IS680

Very Low-Loss Laminate

Tg 200°C Td 360°C Dk 2.80-3.45 Df 0.0025-0.0035

IPC-4103 /17 UL - File Number E41625

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

PRODUCT FEATURES

Industry Recognition

- UL File Number: E41625
- RoHS Compliant

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, 1 and 2 oz (18, 35 and 70 µm) available
- Square weave glass
- Mechanically spread glass

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

TYPICAL MARKET APPLICATIONS

ORDERING INFORMATION:

Contact your local sales representative or contact info@isola-group.com for further information.

Isola Group
6565 West Frye RoadChandler, AZ 85226 Phone: 480-893-6527 Fax: 480-893-1409

Isola Asia Pacific
(Hong Kong) Ltd.12/F, Kin Sang Commercial Centre, 49 King Yip Street, Kwun Tong, Kowloon,
Hong KongPhone: 852-2418-1318 Fax: 852-2418-1533

Isola GmbH
Isola Strasse 2 D-52348 Düren, GermanyPhone: 49-2421-8080 Fax: 49-2421-808164

Typical Values Table

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/m·K	ASTM E1952
Thermal Stress 10 sec @ 288ºC (550.4ºF)	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	1.33×10^7	MΩ-cm	2.5.17.1
Surface Resistivity	C-96/35/90	1.33×10^5	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	259 (37.5) 197 (28.5)	MPa (kpsi)	2.4.4B
Tensile Strength	A. Length direction B. Cross direction	193 (28.0) 179 (26.0)	MPa (kpsi)	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
Relative Thermal Index (RTI)		110	°C	UL 796

NOTES

Visit our site http://www.isola-group.com for more details.
Revisions:
A: Initial release - 4/17
B: Corrected units for Flexural and Tensile Strength - 8/18
C: Change MOT to RTI 5/19