

Data Sheet

**Halogen Free & Ultra-low transmission loss
Multi-layer circuit board materials**

Halogen-free 
MEGTRON6

**Laminate R-537Y
Prepreg R-527Y**

Any letters with parentheses () at the end of a part number are for identification code in our company and are not included in the part numbers registered for UL certification.

Jul. 2024 No.240724

Partnering to go beyond.

Electronic Materials
Panasonic Industry

General Properties / Laminate R-537Y(E) & R-537Y(N)

| Items | | Units | Test Method | Condition | Typical Values | | |
|------------------|-----------------------------------|---------------|-------------------|---------------------|----------------------|---------------------------|---------|
| | | | | | R-537Y(E) E-glass | R-537Y(N) Low Dk-glass | |
| THERMAL | Glass Transition Temp (Tg) | | C | TMA | As received | 210 | 210 |
| | | | | DMA | As received | 250 | 250 |
| | Thermal Decomposition Temp (Td) | | C | TGA | As received | 435 | 435 |
| | Time to Delam (T288) | Without Cu | Min | IPC TM-650 2.4.24.1 | As received | > 120 | > 120 |
| | | With Cu | Min | IPC TM-650 2.4.24.1 | As received | > 120 | > 120 |
| | CTE : $\alpha 1$ | X - axis | ppm / C | IPC TM-650 2.4.24 | < Tg | 14 - 16 | 14 - 16 |
| | | Y - axis | ppm / C | IPC TM-650 2.4.24 | < Tg | 14 - 16 | 14 - 16 |
| | | Z - axis | ppm / C | IPC TM-650 2.4.24 | < Tg | 39 | 39 |
| CTE : $\alpha 2$ | Z - axis | ppm / C | IPC TM-650 2.4.24 | > Tg | 200 | 200 | |
| ELECTRICAL | Dielectric Constant (Dk) | @1GHz | - | IPC TM-650 2.5.5.9 | C-24/23/50 | 3.72 | 3.42 |
| | | @ 13GHz | - | *Note 1 | C-24/23/50 | 3.66 | 3.36 |
| | Dissipation Factor (Df) | @1GHz | - | IPC TM-650 2.5.5.9 | C-24/23/50 | 0.002 | 0.001 |
| | | @ 13GHz | - | *Note 1 | C-24/23/50 | 0.0037 | 0.0029 |
| PHYSICAL | Water Absorption | | % | IPC TM-650 2.6.2.1 | D-24/23 | 0.22 | 0.23 |
| | Peel Strength | 1oz (HVLP2) | kN / m | IPC TM-650 2.4.8 | As Received | 0.6 | 0.6 |
| | Flammability | | - | UL 94V | C-48/23/50 | 94V-0 | 94V-0 |

Sample thickness ; 29.5 mil = 0.75 mm

Note 1: Balanced-type Circular Disk Resonance Method [IEC 63185 (2020)]

* The data in the above table represents typical values for your reference and are not guaranteed values.

Dielectric Properties / Laminate R-537Y(E) : E glass

1GHz ; IPC TM650-2.5.5.9

13-56GHz ; Balanced-type Circular Disk Resonance Method [IEC 63185 (2020)]

| Core Type | Actual Thickness | | Cloth Style | ply | Typical Resin Content (%) | Typical Dk | | | | | |
|-----------|------------------|-------|-------------|-----|---------------------------|------------|-------|-------|-------|-------|-------|
| | mil | mm | | | | 1GHz | 13GHz | 24GHz | 35GHz | 46GHz | 56GHz |
| 2 | 2.0 | 0.050 | 1035 | 1 | 65 | 3.49 | 3.40 | 3.40 | 3.40 | 3.40 | 3.40 |
| 2.6 | 2.6 | 0.065 | 1078 | 1 | 57 | 3.64 | 3.56 | 3.56 | 3.56 | 3.56 | 3.56 |
| 3 | 3 | 0.075 | 1078 | 1 | 62 | 3.55 | 3.46 | 3.46 | 3.46 | 3.46 | 3.46 |
| 4 | 3.9 | 0.100 | 3313 | 1 | 54 | 3.70 | 3.63 | 3.63 | 3.63 | 3.63 | 3.63 |
| 4 | 3.9 | 0.100 | 1035 | 2 | 65 | 3.49 | 3.40 | 3.40 | 3.40 | 3.40 | 3.40 |
| 5 | 5.0 | 0.127 | 1078 | 2 | 57 | 3.64 | 3.56 | 3.56 | 3.56 | 3.56 | 3.56 |
| 5 | 4.9 | 0.125 | 2116 | 1 | 53 | 3.72 | 3.66 | 3.66 | 3.66 | 3.66 | 3.66 |
| 6 | 5.7 | 0.146 | 1078 | 2 | 62 | 3.55 | 3.46 | 3.46 | 3.46 | 3.46 | 3.46 |
| 8 | 7.9 | 0.200 | 3313 | 2 | 54 | 3.70 | 3.63 | 3.63 | 3.63 | 3.63 | 3.63 |
| 10 | 9.8 | 0.250 | 2116 | 2 | 53 | 3.72 | 3.66 | 3.66 | 3.66 | 3.66 | 3.66 |
| 12 | 11.8 | 0.300 | 3313 | 3 | 54 | 3.70 | 3.63 | 3.63 | 3.63 | 3.63 | 3.63 |
| 16 | 15.7 | 0.400 | 3313 | 4 | 54 | 3.70 | 3.63 | 3.63 | 3.63 | 3.63 | 3.63 |
| 20 | 19.7 | 0.500 | 2116 | 4 | 53 | 3.72 | 3.66 | 3.66 | 3.66 | 3.66 | 3.66 |
| 25 | 24.6 | 0.625 | 2116 | 5 | 53 | 3.72 | 3.66 | 3.66 | 3.66 | 3.66 | 3.66 |
| 30 | 29.5 | 0.750 | 2116 | 6 | 53 | 3.72 | 3.66 | 3.66 | 3.66 | 3.66 | 3.66 |

* The data in the above table represents typical values for your reference and are not guaranteed values.

Dielectric Properties / Laminate R-537Y(E) : E glass

1GHz ; IPC TM650-2.5.5.9

13-56GHz ; Balanced-type Circular Disk Resonance Method [IEC 63185 (2020)]

| Core Type | Actual Thickness | | Cloth Style | ply | Typical Resin Content (%) | Typical Df | | | | | |
|-----------|------------------|-------|-------------|-----|---------------------------|------------|--------|--------|--------|--------|--------|
| | mil | mm | | | | 1GHz | 13GHz | 24GHz | 35GHz | 46GHz | 56GHz |
| 2 | 2.0 | 0.050 | 1035 | 1 | 65 | 0.002 | 0.0034 | 0.0037 | 0.0041 | 0.0044 | 0.0047 |
| 2.6 | 2.6 | 0.065 | 1078 | 1 | 57 | 0.002 | 0.0036 | 0.0040 | 0.0044 | 0.0048 | 0.0051 |
| 3 | 3 | 0.075 | 1078 | 1 | 62 | 0.002 | 0.0035 | 0.0038 | 0.0042 | 0.0046 | 0.0049 |
| 4 | 3.9 | 0.100 | 3313 | 1 | 54 | 0.002 | 0.0037 | 0.0041 | 0.0045 | 0.0049 | 0.0053 |
| 4 | 3.9 | 0.100 | 1035 | 2 | 65 | 0.002 | 0.0034 | 0.0037 | 0.0041 | 0.0044 | 0.0047 |
| 5 | 5.0 | 0.127 | 1078 | 2 | 57 | 0.002 | 0.0036 | 0.0040 | 0.0044 | 0.0048 | 0.0051 |
| 5 | 4.9 | 0.125 | 2116 | 1 | 53 | 0.002 | 0.0037 | 0.0041 | 0.0046 | 0.0050 | 0.0053 |
| 6 | 5.7 | 0.146 | 1078 | 2 | 62 | 0.002 | 0.0035 | 0.0038 | 0.0042 | 0.0046 | 0.0049 |
| 8 | 7.9 | 0.200 | 3313 | 2 | 54 | 0.002 | 0.0037 | 0.0041 | 0.0045 | 0.0049 | 0.0053 |
| 10 | 9.8 | 0.250 | 2116 | 2 | 53 | 0.002 | 0.0037 | 0.0041 | 0.0046 | 0.0050 | 0.0053 |
| 12 | 11.8 | 0.300 | 3313 | 3 | 54 | 0.002 | 0.0037 | 0.0041 | 0.0045 | 0.0049 | 0.0053 |
| 16 | 15.7 | 0.400 | 3313 | 4 | 54 | 0.002 | 0.0037 | 0.0041 | 0.0045 | 0.0049 | 0.0053 |
| 20 | 19.7 | 0.500 | 2116 | 4 | 53 | 0.002 | 0.0037 | 0.0041 | 0.0046 | 0.0050 | 0.0053 |
| 25 | 24.6 | 0.625 | 2116 | 5 | 53 | 0.002 | 0.0037 | 0.0041 | 0.0046 | 0.0050 | 0.0053 |
| 30 | 29.5 | 0.750 | 2116 | 6 | 53 | 0.002 | 0.0037 | 0.0041 | 0.0046 | 0.0050 | 0.0053 |

* The data in the above table represents typical values for your reference and are not guaranteed values.

Dielectric Properties / Prepreg R-527Y(E) : E glass

1GHz ; IPC TM650-2.5.5.9

13-56GHz ; Balanced-type Circular Disk Resonance Method [IEC 63185 (2020)]

| Cloth Style | Resin Content (%) | Typical Thickness (um) | Typical Dk | | | | | |
|-------------|-------------------|------------------------|------------|-------|-------|-------|-------|-------|
| | | | 1GHz | 13GHz | 24GHz | 35GHz | 46GHz | 56GHz |
| 1027 | 75 | 49 | 3.31 | 3.22 | 3.22 | 3.22 | 3.22 | 3.22 |
| 1035 | 70 | 60 | 3.40 | 3.30 | 3.30 | 3.30 | 3.30 | 3.30 |
| | 73 | 68 | 3.35 | 3.25 | 3.25 | 3.25 | 3.25 | 3.25 |
| | 75 | 74 | 3.31 | 3.22 | 3.22 | 3.22 | 3.22 | 3.22 |
| 1080 | 64 | 76 | 3.51 | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| | 68 | 87 | 3.44 | 3.34 | 3.34 | 3.34 | 3.34 | 3.34 |
| 1078 | 64 | 77 | 3.51 | 3.42 | 3.42 | 3.42 | 3.42 | 3.42 |
| | 68 | 89 | 3.44 | 3.34 | 3.34 | 3.34 | 3.34 | 3.34 |
| | 72 | 104 | 3.36 | 3.27 | 3.27 | 3.27 | 3.27 | 3.27 |
| | 75 | 118 | 3.31 | 3.22 | 3.22 | 3.22 | 3.22 | 3.22 |
| 3313 | 54 | 98 | 3.70 | 3.63 | 3.63 | 3.63 | 3.63 | 3.63 |
| | 57 | 106 | 3.64 | 3.56 | 3.56 | 3.56 | 3.56 | 3.56 |
| 2116 | 56 | 132 | 3.66 | 3.59 | 3.59 | 3.59 | 3.59 | 3.59 |

* The data in the above table represents typical values for your reference and are not guaranteed values.

Dielectric Properties / Prepreg R-527Y(E) : E glass

1GHz ; IPC TM650-2.5.5.9

13-56GHz ; Balanced-type Circular Disk Resonance Method [IEC 63185 (2020)]

| Cloth Style | Resin Content (%) | Typical Thickness (um) | Typical Df | | | | | |
|-------------|-------------------|------------------------|------------|--------|--------|--------|--------|--------|
| | | | 1GHz | 13GHz | 24GHz | 35GHz | 46GHz | 56GHz |
| 1027 | 75 | 49 | 0.002 | 0.0032 | 0.0034 | 0.0037 | 0.0040 | 0.0043 |
| 1035 | 70 | 60 | 0.002 | 0.0033 | 0.0036 | 0.0039 | 0.0042 | 0.0045 |
| | 73 | 68 | 0.002 | 0.0032 | 0.0035 | 0.0038 | 0.0041 | 0.0044 |
| | 75 | 74 | 0.002 | 0.0032 | 0.0034 | 0.0037 | 0.0040 | 0.0043 |
| 1080 | 64 | 76 | 0.002 | 0.0034 | 0.0038 | 0.0041 | 0.0045 | 0.0048 |
| | 68 | 87 | 0.002 | 0.0033 | 0.0036 | 0.0040 | 0.0043 | 0.0046 |
| 1078 | 64 | 77 | 0.002 | 0.0034 | 0.0038 | 0.0041 | 0.0045 | 0.0048 |
| | 68 | 89 | 0.002 | 0.0033 | 0.0036 | 0.0040 | 0.0043 | 0.0046 |
| | 72 | 104 | 0.002 | 0.0032 | 0.0035 | 0.0038 | 0.0042 | 0.0044 |
| | 75 | 118 | 0.002 | 0.0032 | 0.0034 | 0.0037 | 0.0040 | 0.0043 |
| 3313 | 54 | 98 | 0.002 | 0.0037 | 0.0041 | 0.0045 | 0.0049 | 0.0053 |
| | 57 | 106 | 0.002 | 0.0036 | 0.0040 | 0.0044 | 0.0048 | 0.0051 |
| 2116 | 56 | 132 | 0.002 | 0.0036 | 0.0040 | 0.0044 | 0.0048 | 0.0052 |

* The data in the above table represents typical values for your reference and are not guaranteed values.

Dielectric Properties / Laminate R-537Y(N) : Low-Dk glass

1GHz ; IPC TM650-2.5.5.9

13-58GHz ; Balanced-type Circular Disk Resonance Method [IEC 63185 (2020)]

| Core Type | Actual Thickness | | Cloth Style | ply | Typical Resin Content (%) | Typical Dk | | | | | |
|-----------|------------------|-------|-------------|-----|---------------------------|------------|-------|-------|-------|-------|-------|
| | mil | mm | | | | 1GHz | 13GHz | 24GHz | 36GHz | 47GHz | 58GHz |
| 2 | 2.0 | 0.050 | 1035 | 1 | 67 | 3.27 | 3.20 | 3.20 | 3.20 | 3.20 | 3.20 |
| 2.6 | 2.6 | 0.065 | 1078 | 1 | 59 | 3.37 | 3.30 | 3.30 | 3.30 | 3.30 | 3.30 |
| 3 | 3 | 0.075 | 1078 | 1 | 64 | 3.31 | 3.24 | 3.24 | 3.24 | 3.24 | 3.24 |
| 4 | 3.9 | 0.100 | 2013 | 1 | 56 | 3.41 | 3.34 | 3.34 | 3.34 | 3.34 | 3.34 |
| 4 | 3.9 | 0.100 | 1035 | 2 | 67 | 3.27 | 3.20 | 3.20 | 3.20 | 3.20 | 3.20 |
| 5 | 5.0 | 0.127 | 1078 | 2 | 59 | 3.37 | 3.30 | 3.30 | 3.30 | 3.30 | 3.30 |
| 5 | 4.9 | 0.125 | 2116 | 1 | 55 | 3.42 | 3.36 | 3.36 | 3.36 | 3.36 | 3.36 |
| 6 | 5.7 | 0.146 | 1078 | 2 | 64 | 3.31 | 3.24 | 3.24 | 3.24 | 3.24 | 3.24 |
| 8 | 7.9 | 0.200 | 2013 | 2 | 56 | 3.41 | 3.34 | 3.34 | 3.34 | 3.34 | 3.34 |
| 10 | 9.8 | 0.250 | 2116 | 2 | 55 | 3.42 | 3.36 | 3.36 | 3.36 | 3.36 | 3.36 |
| 12 | 11.8 | 0.300 | 2013 | 3 | 56 | 3.41 | 3.34 | 3.34 | 3.34 | 3.34 | 3.34 |
| 16 | 15.7 | 0.400 | 2013 | 4 | 56 | 3.41 | 3.34 | 3.34 | 3.34 | 3.34 | 3.34 |
| 20 | 19.7 | 0.500 | 2116 | 4 | 55 | 3.42 | 3.36 | 3.36 | 3.36 | 3.36 | 3.36 |
| 25 | 24.6 | 0.625 | 2116 | 5 | 55 | 3.42 | 3.36 | 3.36 | 3.36 | 3.36 | 3.36 |
| 30 | 29.5 | 0.750 | 2116 | 6 | 55 | 3.42 | 3.36 | 3.36 | 3.36 | 3.36 | 3.36 |

* The data in the above table represents typical values for your reference and are not guaranteed values.

Dielectric Properties / Laminate R-537Y(N) : Low-Dk glass

1GHz ; IPC TM650-2.5.5.9

13-58GHz ; Balanced-type Circular Disk Resonance Method [IEC 63185 (2020)]

| Core Type | Actual Thickness | | Cloth Style | ply | Typical Resin Content (%) | Typical Df | | | | | |
|-----------|------------------|-------|-------------|-----|---------------------------|------------|--------|--------|--------|--------|--------|
| | mil | mm | | | | 1GHz | 13GHz | 24GHz | 36GHz | 47GHz | 58GHz |
| 2 | 2.0 | 0.050 | 1035 | 1 | 67 | 0.001 | 0.0028 | 0.0030 | 0.0033 | 0.0035 | 0.0038 |
| 2.6 | 2.6 | 0.065 | 1078 | 1 | 59 | 0.001 | 0.0028 | 0.0031 | 0.0034 | 0.0036 | 0.0039 |
| 3 | 3 | 0.075 | 1078 | 1 | 64 | 0.001 | 0.0028 | 0.0031 | 0.0033 | 0.0036 | 0.0038 |
| 4 | 3.9 | 0.100 | 2013 | 1 | 56 | 0.001 | 0.0029 | 0.0031 | 0.0034 | 0.0036 | 0.0039 |
| 4 | 3.9 | 0.100 | 1035 | 2 | 67 | 0.001 | 0.0028 | 0.0030 | 0.0033 | 0.0035 | 0.0038 |
| 5 | 5.0 | 0.127 | 1078 | 2 | 59 | 0.001 | 0.0028 | 0.0031 | 0.0034 | 0.0036 | 0.0039 |
| 5 | 4.9 | 0.125 | 2116 | 1 | 55 | 0.001 | 0.0029 | 0.0031 | 0.0034 | 0.0037 | 0.0039 |
| 6 | 5.7 | 0.146 | 1078 | 2 | 64 | 0.001 | 0.0028 | 0.0031 | 0.0033 | 0.0036 | 0.0038 |
| 8 | 7.9 | 0.200 | 2013 | 2 | 56 | 0.001 | 0.0029 | 0.0031 | 0.0034 | 0.0036 | 0.0039 |
| 10 | 9.8 | 0.250 | 2116 | 2 | 55 | 0.001 | 0.0029 | 0.0031 | 0.0034 | 0.0037 | 0.0039 |
| 12 | 11.8 | 0.300 | 2013 | 3 | 56 | 0.001 | 0.0029 | 0.0031 | 0.0034 | 0.0036 | 0.0039 |
| 16 | 15.7 | 0.400 | 2013 | 4 | 56 | 0.001 | 0.0029 | 0.0031 | 0.0034 | 0.0036 | 0.0039 |
| 20 | 19.7 | 0.500 | 2116 | 4 | 55 | 0.001 | 0.0029 | 0.0031 | 0.0034 | 0.0037 | 0.0039 |
| 25 | 24.6 | 0.625 | 2116 | 5 | 55 | 0.001 | 0.0029 | 0.0031 | 0.0034 | 0.0037 | 0.0039 |
| 30 | 29.5 | 0.750 | 2116 | 6 | 55 | 0.001 | 0.0029 | 0.0031 | 0.0034 | 0.0037 | 0.0039 |

* The data in the above table represents typical values for your reference and are not guaranteed values.

Dielectric Properties / Prepreg R-527Y(N) : Low-Dk glass

1GHz ; IPC TM650-2.5.5.9

13-58GHz ; Balanced-type Circular Disk Resonance Method [IEC 63185 (2020)]

| Cloth Style | Resin Content (%) | Typical Thickness (um) | Typical Dk | | | | | |
|-------------|-------------------|------------------------|------------|-------|-------|-------|-------|-------|
| | | | 1GHz | 13GHz | 24GHz | 36GHz | 47GHz | 58GHz |
| 1027 | 77 | 49 | 3.15 | 3.09 | 3.09 | 3.09 | 3.09 | 3.09 |
| 1035 | 72 | 60 | 3.21 | 3.14 | 3.14 | 3.14 | 3.14 | 3.14 |
| | 75 | 68 | 3.18 | 3.11 | 3.11 | 3.11 | 3.11 | 3.11 |
| | 77 | 74 | 3.15 | 3.09 | 3.09 | 3.09 | 3.09 | 3.09 |
| 1080 | 66 | 76 | 3.29 | 3.21 | 3.21 | 3.21 | 3.21 | 3.21 |
| | 70 | 87 | 3.24 | 3.16 | 3.16 | 3.16 | 3.16 | 3.16 |
| 1078 | 66 | 77 | 3.29 | 3.21 | 3.21 | 3.21 | 3.21 | 3.21 |
| | 70 | 89 | 3.24 | 3.16 | 3.16 | 3.16 | 3.16 | 3.16 |
| | 74 | 104 | 3.19 | 3.12 | 3.12 | 3.12 | 3.12 | 3.12 |
| | 77 | 118 | 3.15 | 3.09 | 3.09 | 3.09 | 3.09 | 3.09 |
| 2013 | 56 | 98 | 3.41 | 3.34 | 3.34 | 3.34 | 3.34 | 3.34 |
| | 59 | 106 | 3.37 | 3.30 | 3.30 | 3.30 | 3.30 | 3.30 |
| 2116 | 58 | 132 | 3.38 | 3.32 | 3.32 | 3.32 | 3.32 | 3.32 |

* The data in the above table represents typical values for your reference and are not guaranteed values.

Dielectric Properties / Prepreg R-527Y(N) : Low-Dk glass

1GHz ; IPC TM650-2.5.5.9

13-58GHz ; Balanced-type Circular Disk Resonance Method [IEC 63185 (2020)]

| Cloth Style | Resin Content (%) | Typical Thickness (um) | Typical Df | | | | | |
|-------------|-------------------|------------------------|------------|--------|--------|--------|--------|--------|
| | | | 1GHz | 13GHz | 24GHz | 36GHz | 47GHz | 58GHz |
| 1027 | 77 | 49 | 0.001 | 0.0027 | 0.0030 | 0.0032 | 0.0034 | 0.0036 |
| 1035 | 72 | 60 | 0.001 | 0.0028 | 0.0030 | 0.0032 | 0.0035 | 0.0037 |
| | 75 | 68 | 0.001 | 0.0027 | 0.0030 | 0.0032 | 0.0034 | 0.0037 |
| | 77 | 74 | 0.001 | 0.0027 | 0.0030 | 0.0032 | 0.0034 | 0.0036 |
| 1080 | 66 | 76 | 0.001 | 0.0028 | 0.0030 | 0.0033 | 0.0035 | 0.0038 |
| | 70 | 87 | 0.001 | 0.0028 | 0.0030 | 0.0033 | 0.0035 | 0.0037 |
| 1078 | 66 | 77 | 0.001 | 0.0028 | 0.0030 | 0.0033 | 0.0035 | 0.0038 |
| | 70 | 89 | 0.001 | 0.0028 | 0.0030 | 0.0033 | 0.0035 | 0.0037 |
| | 74 | 104 | 0.001 | 0.0028 | 0.0030 | 0.0032 | 0.0035 | 0.0037 |
| | 77 | 118 | 0.001 | 0.0027 | 0.0030 | 0.0032 | 0.0034 | 0.0036 |
| 2013 | 56 | 98 | 0.001 | 0.0029 | 0.0031 | 0.0034 | 0.0036 | 0.0039 |
| | 59 | 106 | 0.001 | 0.0028 | 0.0031 | 0.0034 | 0.0036 | 0.0039 |
| 2116 | 58 | 132 | 0.001 | 0.0028 | 0.0031 | 0.0034 | 0.0036 | 0.0039 |

* The data in the above table represents typical values for your reference and are not guaranteed values.

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