



IS680

Very Low-Loss Laminate Materials

IS680 laminate materials exhibit exceptional electrical properties which are very stable over a broad frequency and temperature range.

IS680 is suitable for many of today's commercial RF/ microwave printed circuit designs. It features a dielectric constant (Dk) that is stable between -55°C and +125°C up to W-band frequencies. In addition, IS680 offers a very low dissipation factor (Df), making it an extremely cost-effective alternative to PTFE and other commercial microwave laminate materials in double sided applications.

Product Attributes

RF/Microwave

Typical Market Applications

Aerospace & Defense , RF / Microwave

ORDERING INFORMATION:

Contact your local sales representative or visit www.isola-group.com for further information.

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RF/Microwave

Data Sheet

Tg 200°C

Td 360°C

Dk 2.80-3.45

Df 0.0025-0.0035

IPC-4103 - / 17

UL - File Number E41625

Last Updated April 5, 2018
Revision No: B

Product Features

- Industry Recognition
 - UL File Number: E41625
 - RoHS Compliant
- Performance Attributes
- Processing Advantages
 - Reduced drill wear
 - No plasma desmear required
 - Consistent dielectric spacing
 - Dimensional stability

Product Availability

- Standard Material Offering: Laminate
 - 20, 30, 60 mil (0.51, 0.76, 1.5 mm)
 - Available in full size sheet or panel form
- Copper Foil Type
 - HTE Grade 3
- Copper Weight
 - ½ to 2 oz (18 to 70 µm) available
 - Heavier copper available
 - Thinner copper foil available

Property	Typical Value	Units	Test Method	
		Metric (English)	IPC-TM-650 (or as noted)	
Glass Transition Temperature (Tg) by DSC	200	°C	2.4.25C	
Decomposition Temperature (Td) by TGA @ 5% weight loss	360	°C	2.4.24.6	
Time to Delaminate by TMA (Copper removed)	A. T260 B. T288	>60	Minutes	2.4.24.1
Z-Axis CTE	A. Pre-Tg B. Post-Tg C. 50 to 260°C, (Total Expansion)	44.7 191 2.9	ppm/°C ppm/°C %	2.4.24C
X/Y-Axis CTE	Pre-Tg	12	ppm/°C	2.4.24C
Thermal Conductivity	0.38 - 0.53	W/mK	ASTM E1952	
Thermal Stress 10 sec @ 288°C (550.4°F)	A. Unetched B. Etched	Pass	Pass Visual	2.4.13.1
Dk, Permittivity	@ 10 GHz	2.80	—	2.5.5.5
Df, Loss Tangent	@ 10 GHz	0.0025	—	Bereskin Stripline
Dk, Permittivity	@ 10 GHz	3.00	—	2.5.5.5
Df, Loss Tangent	@ 10 GHz	0.0030	—	Bereskin Stripline
Dk, Permittivity	@ 10 GHz	3.20	—	2.5.5.5
Df, Loss Tangent	@ 10 GHz	0.0030	—	Bereskin Stripline
Dk, Permittivity	@ 10 GHz	3.33	—	2.5.5.5
Df, Loss Tangent	@ 10 GHz	0.0030	—	Bereskin Stripline
Dk, Permittivity	@ 10 GHz	3.38	—	2.5.5.5
Df, Loss Tangent	@ 10 GHz	0.0035	—	Bereskin Stripline
Dk, Permittivity	@ 10 GHz	3.45	—	2.5.5.5
Df, Loss Tangent	@ 10 GHz	0.0035	—	Bereskin Stripline
Volume Resistivity	C-96/35/90	1.33 x 10 ⁷	MΩ-cm	2.5.17.1
Surface Resistivity	C-96/35/90	1.33 x 10 ⁵	MΩ	2.5.17.1
Dielectric Breakdown	45.4	kV	2.5.6B	
Arc Resistance	139	Seconds	2.5.1B	
Electric Strength (Laminate & laminated prepreg)	45 (1133)	kV/mm (V/mil)	2.5.6.2A	
Comparative Tracking Index (CTI)	2	Class (Volts)	UL 746A ASTM D3638	
Peel Strength	1 oz. EDC foil	0.70 (4.01)	N/mm (lb/inch)	2.4.8.2A
Flexural Strength	A. Length direction B. Cross direction	37.5 28.5	ksi	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	28.0 26.0	ksi	ASTM D3039
Poisson's Ratio	A. Length direction B. Cross direction	0.122 0.120	—	ASTM D3039
Moisture Absorption	0.10	%	2.6.2.1A	
Flammability (Laminate & laminated prepreg)	V-0	Rating	UL 94	
Max Operating Temperature	110	°C	UL 796	

The data, while believed to be accurate and based on analytical methods considered to be reliable, is for information purposes only. Any sales of these products will be governed by the terms and conditions of the agreement under which they are sold.

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NOTE

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Revision B: Corrected units for Flexural and Tensile Strength