



SM-560-5
SM-560-5 Halogen Free Tg150 Laminate
Green Material
(IPC-4101/128)

尚茂電子材料股份有限公司

ShineMore Technology Materials Co., Ltd.

Website: <http://www.shinemore.com.tw>

ANSI: FR-4.1

UL FILE : E199230

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General Specification:

Thickness		Copper Cladding		Standard Size	
<u>inch</u>	<u>(mm)</u>	<u>oz</u>	<u>(μm)</u>	<u>inch</u>	<u>(mm)</u>
0.003	(0.076)	3/8	(12)	37 x 49	(941 x 1246)
to		to		41 x 49	(1043 x 1246)
0.125	(3.175)	12	(420)	43 x 49	(1094 x 1246)

Characteristics:

- SM-560-5 is a middle Tg halogen free product of filled multifunctional epoxy system with high thermal reliability
- It's suitable for building HDI (including Any Layer, or ELIC design) PCB
- Woven E-Glass
- Both HTE and RTF Copper Foils are available

Features:

- Halogen free FR-4.1 materials fully compliant with RoHS/REACH regulations
- Designed for normal PCB manufacturing processes
- Excellent dimensional stability and thickness uniformity
- Superior thermal and chemical resistance
- Excellent electrical and mechanical properties
- Lower CTE provides excellent through hole reliability
- Superior CAF-Resistance and reliability

Applications:

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

Test Items		Units Metric (English)	Test Condition	IPC Spec.	Typical Value	Test Method (IPC-TM-650)
Electrical	Dielectric Constant (RC 50%)	1GHz	C-24/23/50	—	4.30	2.5.5.9
		5GHz		—	4.20	2.5.5.13
	Dissipation Factor (RC 50%)	1GHz	C-24/23/50	—	0.010	2.5.5.9
		5GHz		—	0.014	2.5.5.13
	Volume Resistivity	MΩ -cm	C-96/35/90	> 10 ⁶	> 10 ¹¹	2.5.17.1
Surface Resistivity	MΩ	C-96/35/90	> 10 ⁴	> 10 ¹⁰	2.5.17.1	
Physical	Flexural Strength	N/mm ²	Length direction Cross direction	>415 >345	>450 >375	2.4.4
	Moisture absorption	%	E-24/50+D-24/23	< 0.80	< 0.1	2.6.2.1
	Peel strength (1oz)	N/mm (lb/in)	As Received	1.05 (6.0)	1.40 (8.0)	2.4.8
Thermal	Glass Transition Temp	°C	DSC	>150	>150	2.4.25
	Z-Axis alpha 1	ppm/°C	Before Tg	< 60	< 45	2.4.24
	Z-Axis alpha 2	ppm/°C	After Tg	< 300	< 250	2.4.24
	Z-Axis CTE	%	Expansion (50~260°C)	< 3.5	< 3.0	2.4.24
	X/Y-Axis CTE	ppm/°C	Before Tg	—	12/15	2.4.24
	Time to Delaminate	min	TMA (Unclad, 288°C)	> 5	>60	2.4.24.1
	Decomposition Temp.	°C	TGA (5% wt loss)	>325	>370	2.4.24.6
	Thermal stress	sec	288°C Solder dipping	> 10	>180	2.4.13.1
	Flame Resistance	—	A&E-24/125	V-0	V-0	UL94

※ Specification Sheet : IPC-4101/128

Ordering Information :

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NOTE:

1. Typical Property values are for information purposes only.
2. Any sale of these products will be governed by the terms and conditions of the agreement under which they are sold.