04   | 5.81              | 6.24   | 6.52   | 6.12               | 6.61   | 6.96   |
| 225   | 2.68           | 2.74   | 2.79   | 6.36              | 6.82   | 7.13   | 6.70               | 7.25   | 7.62   |
| 226   | 2.55           | 2.61   | 2.67   | 6.64              | 7.12   | 7.44   | 7.00               | 7.57   | 7.96   |
| 242   | 1.02           | 1.13   | 1.21   | 15.80             | 17.04  | 17.96  | 17.06              | 18.96  | 20.56  |
| 254   | 0.75           | 0.86   | 0.94   | 23.75             | 24.85  | 25.11  | 25.65              | 27.37  | 27.99  |
| 270   | 0.62           | 0.72   | 0.80   | 28.93             | 28.36  | 26.80  | 27.30              | 26.56  | 25.64  |
| 280   | 0.56           | 0.66   | 0.73   | 33.17             | 33.34  | 31.03  | 29.58              | 29.09  | 28.43  |
| 290   | 0.51           | 0.61   | 0.67   | 47.34             | 55.66  | 43.16  | 33.96              | 33.01  | 33.69  |
| 294   | 0.50           | 0.59   | 0.65   | 44.16             | 38.82  | 38.77  | 35.03              | 32.95  | 34.06  |
| 300   | 0.48           | 0.57   | 0.63   | 34.66             | 31.45  | 31.26  | 33.12              | 30.23  | 30.63  |
| 320   | 0.45           | 0.54   | 0.60   | 24.62             | 22.68  | 22.01  | 24.59              | 22.61  | 22.02  |
| 360   | 0.42           | 0.52   | 0.58   | 18.88             | 17.65  | 16.82  | 18.58              | 17.37  | 16.61  |
| 410   | 0.40           | 0.48   | 0.55   | 17.20             | 16.58  | 15.85  | 16.77              | 16.14  | 15.51  |
| 460   | 0.36           | 0.44   | 0.49   | 17.57             | 17.46  | 16.98  | 17.06              | 16.89  | 16.52  |
| 525   | 0.31           | 0.38   | 0.43   | 19.57             | 19.98  | 19.95  | 18.97              | 19.30  | 19.35  |
| 650   | 0.25           | 0.32   | 0.37   | 26.92             | 29.30  | 31.21  | 26.31              | 28.10  | 29.65  |
| 925   | 0.23           | 0.33   | 0.40   | 26.63             | 24.25  | 22.01  | 25.54              | 23.31  | 21.25  |
| 1025  | 0.25           | 0.36   | 0.45   | 24.15             | 21.65  | 19.85  | 23.08              | 20.84  | 19.19  |
| 1225  | 0.27           | 0.40   | 0.50   | 21.26             | 18.83  | 17.50  | 20.66              | 18.36  | 17.14  |
| 1400  | 0.28           | 0.43   | 0.54   | 19.96             | 17.61  | 16.49  | 19.66              | 17.40  | 16.35  |
| 1575  | 0.30           | 0.46   | 0.58   | 18.86             | 17.06  | 16.02  | 18.88              | 17.11  | 16.14  |
| 1825  | 0.31           | 0.48   | 0.62   | 18.86             | 17.16  | 15.96  | 19.09              | 17.45  | 16.28  |
| 2475  | 0.32           | 0.51   | 0.70   | 23.83             | 21.74  | 19.45  | 24.34              | 22.14  | 19.46  |
| 2650  | 0.33           | 0.53   | 0.73   | 24.97             | 24.04  | 21.62  | 25.19              | 24.09  | 21.14  |
| 2800  | 0.35           | 0.55   | 0.76   | 24.38             | 25.59  | 23.61  | 24.18              | 25.14  | 22.58  |
| 2900  | 0.36           | 0.57   | 0.77   | 23.45             | 25.75  | 24.41  | 23.11              | 25.08  | 23.22  |
| 3000  | 0.37           | 0.59   | 0.81   | 22.71             | 24.87  | 23.74  | 22.17              | 24.06  | 22.82  |

# High Pass Filter

# ZX75HP-225-S+

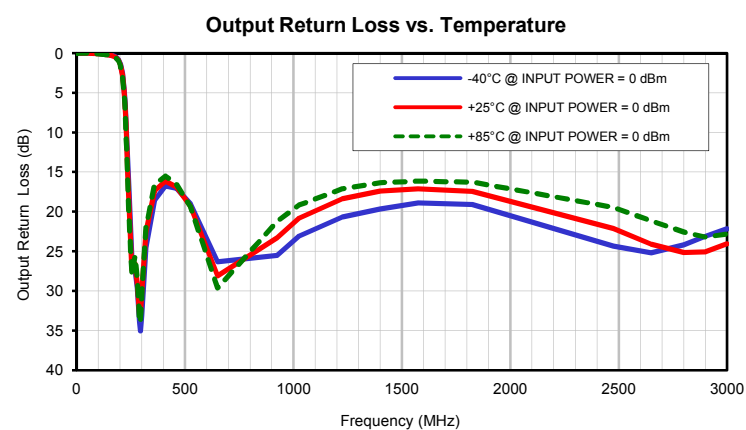
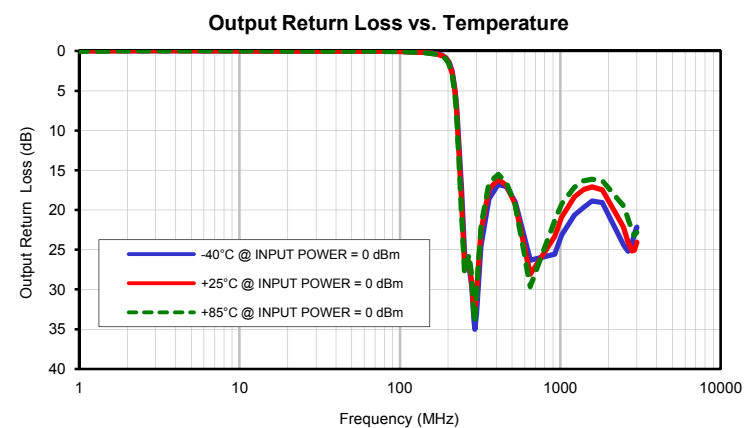
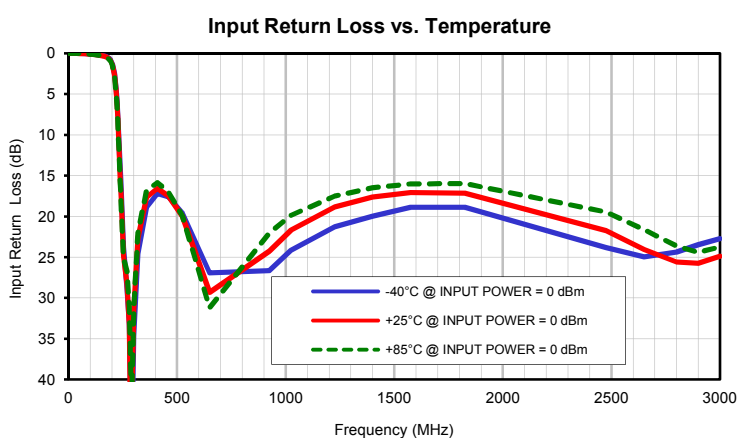
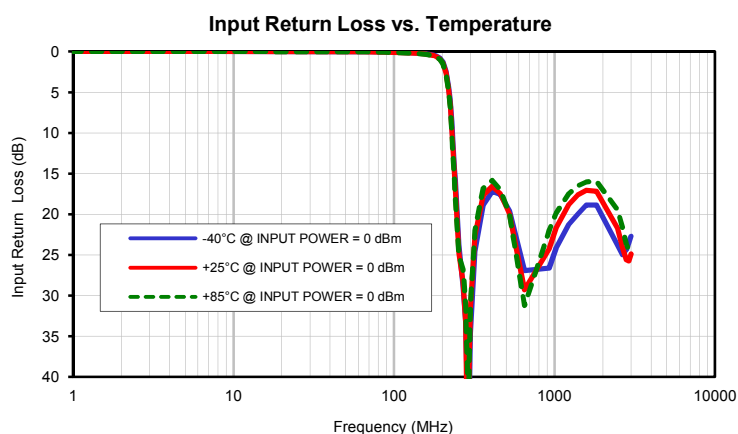
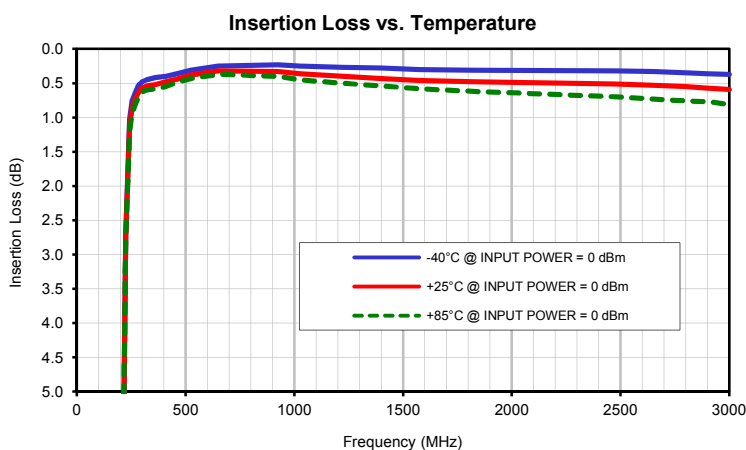
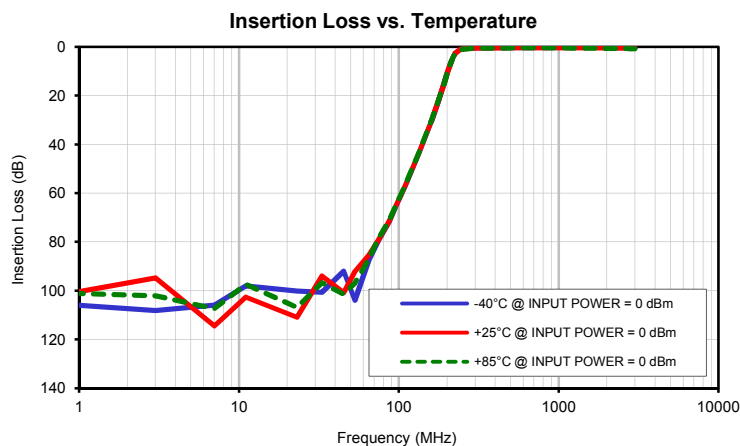
## Typical Performance Data

| FREQ.<br><br>(MHz) | GROUP DELAY |        |        |
|--------------------|-------------|--------|--------|
|                    | (nsec)      |        |        |
|                    | @-40°C      | @+25°C | @+85°C |
| 360                | 2.19        | 2.17   | 2.16   |
| 370                | 2.06        | 2.05   | 2.04   |
| 380                | 1.95        | 1.93   | 1.92   |
| 390                | 1.85        | 1.83   | 1.82   |
| 400                | 1.76        | 1.74   | 1.73   |
| 410                | 1.68        | 1.66   | 1.65   |
| 420                | 1.60        | 1.59   | 1.58   |
| 430                | 1.53        | 1.52   | 1.52   |
| 440                | 1.47        | 1.46   | 1.46   |
| 450                | 1.42        | 1.41   | 1.40   |
| 460                | 1.36        | 1.35   | 1.35   |
| 470                | 1.31        | 1.31   | 1.30   |
| 480                | 1.27        | 1.26   | 1.26   |
| 490                | 1.22        | 1.22   | 1.21   |
| 500                | 1.17        | 1.17   | 1.16   |
| 525                | 1.12        | 1.11   | 1.11   |
| 550                | 1.06        | 1.05   | 1.05   |
| 575                | 1.00        | 0.99   | 0.99   |
| 600                | 0.94        | 0.93   | 0.93   |
| 625                | 0.89        | 0.88   | 0.88   |
| 650                | 0.85        | 0.84   | 0.84   |
| 675                | 0.81        | 0.80   | 0.80   |
| 700                | 0.77        | 0.76   | 0.76   |
| 725                | 0.74        | 0.73   | 0.73   |
| 750                | 0.71        | 0.71   | 0.70   |
| 775                | 0.69        | 0.68   | 0.68   |
| 800                | 0.67        | 0.66   | 0.66   |
| 825                | 0.65        | 0.64   | 0.64   |
| 850                | 0.63        | 0.62   | 0.62   |
| 875                | 0.61        | 0.60   | 0.60   |
| 900                | 0.60        | 0.59   | 0.59   |
| 925                | 0.58        | 0.57   | 0.57   |
| 950                | 0.57        | 0.56   | 0.56   |
| 975                | 0.55        | 0.55   | 0.54   |
| 1000               | 0.54        | 0.53   | 0.53   |
| 1025               | 0.53        | 0.52   | 0.52   |
| 1075               | 0.51        | 0.50   | 0.50   |
| 1100               | 0.50        | 0.50   | 0.49   |
| 1125               | 0.50        | 0.49   | 0.49   |
| 1150               | 0.49        | 0.48   | 0.48   |
| 1175               | 0.48        | 0.48   | 0.47   |
| 1250               | 0.47        | 0.46   | 0.45   |
| 1300               | 0.46        | 0.45   | 0.45   |
| 1325               | 0.45        | 0.44   | 0.44   |
| 1450               | 0.44        | 0.43   | 0.43   |
| 1525               | 0.43        | 0.42   | 0.42   |
| 1550               | 0.42        | 0.41   | 0.41   |
| 1650               | 0.41        | 0.40   | 0.40   |
| 1750               | 0.40        | 0.40   | 0.39   |
| 1875               | 0.40        | 0.39   | 0.39   |
| 2000               | 0.39        | 0.38   | 0.38   |
| 2075               | 0.39        | 0.38   | 0.38   |
| 2175               | 0.38        | 0.38   | 0.37   |
| 2275               | 0.38        | 0.37   | 0.37   |
| 2375               | 0.38        | 0.37   | 0.37   |
| 2525               | 0.38        | 0.37   | 0.37   |
| 2675               | 0.37        | 0.37   | 0.37   |
| 2825               | 0.37        | 0.37   | 0.37   |
| 2900               | 0.37        | 0.37   | 0.37   |
| 3000               | 0.37        | 0.37   | 0.37   |

# High Pass Filter

ZX75HP-225-S+

## Typical Performance Curves



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 The Design Engineers Search Engine Provides ACTUAL Data Instantly From MINI-CIRCUITS At: [www.minicircuits.com](http://www.minicircuits.com)



IF/RF MICROWAVE COMPONENTS

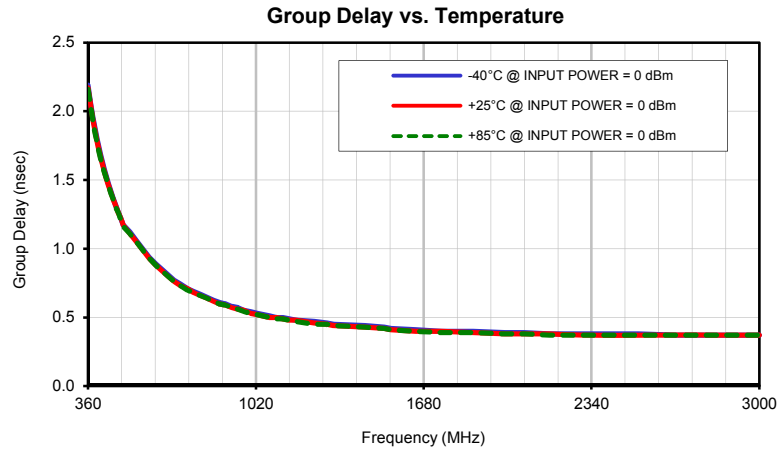


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# High Pass Filter

## ZX75HP-225-S+

### Typical Performance Curves



### Outline Dimensions



| CASE #. | A              | B              | C              | D               | E             | F              | G             | H              | J               | K             | L             | M             |
|---------|----------------|----------------|----------------|-----------------|---------------|----------------|---------------|----------------|-----------------|---------------|---------------|---------------|
| KE1467  | .74<br>(18.80) | .75<br>(19.05) | .46<br>(11.68) | 1.18<br>(29.97) | .04<br>(1.02) | .362<br>(9.19) | .21<br>(5.33) | .362<br>(9.19) | 1.00<br>(25.40) | .37<br>(9.40) | .18<br>(4.57) | .11<br>(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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P.O. Box 350166, Brooklyn, New York 11235-0003 (718) 934-4500 Fax (718) 332-4661

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Mini-Circuits ISO 9001 & ISO 14001 Certified



All Mini-Circuits products are manufactured under exacting quality assurance and control standards, and are capable of meeting published specifications after being subjected to any or all of the following physical and environmental test.

| Specification              | Test/Inspection Condition                                                              | Reference/Spec                       |
|----------------------------|----------------------------------------------------------------------------------------|--------------------------------------|
| Operating Temperature      | -40° to 85°C                                                                           | Individual Model Data Sheet          |
| Storage Temperature        | -55° to 100° C<br>Ambient Environment                                                  | Individual Model Data Sheet          |
| Barometric Pressure        | 100,000 Feet                                                                           | MIL-STD-202, Method 105, Condition D |
| Humidity                   | 90% RH, 65°C<br>Units may require bake-out after humidity to restore full performance. | MIL-STD-202, Method 103              |
| Thermal Shock              | -65° to 125°C, 5 cycles                                                                | MIL-STD-202, Method 107, Condition B |
| 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           | 100g, 6ms sawtooth, 3 shocks each direction 3 axes (total 18)                          | MIL-STD-202, Method 213, Condition I |