

**Data Sheet**

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

**MEGTRON7**

**Laminate R-5785  
Prepreg R-5680**

Jun. 2018 No.18060428

# Specification / Laminate R-5785 & R-5785(N)

Property		Units	Test Method	Condition	Value		
					R-5785 E glass	R-5785(N) Low-Dk glass	
THERMAL	Glass Transition Temp ( Tg )		C	DSC	As received	200	200
				DMA	As received	210	210
	Thermal Decomposition Temp ( Td )		C	TGA	As received	400	400
	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	42	42
CTE : $\alpha 2$	Z - axis	ppm / C	IPC TM-650 2.4.24	> Tg	280	280	
ELECTRICAL	Volume Resistivity		M $\Omega$ - cm	IPC TM-650 2.5.17.1	C-96/35/90	1 x 10 <sup>9</sup>	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>	1 x 10 <sup>8</sup>
	Dielectric Constant ( Dk )	@1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	3.63	3.37
		@ 12GHz	-	*Note 1	C-24/23/50	3.61	3.35
	Dissipation Factor ( Df )	@1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	0.002	0.001
		@ 12GHz	-	*Note 1	C-24/23/50	0.003	0.002
PHYSICAL	Water Absorption		%	IPC TM-650 2.6.2.1	D-24/23	0.06	0.06
	Peel Strength	1oz ( H-VLP )	kN / m	IPC TM-650 2.4.8	As Received	0.8	0.8
	Flammability		-	UL	C-48/23/50	94V-0	94V-0

Sample thickness ; 29.5 mil = 0.75 mm

Note 1: The method by H. Kawabata, Proceedings of the 36th European Microwave Conference, 388-391 (2006)

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

# Specification / Laminate R-5785 : E glass

1GHz ; IPC TM650-2.5.5.9

6-50GHz ; The method by H. Kawabata, Proceedings of the 36th European Microwave Conference, 388-391 (2006)

Core Type	Actual Thickness		Cloth Style	ply	Typical Resin Content (%)	Typical Dk									
	mil	mm				1GHz	6GHz	12GHz	18GHz	23GHz	29GHz	34GHz	40GHz	45GHz	50GHz
2	2.0	0.050	1035	1	65	3.37	3.36	3.35	3.35	3.35	3.34	3.34	3.34	3.34	3.34
2.6	2.6	0.065	1080	1	57	3.55	3.54	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53
2.6	2.6	0.065	1078	1	57	3.55	3.54	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53
3	3.0	0.075	1078	1	63	3.41	3.40	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39
3.5	3.5	0.090	1078	1	68	3.30	3.29	3.29	3.28	3.28	3.28	3.28	3.28	3.28	3.28
4	3.9	0.100	3313	1	53	3.63	3.61	3.61	3.60	3.60	3.60	3.60	3.60	3.60	3.60
4	3.9	0.100	1035	2	65	3.37	3.36	3.35	3.35	3.35	3.34	3.34	3.34	3.34	3.34
5	5.0	0.127	1078	2	57	3.55	3.54	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53
5	4.9	0.125	2116	1	53	3.63	3.61	3.61	3.60	3.60	3.60	3.60	3.60	3.60	3.60
5	5.1	0.130	1080	2	57	3.55	3.54	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53
6	5.7	0.146	1078	2	63	3.41	3.40	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39
6	5.9	0.150	1080	2	63	3.41	3.40	3.39	3.39	3.39	3.39	3.39	3.39	3.39	3.39
7	7.0	0.178	1078	2	68	3.30	3.29	3.29	3.28	3.28	3.28	3.28	3.28	3.28	3.28
8	7.9	0.200	3313	2	53	3.63	3.61	3.61	3.60	3.60	3.60	3.60	3.60	3.60	3.60
10	9.8	0.250	2116	2	53	3.63	3.61	3.61	3.60	3.60	3.60	3.60	3.60	3.60	3.60
12	11.8	0.300	3313	3	53	3.63	3.61	3.61	3.60	3.60	3.60	3.60	3.60	3.60	3.60
16	15.7	0.400	3313	4	53	3.63	3.61	3.61	3.60	3.60	3.60	3.60	3.60	3.60	3.60
20	19.7	0.500	2116	4	53	3.63	3.61	3.61	3.60	3.60	3.60	3.60	3.60	3.60	3.60
25	24.6	0.625	2116	5	53	3.63	3.61	3.61	3.60	3.60	3.60	3.60	3.60	3.60	3.60
30	29.5	0.750	2116	6	53	3.63	3.61	3.61	3.60	3.60	3.60	3.60	3.60	3.60	3.60

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

# Specification / Laminate R-5785 : E glass

1GHz ; IPC TM650-2.5.5.9

6-50GHz ; The method by H. Kawabata, Proceedings of the 36th European Microwave Conference,  
388-391 (2006)

Core Type	Actual Thickness		Cloth Style	ply	Typical Resin Content (%)	Typical Df									
	mil	mm				1GHz	6GHz	12GHz	18GHz	23GHz	29GHz	34GHz	40GHz	45GHz	50GHz
2	2.0	0.050	1035	1	65	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004
2.6	2.6	0.065	1080	1	57	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.005
2.6	2.6	0.065	1078	1	57	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.005
3	3.0	0.075	1078	1	63	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004
3.5	3.5	0.090	1078	1	68	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004
4	3.9	0.100	3313	1	53	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005
4	3.9	0.100	1035	2	65	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004
5	5.0	0.127	1078	2	57	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.005
5	4.9	0.125	2116	1	53	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005
5	5.1	0.130	1080	2	57	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.005
6	5.7	0.146	1078	2	63	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004
6	5.9	0.150	1080	2	63	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004
7	7.0	0.178	1078	2	68	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004
8	7.9	0.200	3313	2	53	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005
10	9.8	0.250	2116	2	53	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005
12	11.8	0.300	3313	3	53	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005
16	15.7	0.400	3313	4	53	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005
20	19.7	0.500	2116	4	53	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005
25	24.6	0.625	2116	5	53	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005
30	29.5	0.750	2116	6	53	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005

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

# Specification / Prepreg R-5680 : E glass

1GHz ; IPC TM650-2.5.5.9

6-50GHz ; The method by H. Kawabata, Proceedings of the 36th European Microwave Conference,  
388-391 (2006)

Cloth Style	Resin Content (%)	Typical Thickness (um)	Typical Dk									
			1GHz	6GHz	12GHz	18GHz	23GHz	29GHz	34GHz	40GHz	45GHz	50GHz
1027	75	49	3.18	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15
1035	70	60	3.26	3.25	3.25	3.24	3.24	3.24	3.24	3.24	3.24	3.24
	73	68	3.20	3.19	3.19	3.19	3.18	3.18	3.18	3.18	3.18	3.18
	75	74	3.18	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15	3.15
1080	64	76	3.39	3.38	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37
	68	87	3.30	3.29	3.29	3.28	3.28	3.28	3.28	3.28	3.28	3.28
1078	64	77	3.39	3.38	3.37	3.37	3.37	3.37	3.37	3.37	3.37	3.37
	68	89	3.30	3.29	3.29	3.28	3.28	3.28	3.28	3.28	3.28	3.28
	72	104	3.22	3.21	3.21	3.20	3.20	3.20	3.20	3.20	3.20	3.20
	75	118	3.18	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16
3313	54	98	3.63	3.61	3.61	3.60	3.60	3.60	3.60	3.60	3.60	3.60
	57	106	3.55	3.54	3.53	3.53	3.53	3.53	3.53	3.53	3.53	3.53
2116	56	132	3.57	3.56	3.56	3.55	3.55	3.55	3.55	3.55	3.55	3.55

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

# Specification / Prepreg R-5680 : E glass

1GHz ; IPC TM650-2.5.5.9

6-50GHz ; The method by H. Kawabata, Proceedings of the 36th European Microwave Conference,  
388-391 (2006)

Cloth Style	Resin Content (%)	Typical Thickness (um)	Typical Df									
			1GHz	6GHz	12GHz	18GHz	23GHz	29GHz	34GHz	40GHz	45GHz	50GHz
1027	75	49	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
1035	70	60	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.003	0.004
	73	68	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
	75	74	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
1080	64	76	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004
	68	87	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004
1078	64	77	0.002	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004	0.004
	68	89	0.002	0.003	0.003	0.003	0.003	0.003	0.003	0.004	0.004	0.004
	72	104	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
	75	118	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
3313	54	98	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.005	0.005
	57	106	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.005
2116	56	132	0.002	0.003	0.003	0.003	0.004	0.004	0.004	0.004	0.004	0.005

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

# Specification / Laminate R-5785(N) : Low-Dk glass

1GHz ; IPC TM650-2.5.5.9

6-50GHz ; The method by H. Kawabata, Proceedings of the 36th European Microwave Conference, 388-391 (2006)

Core Type	Actual Thickness		Cloth Style	ply	Typical Resin Content (%)	Typical Dk									
	mil	mm				1GHz	6GHz	12GHz	18GHz	23GHz	29GHz	34GHz	40GHz	45GHz	50GHz
2	2.0	0.050	1035	1	67	3.21	3.20	3.20	3.20	3.19	3.19	3.19	3.19	3.19	3.19
2.6	2.6	0.065	1078	1	59	3.32	3.31	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
3	3.0	0.075	1078	1	65	3.24	3.23	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22
3.2	3.2	0.080	1035	2	60	3.31	3.29	3.29	3.29	3.28	3.28	3.28	3.28	3.28	3.28
3.5	3.5	0.090	1078	1	70	3.18	3.17	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16
3.5	3.5	0.090	1035	2	64	3.26	3.24	3.24	3.23	3.23	3.23	3.23	3.23	3.23	3.23
4	3.9	0.100	3313	1	55	3.37	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.34	3.34
4	3.9	0.100	1035	2	67	3.21	3.20	3.20	3.20	3.19	3.19	3.19	3.19	3.19	3.19
5	5.0	0.127	1078	2	59	3.32	3.31	3.30	3.30	3.30	3.30	3.30	3.30	3.30	3.30
5	4.9	0.125	2116	1	55	3.37	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.34	3.34
5.2	5.2	0.135	1035	3	64	3.26	3.24	3.24	3.23	3.23	3.23	3.23	3.23	3.23	3.23
6	5.7	0.146	1078	2	65	3.24	3.23	3.22	3.22	3.22	3.22	3.22	3.22	3.22	3.22
7	7.0	0.178	1078	2	70	3.18	3.17	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16
8	7.9	0.200	3313	2	55	3.37	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.34	3.34
10	9.8	0.250	2116	2	55	3.37	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.34	3.34
12	11.8	0.300	3313	3	55	3.37	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.34	3.34
16	15.7	0.400	3313	4	55	3.37	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.34	3.34
20	19.7	0.500	2116	4	55	3.37	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.34	3.34
25	24.6	0.625	2116	5	55	3.37	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.34	3.34
30	29.5	0.750	2116	6	55	3.37	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.34	3.34

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

# Specification / Laminate R-5785(N) : Low-Dk glass

1GHz ; IPC TM650-2.5.5.9

6-50GHz ; The method by H. Kawabata, Proceedings of the 36th European Microwave Conference,  
388-391 (2006)

Core Type	Actual Thickness		Cloth Style	ply	Typical Resin Content (%)	Typical Df									
	mil	mm				1GHz	6GHz	12GHz	18GHz	23GHz	29GHz	34GHz	40GHz	45GHz	50GHz
2	2.0	0.050	1035	1	67	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
2.6	2.6	0.065	1078	1	59	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
3	3.0	0.075	1078	1	65	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
3.2	3.2	0.080	1035	2	60	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
3.5	3.5	0.090	1078	1	70	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003
3.5	3.5	0.090	1035	2	64	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
4	3.9	0.100	3313	1	55	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
4	3.9	0.100	1035	2	67	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
5	5.0	0.127	1078	2	59	0.001	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003
5	4.9	0.125	2116	1	55	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
5.2	5.2	0.135	1035	3	64	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
6	5.7	0.146	1078	2	65	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
7	7.0	0.178	1078	2	70	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003
8	7.9	0.200	3313	2	55	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
10	9.8	0.250	2116	2	55	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
12	11.8	0.300	3313	3	55	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
16	15.7	0.400	3313	4	55	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
20	19.7	0.500	2116	4	55	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
25	24.6	0.625	2116	5	55	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
30	29.5	0.750	2116	6	55	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004

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



# Specification / Prepreg R-5680(N) : Low-Dk glass

1GHz ; IPC TM650-2.5.5.9

6-50GHz ; The method by H. Kawabata, Proceedings of the 36th European Microwave Conference,  
388-391 (2006)

Cloth Style	Resin Content (%)	Typical Thickness (um)	Typical Dk									
			1GHz	6GHz	12GHz	18GHz	23GHz	29GHz	34GHz	40GHz	45GHz	50GHz
1035	72	60	3.15	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14	3.14
	75	68	3.11	3.11	3.11	3.10	3.10	3.10	3.10	3.10	3.10	3.10
	77	74	3.09	3.09	3.09	3.09	3.08	3.08	3.08	3.08	3.08	3.08
1080	66	77	3.23	3.22	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21
	70	87	3.18	3.17	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16
	74	102	3.12	3.12	3.12	3.11	3.11	3.11	3.11	3.11	3.11	3.11
	77	115	3.09	3.09	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08
1078	66	77	3.23	3.22	3.21	3.21	3.21	3.21	3.21	3.21	3.21	3.21
	70	89	3.18	3.17	3.16	3.16	3.16	3.16	3.16	3.16	3.16	3.16
	74	104	3.12	3.12	3.12	3.11	3.11	3.11	3.11	3.11	3.11	3.11
	77	118	3.09	3.09	3.08	3.08	3.08	3.08	3.08	3.08	3.08	3.08
3313	56	98	3.37	3.35	3.35	3.34	3.34	3.34	3.34	3.34	3.34	3.34
	59	106	3.33	3.32	3.32	3.31	3.31	3.31	3.31	3.31	3.31	3.31
2116	58	132	3.33	3.33	3.33	3.33	3.32	3.32	3.32	3.32	3.32	3.32

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

# Specification / Prepreg R-5680(N) : Low-Dk glass

1GHz ; IPC TM650-2.5.5.9

6-50GHz ; The method by H. Kawabata, Proceedings of the 36th European Microwave Conference,  
388-391 (2006)

Cloth Style	Resin Content (%)	Typical Thickness (um)	Typical Df									
			1GHz	6GHz	12GHz	18GHz	23GHz	29GHz	34GHz	40GHz	45GHz	50GHz
1035	72	60	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003
	75	68	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003
	77	74	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003
1080	66	77	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
	70	87	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003
	74	102	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003
	77	115	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003
1078	66	77	0.001	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003
	70	89	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003
	74	104	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003	0.003
	77	118	0.001	0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.003	0.003
3313	56	98	0.001	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003	0.004
	59	106	0.001	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003
2116	58	132	0.001	0.002	0.002	0.002	0.002	0.003	0.003	0.003	0.003	0.003

\*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.
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