

SM560-4 Laminate

SM560B-4 Prepreg

(IPC-4101C / 101/ 127)

UL FILE : E199230

updated : A Version 03/07/2011

General Specification:

Thickness		Copper Cladding		Standard Size		Special large (on Request)	
<u>inch</u>	<u>(mm)</u>	<u>oz</u>	<u>(μm)</u>	<u>inch</u>	<u>(mm)</u>	<u>inch</u>	<u>(mm)</u>
0.003	(0.08)	3/8	(12)	36.8 x 48.8	(935 x 1240)	37.0 x 49.0	(941 x 1246)
to		to		40.8 x 48.8	(1035 x 1240)	41.0 x 49.0	(1043 x 1246)
0.125	(3.14)	12	(410)	42.8 x 48.8	(1085 x 1240)	43.0 x 49.0	(1093 x 1246)

Characteristics :

- Tetra-functional Epoxy does not contain any halogenated flame retardants
- E-woven Glass
- HTE Copper Foil

Features:

- Halogen and antimony free, Flammability meets UL 94 V-0
- Thermal stability for lead-free process
- Excellent long term reliability
- Low C.T.E. provide excellent through-hole reliability
- UV Blocking and AOI Performance
- $T_g \geq 135 \pm 5^\circ\text{C}$ (DSC)

Applications :

- Computer & Peripheral
- Communications Telecom
- Consumer Electronics
- Instrumentation / Industry / Medical
- OA Equipment / printer etc

SM560-4/HF Laminate Properties:

Based on 1.6 mm^t, 1/1

Test Items		Units Metric (English)	Test Condition	IPC Spec.	Typical Value	Test Method
						IPC-TM-650
Electrical	Dielectric Constant (1MHz)	---	C-96/23/50	< 5.4	4.2 - 4.5	2.5.5
	Dissipation Factor	---	C-96/23/50	< 0.035	0.008 - 0.014	2.5.5
	Volume Resistivity	MΩ -cm	C-96/23/50	> 10 ⁶	> 10 ¹⁰	2.5.17.1
	Surface Resistivity	MΩ	C-96/23/50	> 10 ⁴	> 10 ⁶	2.5.17.1
Physical	Flexural Strength	Lb/in	As Received	< 6x10 ⁴	8 - 6x10 ⁴	2.4.4
	Moisture absorption	%	E-24/50+d-24/2	< 0.8	< 0.2	2.6.2.1
	Peel strength	N / mm (1b/in)	As Received	0.7 (4.0)	1.40 -1.75 (8 – 10)	2.4.8
After Solder			0.7 (4.0)	1.05 -1.40 (6 – 8)	2.4.8	
Thermal	Glass Transition Temp	°C	DSC	By DSC > 130	135+/-5	2.4.25
			TMA		130+/-5	2.4.24
	CTE	ppm/°C	> Tg	< 400	< 300	2.4.24
	Thermal resistance	min	TMA (T288°C)	> 5	>30	2.4.24.1
	Decomposition Temp	°C	ASTM D3850	>310	>360	2.4.24.6
	Flammability	---	A&E-24/125	UL 94 V-0	min.V-0	UL 94 V-0

※Specification Sheet : IPC-4101C / 101/ 127

SM560B -4 Prepreg Parameters :

	<u>7628</u>	<u>2116</u>	<u>1080</u>
R/C : Resin Content (%)	42 ± 3	53 ± 3	62 ± 4
R/F : Resin Flow (%)	18 ± 5	30 ± 5	34 ± 5
P/G : Gel Time (sec)	130 ± 20	130 ± 20	130 ± 20
After Pressed Thickness (mil)	7.0 ± 0.5	5.0 ± 0.5	3.0 ± 0.4
VC : Volatile Content (%)	Max 1.0	Max 1.0	Max 1.0

* Other fabric types are available upon request.

* Above value can be adjusted to fit customer's processing condition.

Storage and Shelf Life:

Storage condition

20 ± 2°C , 50 ± 10%RH // Refrigeration

5 ± 2°C , 50 ± 10%RH // Frozen

Shelf life

< 3 months

< 6 months

- Excessive humidity will result in high press flow & possible quality defects.

SM560B-4 Prepreg Recommended Press Cycle

- **Temperature Profile:**

Heating Rise

Heating rate of material between 60°C and 140°C, 1-3°C/min is acceptable, 1.5-2.5°C/min would be better.

Curing Condition

> 180°C/60 min

Cooling Down

Hold cooling rate to less than 2.5°C/min down to below 120°C to minimize the accumulated stress, then cool down to 45°C as fast as possible.

- **Pressure Profile**

Load press hot, close quickly, use kiss pressure 8 – 12 Kg/cm² (114 – 170 psi) for 15 – 20 minutes then apply full pressure 15 - 25 Kg/cm² (213 – 355 psi) (laminare pressure).

Increase pressure by 10% for non-vacuum press system.

- **Vacuum**

Min. 72 mmHg

