



Ultra-low transmission loss Highly heat resistant Multi-layer circuit board materials

超低伝送損失・高耐熱多層基板材料

MEGTRON6

Laminate R-5775(N)* R-5775(K) R-5775(G) R-5775(S)* R-5775(R)
Prepreg R-5670(N)* R-5670(K) R-5670(G)

*Low Dk glass cloth type R-5775(S)/R-5775(R): Buried Resistor Copper Foil

Applications 用途

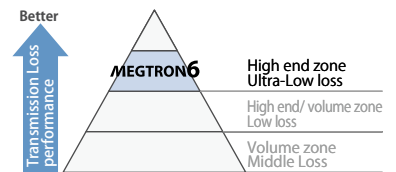
ICT infrastructure equipment, Supercomputer, Measuring instrument, Antenna(Base station, Automotive millimeter-wave radar), Etc.

ICT インフラ機器 (スーパーコンピュータ、計測用機器)、アンテナ (基地局、車載ミリ波レーダ)、高周波用途など



The industry standard for high speed, ultra-low loss PCB material. Excellent HDI and thermal performance.

超高性能サーバルータ向け材料のデファクトスタンダード。低伝送ロスを実現し、超高性能サーバルータの性能向上に貢献

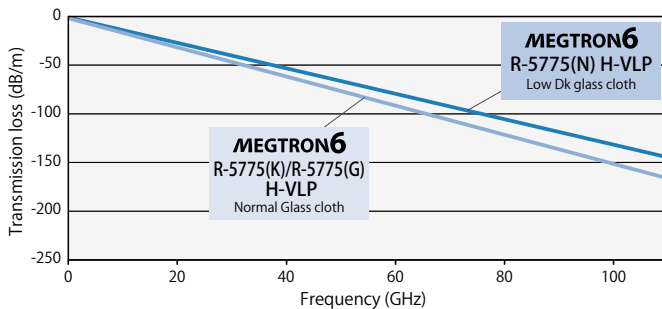


Dk 3.4 Df 0.004
@12GHz

Tg (DSC)
185°C

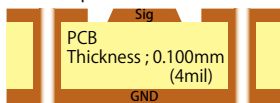
T288 (with copper)
>120min

Frequency dependence by Transmission loss 伝送損失比較



Construction

Microstrip line



Measurement	2 port S-Parameter
Frequency	10MHz-110GHz
De-embedded	Multiline TRL method
Measurement line	adjust to 50Ω (Zo)

Layer1 : Signal Line (line width : 270 μm) (Cu thickness : 24 μm)
Layer2 : GND Plane (Cu thickness : 24 μm)

Heat resistance of High Multi-layered 高多層耐熱性

Result

Drill diameter	φ 0.3mm	
Wall to wall distance	0.5mm	0.6mm
MEGTRON6 (Low Dk glass cloth)	pass	pass

Condition

260°C reflow x 10times

Construction

32 Layers
Board thickness: 4.5mm



General properties 一般特性

Item	Test method	Condition	Unit	MEGTRON6 R-5775(N) Low Dk glass cloth	MEGTRON6 R-5775(K)/R-5775(G) Normal glass cloth	MEGTRON6 R-5775(S) Low Dk glass cloth Buried Resistor Copper Foil	MEGTRON6 R-5775(R) Normal glass cloth Buried Resistor Copper Foil
Tg	DSC	A	°C	185	185	185	185
CTE z-axis	α1	IPC-TM-650 2.4.24	A	ppm/°C	45	45	45
					α2	260	260
T288(with copper)	IPC-TM-650 2.4.24.1	A	min	>120	>120	>120	>120
Dk	12GHz	Balanced-type circular disk resonator	C-24/23/50	-	3.4	3.6	3.4
Df					0.004	0.004	0.004
Peel strength*1	1oz(35 μm)	IPC-TM-650 2.4.8	A	kN/m	0.8	0.8	0.8*2

The sample thickness is 0.75mm.

*1 H-VLP Copper *2 Buried Resistor Copper Foil 1/2oz (18 μm)

The above data are typical values and not guaranteed values. 上記データは当社測定による代表値であり、保証値ではありません。

Please see the page for "Notes before you use" 商品のご採用に当たっての注意事項は こちら

Specification / Laminate R-5775

Property		Units	Test Method	Condition	Typical Value	
THERMAL	Glass Transition Temp (Tg)	C	DSC	As received	185	
			DMA	As received	210	
	Thermal Decomposition Temp (Td)		C	TGA	As received	410
	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	> 120
	CTE : $\alpha 1$	X - axis	ppm / C	IPC TM-650 2.4.24	< Tg	14 - 16
		Y - axis	ppm / C	IPC TM-650 2.4.24	< Tg	14 - 16
		Z - axis	ppm / C	IPC TM-650 2.4.24	< Tg	45
CTE : $\alpha 2$	Z - axis	ppm / C	IPC TM-650 2.4.24	> Tg	260	
ELECTRICAL	Volume Resistivity		M Ω - cm	IPC TM-650 2.5.17.1	C-96/35/90	1 x 10 ⁹
	Surface Resistivity		M Ω	IPC TM-650 2.5.17.1	C-96/35/90	1 x 10 ⁸
	Dielectric Constant (Dk)	@ 1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	3.71
		@ 10GHz	-	IPC TM-650 2.5.5.5	C-24/23/50	3.61
	Dissipation Factor (Df)	@ 1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	0.002
		@ 10GHz	-	IPC TM-650 2.5.5.5	C-24/23/50	0.004
PHYSICAL	Water Absorption		%	IPC TM-650 2.6.2.1	D-24/23	0.14
	Peel Strength	1oz (H-VLP)	kN / m	IPC TM-650 2.4.8	As Received	0.8
	Flammability		-	UL	C-48/23/50	94V-0

Sample thickness ; 29.5 mil = 0.750 mm (Core Type 30)

* The data in the above table are not guaranteed values.

Specification / Laminate R-5775(K)

1GHz ; IPC TM650-2.5.5.9

2GHz-10GHz ; IPC TM650-2.5.5.5

Core Type	Actual Thickness		Cloth Style	ply	Typical Resin Content (%)	Typical Dk						Typical Df					
	mil	mm				1GHz	2GHz	4GHz	6GHz	8GHz	10GHz	1GHz	2GHz	4GHz	6GHz	8GHz	10GHz
2	2.0	0.050	1035	1	65	3.46	3.39	3.38	3.38	3.38	3.37	0.002	0.002	0.003	0.003	0.004	0.004
2.6	2.6	0.065	1080	1	57	3.65	3.58	3.57	3.56	3.56	3.55	0.002	0.002	0.003	0.003	0.004	0.004
2.6	2.6	0.065	1078	1	57	3.65	3.58	3.57	3.56	3.56	3.55	0.002	0.002	0.003	0.003	0.004	0.004
3	3.0	0.075	1078	1	63	3.49	3.42	3.41	3.40	3.40	3.39	0.002	0.002	0.003	0.003	0.004	0.004
3.5	3.5	0.090	1078	1	68	3.41	3.34	3.33	3.33	3.33	3.32	0.002	0.002	0.003	0.003	0.004	0.004
4	3.9	0.100	3313	1	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
4	3.9	0.100	1035	2	65	3.46	3.39	3.38	3.38	3.38	3.37	0.002	0.002	0.003	0.003	0.004	0.004
5	5.0	0.127	1078	2	57	3.65	3.58	3.57	3.56	3.56	3.55	0.002	0.002	0.003	0.003	0.004	0.004
5	4.9	0.125	2116	1	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
5	5.1	0.130	1080	2	57	3.65	3.58	3.57	3.56	3.56	3.55	0.002	0.002	0.003	0.003	0.004	0.004
6	5.7	0.146	1078	2	63	3.49	3.42	3.41	3.40	3.40	3.39	0.002	0.002	0.003	0.003	0.004	0.004
6	5.9	0.150	1080	2	63	3.49	3.42	3.41	3.40	3.40	3.39	0.002	0.002	0.003	0.003	0.004	0.004
7	7.0	0.178	1078	2	68	3.41	3.34	3.33	3.33	3.33	3.32	0.002	0.002	0.003	0.003	0.004	0.004
8	7.9	0.200	3313	2	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
10	9.8	0.250	2116	2	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
12	11.8	0.300	3313	3	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
16	15.7	0.400	3313	4	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
20	19.7	0.500	2116	4	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
25	24.6	0.625	2116	5	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
30	29.5	0.750	2116	6	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004

* The data in the above table are not guaranteed values.

Specification / Prepreg R-5670(K)

1GHz ; IPC TM650-2.5.5.9 2GHz-10GHz ; IPC TM650-2.5.5.5

Cloth Style	Resin Content (%)	Typical Thickness (um)	Typical Dk						Typical Df					
			1GHz	2GHz	4GHz	6GHz	8GHz	10GHz	1GHz	2GHz	4GHz	6GHz	8GHz	10GHz
1027	75	49	3.28	3.21	3.20	3.20	3.20	3.19	0.002	0.002	0.003	0.003	0.004	0.004
1035	70	60	3.35	3.25	3.25	3.24	3.24	3.23	0.002	0.002	0.003	0.003	0.004	0.004
	73	68	3.29	3.22	3.22	3.21	3.21	3.20	0.002	0.002	0.003	0.003	0.004	0.004
	75	74	3.28	3.21	3.20	3.20	3.20	3.19	0.002	0.002	0.003	0.003	0.004	0.004
1080	64	76	3.47	3.40	3.39	3.39	3.39	3.38	0.002	0.002	0.003	0.003	0.004	0.004
	68	87	3.41	3.34	3.33	3.33	3.33	3.32	0.002	0.002	0.003	0.003	0.004	0.004
1078	64	77	3.47	3.40	3.39	3.39	3.39	3.38	0.002	0.002	0.003	0.003	0.004	0.004
	68	89	3.41	3.34	3.33	3.33	3.33	3.32	0.002	0.002	0.003	0.003	0.004	0.004
	72	104	3.31	3.24	3.23	3.23	3.23	3.22	0.002	0.002	0.003	0.003	0.004	0.004
	75	118	3.28	3.21	3.20	3.20	3.20	3.19	0.002	0.002	0.003	0.003	0.004	0.004
3313	54	98	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
	57	106	3.65	3.58	3.57	3.56	3.56	3.55	0.002	0.002	0.003	0.003	0.004	0.004
2116	54	125	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
	56	132	3.67	3.60	3.59	3.58	3.58	3.57	0.002	0.002	0.003	0.003	0.004	0.004

* The data in the above table are not guaranteed values.

Specification / Laminate R-5775(G)

1GHz ; IPC TM650-2.5.5.9

2GHz-10GHz ; IPC TM650-2.5.5.5

Core Type	Actual Thickness		Cloth Style	ply	Typical Resin Content (%)	Typical Dk						Typical Df					
	mil	mm				1GHz	2GHz	4GHz	6GHz	8GHz	10GHz	1GHz	2GHz	4GHz	6GHz	8GHz	10GHz
2	2.0	0.050	1035	1	65	3.46	3.39	3.38	3.38	3.38	3.37	0.002	0.002	0.003	0.003	0.004	0.004
2	2.0	0.050	1067	1	64	3.47	3.40	3.39	3.39	3.39	3.38	0.002	0.002	0.003	0.003	0.004	0.004
2.6	2.6	0.065	1080	1	57	3.65	3.58	3.57	3.56	3.56	3.55	0.002	0.002	0.003	0.003	0.004	0.004
2.6	2.6	0.065	1078	1	57	3.65	3.58	3.57	3.56	3.56	3.55	0.002	0.002	0.003	0.003	0.004	0.004
3	3.0	0.075	1078	1	63	3.49	3.42	3.41	3.40	3.40	3.39	0.002	0.002	0.003	0.003	0.004	0.004
3.5	3.5	0.090	1078	1	68	3.41	3.34	3.33	3.33	3.33	3.32	0.002	0.002	0.003	0.003	0.004	0.004
4	3.9	0.100	3313	1	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
4	3.9	0.100	1035	2	65	3.46	3.39	3.38	3.38	3.38	3.37	0.002	0.002	0.003	0.003	0.004	0.004
5	5.0	0.127	1078	2	57	3.65	3.58	3.57	3.56	3.56	3.55	0.002	0.002	0.003	0.003	0.004	0.004
5	4.9	0.125	2116	1	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
5	5.1	0.130	1080	2	57	3.65	3.58	3.57	3.56	3.56	3.55	0.002	0.002	0.003	0.003	0.004	0.004
6	5.7	0.146	1078	2	63	3.49	3.42	3.41	3.40	3.40	3.39	0.002	0.002	0.003	0.003	0.004	0.004
6	5.9	0.150	1080	2	63	3.49	3.42	3.41	3.40	3.40	3.39	0.002	0.002	0.003	0.003	0.004	0.004
7	7.0	0.178	1078	2	68	3.41	3.34	3.33	3.33	3.33	3.32	0.002	0.002	0.003	0.003	0.004	0.004
8	7.9	0.200	3313	2	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
10	9.8	0.250	2116	2	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
12	11.8	0.300	3313	3	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
16	15.7	0.400	3313	4	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
20	19.7	0.500	2116	4	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
22	21.9	0.555	7628	3	42	4.07	4.00	3.97	3.96	3.95	3.95	0.002	0.002	0.003	0.003	0.004	0.004
25	24.6	0.625	2116	5	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
29	29.1	0.740	7628	4	42	4.07	4.00	3.97	3.96	3.95	3.95	0.002	0.002	0.003	0.003	0.004	0.004
30	29.5	0.750	2116	6	54	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
37	36.4	0.925	7628	5	42	4.07	4.00	3.97	3.96	3.95	3.95	0.002	0.002	0.003	0.003	0.004	0.004

* The data in the above table are not guaranteed values.

Specification / Prepreg R-5670(G)

1GHz ; IPC TM650-2.5.5.9 2GHz-10GHz ; IPC TM650-2.5.5.5

Cloth Style	Resin Content (%)	Typical Thickness (um)	Typical Dk						Typical Df					
			1GHz	2GHz	4GHz	6GHz	8GHz	10GHz	1GHz	2GHz	4GHz	6GHz	8GHz	10GHz
1027	75	49	3.28	3.21	3.20	3.20	3.20	3.19	0.002	0.002	0.003	0.003	0.004	0.004
1035	70	60	3.35	3.25	3.25	3.24	3.24	3.23	0.002	0.002	0.003	0.003	0.004	0.004
	73	68	3.29	3.22	3.22	3.21	3.21	3.20	0.002	0.002	0.003	0.003	0.004	0.004
	75	74	3.28	3.21	3.20	3.20	3.20	3.19	0.002	0.002	0.003	0.003	0.004	0.004
1067	69	59	3.38	3.29	3.29	3.28	3.28	3.27	0.002	0.002	0.003	0.003	0.004	0.004
	72	67	3.31	3.24	3.23	3.23	3.23	3.22	0.002	0.002	0.003	0.003	0.004	0.004
	74	72	3.29	3.22	3.21	3.21	3.21	3.20	0.002	0.002	0.003	0.003	0.004	0.004
1080	64	76	3.47	3.40	3.39	3.39	3.39	3.38	0.002	0.002	0.003	0.003	0.004	0.004
	68	87	3.41	3.34	3.33	3.33	3.33	3.32	0.002	0.002	0.003	0.003	0.004	0.004
1078	64	77	3.47	3.40	3.39	3.39	3.39	3.38	0.002	0.002	0.003	0.003	0.004	0.004
	68	89	3.41	3.34	3.33	3.33	3.33	3.32	0.002	0.002	0.003	0.003	0.004	0.004
	72	104	3.31	3.24	3.23	3.23	3.23	3.22	0.002	0.002	0.003	0.003	0.004	0.004
	75	118	3.28	3.21	3.20	3.20	3.20	3.19	0.002	0.002	0.003	0.003	0.004	0.004
3313	54	98	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
	57	106	3.65	3.58	3.57	3.56	3.56	3.55	0.002	0.002	0.003	0.003	0.004	0.004
2116	54	125	3.71	3.64	3.63	3.63	3.62	3.61	0.002	0.002	0.003	0.003	0.004	0.004
	56	132	3.67	3.60	3.59	3.58	3.58	3.57	0.002	0.002	0.003	0.003	0.004	0.004

* The data in the above table are not guaranteed values.

++ Before purchase ++

【Notes before you use】

- Please verify the suitability and fitness for intended application by quality testing, evaluation or other means at your own option before any adoption, use or change of use conditions of a product listed in the datasheet.
- 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.

【Safety Information】

- Before using the product, please read the delivery specifications carefully or contact the distributor from which you purchased the product or our sales department in order to use the product correctly.
- 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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