



IS680 AG

Very Low-Loss Laminate Materials

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

IS680 AG 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 AG offers an ultra-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.

Isola Group
3100 West Ray Road
Suite 301
Chandler, AZ 85226
Phone: 480-893-6527
Fax: 480-893-1409
info@isola-group.com

Isola Asia Pacific (Hong Kong) Ltd.
Unit 3512 - 3522, 35/F
No. 1 Hung To Road, Kwun Tong,
Kowloon, Hong Kong
Phone: 852-2418-1318
Fax: 852-2418-1533
info.hkg@isola-group.com

Isola GmbH
Isola Strasse 2
D-52348 Düren,
Germany
Phone: 49-2421-8080
Fax: 49-2421-808164
info-dur@isola-group.com

RF/Microwave

Data Sheet

Tg 200°C

Td 360°C

Dk 3.00 / 3.38 / 3.45 / 3.48

Df 0.0020 - 0.0029

IPC-4103 - / 17

UL - File Number E41625

Last Updated May 8, 2019
Revision No: C

Product Features

- Industry Recognition
 - UL File Number: E41625
 - RoHS Compliant
- Performance Attributes
- Processing Advantages
 - FR-4 process compatible
 - Reduced drill wear
 - No plasma desmear required
 - Consistent dielectric spacing

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
 - VLP-2 (2 micron), 1 oz and below
- Copper Weight
 - ½, 1 oz (18 and 35 µm) available
 - Heavier copper available
 - Thinner copper foil available

IS680 AG Typical Values

Last Updated May 8, 2019

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	3.00	—	2.5.5.5
Df, Loss Tangent	@ 10 GHz	0.0020	—	Bereskin Stripline
Dk, Permittivity	@ 10 GHz	3.38	—	2.5.5.5
Df, Loss Tangent	@ 10 GHz	0.0026	—	Bereskin Stripline
Dk, Permittivity	@ 10 GHz	3.45	—	2.5.5.5
Df, Loss Tangent	@ 10 GHz	0.0026	—	Bereskin Stripline
Dk, Permittivity	@ 10 GHz	3.48	—	2.5.5.5
Df, Loss Tangent	@ 10 GHz	0.0029	—	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	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	
Relative Thermal Index (RTI)	130	°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.

<https://www.isola-group.com/products/all-printed-circuit-materials/is680-ag/>

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NOTE

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Revisions:

A: Initial release - 4/17

B: Corrected units for Flexural and Tensile Strength - 8/18

C: Change MOT to RTI 5/19