

Data Sheet

High Reliability Glass Epoxy Multi-layer Materials

HiPER 

Laminate R-1755E
Prepreg R-1650E

Jul. 2019 No.19070541

Specification / Laminate R-1755E

Property		Units	Test Method	Condition	Typical Value	
THERMAL	Glass Transition Temp (Tg)	C	DSC	As received	133	
			TMA	As received	133	
			DMA	As received	153	
	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	25
	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	42
CTE : $\alpha 2$	Z - axis	ppm / C	IPC TM-650 2.4.24	> Tg	250	
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	5.0
		@ 1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	4.6
	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	0.013
PHYSICAL	Water Absorption		%	IPC TM-650 2.6.2.1	D-24/23	0.11
	Peel Strength	1oz	kN / m	IPC TM-650 2.4.8	As Received	1.6
	Flammability		-	UL	C-48/23/50	94V-0

Sample thickness ; 32 mil (0.8 mm)

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

Specification / Laminate R-1755E

1GHz ; IPC TM650-2.5.5.9

Nominal Thickness		Cloth Style	Typical Resin Content	ply	Typical Dk			Typical Df		
mil	mm				1MHz	100MHz	1GHz	1MHz	100MHz	1GHz
4.0	0.1	2116	46%	1	5.0	4.7	4.6	0.014	0.014	0.014
6.0	0.15	1501	44%	1	5.0	4.8	4.6	0.013	0.013	0.013
8.0	0.2	7628	47%	1	5.0	4.7	4.6	0.014	0.014	0.014
12	0.3	1501	44%	2	5.0	4.8	4.6	0.013	0.013	0.013
16	0.4	7628	47%	2	5.0	4.7	4.6	0.014	0.014	0.014
20	0.5	7628 / 2116	47%	2 / 1	5.0	4.7	4.6	0.014	0.014	0.014
24	0.6	7628	47%	3	5.0	4.7	4.6	0.014	0.014	0.014
32	0.8 1/1	7628	45%	4	5.0	4.8	4.6	0.013	0.013	0.013
39	1.0 1/1	7628	45%	5	5.0	4.8	4.6	0.013	0.013	0.013
47	1.2 1/1	7628	45%	6	5.0	4.8	4.6	0.013	0.013	0.013
62	1.6 1/1	7628	45%	8	5.0	4.8	4.6	0.013	0.013	0.013

※ Nominal Thickness (< 0.8mm) : without copper thickness

※ Nominal Thickness (>= 0.8mm) : with copper thickness

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

Specification / Laminate R-1755E

2GHz-10GHz ; IPC TM650-2.5.5.5

Nominal Thickness		Cloth Style	Typical Resin Content	ply	Typical Dk					Typical Df				
mil	mm				2GHz	4GHz	6GHz	8GHz	10GHz	2GHz	4GHz	6GHz	8GHz	10GHz
4.0	0.1	2116	46%	1	4.6	4.5	4.5	4.5	4.5	0.015	0.016	0.017	0.018	0.019
6.0	0.15	1501	44%	1	4.6	4.6	4.6	4.5	4.5	0.014	0.016	0.017	0.018	0.019
8.0	0.2	7628	47%	1	4.5	4.5	4.5	4.5	4.4	0.015	0.016	0.017	0.018	0.019
12	0.3	1501	44%	2	4.6	4.6	4.6	4.5	4.5	0.015	0.016	0.017	0.018	0.019
16	0.4	7628	47%	2	4.5	4.5	4.5	4.5	4.4	0.015	0.016	0.017	0.018	0.019
20	0.5	7628 / 2116	47%	2 / 1	4.5	4.5	4.5	4.5	4.4	0.015	0.016	0.017	0.018	0.019
24	0.6	7628	47%	3	4.5	4.5	4.5	4.5	4.4	0.015	0.016	0.017	0.018	0.019
32	0.8 1/1	7628	45%	4	4.6	4.6	4.5	4.5	4.5	0.015	0.016	0.017	0.018	0.019
39	1.0 1/1	7628	45%	5	4.6	4.6	4.5	4.5	4.5	0.015	0.016	0.017	0.018	0.019
47	1.2 1/1	7628	45%	6	4.6	4.6	4.5	4.5	4.5	0.015	0.016	0.017	0.018	0.019
62	1.6 1/1	7628	45%	8	4.6	4.6	4.5	4.5	4.5	0.015	0.016	0.017	0.018	0.019

※ Nominal Thickness (< 0.8mm) : without copper thickness

※ Nominal Thickness (>= 0.8mm) : with copper thickness

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

Specification / Prepreg R-1650E

1GHz ; IPC TM650-2.5.5.9

Cloth Style	Resin Content	Typical Thickness (um)	Typical Dk			Typical Df		
			1MHz	100MHz	1GHz	1MHz	1MHz	1GHz
1080	64%	74	4.6	4.3	4.2	0.017	0.017	0.017
	68%	85	4.6	4.3	4.1	0.017	0.017	0.017
1078	64%	75	4.6	4.3	4.2	0.017	0.017	0.017
	68%	87	4.6	4.3	4.1	0.017	0.017	0.017
	70%	93	4.5	4.2	4.1	0.018	0.018	0.018
2116	51%	113	4.9	4.6	4.5	0.015	0.015	0.015
	54%	122	4.8	4.6	4.4	0.016	0.016	0.016
	57%	133	4.8	4.5	4.3	0.016	0.016	0.016
1501	50%	175	4.9	4.6	4.5	0.015	0.015	0.015
	53%	189	4.9	4.6	4.4	0.015	0.015	0.015
7628	49%	216	4.9	4.7	4.5	0.014	0.014	0.014
	52%	233	4.9	4.6	4.5	0.015	0.015	0.015

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

Specification / Prepreg R-1650E

2GHz-10GHz ; IPC TM650-2.5.5.5

Cloth Style	Resin Content	Typical Thickness (um)	Typical Dk					Typical Df				
			2GHz	4GHz	6GHz	8GHz	10GHz	2GHz	4GHz	6GHz	8GHz	10GHz
1080	64%	74	4.1	4.1	4.1	4.0	4.0	0.017	0.019	0.020	0.021	0.022
	68%	85	4.1	4.0	4.0	4.0	3.9	0.018	0.019	0.021	0.022	0.023
1078	64%	75	4.1	4.1	4.1	4.0	4.0	0.017	0.019	0.020	0.021	0.022
	68%	87	4.1	4.0	4.0	4.0	3.9	0.018	0.019	0.021	0.022	0.023
	70%	93	4.0	4.0	3.9	3.9	3.9	0.018	0.020	0.021	0.022	0.023
2116	51%	113	4.5	4.4	4.4	4.4	4.3	0.016	0.017	0.018	0.019	0.020
	54%	122	4.4	4.4	4.3	4.3	4.3	0.016	0.017	0.019	0.020	0.021
	57%	133	4.3	4.3	4.2	4.2	4.2	0.017	0.018	0.019	0.020	0.021
1501	50%	175	4.5	4.4	4.4	4.4	4.4	0.016	0.017	0.018	0.019	0.020
	53%	189	4.4	4.4	4.3	4.3	4.3	0.016	0.017	0.018	0.019	0.021
7628	49%	216	4.5	4.5	4.4	4.4	4.4	0.015	0.017	0.018	0.019	0.020
	52%	233	4.4	4.4	4.4	4.3	4.3	0.016	0.017	0.018	0.019	0.021

* 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.

Please Contact us of more

【Technical Marketing】

- Japan (Osaka) TEL: 81-6-6904-2771
- USA (Mountain view) 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
- Austria (Enns) TEL: 43-7223-883
- USA (Mountain view) TEL: 1-408-861-3946
- Japan (Osaka) TEL: 81-6-6904-2771

Panasonic Corporation
 Industrial Solutions 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