

## Data Sheet

### High Reliability Glass Epoxy Multi-layer Materials (High Tg & Low CTE type)

**HI**PER**D**

Laminate R-1755D  
Prepreg R-1650D

Jun. 2017 No.17061637

# Specification / Laminate R-1755D

Property		Units	Test Method	Condition	Value	
THERMAL	Glass Transition Temp ( Tg )	°C	DSC	As received	163	
			TMA	As received	154	
			DMA	As received	185	
	Thermal Decomposition Temp ( Td )		°C	TGA	As received	345
	Time to Delam ( T288 )	With Cu	min	IPC TM-650 2.4.24.1	As received	15
	CTE : $\alpha 1$	X - axis	ppm / °C	IPC TM-650 2.4.24	< Tg	10 - 12
		Y - axis	ppm / °C	IPC TM-650 2.4.24	< Tg	12 - 14
		Z - axis	ppm / °C	IPC TM-650 2.4.24	< Tg	43
CTE : $\alpha 2$	Z - axis	ppm / °C	IPC TM-650 2.4.24	> Tg	236	
ELECTRICAL	Volume Resistivity		M $\Omega$ - cm	IPC TM-650 2.5.17.1	C-96/35/90	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>
	Dielectric Constant ( Dk )	@1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	4.4
	Dissipation Factor ( Df )	@1GHz	-	IPC TM-650 2.5.5.9	C-24/23/50	0.016
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	1.3
	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-1755D

1GHz ; IPC TM650-2.5.5.9

Nominal Thickness		Cloth Style	Typical Resin Content	ply	Typical Dk (1GHz)	Typical Df (1GHz)
mil	mm					
2.5	0.06	1080	58%	1	4.1	0.017
3	0.08	3313	48%	1	4.4	0.016
4	0.10	2116	46%	1	4.4	0.016
6	0.15	1501	46%	1	4.4	0.016
8	0.20	7628	49%	1	4.3	0.016
16	0.40	7628	49%	2	4.3	0.016
20	0.50	7628 / 2116	48%	2 / 1	4.4	0.016
24	0.60	7628	49%	3	4.3	0.016
32	0.80	7628	46%	4	4.4	0.016
40	1.00	7628	46%	5	4.4	0.016
48	1.20	7628	46%	6	4.4	0.016
64	1.60	7628	46%	8	4.4	0.016

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

# Specification / Prepreg R-1650D

1GHz ; IPC TM650-2.5.5.9

Cloth Style	Resin Content (%)	Typical Thickness (um)	Typical Dk (1GHz)	Typical Df (1GHz)
1080	64	74	4.0	0.018
	68	85	3.8	0.019
	72	99	3.8	0.019
1078	64	75	4.0	0.018
	72	101	3.7	0.019
3313	62	121	4.0	0.018
2116	56	129	4.2	0.017
	59	140	4.1	0.018
1501	51	179	4.3	0.017
	54	194	4.2	0.017
7628	47	207	4.4	0.016
	50	223	4.3	0.016
	53	241	4.2	0.017

\*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](http://industrial.panasonic.com/ww/electronic-materials)