S1165 / S1165M

S1165 (UL ANSI: No ANSI) High Performance Halogen-Free
S1165M (UL ANSI: FR-4.1 ≥ 1.6mm) High Performance Halogen-Free

FEATURES

- Lead-free compatible.
- High Tg Halogen-free, Tg 170℃ （DSC）
- UV Blocking/AOI compatible.
- Lower Z-axis CTE.

APPLICATIONS

Communication equipment, mobile phone, computer, instrumentation, VCR, TV, electronic game machine, and etc.

GENERAL PROPERTIES

Test Items		Treatment Condition	Unit	Property Data	
				SPEC	Typical Value
Tg		DSC	℃	≥170	175
		DMA		-	195
Flammability		C-48/23/50,E-24/125	-	V-0	V-0
		E-24/125+des			
Volume Resistivity		After moisture resistance	MΩ-cm	$\geq 10^6$	4.76×10^8
		E-24/125		$\geq 10^3$	5.00×10^6
Surface Resistivity		After moisture resistance	MΩ	$\geq 10^4$	1.84×10^7
		E-24/125		$\geq 10^3$	5.00×10^6
Arc Resistance		D-48/50+D-0.5/23	S	≥60	181
Dielectric Breakdown		D-48/50+D-0.5/23	KV	≥40	45+KV NB
Dielectric Constant (1GHz)		C-24/23/50	-	≤5.4	4.5
Dissipation Factor (1GHz)		C-24/23/50	-	≤0.035	0.011
Thermal Stress	Unetched	288℃, solder dip	-	>10s No Delamination	Pass
	Etched				
Peel Strength	1OZ Cu.Foil	288℃/10s	N/mm	≥1.05	1.7
		125℃		≥0.70	1.6
Flexural Strength	LW	A	Mpa	≥415	600
	CW			≥345	450
Water Absorption		D-24/23	%	≤0.5	0.07
CTE Z-axis	Before Tg	TMA	PPM/℃	≤60	31.2
	After Tg	TMA	PPM/℃	≤300	239.5
	50-260℃	TMA	%	≤3.5	2.7
Td		10℃/min，N_2，5%Wt Loss	℃	≥325	400
T288		TMA	min	≥5	60
T260		TMA	min	≥30	60

Specimen thickness: 1.6mm. Test method is according to IPC TM-650.

Remarks: 1.Specification sheet:IPC-4101/128, is for your reference only.
2.All the typical value is based on the 1.6mm specimen,while the Tg is for specimen ≥0.50mm.
3.All the typical value listed above is for your reference only, please turn to Shengyi Technology Co., Ltd. for detailed information, and all rights from this data sheet are reserved by Shengyi Technology Co., Ltd.

Explanations: C = Humidity conditioning; D = Immersion conditioning in distilled water; E = Temperature conditioning.

The figures following the letter symbols indicate with the first digit the duration of the preconditioning in hours, with the second digit the preconditioning temperature in ℃ and with the third digit the relative humidity.

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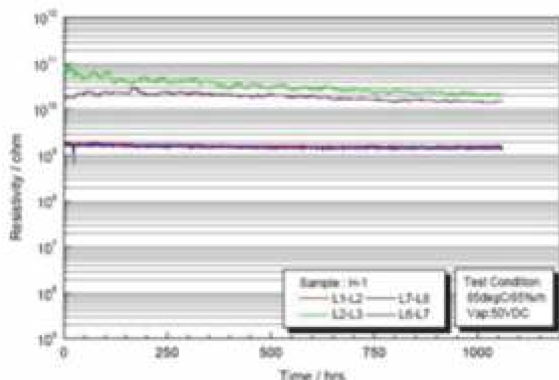
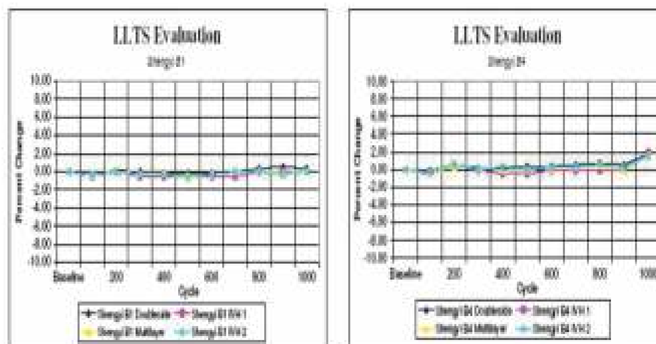
Anti-CAF Test



Test condition: 85℃/85%RH/50V DC/1000hours

Specimen: 8-Layer board (Build up, 1+6+1)

LLTS Test

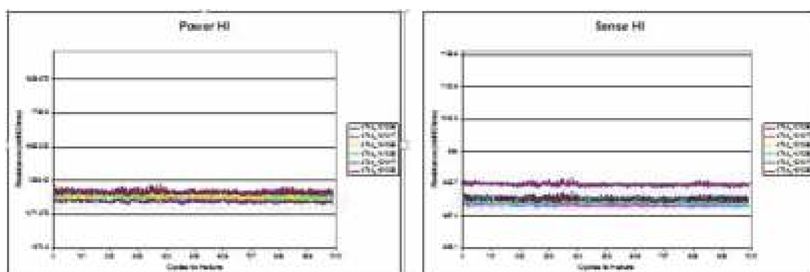


LLTS condition: -55℃ ~ +125℃, 1000cycles

Resistance change percent <5%

Specimen: 8-Layer board (Build up, 1+6+1)

IST Test

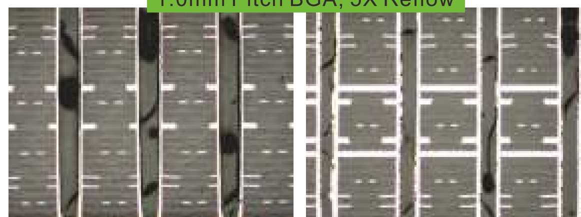


Test coupon	16Layer	3.2mm thickness	
Pre condition	Lead free reflow	6 cycles	
Test temperature	25℃~150℃		
IST TEST RESULT			
Hole sizes	10mil	12mil	46.5mil
Min. Cycles	1000	1000	1000
Max. Cycles	1000	1000	1000
Average Cycles	1000	1000	1000

High layer count application evaluation

- 20 Layers, core 0.10 1/1, PP 1080/2313/2116
- Overall thickness: 3.0 mm
- Min Hole size:0.30 mm
- 260℃ Lead free reflow: 5x, ok

1.0mm Pitch BGA, 5X Reflow



0.8mm Pitch BGA, 5X Reflow

S0165 PREPREG

(UL ANSI: No ANSI) Bonding Prepreg For S1165

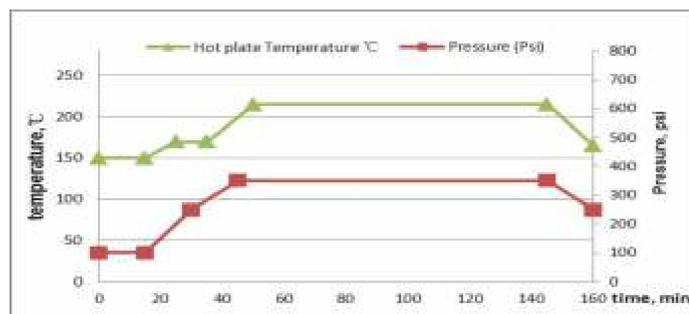
PREPREG PARAMETERS

Glass fabric type	Resin content (%)	Cured thickness (mm)	DK(1GHz)	Df(1GHz)	Standard size (Roll type)
106/1037	72	0.052	3.7	0.014	1.260m X150m
	76	0.062	3.6	0.015	
1080/1078	64	0.077	3.9	0.013	1.260m X300m
	68	0.088	3.8	0.014	
2313	55	0.100	4.1	0.013	
	59	0.113	4.0	0.013	
2116	52	0.119	4.2	0.012	1.260m X250m
	55	0.129	4.1	0.013	
1506	45	0.160	4.4	0.012	1.260m X150m
	48	0.172	4.3	0.012	
7628	43	0.195	4.4	0.011	
	46	0.209	4.3	0.012	
	48	0.220	4.3	0.012	
	50	0.231	4.2	0.012	

Remark: DK and Df are tested according to IPC TM-650 2.5.5.9

Prepreg type, resin content and size could be available upon request.

HOT PRESSING CYCLE



Heat-up rate: 1.0~2.5℃/min (80~140℃)
Curing time:>60min (190~200℃)
The hot pressing parameters is for your Reference only, please turn to Shengyi Technology Co., Ltd for detailed information.

STORAGE CONDITION

- Three months when stored at <23℃ and <50% RH .
- Six months when stored at <5℃.Normalize in room temperature for at least 4h before using.
- Beware of moisture, always keep wrapped in damp-proof material. Were kept in normal condition, prepreg might absorb moisture and its bonding strength would be weakened.
- Avoid UV-rays and strong light.