


**Data Sheet**

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

**MEGTRON4**

Laminate R-5725  
Prepreg R-5620

UL/ANSI	FR-4	
IPC-4101	Primary:/91	
Slash Sheet	Secondary:/102(*)	

(\*); Tg measurement is limited to DMA method for Slash Sheet

Nov. 2009 No.09110663

Partnering to go beyond.

**Electronic Materials**  
Panasonic Electric Works

# Specification / Laminate R-5725

Property		Units	Test Method	Condition	Value	
THERMAL	Glass Transition Temp	°C	DSC	As received	176	
			TMA	As received	170	
			DMA	As received	210	
	Thermal Decomposition Temp	°C	TGA	As received	360	
	Time to Delam (T288 With Cu)	min	IPC TM-650 2.4.24.1	As received	30	
	CTE ( $\alpha$ 1) z-axis	ppm/°C	IPC TM-650 2.4.24	< Tg	35	
CTE ( $\alpha$ 2) z-axis	ppm/°C	IPC TM-650 2.4.24	> Tg	265		
ELECTRICAL	Volume Resistivity	M $\Omega$ -cm	IPC TM-650 2.5.17.1	C-96/35/90	1x10 <sup>9</sup>	
	Surface Resistivity	M $\Omega$	IPC TM-650 2.5.17.1	C-96/35/90	1x10 <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 1 oz (35 $\mu$ m)	ST	kN/m	IPC TM-650 2.4.8	As Received	1.2
	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-5725

1MHz - 1GHz ; IPC TM650-2.5.5.9

Published Nominal Thickness		Cloth Style	Typical Resin Content	Typical Dk			Typical Df		
mil	mm			1MHz	100MHz	1GHz	1MHz	100MHz	1GHz
2.0	0.05	1067 × 1	66%	3.62	3.58	3.55	0.005	0.005	0.005
2.5	0.06	1080 × 1	59%	3.82	3.78	3.75	0.005	0.005	0.005
3.0	0.08	1080 × 1	65%	3.64	3.59	3.57	0.005	0.005	0.005
3.4	0.09	1078 × 1	68%	3.54	3.50	3.47	0.005	0.005	0.006
3.5		106 × 2	69%	3.53	3.48	3.46	0.005	0.005	0.006
		3313 × 1	51%	4.07	4.03	4.00	0.004	0.005	0.005
4.0	0.10	3313 × 1	57%	3.91	3.87	3.84	0.005	0.005	0.005
		1067 × 2	66%	3.62	3.58	3.55	0.005	0.005	0.005
4.5	0.11	1080 × 2	56%	3.93	3.90	3.86	0.005	0.005	0.005
		2116 × 1	48%	4.18	4.14	4.11	0.004	0.005	0.005
4.7	0.12	1080 × 2	57%	3.89	3.85	3.82	0.005	0.005	0.005
5.0	0.13	2116 × 1	56%	3.93	3.89	3.86	0.005	0.005	0.005
5.1	0.13	1080 × 2	60%	3.80	3.76	3.73	0.005	0.005	0.005
		1078 × 2	59%	3.83	3.79	3.76	0.005	0.005	0.005
5.5	0.14	1080 × 2	63%	3.72	3.68	3.65	0.005	0.005	0.005
6.0	0.15	1080 × 2	65%	3.64	3.59	3.57	0.005	0.005	0.005
		1504 × 1	49%	4.14	4.10	4.07	0.004	0.005	0.005
		1078 × 2	65%	3.66	3.61	3.59	0.005	0.005	0.005

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# Specification / Laminate R-5725

1MHz - 1GHz ; IPC TM650-2.5.5.9

Published Nominal Thickness		Cloth Style	Typical Resin Content	Typical Dk			Typical Df		
mil	mm			1MHz	100MHz	1GHz	1MHz	100MHz	1GHz
7.0	0.18	3313 × 2	52%	4.07	4.03	4.00	0.004	0.005	0.005
		1067 × 3	70%	3.49	3.46	3.42	0.005	0.005	0.006
7.5	0.19	7628 × 1	45%	4.26	4.23	4.19	0.004	0.005	0.005
8.0	0.20	3313 × 2	57%	3.91	3.87	3.84	0.005	0.005	0.005
		2116 × 2	47%	4.20	4.17	4.13	0.004	0.005	0.005
10.0	0.25	2116 × 2	56%	3.93	3.89	3.86	0.005	0.005	0.005
12.0	0.30	1504 × 2	49%	4.14	4.10	4.07	0.004	0.005	0.005
15.0	0.38	7628 × 2	45%	4.26	4.23	4.19	0.004	0.005	0.005
18.0	0.46	7628 × 2 + 3313 × 1	45%	4.26	4.23	4.19	0.004	0.005	0.005
20.0	0.51	7628 × 2 + 1080 × 2	49%	4.16	4.12	4.09	0.004	0.005	0.005
22.0	0.56	7628 × 3	44%	4.29	4.26	4.22	0.004	0.005	0.005
24.0	0.61	7628 × 3	48%	4.18	4.14	4.11	0.004	0.005	0.005
26.0	0.66	7628 × 3 + 2116 × 1	45%	4.28	4.25	4.21	0.004	0.005	0.005
28.0	0.71	7628 × 4	42%	4.36	4.33	4.29	0.004	0.005	0.005
31.0	0.79	7628 × 4	47%	4.22	4.19	4.15	0.004	0.005	0.005
40.0	1.00	7628 × 5	47%	4.21	4.17	4.14	0.004	0.005	0.005
47.0	1.20	7628 × 6	47%	4.21	4.17	4.14	0.004	0.005	0.005
		3313 × 12	57%	3.91	3.87	3.84	0.005	0.005	0.005

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

# Specification / Laminate R-5725

2GHz-10GHz ; IPC TM650-2.5.5.5

Published Nominal Thickness		Cloth Style	Typical Resin Content	Typical Dk					Typical Df				
mil	mm			2GHz	4GHz	6GHz	8GHz	10GHz	2GHz	4GHz	6GHz	8GHz	10GHz
2.0	0.05	1067 × 1	66%	3.54	3.53	3.53	3.52	3.52	0.006	0.006	0.007	0.008	0.008
2.5	0.06	1080 × 1	59%	3.73	3.71	3.71	3.70	3.69	0.006	0.006	0.006	0.007	0.007
3.0	0.08	1080 × 1	65%	3.56	3.54	3.54	3.54	3.53	0.006	0.006	0.007	0.008	0.008
3.4	0.09	1078 × 1	68%	3.47	3.46	3.45	3.45	3.45	0.006	0.006	0.007	0.008	0.008
3.5		106 × 2	69%	3.46	3.44	3.44	3.44	3.44	0.006	0.006	0.007	0.008	0.008
		3313 × 1	51%	3.97	3.95	3.93	3.92	3.91	0.006	0.006	0.006	0.007	0.007
4.0	0.10	3313 × 1	57%	3.82	3.80	3.79	3.78	3.77	0.006	0.006	0.006	0.007	0.007
		1067 × 2	66%	3.54	3.53	3.53	3.52	3.52	0.006	0.006	0.007	0.008	0.008
4.5	0.11	1080 × 2	56%	3.84	3.82	3.81	3.80	3.80	0.006	0.006	0.006	0.007	0.007
		2116 × 1	48%	4.07	4.05	4.03	4.02	4.01	0.006	0.006	0.006	0.007	0.007
4.7	0.12	1080 × 2	57%	3.80	3.78	3.77	3.76	3.75	0.006	0.006	0.006	0.007	0.007
5.0	0.13	2116 × 1	56%	3.84	3.82	3.81	3.80	3.79	0.006	0.006	0.006	0.007	0.007
5.1	0.13	1080 × 2	60%	3.71	3.70	3.69	3.68	3.67	0.006	0.006	0.007	0.007	0.007
		1078 × 2	59%	3.75	3.73	3.72	3.71	3.70	0.006	0.006	0.006	0.007	0.007
5.5	0.14	1080 × 2	63%	3.64	3.62	3.62	3.61	3.61	0.006	0.006	0.007	0.007	0.007
6.0	0.15	1080 × 2	65%	3.56	3.54	3.54	3.54	3.53	0.006	0.006	0.007	0.008	0.008
		1504 × 1	49%	4.04	4.02	4.00	3.99	3.98	0.006	0.006	0.006	0.007	0.007
		1078 × 2	65%	3.58	3.56	3.56	3.55	3.55	0.006	0.006	0.007	0.007	0.008

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

# Specification / Laminate R-5725

2GHz-10GHz ; IPC TM650-2.5.5.5

Published Nominal Thickness		Cloth Style	Typical Resin Content	Typical Dk					Typical Df				
mil	mm			2GHz	4GHz	6GHz	8GHz	10GHz	2GHz	4GHz	6GHz	8GHz	10GHz
7.0	0.18	3313 × 2	52%	3.97	3.95	3.93	3.92	3.91	0.006	0.006	0.006	0.007	0.007
		1067 × 3	70%	3.42	3.40	3.40	3.40	3.40	0.006	0.006	0.007	0.008	0.008
7.5	0.19	7628 × 1	45%	4.16	4.13	4.11	4.10	4.09	0.006	0.006	0.006	0.007	0.007
8.0	0.20	3313 × 2	57%	3.82	3.80	3.79	3.78	3.77	0.006	0.006	0.006	0.007	0.007
		2116 × 2	47%	4.10	4.08	4.06	4.04	4.03	0.006	0.006	0.006	0.007	0.007
10.0	0.25	2116 × 2	56%	3.84	3.82	3.81	3.80	3.79	0.006	0.006	0.006	0.007	0.007
12.0	0.30	1504 × 2	49%	4.04	4.02	4.00	3.99	3.98	0.006	0.006	0.006	0.007	0.007
15.0	0.38	7628 × 2	45%	4.16	4.13	4.11	4.10	4.09	0.006	0.006	0.006	0.007	0.007
18.0	0.46	7628 × 2 + 3313 × 1	45%	4.16	4.13	4.11	4.10	4.09	0.006	0.006	0.006	0.007	0.007
20.0	0.51	7628 × 2 + 1080 × 2	49%	4.06	4.03	4.02	4.00	3.99	0.006	0.006	0.006	0.007	0.007
22.0	0.56	7628 × 3	44%	4.19	4.16	4.14	4.12	4.11	0.006	0.006	0.006	0.007	0.007
24.0	0.61	7628 × 3	48%	4.08	4.05	4.04	4.02	4.01	0.006	0.006	0.006	0.007	0.007
26.0	0.66	7628 × 3 + 2116 × 1	45%	4.17	4.15	4.13	4.11	4.10	0.006	0.006	0.006	0.007	0.007
28.0	0.71	7628 × 4	42%	4.25	4.22	4.20	4.18	4.17	0.006	0.006	0.006	0.007	0.007
31.0	0.79	7628 × 4	47%	4.12	4.09	4.07	4.06	4.05	0.006	0.006	0.006	0.007	0.007
40.0	1.00	7628 × 5	47%	4.10	4.08	4.06	4.05	4.04	0.006	0.006	0.006	0.007	0.007
47.0	1.20	7628 × 6	47%	4.10	4.08	4.06	4.05	4.04	0.006	0.006	0.006	0.007	0.007
		3313 × 12	57%	3.82	3.80	3.79	3.78	3.77	0.006	0.006	0.006	0.007	0.007

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

# Specification / Prepreg R-5620

1MHz - 1GHz ; IPC TM650-2.5.5.9

Published Nominal Thickness (mm)	Cloth Style	Typical Resin Content	Typical Thickness (um)	Typical Dk			Typical Df		
				1MHz	100MHz	1GHz	1MHz	100MHz	1GHz
0.04	106	72%	51	3.39	3.39	3.38	0.004	0.005	0.005
	106	75%	58	3.33	3.33	3.32	0.004	0.005	0.005
	1067	66%	52	3.58	3.56	3.56	0.004	0.004	0.005
	1067	70%	60	3.47	3.46	3.46	0.004	0.005	0.005
	1067	74%	70	3.34	3.34	3.33	0.004	0.005	0.005
0.06	1080	65%	78	3.62	3.60	3.59	0.004	0.004	0.005
	1080	69%	90	3.48	3.47	3.47	0.004	0.005	0.005
	1080	73%	105	3.38	3.38	3.37	0.004	0.005	0.005
	1078	64%	75	3.65	3.63	3.62	0.004	0.004	0.005
	1078	69%	89	3.48	3.47	3.47	0.004	0.005	0.005
0.08	3313	57%	105	3.89	3.85	3.83	0.004	0.004	0.005
	3313	63%	126	3.69	3.66	3.65	0.004	0.004	0.005
0.10	2116	53%	119	4.03	3.98	3.95	0.004	0.004	0.005
0.10	2116	56%	127	3.93	3.88	3.86	0.004	0.004	0.005
0.13	1504	51%	160	4.10	4.05	4.01	0.003	0.004	0.005
0.15	1501	51%	178	4.10	4.05	4.01	0.003	0.004	0.005
0.20	7628	44%	185	4.34	4.27	4.22	0.003	0.004	0.004

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# Specification / Prepreg R-5620

2GHz-10GHz ; IPC TM650-2.5.5.5

Published Nominal Thickness (mm)	Cloth Style	Typical Resin Content	Typical Thickness (um)	Typical Dk					Typical Df				
				2GHz	4GHz	6GHz	8GHz	10GHz	2GHz	4GHz	6GHz	8GHz	10GHz
0.04	106	72%	51	3.38	3.37	3.37	3.37	3.37	0.006	0.006	0.007	0.008	0.008
	106	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	0.005	0.006	0.007	0.007	0.008
	1067	70%	60	3.46	3.45	3.45	3.45	3.45	0.006	0.006	0.007	0.008	0.008
	1067	74%	70	3.33	3.32	3.32	3.32	3.32	0.006	0.007	0.007	0.008	0.008
0.06	1080	65%	78	3.59	3.59	3.59	3.58	3.58	0.005	0.006	0.007	0.007	0.008
	1080	69%	90	3.47	3.47	3.47	3.47	3.47	0.006	0.006	0.007	0.007	0.008
	1080	73%	105	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	0.005	0.006	0.007	0.007	0.008
	1078	69%	89	3.47	3.47	3.47	3.47	3.47	0.006	0.006	0.007	0.007	0.008
0.08	3313	57%	105	3.82	3.82	3.81	3.80	3.80	0.005	0.006	0.006	0.007	0.007
	3313	63%	126	3.65	3.65	3.64	3.64	3.64	0.005	0.006	0.007	0.007	0.008
0.10	2116	53%	119	3.94	3.93	3.92	3.91	3.91	0.005	0.006	0.006	0.007	0.007
0.10	2116	56%	127	3.85	3.85	3.84	3.83	3.83	0.005	0.006	0.006	0.007	0.007
0.13	1504	51%	160	4.00	3.99	3.97	3.97	3.96	0.005	0.006	0.006	0.007	0.007
0.15	1501	51%	178	4.00	3.99	3.97	3.97	3.96	0.005	0.006	0.006	0.007	0.007
0.20	7628	44%	185	4.20	4.19	4.17	4.16	4.15	0.005	0.006	0.006	0.006	0.007

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**++Precautions++**

- \*The user, through its own analysis and testing, is solely responsible for making the final selection of the boards and materials and assuring that all performance, endurance, maintenance, safety and warning requirements of the application are met.
- \*The user must analyze all aspects of the application, follow applicable industry standards, and follow the information concerning the product in the current product catalog and in any other materials provided from PEW or its subsidiaries or authorized distributors.

**++Before purchase++**

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- \* ALL data are our actual values and not assured values.

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