



# SH260 SH260M High Performance, Polyimide Laminate and Prepreg

Shengyi Technology Rigid Laminate Systems offers a product line of polyimide-based copper clad laminates and prepreg for high temperature required PCB applications. These products utilize modified polyimide, fully cured without the use of MDA, and can provide high thermal performance without the difficulties of brittleness. The attracting cost-performance makes it available in commercial and industrial electronic applications.

## FEATURES

- Polyimide system provides ultra-high thermal performance, with Tg > 250°C (TMA), Td >405°C (5% loss, TGA), and T300>60min.
- Lower Z-axis CTE of 1.20% ( 50-260°C) offering superior PTH reliability.
- Maintain mechanical strength and bonding strength at high temperature.
- Tough resin system, Non-MDA chemistry.
- Halogen-free chemistry compatible with lead-free processing. RoHS/WEEE compliant.
- IPC 4101C/40, /41

## APPLICATIONS

- Aerospace
- Burn-in Boards
- Down Hole
- Backplanes
- Under-hood automotive controls

## PURCHASING INFORMATION

### Laminate

Thickness	Copper foil	Standard Size
0.05mm (.002") ~	12µm ~	915×1220mm(36"×48") 1020×1220mm(40"×48")
2.36mm (.093")	105µm	1070×1220mm(42"×48")

### Prepreg

Glass Type	RC %	Tolerance
106	72	+/-3%
1080	63	
2313	55	
2116	52	
7628	40	

\*Other sheet and panel size could be available upon request.



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## GENERAL PROPERTIES

Property	Metric Units	Value	Test Method	
Dielectric Constant	@1MHz	-	4.22	IPC TM-650 2.5.5.3
	@1GHz	-	4.12	IPC TM-650 2.5.5.9
Dissipation Factor	@1MHz	-	0.007	IPC TM-650 2.5.5.3
	@1GHz	-	0.007	IPC TM-650 2.5.5.9
Volume Resistivity	C96 / 35 / 90	MΩ-cm	7.45×10 <sup>7</sup>	IPC TM-650 2.5.17.1
	E24/ 125	MΩ-cm	1.04×10 <sup>8</sup>	IPC TM-650 2.5.17.1
Surface Resistivity	C96 / 35 / 90	MΩ	5.69×10 <sup>5</sup>	IPC TM-650 2.5.17.1
	E24 /125	MΩ	4.47×10 <sup>6</sup>	IPC TM-650 2.5.17.1
Electrical Strength		kV/mm	85	IPC TM-650 2.5.6.2
Dielectric Breakdown		kV	40.5	IPC TM-650 2.5.6
Arc Resistance		Sec	180	IPC TM-650 2.5.1
Tg	TMA	°C	>250	IPC TM-650 2.4.24
Td	2%	°C	417	IPC TM-650 2.3.41
	5%	°C	429	IPC TM-650 2.3.41
T260		min	>60	IPC TM-650 2.4.24.1
T288		min	>60	IPC TM-650 2.4.24.1
T300		min	>60	IPC TM-650 2.4.24.1
CTE (x/y-axis)		ppm/°C	12~15	IPC TM-650 2.4.41
CTE (z-axis)	α1 (<Tg) (50~260°C)	ppm/°C	45	IPC TM-650 2.4.24
		%	1.20	IPC TM-650 2.4.24
Peel Strength to Copper (10z) After Thermal Stress At Elevated Temperatures After Process Solutions		N/mm	1.37 [7.82]	IPC TM-650 2.4.8
		[lb/in]	1.20 [6.86]	IPC TM-650 2.4.8.2
			1.25 [7.12]	IPC TM-650 2.4.8
Young's modulus (200°C)		GPa	10.3	IPC TM-650 2.4.18.3
Flexural Strength		MPa [lb/in <sup>2</sup> ]	530 [76,850]	IPC TM-650 2.4.4
Flexural Strength (200°C)		MPa [lb/in <sup>2</sup> ]	439 [63,655]	
Water Absorption		%	0.26	IPC TM-650 2.6.2.1
Specific Gravity		g/cm <sup>3</sup>	2.02	ASTM D792 Method A
Flammability		-	HB	UL-94

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

## Recommended Process Conditions

**Inner-layers Pre-treatment:** Bake inner-layers in the shelf for 60 minutes at about 105°C before lamination to get rid of the moisture.

**Lamination parameter:**

Pressure			Temperature		
Rise min.	Kg/cm <sup>2</sup>	Keep min.	Rise min.	°C	Keep min.
2	7	8	0	140	10
2	16	8	8	160	2
2	25	283	45	240	240
25	16	0	25	160	0
10	7	0	10	140	0
Total time			340min		

\*Vacuum: 10torr or less at the beginning.  
 \*Heat ramp: 1.5-2.5°C/min., between 80°C and 140°C material temperature.  
 \*Cure time: ≥220°C, 240min.  
 \*Option for curing: Cure above 185°C for 1.5 hour, post baking for about 3 hours at 230°C.

**Drilling:** Drilling parameters of high Tg or halogen-free laminate are compatible with SH260, or refer to right chart.

**Desmear:** Utilize alkaline permanganate or plasma with appropriate parameter. Plasma is preferred after drilling.

Hole size (mm)	S (krpm)	F (m/min)	R (m/min)	Hit count
0.35	110	1.7	12	1200
0.4	110	2.4	12	1200
0.5	100	3.5	15	1200