

# Cavity Band Pass Filter

# ZVBP-2300A-S+

## Typical Performance Data

| FREQ.<br><br>(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 |
| 10                 | 73.65          | 66.52  | 63.93  | 0.02              | 0.01   | 0.03   | 0.01               | 0.02   | 0.00   |
| 20                 | 84.12          | 82.74  | 96.29  | 0.02              | 0.01   | 0.04   | 0.02               | 0.02   | 0.03   |
| 50                 | 82.40          | 74.81  | 73.70  | 0.02              | 0.02   | 0.01   | 0.03               | 0.05   | 0.04   |
| 100                | 90.09          | 86.36  | 84.02  | 0.01              | 0.00   | 0.00   | 0.05               | 0.07   | 0.06   |
| 150                | 90.04          | 86.64  | 97.30  | 0.01              | 0.01   | 0.02   | 0.07               | 0.08   | 0.08   |
| 250                | 90.29          | 99.00  | 89.75  | 0.04              | 0.05   | 0.05   | 0.09               | 0.11   | 0.10   |
| 500                | 92.10          | 97.84  | 96.14  | 0.04              | 0.06   | 0.08   | 0.09               | 0.12   | 0.12   |
| 700                | 89.57          | 97.15  | 88.98  | 0.04              | 0.07   | 0.09   | 0.09               | 0.12   | 0.12   |
| 750                | 90.23          | 95.21  | 90.96  | 0.04              | 0.07   | 0.09   | 0.07               | 0.11   | 0.11   |
| 1000               | 88.01          | 96.08  | 86.82  | 0.03              | 0.06   | 0.09   | 0.06               | 0.10   | 0.11   |
| 1250               | 84.24          | 85.70  | 84.82  | 0.03              | 0.07   | 0.10   | 0.05               | 0.10   | 0.11   |
| 1500               | 78.08          | 78.04  | 77.75  | 0.01              | 0.06   | 0.10   | 0.03               | 0.09   | 0.10   |
| 1750               | 66.05          | 66.09  | 66.18  | 0.01              | 0.07   | 0.12   | 0.01               | 0.08   | 0.11   |
| 2000               | 43.58          | 43.38  | 43.20  | 0.01              | 0.08   | 0.13   | 0.01               | 0.09   | 0.12   |
| 2030               | 39.27          | 39.01  | 38.81  | 0.01              | 0.08   | 0.13   | 0.01               | 0.09   | 0.11   |
| 2040               | 37.68          | 37.42  | 37.20  | 0.01              | 0.08   | 0.13   | 0.02               | 0.10   | 0.12   |
| 2050               | 36.02          | 35.74  | 35.50  | 0.02              | 0.10   | 0.14   | 0.03               | 0.10   | 0.13   |
| 2060               | 34.27          | 33.95  | 33.70  | 0.03              | 0.10   | 0.15   | 0.03               | 0.11   | 0.14   |
| 2070               | 32.41          | 32.08  | 31.79  | 0.03              | 0.10   | 0.15   | 0.04               | 0.11   | 0.14   |
| 2080               | 30.45          | 30.08  | 29.77  | 0.03              | 0.11   | 0.16   | 0.04               | 0.12   | 0.15   |
| 2090               | 28.35          | 27.95  | 27.61  | 0.04              | 0.12   | 0.17   | 0.05               | 0.13   | 0.16   |
| 2100               | 26.11          | 25.67  | 25.29  | 0.06              | 0.14   | 0.19   | 0.06               | 0.15   | 0.17   |
| 2120               | 21.11          | 20.57  | 20.10  | 0.12              | 0.20   | 0.26   | 0.13               | 0.21   | 0.24   |
| 2150               | 11.84          | 11.08  | 10.40  | 0.48              | 0.64   | 0.77   | 0.50               | 0.67   | 0.78   |
| 2160               | 8.25           | 7.45   | 6.73   | 1.00              | 1.30   | 1.57   | 1.02               | 1.34   | 1.59   |
| 2170               | 4.70           | 3.99   | 3.37   | 2.32              | 3.00   | 3.69   | 2.36               | 3.07   | 3.74   |
| 2175               | 3.17           | 2.59   | 2.11   | 3.63              | 4.68   | 5.76   | 3.69               | 4.78   | 5.85   |
| 2180               | 1.94           | 1.55   | 1.24   | 5.67              | 7.24   | 8.88   | 5.77               | 7.40   | 9.08   |
| 2200               | 0.33           | 0.43   | 0.47   | 25.70             | 23.52  | 20.84  | 27.70              | 24.19  | 20.99  |
| 2250               | 0.28           | 0.38   | 0.42   | 21.97             | 20.95  | 19.86  | 20.71              | 19.96  | 19.09  |
| 2300               | 0.26           | 0.36   | 0.39   | 24.22             | 24.76  | 24.99  | 27.14              | 28.04  | 28.05  |
| 2350               | 0.34           | 0.43   | 0.46   | 17.25             | 18.26  | 18.91  | 17.38              | 18.31  | 18.90  |
| 2400               | 0.42           | 0.51   | 0.54   | 17.91             | 21.08  | 26.28  | 17.56              | 20.83  | 26.59  |
| 2410               | 0.43           | 0.65   | 0.88   | 27.54             | 17.49  | 13.26  | 29.43              | 17.91  | 13.44  |
| 2420               | 1.36           | 2.19   | 2.95   | 8.04              | 5.84   | 4.56   | 8.11               | 5.91   | 4.59   |
| 2422               | 1.81           | 2.79   | 3.65   | 6.41              | 4.68   | 3.68   | 6.47               | 4.74   | 3.70   |
| 2423               | 2.08           | 3.13   | 4.04   | 5.72              | 4.19   | 3.30   | 5.77               | 4.25   | 3.33   |
| 2425               | 2.70           | 3.87   | 4.85   | 4.55              | 3.36   | 2.68   | 4.59               | 3.40   | 2.69   |
| 2440               | 9.30           | 10.72  | 11.79  | 0.95              | 0.84   | 0.77   | 0.96               | 0.86   | 0.78   |
| 2450               | 13.95          | 15.24  | 16.21  | 0.46              | 0.48   | 0.49   | 0.46               | 0.50   | 0.49   |
| 2460               | 18.18          | 19.34  | 20.22  | 0.29              | 0.34   | 0.37   | 0.28               | 0.35   | 0.37   |
| 2465               | 20.14          | 21.24  | 22.08  | 0.24              | 0.30   | 0.34   | 0.24               | 0.31   | 0.34   |
| 2490               | 28.68          | 29.56  | 30.25  | 0.14              | 0.21   | 0.27   | 0.14               | 0.23   | 0.26   |
| 2495               | 30.19          | 31.05  | 31.72  | 0.13              | 0.21   | 0.26   | 0.13               | 0.22   | 0.26   |
| 2500               | 31.65          | 32.48  | 33.13  | 0.12              | 0.20   | 0.25   | 0.12               | 0.21   | 0.25   |
| 2550               | 44.05          | 44.69  | 45.23  | 0.07              | 0.15   | 0.21   | 0.08               | 0.17   | 0.21   |
| 2600               | 53.85          | 54.43  | 54.85  | 0.05              | 0.13   | 0.19   | 0.05               | 0.15   | 0.19   |
| 2700               | 69.34          | 69.60  | 70.33  | 0.03              | 0.12   | 0.18   | 0.03               | 0.13   | 0.17   |
| 3000               | 108.29         | 93.12  | 95.77  | 0.01              | 0.10   | 0.17   | 0.01               | 0.12   | 0.16   |
| 3250               | 107.37         | 105.51 | 117.56 | 0.00              | 0.10   | 0.18   | 0.02               | 0.12   | 0.16   |
| 3500               | 102.02         | 99.01  | 102.49 | 0.00              | 0.10   | 0.18   | 0.01               | 0.12   | 0.16   |
| 3750               | 92.94          | 96.57  | 104.81 | 0.00              | 0.09   | 0.17   | 0.01               | 0.12   | 0.15   |
| 4000               | 98.35          | 95.09  | 101.93 | 0.01              | 0.11   | 0.18   | 0.02               | 0.12   | 0.16   |
| 4250               | 104.55         | 98.23  | 100.61 | 0.02              | 0.12   | 0.19   | 0.04               | 0.15   | 0.17   |
| 5000               | 105.30         | 101.56 | 99.65  | 0.06              | 0.16   | 0.21   | 0.07               | 0.17   | 0.18   |
| 5500               | 97.86          | 96.10  | 97.40  | 0.07              | 0.17   | 0.21   | 0.08               | 0.18   | 0.18   |
| 6000               | 105.03         | 110.39 | 127.81 | 0.07              | 0.16   | 0.19   | 0.07               | 0.17   | 0.16   |
| 7500               | 96.80          | 98.87  | 102.46 | 0.00              | 0.12   | 0.17   | 0.00               | 0.14   | 0.14   |
| 8000               | 94.64          | 100.77 | 96.43  | 0.01              | 0.15   | 0.21   | 0.00               | 0.17   | 0.17   |
| 8050               | 97.12          | 95.28  | 98.86  | 0.03              | 0.13   | 0.20   | 0.02               | 0.15   | 0.17   |



Typical Performance Data

| FREQ.<br><br>(MHz) | GROUP DELAY |        |        |
|--------------------|-------------|--------|--------|
|                    | (nsec)      |        |        |
|                    | @-40°C      | @+25°C | @+85°C |
| 2200               | 7.56        | 7.24   | 6.98   |
| 2203               | 7.20        | 6.90   | 6.69   |
| 2206               | 6.88        | 6.62   | 6.44   |
| 2209               | 6.61        | 6.40   | 6.25   |
| 2212               | 6.38        | 6.21   | 6.09   |
| 2215               | 6.20        | 6.06   | 5.97   |
| 2218               | 6.06        | 5.94   | 5.87   |
| 2221               | 5.94        | 5.85   | 5.79   |
| 2224               | 5.84        | 5.77   | 5.72   |
| 2227               | 5.76        | 5.70   | 5.66   |
| 2230               | 5.70        | 5.64   | 5.60   |
| 2233               | 5.63        | 5.58   | 5.55   |
| 2236               | 5.58        | 5.53   | 5.50   |
| 2239               | 5.52        | 5.47   | 5.44   |
| 2242               | 5.46        | 5.42   | 5.39   |
| 2245               | 5.41        | 5.36   | 5.33   |
| 2248               | 5.36        | 5.31   | 5.28   |
| 2251               | 5.31        | 5.26   | 5.23   |
| 2254               | 5.26        | 5.22   | 5.19   |
| 2257               | 5.21        | 5.17   | 5.14   |
| 2260               | 5.17        | 5.13   | 5.11   |
| 2263               | 5.13        | 5.10   | 5.08   |
| 2266               | 5.10        | 5.07   | 5.05   |
| 2269               | 5.08        | 5.05   | 5.03   |
| 2272               | 5.06        | 5.04   | 5.03   |
| 2275               | 5.05        | 5.03   | 5.02   |
| 2278               | 5.04        | 5.03   | 5.03   |
| 2281               | 5.04        | 5.04   | 5.04   |
| 2284               | 5.05        | 5.04   | 5.05   |
| 2287               | 5.06        | 5.06   | 5.06   |
| 2290               | 5.07        | 5.07   | 5.08   |
| 2293               | 5.08        | 5.08   | 5.10   |
| 2296               | 5.10        | 5.10   | 5.12   |
| 2300               | 5.12        | 5.12   | 5.13   |
| 2302               | 5.12        | 5.13   | 5.14   |
| 2305               | 5.14        | 5.14   | 5.16   |
| 2308               | 5.15        | 5.15   | 5.17   |
| 2311               | 5.16        | 5.16   | 5.18   |
| 2314               | 5.16        | 5.17   | 5.18   |
| 2317               | 5.17        | 5.18   | 5.19   |
| 2320               | 5.18        | 5.19   | 5.20   |
| 2323               | 5.19        | 5.20   | 5.22   |
| 2326               | 5.20        | 5.21   | 5.23   |
| 2329               | 5.21        | 5.23   | 5.26   |
| 2332               | 5.23        | 5.25   | 5.28   |
| 2335               | 5.25        | 5.28   | 5.32   |
| 2338               | 5.29        | 5.32   | 5.36   |
| 2341               | 5.33        | 5.37   | 5.42   |
| 2344               | 5.38        | 5.43   | 5.48   |
| 2347               | 5.44        | 5.50   | 5.55   |
| 2350               | 5.51        | 5.57   | 5.63   |
| 2360               | 5.79        | 5.86   | 5.93   |
| 2365               | 5.94        | 6.02   | 6.09   |
| 2370               | 6.10        | 6.18   | 6.26   |
| 2375               | 6.26        | 6.34   | 6.43   |
| 2380               | 6.42        | 6.52   | 6.63   |
| 2385               | 6.61        | 6.75   | 6.90   |
| 2390               | 6.87        | 7.08   | 7.30   |
| 2395               | 7.25        | 7.56   | 7.89   |
| 2400               | 7.83        | 8.29   | 8.73   |