

Suspended substrate stripline Band Pass Filter

ZBSS-4G-S+

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 |
| 10 | 99.64 | 103.89 | 103.11 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| 50 | 102.51 | 106.09 | 100.92 | 0.02 | 0.01 | 0.00 | 0.00 | 0.00 | 0.01 |
| 100 | 119.88 | 118.63 | 117.74 | 0.02 | 0.01 | 0.00 | 0.00 | 0.01 | 0.01 |
| 150 | 114.32 | 108.95 | 114.29 | 0.04 | 0.01 | 0.01 | 0.01 | 0.02 | 0.01 |
| 200 | 120.02 | 127.90 | 116.26 | 0.08 | 0.03 | 0.01 | 0.03 | 0.03 | 0.01 |
| 250 | 115.95 | 113.98 | 113.94 | 0.07 | 0.02 | 0.03 | 0.03 | 0.04 | 0.00 |
| 300 | 117.03 | 114.94 | 116.16 | 0.12 | 0.04 | 0.03 | 0.04 | 0.06 | 0.01 |
| 350 | 109.54 | 111.52 | 121.45 | 0.11 | 0.03 | 0.05 | 0.03 | 0.08 | 0.02 |
| 400 | 115.65 | 116.42 | 112.72 | 0.12 | 0.03 | 0.04 | 0.01 | 0.10 | 0.05 |
| 450 | 117.45 | 112.84 | 114.20 | 0.13 | 0.03 | 0.04 | 0.02 | 0.14 | 0.09 |
| 500 | 110.97 | 115.98 | 113.97 | 0.10 | 0.01 | 0.03 | 0.06 | 0.17 | 0.13 |
| 550 | 121.40 | 120.33 | 134.34 | 0.11 | 0.02 | 0.01 | 0.10 | 0.20 | 0.18 |
| 600 | 124.76 | 120.99 | 116.22 | 0.08 | 0.01 | 0.01 | 0.15 | 0.24 | 0.23 |
| 650 | 127.60 | 118.98 | 114.88 | 0.08 | 0.00 | 0.03 | 0.19 | 0.27 | 0.28 |
| 700 | 118.24 | 117.11 | 120.42 | 0.06 | 0.02 | 0.04 | 0.22 | 0.31 | 0.31 |
| 800 | 115.90 | 113.11 | 124.85 | 0.05 | 0.03 | 0.07 | 0.25 | 0.36 | 0.36 |
| 1000 | 98.16 | 96.82 | 97.56 | 0.01 | 0.09 | 0.12 | 0.24 | 0.39 | 0.36 |
| 1100 | 84.04 | 83.53 | 83.55 | 0.02 | 0.13 | 0.15 | 0.24 | 0.39 | 0.36 |
| 1300 | 58.13 | 57.74 | 57.50 | 0.11 | 0.25 | 0.28 | 0.32 | 0.48 | 0.47 |
| 1400 | 44.93 | 44.50 | 44.24 | 0.21 | 0.36 | 0.42 | 0.45 | 0.63 | 0.63 |
| 1500 | 30.72 | 30.21 | 29.94 | 0.43 | 0.62 | 0.71 | 0.73 | 0.97 | 0.99 |
| 1550 | 22.91 | 22.35 | 22.06 | 0.70 | 0.94 | 1.02 | 1.04 | 1.35 | 1.40 |
| 1600 | 14.44 | 13.88 | 13.61 | 1.36 | 1.75 | 1.95 | 1.84 | 2.32 | 2.47 |
| 1700 | 2.40 | 2.66 | 2.76 | 16.04 | 17.39 | 17.74 | 22.53 | 27.90 | 30.39 |
| 2000 | 0.94 | 1.18 | 1.24 | 20.07 | 20.20 | 20.21 | 20.77 | 20.93 | 20.91 |
| 2500 | 0.57 | 0.78 | 0.81 | 25.37 | 25.47 | 25.95 | 26.24 | 26.78 | 26.28 |
| 3000 | 0.49 | 0.71 | 0.72 | 18.90 | 19.06 | 19.22 | 18.30 | 18.42 | 18.44 |
| 3500 | 0.41 | 0.64 | 0.65 | 22.53 | 22.35 | 22.07 | 23.67 | 23.31 | 23.16 |
| 3700 | 0.47 | 0.70 | 0.71 | 16.71 | 16.68 | 16.56 | 16.56 | 16.88 | 16.66 |
| 4000 | 0.48 | 0.70 | 0.71 | 15.93 | 16.31 | 16.55 | 17.18 | 17.79 | 18.00 |
| 4300 | 0.43 | 0.67 | 0.68 | 18.51 | 18.71 | 18.81 | 20.50 | 20.53 | 20.43 |
| 4500 | 0.47 | 0.71 | 0.73 | 16.48 | 16.59 | 16.47 | 16.18 | 16.41 | 16.23 |
| 5000 | 0.43 | 0.68 | 0.69 | 20.73 | 21.40 | 21.35 | 22.73 | 24.35 | 24.72 |
| 5500 | 0.54 | 0.82 | 0.84 | 17.80 | 17.76 | 17.58 | 16.36 | 16.67 | 16.44 |
| 6000 | 0.65 | 0.97 | 1.01 | 22.56 | 23.24 | 22.74 | 25.48 | 25.04 | 24.50 |
| 6400 | 2.52 | 3.20 | 3.37 | 7.09 | 6.76 | 6.66 | 6.52 | 6.14 | 5.84 |
| 6650 | 9.36 | 10.31 | 10.59 | 1.29 | 1.51 | 1.53 | 1.15 | 1.27 | 1.17 |
| 6950 | 19.32 | 20.17 | 20.39 | 0.23 | 0.52 | 0.61 | 0.12 | 0.37 | 0.26 |
| 7300 | 29.39 | 30.12 | 30.25 | 0.11 | 0.38 | 0.49 | 0.12 | 0.16 | 0.02 |
| 7500 | 34.38 | 35.06 | 35.19 | 0.12 | 0.39 | 0.46 | 0.15 | 0.11 | 0.01 |
| 8000 | 44.79 | 45.40 | 45.50 | 0.06 | 0.34 | 0.40 | 0.08 | 0.13 | 0.04 |
| 8500 | 53.06 | 53.63 | 53.74 | 0.07 | 0.22 | 0.29 | 0.11 | 0.14 | 0.02 |
| 9100 | 61.73 | 62.23 | 62.32 | 0.13 | 0.16 | 0.22 | 0.11 | 0.14 | 0.01 |
| 9500 | 67.24 | 67.75 | 67.80 | 0.13 | 0.15 | 0.25 | 0.06 | 0.16 | 0.06 |
| 10000 | 73.84 | 74.35 | 74.32 | 0.09 | 0.20 | 0.29 | 0.06 | 0.19 | 0.06 |
| 10500 | 79.46 | 79.94 | 80.07 | 0.20 | 0.11 | 0.21 | 0.05 | 0.20 | 0.08 |
| 11000 | 84.24 | 85.02 | 85.04 | 0.25 | 0.06 | 0.14 | 0.06 | 0.20 | 0.07 |
| 12000 | 92.16 | 94.40 | 93.34 | 0.27 | 0.06 | 0.18 | 0.12 | 0.17 | 0.03 |
| 13000 | 101.53 | 103.48 | 102.64 | 0.31 | 0.03 | 0.18 | 0.16 | 0.16 | 0.00 |
| 14000 | 107.10 | 109.43 | 108.73 | 0.45 | 0.07 | 0.11 | 0.19 | 0.14 | 0.01 |
| 15000 | 107.57 | 119.22 | 117.71 | 0.24 | 0.14 | 0.29 | 0.25 | 0.04 | 0.07 |
| 16000 | 118.13 | 120.73 | 117.73 | 0.23 | 0.16 | 0.30 | 0.34 | 0.02 | 0.15 |
| 17000 | 124.85 | 114.75 | 113.29 | 0.27 | 0.17 | 0.30 | 0.42 | 0.04 | 0.20 |
| 18000 | 115.21 | 111.89 | 115.12 | 0.06 | 0.47 | 0.69 | 0.42 | 0.03 | 0.19 |
| 19000 | 114.98 | 119.76 | 128.11 | 0.08 | 0.41 | 0.68 | 0.46 | 0.07 | 0.22 |
| 20000 | 115.35 | 117.71 | 123.06 | 0.18 | 0.71 | 1.11 | 0.43 | 0.02 | 0.18 |
| 21000 | 124.27 | 119.05 | 123.67 | 1.66 | 2.33 | 2.50 | 0.40 | 0.04 | 0.13 |
| 22000 | 126.75 | 117.80 | 122.86 | 2.37 | 3.36 | 3.75 | 0.33 | 0.07 | 0.06 |
| 25000 | 105.76 | 107.35 | 112.18 | 1.36 | 2.03 | 1.88 | 0.26 | 0.19 | 0.03 |
| 26500 | 100.29 | 103.35 | 102.02 | 13.22 | 9.51 | 7.44 | 0.14 | 0.29 | 0.15 |



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Typical Performance Data

| FREQ. (MHz) | GROUP DELAY | | |
|--------------------|-------------|--------|--------|
| | (nsec) | | |
| | @-40°C | @+25°C | @+85°C |
| 2000 | 1.84 | 1.83 | 1.82 |
| 2100 | 1.53 | 1.52 | 1.51 |
| 2200 | 1.34 | 1.33 | 1.33 |
| 2300 | 1.21 | 1.20 | 1.20 |
| 2400 | 1.11 | 1.11 | 1.11 |
| 2500 | 1.04 | 1.04 | 1.04 |
| 2600 | 0.98 | 0.98 | 0.98 |
| 2700 | 0.93 | 0.93 | 0.93 |
| 2800 | 0.89 | 0.89 | 0.89 |
| 2900 | 0.85 | 0.85 | 0.85 |
| 3000 | 0.82 | 0.82 | 0.82 |
| 3100 | 0.80 | 0.80 | 0.80 |
| 3200 | 0.78 | 0.78 | 0.78 |
| 3300 | 0.76 | 0.76 | 0.76 |
| 3400 | 0.74 | 0.74 | 0.74 |
| 3500 | 0.73 | 0.73 | 0.73 |
| 3600 | 0.71 | 0.71 | 0.71 |
| 3700 | 0.70 | 0.70 | 0.70 |
| 3800 | 0.69 | 0.69 | 0.69 |
| 3900 | 0.68 | 0.68 | 0.68 |
| 4000 | 0.68 | 0.68 | 0.68 |
| 4100 | 0.67 | 0.67 | 0.67 |
| 4200 | 0.67 | 0.67 | 0.67 |
| 4300 | 0.66 | 0.67 | 0.67 |
| 4400 | 0.66 | 0.66 | 0.66 |
| 4500 | 0.66 | 0.66 | 0.66 |
| 4600 | 0.66 | 0.66 | 0.66 |
| 4700 | 0.66 | 0.66 | 0.66 |
| 4800 | 0.66 | 0.66 | 0.66 |
| 4900 | 0.66 | 0.66 | 0.66 |
| 5000 | 0.67 | 0.67 | 0.67 |
| 5100 | 0.67 | 0.67 | 0.67 |
| 5200 | 0.68 | 0.68 | 0.68 |
| 5300 | 0.68 | 0.68 | 0.69 |
| 5400 | 0.69 | 0.69 | 0.69 |
| 5500 | 0.70 | 0.70 | 0.70 |
| 5600 | 0.71 | 0.72 | 0.72 |
| 5700 | 0.73 | 0.74 | 0.74 |
| 5800 | 0.75 | 0.76 | 0.76 |
| 5900 | 0.79 | 0.79 | 0.80 |
| 6000 | 0.83 | 0.84 | 0.84 |