

ITEQ
Your Partner of Advanced Materials & Mass Lam Service

IT-999GSE3

CCL : IT-999GSE3
Prepreg: IT-999GSE3BS

High Tg/Halogen Free/Low Dk/Extreme Low Loss Laminate & Prepreg

- ANSI Type :No ANSI
- Appliceable IPC-4101 /134 ; IPC-4103 /230/530
- 1.6T Solution
- Lower Dk (2.93 @ 10GHz) and ultra low Df (0.0007 @ 10GHz)
- Very Stable Dk-Df across frequency

Laminate properties

Items	IPC TM-650	Typical Value		Unit
Peel Strength A. HVLP4/HVLP5 (18μm) B. HVLP4/HVLP5 (35μm)	2.4.8	2.5 3.0		lb/inch
Volume Resistivity	2.5.17.1	10^{10}		MΩ-cm
Surface Resistivity	2.5.17.1	10^{9}		MΩ
Moisture Absorption	2.6.2.1	0.07		%
Permittivity (Dk) A. 2GHz B. 5GHz C. 10GHz	2.5.5.13	3.09 3.05 3.03 (RC 70%)	2.99 2.95 2.93 (RC 83%)	--
Loss Tangent (Df) A. 2GHz B. 5GHz C. 10GHz	2.5.5.13	(RC 70%) 0.0006 0.0006 0.0007	(RC 83%) 0.0006 0.0006 0.0007	--
Flexural Strength A. Length direction B. Cross direction	2.4.4	475 425		N/mm^2
Young's Modulus A. Warp direction B. Fill direction	ASTM D3039	18 16		Gpa
Thermal Stress 10 s at 288°C A. Unetched B. Etched	2.4.13.1	Pass Visual Pass Visual		Rating
Flammability	UL94	V-0		Rating
Comparative Tracking Index (CTI)	ASTM D3638 / UL 746	CTI 2 (250-399)		Class (Volts)
Glass Transition Temperature (DMA)	2.4.24.4	180		˚C
Glass Transition Temperature (TMA)	2.4.24	170		˚C
Decomposition Temperature (5% W.L)	2.4.24.6	400		˚C
X/Y Axis CTE (40°C to 125°C)	2.4.24.5	5/6		ppm/˚C
Z-Axis CTE A. Alpha 1 B. Alpha 2 C. 50 ˚C to 260˚C	2.4.24	30 180 1.5		ppm/˚C ppm/˚C %
Thermal Resistance A. T260 B. T288	2.4.24.1	> 60 > 60		Minutes Minutes