

# Surface mount Band Pass Filter

LPHI-90+

## Typical Performance Data

| FREQ.<br>(MHz) | INSERTION LOSS<br>(dB) |        |        | INPUT RETURN LOSS<br>(dB) |        |        | OUTPUT RETURN LOSS<br>(dB) |        |        |
|----------------|------------------------|--------|--------|---------------------------|--------|--------|----------------------------|--------|--------|
|                | @-40°C                 | @+25°C | @+85°C | @-40°C                    | @+25°C | @+85°C | @-40°C                     | @+25°C | @+85°C |
|                | 0.08                   | 0.08   | 0.08   | 40.45                     | 40.55  | 40.56  | 43.14                      | 43.29  | 43.37  |
| 5              | 0.14                   | 0.13   | 0.13   | 27.64                     | 27.66  | 27.65  | 27.50                      | 27.52  | 27.52  |
| 10             | 0.16                   | 0.18   | 0.20   | 22.16                     | 22.44  | 22.73  | 21.90                      | 22.15  | 22.40  |
| 15             | 0.21                   | 0.23   | 0.25   | 20.59                     | 20.81  | 21.03  | 20.29                      | 20.46  | 20.64  |
| 20             | 0.23                   | 0.26   | 0.28   | 21.55                     | 21.69  | 21.79  | 20.88                      | 20.97  | 21.02  |
| 25             | 0.24                   | 0.27   | 0.30   | 25.40                     | 25.35  | 25.21  | 23.87                      | 23.79  | 23.63  |
| 30             | 0.25                   | 0.29   | 0.32   | 33.58                     | 33.48  | 33.06  | 29.17                      | 29.02  | 28.82  |
| 35             | 0.27                   | 0.32   | 0.35   | 27.36                     | 27.93  | 28.86  | 26.72                      | 27.24  | 28.13  |
| 40             | 0.31                   | 0.36   | 0.39   | 23.16                     | 23.48  | 24.02  | 23.09                      | 23.48  | 24.06  |
| 45             | 0.35                   | 0.40   | 0.44   | 22.95                     | 23.08  | 23.31  | 22.79                      | 22.98  | 23.20  |
| 50             | 0.37                   | 0.43   | 0.47   | 27.33                     | 27.06  | 26.71  | 26.09                      | 25.91  | 25.58  |
| 55             | 0.41                   | 0.47   | 0.52   | 37.34                     | 39.08  | 38.63  | 29.57                      | 29.66  | 29.47  |
| 60             | 0.46                   | 0.53   | 0.59   | 24.65                     | 25.44  | 26.61  | 23.88                      | 24.52  | 25.48  |
| 65             | 0.53                   | 0.61   | 0.67   | 22.39                     | 22.85  | 23.55  | 22.45                      | 22.98  | 23.79  |
| 70             | 0.60                   | 0.69   | 0.76   | 26.77                     | 26.80  | 26.87  | 28.49                      | 28.76  | 29.08  |
| 75             | 0.70                   | 0.80   | 0.88   | 27.36                     | 28.13  | 29.25  | 28.85                      | 29.86  | 31.70  |
| 80             | 0.86                   | 0.99   | 1.08   | 21.50                     | 22.23  | 23.35  | 21.90                      | 22.76  | 24.09  |
| 85             | 1.09                   | 1.25   | 1.39   | 23.98                     | 23.83  | 23.99  | 29.26                      | 29.80  | 30.29  |
| 90             | 1.58                   | 1.82   | 2.02   | 22.36                     | 23.01  | 24.23  | 23.42                      | 24.14  | 25.26  |
| 95             | 5.03                   | 5.80   | 6.52   | 8.00                      | 7.86   | 7.68   | 6.84                       | 6.54   | 6.23   |
| 100            | 26.53                  | 27.37  | 28.22  | 1.62                      | 1.78   | 1.89   | 0.91                       | 1.02   | 1.11   |
| 105            | 51.86                  | 52.65  | 53.52  | 0.78                      | 0.88   | 0.95   | 0.45                       | 0.52   | 0.58   |
| 110            | 79.86                  | 79.33  | 78.42  | 0.47                      | 0.54   | 0.59   | 0.28                       | 0.34   | 0.38   |
| 115            | 81.33                  | 81.54  | 81.13  | 0.32                      | 0.37   | 0.41   | 0.20                       | 0.24   | 0.28   |
| 120            | 87.29                  | 87.42  | 87.97  | 0.24                      | 0.28   | 0.31   | 0.15                       | 0.18   | 0.22   |
| 125            | 89.91                  | 90.43  | 90.06  | 0.18                      | 0.22   | 0.25   | 0.11                       | 0.15   | 0.18   |
| 130            | 88.34                  | 88.26  | 87.48  | 0.15                      | 0.18   | 0.21   | 0.10                       | 0.13   | 0.15   |
| 135            | 86.64                  | 87.44  | 87.03  | 0.13                      | 0.16   | 0.18   | 0.08                       | 0.12   | 0.14   |
| 140            | 87.05                  | 86.28  | 87.16  | 0.12                      | 0.15   | 0.17   | 0.08                       | 0.11   | 0.13   |
| 145            | 86.38                  | 86.68  | 87.37  | 0.11                      | 0.13   | 0.15   | 0.07                       | 0.09   | 0.12   |
| 150            | 87.22                  | 88.28  | 86.71  | 0.10                      | 0.12   | 0.14   | 0.06                       | 0.08   | 0.11   |
| 200            | 92.87                  | 92.35  | 95.54  | 0.08                      | 0.09   | 0.10   | 0.05                       | 0.07   | 0.08   |
| 250            | 88.93                  | 89.52  | 89.35  | 0.09                      | 0.10   | 0.11   | 0.06                       | 0.08   | 0.09   |
| 300            | 88.92                  | 88.59  | 88.57  | 0.09                      | 0.11   | 0.12   | 0.07                       | 0.09   | 0.11   |
| 350            | 84.55                  | 85.11  | 85.24  | 0.09                      | 0.11   | 0.12   | 0.07                       | 0.10   | 0.11   |
| 400            | 85.36                  | 85.17  | 85.62  | 0.10                      | 0.12   | 0.13   | 0.08                       | 0.11   | 0.13   |
| 450            | 81.75                  | 81.22  | 80.89  | 0.10                      | 0.13   | 0.14   | 0.09                       | 0.12   | 0.14   |
| 500            | 80.60                  | 81.49  | 81.47  | 0.09                      | 0.12   | 0.13   | 0.09                       | 0.12   | 0.14   |
| 550            | 80.33                  | 79.45  | 79.68  | 0.10                      | 0.13   | 0.15   | 0.10                       | 0.14   | 0.16   |
| 600            | 75.83                  | 75.62  | 75.82  | 0.11                      | 0.13   | 0.15   | 0.11                       | 0.15   | 0.17   |
| 650            | 75.78                  | 76.15  | 75.94  | 0.09                      | 0.13   | 0.14   | 0.10                       | 0.14   | 0.16   |
| 700            | 74.44                  | 74.88  | 74.52  | 0.10                      | 0.14   | 0.16   | 0.11                       | 0.16   | 0.18   |
| 750            | 75.98                  | 76.36  | 76.30  | 0.11                      | 0.14   | 0.17   | 0.13                       | 0.17   | 0.20   |
| 780            | 74.85                  | 74.97  | 74.67  | 0.10                      | 0.14   | 0.16   | 0.12                       | 0.16   | 0.19   |
| 800            | 75.12                  | 75.30  | 74.66  | 0.09                      | 0.13   | 0.16   | 0.11                       | 0.16   | 0.19   |
| 850            | 74.53                  | 74.31  | 73.90  | 0.10                      | 0.14   | 0.17   | 0.13                       | 0.17   | 0.20   |
| 900            | 72.08                  | 71.53  | 71.43  | 0.09                      | 0.13   | 0.16   | 0.13                       | 0.18   | 0.21   |
| 950            | 73.19                  | 73.29  | 72.99  | 0.09                      | 0.14   | 0.17   | 0.13                       | 0.18   | 0.21   |
| 1000           | 73.86                  | 73.61  | 74.06  | 0.10                      | 0.14   | 0.17   | 0.13                       | 0.19   | 0.22   |
| 1050           | 73.83                  | 73.62  | 74.11  | 0.15                      | 0.20   | 0.22   | 0.13                       | 0.18   | 0.22   |
| 1100           | 73.35                  | 73.32  | 73.65  | 0.09                      | 0.14   | 0.18   | 0.13                       | 0.19   | 0.23   |
| 1150           | 76.40                  | 76.83  | 75.90  | 0.09                      | 0.15   | 0.18   | 0.14                       | 0.20   | 0.24   |
| 1200           | 74.28                  | 74.47  | 74.35  | 0.08                      | 0.14   | 0.17   | 0.13                       | 0.20   | 0.24   |
| 1250           | 73.99                  | 73.85  | 73.67  | 0.09                      | 0.15   | 0.19   | 0.14                       | 0.21   | 0.26   |
| 1300           | 74.56                  | 74.37  | 74.38  | 0.10                      | 0.16   | 0.20   | 0.15                       | 0.23   | 0.27   |
| 1400           | 73.85                  | 73.76  | 74.04  | 0.11                      | 0.18   | 0.23   | 0.16                       | 0.24   | 0.28   |
| 1500           | 74.57                  | 74.90  | 75.00  | 0.32                      | 0.44   | 0.52   | 0.16                       | 0.25   | 0.30   |
| 1600           | 75.41                  | 75.52  | 75.61  | 0.15                      | 0.23   | 0.27   | 0.19                       | 0.28   | 0.32   |
| 1700           | 74.21                  | 74.22  | 74.29  | 0.15                      | 0.23   | 0.18   | 0.20                       | 0.29   | 0.34   |
| 1800           | 74.28                  | 74.67  | 74.65  | 0.16                      | 0.24   | 0.28   | 0.22                       | 0.31   | 0.35   |



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LPHI-90+

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## Typical Performance Data

| FREQ.<br>(MHz) | GROUP DELAY |        |        |
|----------------|-------------|--------|--------|
|                | (nsec)      |        |        |
|                | @-40°C      | @+25°C | @+85°C |
| 1              | 14.09       | 14.08  | 14.08  |
| 5              | 13.88       | 13.88  | 13.88  |
| 10             | 13.77       | 13.79  | 13.81  |
| 15             | 13.84       | 13.87  | 13.88  |
| 20             | 14.04       | 14.05  | 14.07  |
| 25             | 14.35       | 14.36  | 14.37  |
| 27             | 14.49       | 14.50  | 14.51  |
| 29             | 14.65       | 14.66  | 14.67  |
| 30             | 14.72       | 14.74  | 14.75  |
| 33             | 14.97       | 14.99  | 15.00  |
| 35             | 15.15       | 15.17  | 15.18  |
| 37             | 15.33       | 15.36  | 15.38  |
| 40             | 15.65       | 15.67  | 15.69  |
| 43             | 16.01       | 16.04  | 16.06  |
| 45             | 16.30       | 16.32  | 16.35  |
| 47             | 16.60       | 16.62  | 16.64  |
| 50             | 17.03       | 17.06  | 17.07  |
| 53             | 17.79       | 17.82  | 17.84  |
| 55             | 18.24       | 18.27  | 18.29  |
| 57             | 18.71       | 18.74  | 18.78  |
| 60             | 19.49       | 19.54  | 19.58  |
| 63             | 20.41       | 20.46  | 20.52  |
| 64             | 20.75       | 20.81  | 20.87  |
| 65             | 21.13       | 21.19  | 21.25  |
| 68             | 22.42       | 22.48  | 22.54  |
| 70             | 23.43       | 23.50  | 23.56  |
| 72             | 24.57       | 24.64  | 24.71  |
| 74             | 25.84       | 25.93  | 26.01  |
| 76             | 27.28       | 27.39  | 27.50  |
| 78             | 28.96       | 29.10  | 29.24  |
| 80             | 9.50        | 31.16  | 31.33  |
| 81             | 32.18       | 32.37  | 32.56  |
| 82             | 33.52       | 33.73  | 33.93  |
| 83             | 35.02       | 35.24  | 35.46  |
| 84             | 36.71       | 36.95  | 37.19  |
| 85             | 38.61       | 38.87  | 39.14  |
| 86             | 40.77       | 41.07  | 41.38  |
| 87             | 43.26       | 43.62  | 44.00  |
| 88             | 46.24       | 46.68  | 47.16  |
| 89             | 49.91       | 50.47  | 51.06  |
| 90             | 54.61       | 55.31  | 56.05  |



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