

Data Sheet

High Reliability Glass Epoxy Multi-layer Materials

HiPERC

**Laminate R-1755C
Prepreg R-1650C**

Jun. 2017 No.17061939

Specification / Laminate R-1755C

Property		Units	Test Method	Condition	Value	
THERMAL	Glass Transition Temp (Tg)	°C	DSC	As received	135	
			TMA	As received	135	
			DMA	As received	155	
	Thermal Decomposition Temp (Td)		°C	TGA	As received	370
	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	35
	CTE : $\alpha 1$	X - axis	ppm / °C	IPC TM-650 2.4.24	< Tg	11 - 13
		Y - axis	ppm / °C	IPC TM-650 2.4.24	< Tg	13 - 15
		Z - axis	ppm / °C	IPC TM-650 2.4.24	< Tg	50
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)	@ 1MHz	-	IPC TM-650 2.5.5.9	C-24/23/50	4.7
		@ 1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	4.3
	Dissipation Factor (Df)	@ 1MHz	-	IPC TM-650 2.5.5.9	C-24/23/50	0.013
		@ 1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	0.015
PHYSICAL	Water Absorption		%	IPC TM-650 2.6.2.1	D-24/23	0.12
	Peel Strength	1oz	kN / m	IPC TM-650 2.4.8	As Received	1.5
	Flammability		-	UL	C-48/23/50	94V-0

Sample thickness ; 32 mil (0.8 mm)

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

Specification / Laminate R-1755C

1MHz - 1GHz ; IPC TM650-2.5.5.9

Nominal Thickness		Cloth Style	Typical Resin Content (%)	Typical Dk			Typical Df		
mil	mm			1MHz	100MHz	1GHz	1MHz	100MHz	1GHz
2.5	0.06	1080 x 1ply	56	4.4	4.1	4.0	0.014	0.016	0.017
4	0.1	2116 x 1ply	46	4.7	4.4	4.3	0.013	0.015	0.015
6	0.15	1501 x 1ply	42	4.8	4.5	4.4	0.013	0.015	0.015
8	0.2	7628 x 1ply	46	4.7	4.4	4.3	0.013	0.015	0.015
12	0.3	1501 x 2ply	42	4.8	4.5	4.4	0.013	0.015	0.015
16	0.4	7628 x 2ply	46	4.7	4.4	4.3	0.013	0.015	0.015
20	0.5	7628/2116/7628	46	4.7	4.4	4.3	0.013	0.015	0.015
24	0.6	7628 x 3ply	46	4.7	4.4	4.3	0.013	0.015	0.015

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

Specification / Laminate R-1755C

2GHz-10GHz ; IPC TM650-2.5.5.5

Nominal Thickness		Cloth Style	Resin Contents (%)	Typical Dk					Typical Df				
mil	mm			2GHz	4GHz	6GHz	8GHz	10GHz	2GHz	4GHz	6GHz	8GHz	10GHz
2.5	0.06	1080 x 1ply	56	4.0	4.0	3.9	3.9	3.9	0.018	0.018	0.019	0.019	0.020
4	0.1	2116 x 1ply	46	4.3	4.3	4.3	4.2	4.2	0.016	0.017	0.017	0.018	0.019
6	0.15	1501 x 1ply	42	4.4	4.4	4.4	4.3	4.3	0.015	0.016	0.017	0.018	0.019
8	0.2	7628 x 1ply	46	4.3	4.3	4.3	4.2	4.2	0.016	0.017	0.017	0.018	0.019
12	0.3	1501 x 2ply	42	4.4	4.4	4.4	4.3	4.3	0.015	0.016	0.017	0.018	0.019
16	0.4	7628 x 2ply	46	4.3	4.3	4.3	4.2	4.2	0.016	0.017	0.017	0.018	0.019
20	0.5	7628/2116/7628	46	4.3	4.3	4.3	4.2	4.2	0.016	0.017	0.017	0.018	0.019
24	0.6	7628 x 3ply	46	4.3	4.3	4.3	4.2	4.2	0.016	0.017	0.017	0.018	0.019

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

Specification / Prepreg R-1650C

1MHz - 1GHz ; IPC TM650-2.5.5.9

Cloth Style	Resin Contents (%)	Typical Thickness (μm)	Typical Dk			Typical Df		
			1MHz	100MHz	1GHz	1MHz	100MHz	1GHz
1078	63	75	4.3	4.0	3.8	0.015	0.017	0.018
	65	80	4.3	3.9	3.8	0.015	0.017	0.019
	68	89	4.2	3.8	3.7	0.015	0.017	0.019
1080	63	73	4.3	4.0	3.8	0.015	0.017	0.018
	65	78	4.3	3.9	3.8	0.015	0.017	0.019
	68	87	4.2	3.8	3.7	0.015	0.017	0.019
2116	45	99	4.7	4.4	4.3	0.013	0.015	0.015
	48	107	4.6	4.3	4.2	0.013	0.015	0.015
	52	118	4.5	4.2	4.1	0.014	0.016	0.016
1501	44	154	4.7	4.4	4.3	0.013	0.015	0.015
	48	170	4.6	4.3	4.2	0.013	0.015	0.015
	52	188	4.5	4.2	4.1	0.014	0.016	0.016
7628	45	200	4.7	4.4	4.3	0.013	0.015	0.015
	48	215	4.6	4.3	4.2	0.013	0.015	0.015
	52	238	4.5	4.2	4.1	0.014	0.016	0.016

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

Specification / Prepreg R-1650C

2GHz-10GHz ; IPC TM650-2.5.5.5

Cloth Style	Resin Contents %	Typical Thickness (μm)	Typical Dk					Typical Df				
			2GHz	4GHz	6GHz	8GHz	10GHz	2GHz	4GHz	6GHz	8GHz	10GHz
1078	63	75	3.8	3.8	3.8	3.7	3.7	0.019	0.019	0.020	0.020	0.021
	65	80	3.7	3.7	3.6	3.6	3.6	0.020	0.020	0.020	0.021	0.021
	68	89	3.6	3.6	3.6	3.6	3.6	0.020	0.020	0.021	0.021	0.021
1080	63	73	3.8	3.8	3.8	3.7	3.7	0.019	0.019	0.020	0.020	0.021
	65	78	3.7	3.7	3.6	3.6	3.6	0.020	0.020	0.020	0.021	0.021
	68	87	3.6	3.6	3.6	3.6	3.6	0.020	0.020	0.021	0.021	0.021
2116	45	99	4.3	4.3	4.3	4.2	4.2	0.016	0.016	0.017	0.018	0.019
	48	107	4.2	4.2	4.1	4.1	4.1	0.016	0.017	0.018	0.018	0.019
	52	118	4.0	4.0	4.0	3.9	3.9	0.017	0.017	0.018	0.019	0.020
1501	44	154	4.3	4.3	4.3	4.3	4.2	0.016	0.016	0.017	0.018	0.019
	48	170	4.2	4.2	4.1	4.1	4.1	0.016	0.017	0.018	0.018	0.019
	52	188	4.0	4.0	4.0	3.9	3.9	0.017	0.017	0.018	0.019	0.020
7628	45	200	4.3	4.3	4.3	4.2	4.2	0.016	0.016	0.017	0.018	0.019
	48	215	4.2	4.2	4.2	4.1	4.1	0.016	0.017	0.018	0.018	0.019
	52	238	4.0	4.0	4.0	3.9	3.9	0.017	0.017	0.018	0.019	0.020

*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.

【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.

Please Contact us of more

【Technical Marketing】

- Japan (Osaka) TEL: 81-6-6904-2771
- USA (Cupertino) TEL: 1-408-861-3946
- Austria (Enns) TEL: 43-7223-883
- China (Guangzhou) TEL: 86-20-8713-0888

【Sales Offices】

- China (Hong Kong) TEL: 852-2529-3956
- China (Suzhou) TEL: 86-512-6825-1565
- China (Guangzhou) TEL: 86-20-8713-0888
- Korea (Seoul) TEL: 82-2-361-7873
- Taiwan (Hsinchu) TEL: 886-3-598-3201
- Thailand (Ayuthaya) TEL: 66-3533-0846
- Singapore (Bedok) TEL: 65-6241-6754
- Austria (Enns) TEL: 43-7223-883
- USA (Cupertino) TEL: 1-408-861-3946
- Japan (Osaka) TEL: 81-6-6904-2771

Panasonic Corporation
 Automotive & Industrial Systems Company
 Electronic Materials Business Division
 Circuit Board Materials Business Unit.
 Head Office: 1006 Kadoma, Kadoma City, Osaka 571-8506
 TEL: 81-6-6908-1101
industrial.panasonic.com/ww/electronic-materials