

**Data Sheet**

**High Speed, Low Loss Multi-layer Materials**

**MEGTRON4S**

**Laminate R-5725S  
Prepreg R-5620S**

Jun. 2017 No.17061648

# Specification / Laminate R-5725S

| Property         |                                   | Units      | Test Method       | Condition           | Value       |                     |
|------------------|-----------------------------------|------------|-------------------|---------------------|-------------|---------------------|
| THERMAL          | Glass Transition Temp ( Tg )      | C          | DSC               | As received         | 200         |                     |
|                  |                                   |            | TMA               | As received         | 190         |                     |
|                  |                                   |            | DMA               | As received         | 215         |                     |
|                  | Thermal Decomposition Temp ( Td ) |            | C                 | TGA                 | As received | 360                 |
|                  | Time to Delam ( T288 )            | Without Cu | min               | IPC TM-650 2.4.24.1 | As received | > 120               |
|                  |                                   | With Cu    | min               | IPC TM-650 2.4.24.1 | As received | 50                  |
|                  | CTE : $\alpha 1$                  | X - axis   | ppm / C           | IPC TM-650 2.4.24   | < Tg        | 12 - 14             |
|                  |                                   | Y - axis   | ppm / C           | IPC TM-650 2.4.24   | < Tg        | 13 - 15             |
|                  |                                   | Z - axis   | ppm / C           | IPC TM-650 2.4.24   | < Tg        | 32                  |
| CTE : $\alpha 2$ | Z - axis                          | ppm / C    | IPC TM-650 2.4.24 | > Tg                | 250         |                     |
| ELECTRICAL       | Volume Resistivity                |            | M $\Omega$ - cm   | IPC TM-650 2.5.17.1 | C-96/35/90  | 1 x 10 <sup>9</sup> |
|                  | Surface Resistivity               |            | M $\Omega$        | IPC TM-650 2.5.17.1 | C-96/35/90  | 1 x 10 <sup>8</sup> |
|                  | Dielectric Constant ( Dk )        | @ 1MHz     | -                 | IPC TM-650 2.5.5.9  | C-24/23/50  | 3.9                 |
|                  |                                   | @ 1GHz     | -                 | IPC TM-650 2.5.5.9  | C-24/23/50  | 3.8                 |
|                  | Dissipation Factor ( Df )         | @ 1MHz     | -                 | IPC TM-650 2.5.5.9  | C-24/23/50  | 0.005               |
|                  |                                   | @ 1GHz     | -                 | IPC TM-650 2.5.5.9  | C-24/23/50  | 0.005               |
| PHYSICAL         | Water Absorption                  |            | %                 | IPC TM-650 2.6.2.1  | D-24/23     | 0.14                |
|                  | Peel Strength                     | 1oz        | kN / m            | IPC TM-650 2.4.8    | As Received | 1.4                 |
|                  | Flammability                      |            | -                 | UL                  | C-48/23/50  | 94V-0               |

Sample thickness ; 32 mil ( 0.8 mm ) #3313 × 8ply

\*The data above show actual values and are not guaranteed.

# Specification / Laminate R-5725S

1MHz - 1GHz ; IPC TM650-2.5.5.9

| Core Type | Actual Thickness |       | Cloth Style | Typical Resin Content (%) | Typical Dk |        |      | Typical Df |        |       |
|-----------|------------------|-------|-------------|---------------------------|------------|--------|------|------------|--------|-------|
|           | mil              | mm    |             |                           | 1MHz       | 100MHz | 1GHz | 1MHz       | 100MHz | 1GHz  |
| 2         | 2.0              | 0.050 | 106 X 1     | 72                        | 3.39       | 3.39   | 3.38 | 0.005      | 0.005  | 0.006 |
| 2         | 2.0              | 0.050 | 1067 X 1    | 66                        | 3.58       | 3.56   | 3.56 | 0.005      | 0.005  | 0.005 |
| 2.5       | 2.4              | 0.060 | 1080 X 1    | 59                        | 3.82       | 3.79   | 3.77 | 0.005      | 0.005  | 0.005 |
| 2.5       | 2.4              | 0.060 | 1067 X 1    | 70                        | 3.47       | 3.46   | 3.45 | 0.005      | 0.005  | 0.006 |
| 3         | 3.1              | 0.080 | 1080 X 1    | 65                        | 3.64       | 3.61   | 3.60 | 0.005      | 0.005  | 0.005 |
| 3         | 3.1              | 0.080 | 1078 X 1    | 65                        | 3.64       | 3.61   | 3.60 | 0.005      | 0.005  | 0.005 |
| 3.4       | 3.5              | 0.090 | 1078 X 1    | 68                        | 3.54       | 3.50   | 3.47 | 0.005      | 0.005  | 0.006 |
| 3.5       | 3.5              | 0.090 | 106 X 2     | 69                        | 3.51       | 3.48   | 3.46 | 0.005      | 0.005  | 0.006 |
| 3.5       | 3.5              | 0.090 | 3313 X 1    | 51                        | 4.10       | 4.05   | 4.01 | 0.004      | 0.005  | 0.005 |
| 4         | 3.9              | 0.100 | 3313 X 1    | 57                        | 3.89       | 3.85   | 3.83 | 0.005      | 0.005  | 0.005 |
| 4         | 3.9              | 0.100 | 1067 X 2    | 66                        | 3.58       | 3.56   | 3.56 | 0.005      | 0.005  | 0.005 |
| 4.5       | 4.3              | 0.110 | 2116 X 1    | 51                        | 4.10       | 4.05   | 4.01 | 0.004      | 0.005  | 0.005 |
| 4.7       | 4.7              | 0.120 | 1080 X 2    | 57                        | 3.89       | 3.85   | 3.83 | 0.005      | 0.005  | 0.005 |
| 5         | 5.1              | 0.130 | 2116 X 1    | 56                        | 3.93       | 3.88   | 3.86 | 0.005      | 0.005  | 0.005 |
| 6         | 5.9              | 0.150 | 1080 X 2    | 65                        | 3.64       | 3.61   | 3.60 | 0.005      | 0.005  | 0.005 |
| 6         | 5.9              | 0.150 | 1504 X 1    | 49                        | 4.14       | 4.10   | 4.07 | 0.004      | 0.005  | 0.005 |
| 6         | 5.9              | 0.150 | 1078 X 2    | 65                        | 3.64       | 3.61   | 3.60 | 0.005      | 0.005  | 0.005 |
| 7         | 7.1              | 0.180 | 3313 X 2    | 52                        | 4.05       | 4.01   | 3.98 | 0.005      | 0.005  | 0.005 |
| 7         | 7.1              | 0.180 | 1067 X 3    | 70                        | 3.47       | 3.46   | 3.45 | 0.005      | 0.005  | 0.006 |
| 8         | 7.9              | 0.200 | 3313 X 2    | 57                        | 3.89       | 3.85   | 3.83 | 0.005      | 0.005  | 0.005 |
| 8         | 7.9              | 0.200 | 2116 X 2    | 47                        | 4.21       | 4.17   | 4.14 | 0.004      | 0.005  | 0.005 |
| 9         | 9.1              | 0.230 | 2116 X 2    | 52                        | 4.05       | 4.01   | 3.98 | 0.005      | 0.005  | 0.005 |
| 10        | 9.8              | 0.250 | 2116 X 2    | 56                        | 3.93       | 3.88   | 3.86 | 0.005      | 0.005  | 0.005 |
| 12        | 11.8             | 0.300 | 1504 X 2    | 49                        | 4.14       | 4.10   | 4.07 | 0.004      | 0.005  | 0.005 |

\*The data above show actual values and are not guaranteed.

# Specification / Laminate R-5725S

## 2GHz-10GHz ; IPC TM650-2.5.5.5

| Core Type | Actual Thickness |       | Cloth Style | Typical Resin Content (%) | Typical Dk |      |      |      |       | Typical Df |       |       |       |       |
|-----------|------------------|-------|-------------|---------------------------|------------|------|------|------|-------|------------|-------|-------|-------|-------|
|           | mil              | mm    |             |                           | 2GHz       | 4GHz | 6GHz | 8GHz | 10GHz | 2GHz       | 4GHz  | 6GHz  | 8GHz  | 10GHz |
| 2         | 2.0              | 0.050 | 106 X 1     | 72                        | 3.38       | 3.37 | 3.37 | 3.37 | 3.37  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 2         | 2.0              | 0.050 | 1067 X 1    | 66                        | 3.56       | 3.56 | 3.56 | 3.56 | 3.55  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 2.5       | 2.4              | 0.060 | 1080 X 1    | 59                        | 3.76       | 3.76 | 3.75 | 3.75 | 3.74  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 2.5       | 2.4              | 0.060 | 1067 X 1    | 70                        | 3.44       | 3.43 | 3.42 | 3.42 | 3.41  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 3         | 3.1              | 0.080 | 1080 X 1    | 65                        | 3.59       | 3.58 | 3.57 | 3.57 | 3.57  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 3         | 3.1              | 0.080 | 1078 X 1    | 65                        | 3.59       | 3.58 | 3.57 | 3.57 | 3.57  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 3.4       | 3.5              | 0.090 | 1078 X 1    | 68                        | 3.47       | 3.46 | 3.45 | 3.45 | 3.45  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 3.5       | 3.5              | 0.090 | 106 X 2     | 69                        | 3.46       | 3.44 | 3.44 | 3.44 | 3.44  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 3.5       | 3.5              | 0.090 | 3313 X 1    | 51                        | 4.00       | 3.99 | 3.97 | 3.97 | 3.96  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 4         | 3.9              | 0.100 | 3313 X 1    | 57                        | 3.82       | 3.82 | 3.81 | 3.80 | 3.80  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 4         | 3.9              | 0.100 | 1067 X 2    | 66                        | 3.56       | 3.56 | 3.56 | 3.56 | 3.55  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 4.5       | 4.3              | 0.110 | 2116 X 1    | 51                        | 4.00       | 3.99 | 3.97 | 3.97 | 3.96  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 4.7       | 4.7              | 0.120 | 1080 X 2    | 57                        | 3.82       | 3.82 | 3.81 | 3.80 | 3.80  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 5         | 5.1              | 0.130 | 2116 X 1    | 56                        | 3.85       | 3.85 | 3.84 | 3.83 | 3.83  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 6         | 5.9              | 0.150 | 1080 X 2    | 65                        | 3.59       | 3.58 | 3.57 | 3.57 | 3.57  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 6         | 5.9              | 0.150 | 1504 X 1    | 49                        | 4.04       | 4.02 | 4.00 | 3.99 | 3.98  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 6         | 5.9              | 0.150 | 1078 X 2    | 65                        | 3.59       | 3.58 | 3.57 | 3.57 | 3.57  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 7         | 7.1              | 0.180 | 3313 X 2    | 52                        | 3.95       | 3.93 | 3.92 | 3.90 | 3.90  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 7         | 7.1              | 0.180 | 1067 X 3    | 70                        | 3.44       | 3.43 | 3.42 | 3.42 | 3.41  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 8         | 7.9              | 0.200 | 3313 x 2    | 57                        | 3.82       | 3.82 | 3.81 | 3.80 | 3.80  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 8         | 7.9              | 0.200 | 2116 x 2    | 47                        | 4.10       | 4.08 | 4.06 | 4.05 | 4.04  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 9         | 9.1              | 0.230 | 2116 x 2    | 52                        | 3.95       | 3.93 | 3.92 | 3.90 | 3.90  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 10        | 9.8              | 0.250 | 2116 x 2    | 56                        | 3.85       | 3.85 | 3.84 | 3.83 | 3.83  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 12        | 11.8             | 0.300 | 1504 x 2    | 49                        | 4.04       | 4.02 | 4.00 | 3.99 | 3.98  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |

\*The data above show actual values and are not guaranteed.

# Specification / Prepreg R-5620S

1MHz - 1GHz ; IPC TM650-2.5.5.9

| Cloth Style | Resin Content (%) | Typical Thickness (um) | Typical Dk |        |      | Typical Df |        |       |
|-------------|-------------------|------------------------|------------|--------|------|------------|--------|-------|
|             |                   |                        | 1MHz       | 100MHz | 1GHz | 1MHz       | 100MHz | 1GHz  |
| 106         | 72                | 51                     | 3.39       | 3.39   | 3.38 | 0.005      | 0.005  | 0.006 |
|             | 75                | 58                     | 3.33       | 3.33   | 3.32 | 0.005      | 0.005  | 0.006 |
| 1067        | 66                | 52                     | 3.58       | 3.56   | 3.56 | 0.005      | 0.005  | 0.005 |
|             | 70                | 59                     | 3.47       | 3.46   | 3.45 | 0.005      | 0.005  | 0.006 |
|             | 74                | 70                     | 3.34       | 3.34   | 3.33 | 0.005      | 0.005  | 0.006 |
| 1080        | 65                | 76                     | 3.64       | 3.61   | 3.60 | 0.005      | 0.005  | 0.005 |
|             | 69                | 87                     | 3.51       | 3.48   | 3.46 | 0.005      | 0.005  | 0.006 |
|             | 73                | 102                    | 3.38       | 3.38   | 3.37 | 0.005      | 0.005  | 0.006 |
| 1078        | 64                | 75                     | 3.65       | 3.63   | 3.62 | 0.005      | 0.005  | 0.005 |
|             | 69                | 89                     | 3.51       | 3.48   | 3.46 | 0.005      | 0.005  | 0.006 |
| 3313        | 57                | 103                    | 3.89       | 3.85   | 3.83 | 0.005      | 0.005  | 0.005 |
|             | 60                | 113                    | 3.79       | 3.75   | 3.74 | 0.005      | 0.005  | 0.005 |
|             | 63                | 123                    | 3.69       | 3.66   | 3.65 | 0.005      | 0.005  | 0.005 |
| 2116        | 53                | 118                    | 4.03       | 3.98   | 3.95 | 0.005      | 0.005  | 0.005 |
|             | 56                | 128                    | 3.93       | 3.88   | 3.86 | 0.005      | 0.005  | 0.005 |
|             | 59                | 139                    | 3.82       | 3.79   | 3.77 | 0.005      | 0.005  | 0.005 |
| 1504        | 51                | 160                    | 4.10       | 4.05   | 4.01 | 0.004      | 0.005  | 0.005 |
| 1501        | 51                | 178                    | 4.10       | 4.05   | 4.01 | 0.004      | 0.005  | 0.005 |

\*The data above show actual values and are not guaranteed.

# Specification / Prepreg R-5620S

## 2GHz-10GHz ; IPC TM650-2.5.5.5

| Cloth Style | Resin Content (%) | Typical Thickness (um) | Typical Dk |      |      |      |       | Typical Df |       |       |       |       |
|-------------|-------------------|------------------------|------------|------|------|------|-------|------------|-------|-------|-------|-------|
|             |                   |                        | 2GHz       | 4GHz | 6GHz | 8GHz | 10GHz | 2GHz       | 4GHz  | 6GHz  | 8GHz  | 10GHz |
| 106         | 72                | 51                     | 3.38       | 3.37 | 3.37 | 3.37 | 3.37  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
|             | 75                | 58                     | 3.32       | 3.31 | 3.31 | 3.31 | 3.31  | 0.006      | 0.007 | 0.007 | 0.008 | 0.009 |
| 1067        | 66                | 52                     | 3.56       | 3.56 | 3.56 | 3.56 | 3.55  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
|             | 70                | 59                     | 3.44       | 3.43 | 3.42 | 3.42 | 3.41  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
|             | 74                | 70                     | 3.33       | 3.32 | 3.32 | 3.32 | 3.32  | 0.006      | 0.007 | 0.007 | 0.008 | 0.008 |
| 1080        | 65                | 76                     | 3.59       | 3.58 | 3.57 | 3.57 | 3.57  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
|             | 69                | 87                     | 3.46       | 3.44 | 3.44 | 3.44 | 3.44  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
|             | 73                | 102                    | 3.37       | 3.36 | 3.36 | 3.36 | 3.36  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 1078        | 64                | 75                     | 3.62       | 3.62 | 3.61 | 3.61 | 3.61  | 0.006      | 0.006 | 0.007 | 0.007 | 0.008 |
|             | 69                | 89                     | 3.46       | 3.44 | 3.44 | 3.44 | 3.44  | 0.006      | 0.006 | 0.007 | 0.008 | 0.008 |
| 3313        | 57                | 103                    | 3.82       | 3.82 | 3.81 | 3.80 | 3.80  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
|             | 60                | 113                    | 3.74       | 3.75 | 3.75 | 3.75 | 3.74  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
|             | 63                | 123                    | 3.65       | 3.65 | 3.64 | 3.64 | 3.64  | 0.006      | 0.006 | 0.007 | 0.007 | 0.007 |
| 2116        | 53                | 118                    | 3.94       | 3.92 | 3.90 | 3.88 | 3.87  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
|             | 56                | 128                    | 3.85       | 3.85 | 3.84 | 3.83 | 3.83  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
|             | 59                | 139                    | 3.76       | 3.76 | 3.75 | 3.75 | 3.74  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 1504        | 51                | 160                    | 4.00       | 3.99 | 3.97 | 3.97 | 3.96  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |
| 1501        | 51                | 178                    | 4.00       | 3.99 | 3.97 | 3.97 | 3.96  | 0.006      | 0.006 | 0.006 | 0.007 | 0.007 |

\*The data above show actual values and are not guaranteed.

## ++ Before purchase ++

### 【Notes before you use】

- Prior to adoption and use of a product contained in the datasheet, please verify the suitability for your application by your quality testing, evaluation, etc.
- We would like to have a delivery specifications mutually agreed for the product that you have decided to use. The agreements defined in the delivery specifications are assigned higher priority.
- Please note that images shown may somewhat differ from the actual product in color.
- Please note that specifications and external design are subject to change for product improvement without notice.
- For details on products in the datasheet, please contact your distributor or our sales department.

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- The products in the datasheet are Electronic circuit board materials for electronic and electrical devices. Please do not use them for other than specified use.

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