S1000-2M

(ULANSI: FR-4.0) High Performance, Low CTE, Hi-Tg Lead-free

特点

- 无铅兼容FR-4.0板材。
- 高Tg170℃(DSC), UV Blocking和AOI兼容。 高耐热性。 低的Z轴热膨胀系数。

- 优异的通孔可靠性。
- 优异的Anti-CAF性能。 低吸水率和耐高温高湿性。 •
- 优良的机械加工性能。

FEATURES

- Lead-free compatible FR-4.0 laminate. Tg 170 $^\circ$ (DSC), UV Blocking / AOI compatible.
- High heat resistance. •
- Low Z-axis CTE.
- Excellent through-hole reliability. •
- Excellent anti-CAF performance. •
- Low water absorption. •
- Excellent mechanical processibility •

GENERAL PROPERTIES

应用领域

适用于高多层PCB 广泛应用于电脑、通讯和汽车电子等

APPLICATIONS

Suitable for high-layer count PCB. Widely used in computer, communication, automotive electronics, and etc.

Items Condition Unit Properture Type and type							
$ \begin{array}{ c c c c } & \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ \ $	ltom		Condition	Linit	Property Data		
$\begin{array}{ c c c } \hline \label{eq:resurface} \hline \begin{tabular}{ c c } \hline \hline \begin{tabular}{ c c } \hline \hline \begin{tabular}{ c c } \hline \begin{tabular}{ c c } \hline \bed$	nems		Condition	Unit	Spec	Typical Value	
FiammabilityDMA CA8/23/50 E-24/125Rating Rating 210° 185FiammabilityAfter moisture resistanceMQ-cm E-24/125 210° $8.66E+08$ Surface ResistivityAfter moisture resistanceMQ-cm 210° $8.66E+08$ Surface ResistivityAfter moisture resistanceMQ-cm 210° $8.66E+08$ After moisture resistanceMQ-cm 210° $8.64E+06$ After moisture resistanceMQ $217E+07$ Dielectric BreakD-48/50+D-0.5/23KV 240 Dielectric I rowspan="4">(1GHz)C-24/23/50C -4 -4.6 Constant(1GHz)C-24/23/50 -4 -4.6 Dissipation(1GHz)C-24/23/50 -4 -50.035 Thermal Irres288°C, solder dip -5 -50.035 0.015 Flexural Irres288°C/10sN/mm 21.05 $No Delamination$ Peel StrengtLWMpa 2345 442 Water Absorpt onD-24/23 $\%$ <0.08 411 CTE(Z-xis)Before TgPPM/° <300 208 After TgPPM/° <300 208 2415 THAmin <210 30 2.4	Tg		DSC	°C	≥170	180	
HammabilityE-24/125Rating $\sqrt{-0}$ $\sqrt{-0}$ Volume ResistivityAfter moisture resistance $M\Omega$ -cm $\geq 10^6$ $8.66E+08$ Surface ResistivityAfter moisture resistance $\geq 10^3$ $7.18E+06$ Surface ResistivityAfter moisture resistance $\geq 10^4$ $2.17E+07$ Surface ResistivityD-48/50+D-0.5/23S $\geq 10^4$ $2.17E+07$ Dielectric BreakdownD-48/50+D-0.5/23KV ≥ 400 $45KV+NB$ Dielectric BreakdownD-48/50+D-0.5/23KV ≥ 400 $45KV+NB$ Dielectric Time ResistivityC-24/23/50 4.6 Constant(1GH2)C-24/23/50- < 5.4 4.9 Dissipation Factor(1GH2)C-24/23/50- < 0.035 0.015 Thermal Stress288°C, solder dip C- < 0.035 $No Delamination$ No DelaminationNo Delamination No DelaminationPeel Strength(1 Q2)288°C/10sN/mm ≥ 1.05 1.3 Flexural StrengthLW CCE(2-axis)Mpa ≥ 345 442 Water AbsorptionD-24/23% ≤ 0.5 0.08 CTE(Z-axis)After TgPPM/°C ≤ 300 208 T260TMAmin ≥ 300 208 T260TMAmin ≥ 300 300			DMA		≥170	185	
Volume ResistanceMQ-cm $\mathbb{A}^{210^{\circ}}$ $\mathbb{B}.66E+08$ Surface ResistanceAfter moisture resistance \mathbb{A}^{0} $\mathbb{A}^{10^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ Surface ResistanceD48/50+D-0.5/23S \mathbb{A}^{00} $\mathbb{A}^{10^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ Dielectric BieterD-48/50+D-0.5/23KV \mathbb{A}^{00} $\mathbb{A}^{10^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ Dielectric Constant(1GHz)C-24/23/50- $ \mathbb{A}^{10^{\circ}}$ Dissipation(1GHz)C-24/23/50- $\mathbb{A}^{10^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ Factor(1MHz)C-24/23/50- $\mathbb{A}^{10^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ Feator1002288°C/10sN/mm $\mathbb{A}^{10^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ Flexural \mathbb{A}^{-1} D-24/23 \mathbb{A}° $\mathbb{A}^{10^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ CTE(2-xis)Before TgPPM/°C $\mathbb{A}^{30^{\circ}}$ $\mathbb{A}^{10^{\circ}}$ Go-260°C \mathbb{A}°	Flammability			Rating	V-0	V-0	
Surface ResistivityAfter moisture resistanceMQAfter moisture resistanceMQ222Surface ResistivityE-24/125 \mathbb{M} Q $\geq 10^3$ 8.64E+06Arc ResistanceD-48/50+D-0.5/23S ≥ 60 133Dielectric BrakdownD-48/50+D-0.5/23KV ≥ 40 45KV+NBDielectric (1GHz)C-24/23/504.6Constant (1MHz)C-24/23/50- ≤ 5.4 4.9Dissipation Factor (1MHz)C-24/23/50-<	Volume Resistivity			MΩ-cm	≥10 ⁶	8.66E+08	
$ \begin{array}{c c c c c } & & & & & & & & & & & & & & & & & & &$			E-24/125		≥10 ³	7.18E+06	
$ \begin{array}{c c c c c } \hline \mbox{Arc Resistance} & D-48/50+D-0.5/23 & S & \geq 60 & 133 \\ \hline \mbox{Dielectric Birstance} & D-48/50+D-0.5/23 & KV & \geq 40 & 45KV+NB \\ \hline Dielectric (1GHz) C-24/23/50 & - & - & 4.6 \\ \hline \mbox{Constant (1MHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1GHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1GHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.0.018 & 5.0 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.0 & 0.018 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.4 & 5.0 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.4 & 4.9 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & - & <5.4 & - & 0.018 \\ \hline \mbox{Dissipation (1MHz) C-24/23/50 & N/m & >100 \\ \hline \mbox{Dissipation (1MHz) C-24/23 & N/m & >100 & No Delamination \\ \hline \mbox{Dissipation (1MHz) C-24/23 & % & $>0.0.08 & 442 \\ \hline \mbox{Dissipation (1MHz) C-24/23 & % & $>0.0.08 & 442 \\ \hline \mbox{Dissipation (1MHz) C-24/23 & % & $>0.0.08 & 442 \\ \hline \mbox{Dissipation (1MHz) C-24/23 & % & $>0.0.08 & 442 \\ \hline \mbox{Dissipation (1MHz) C-24/23 & % & $>0.0.08 & 442 \\ \hline \mbox{Dissipation (1MHz) C-24/23 & % & $>0.0.08 & 442 \\ \hline \mbox{Dissipation (1MHz) C-24/23 & % & $>0.0.08 & 442 & $$$0.5 & $0.0.08 & $$$0.0 & $0.05 & $0.0.08 & $$$$0.0 & $0.0 & $$$0.0 & $0.0 & $$$0.0 & $0.0 & $$$0.0 & $0.0 & $$$0.0 & $0.0 & $$$0.0 & $$$0.0 & $0.0 & $$$0.0 & $$0.0 & $$$0.0 & $0.0 & $$$0.0 & $$0.0 & $$$0.0 & $$0.0 & $$$0.0 & $$0.0 & $$$0.0 & $$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$0.0 & $$$$0.0 & $$$0.0 & $$$$$	Surface Resistivity			ΜΩ	≥10⁴	2.17E+07	
$ \begin{array}{c c c c c c c c } \hline \begin{tabular}{ c c c c c c } \hline \begin{tabular}{ c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$			E-24/125		≥10 ³	8.64E+06	
$ \begin{array}{c c c c c c c c c c } \hline \mbox{(1GHz)} & \mbox{C-24/23/50} & \mbox{-} & \mbox{-} & \mbox{4.6} \\ \hline \mbox{Constant} & (1MHz) & \mbox{C-24/23/50} & \mbox{-} & \mbox{-} & \mbox{0.018} \\ \hline \mbox{Dissipation} & (1GHz) & \mbox{C-24/23/50} & \mbox{-} & \mbox{-} & \mbox{0.035} & \mbox{0.015} \\ \hline \mbox{1MHz} & \mbox{C-24/23/50} & \mbox{-} & \mbox{-} & \mbox{0.035} & \mbox{0.015} \\ \hline \mbox{1MHz} & \mbox{C-24/23/50} & \mbox{-} & \mbox{-} & \mbox{0.035} & \mbox{0.015} \\ \hline \mbox{0.008} & \mbox{0.015} & \mbox{0.015} \\ \hline \mbox{1MHz} & \mbox{C-24/23/50} & \mbox{-} & \mbox{-} & \mbox{0.035} & \mbox{0.015} \\ \hline \mbox{No Delamination} & \mbox{No Delamination} & \mbox{No Delamination} \\ \hline \mbox{Peel Strength} & \mbox{1.02} & \mbox{288°C, solder dip} & \mbox{-} & \mbox{-} & \mbox{0.028} & \mbox{No Delamination} \\ \hline \mbox{Peel Strength} & \mbox{1.02} & \mbox{288°C, solder dip} & \mbox{-} & \mbox{-} & \mbox{-} & \mbox{0.028} & \mbox{No Delamination} \\ \hline \mbox{Peel Strength} & \mbox{1.02} & \mbox{288°C, solder dip} & \mbox{-} & \mbox{-} & \mbox{-} & \mbox{-} & \mbox{0.028} & \mbox{-} & \mbox{-} & \mbox{0.028} & \mbox{-} & \mbo$	Arc Resistance		D-48/50+D-0.5/23	S	≥60	133	
$ \begin{array}{ c c c c } \hline Constant & (1MHz) & C-24/23/50 & - & $$ \le 5.4$ & $$ 4.9$ \\ \hline Dissipation & (1GHz) & C-24/23/50 & - & $$ 0.035$ & $$ 0.015$ \\ \hline Thermal Verses & $$ 288°C, solder dip & $$ 100s$ & $$ No Delamination & $$$	Dielectric B	reakdown	D-48/50+D-0.5/23	κv	≥40	45KV+NB	
$ \begin{array}{ c c c c c c c c c } \hline \mbox{IGH2} & \mbox{C-24/23/50} & \mbox{IGH2} & \mbox{C-24/23/50} & \mbox{IGH2} & \mbox{C-24/23/50} & \mbox{IGH2} & \mbox{IGH2} & \mbox{C-24/23/50} & \mbox{IGH2} & \mbox{IGH2} & \mbox{IGH2} & \mbox{C-24/23/50} & \mbox{IGH2} & $	Dielectric	(1GHz)	C-24/23/50	-	-	4.6	
Factor(1MHz) \mathbb{C} -24/23/50- ≤ 0.035 0.015 Thermal Stress $288°C, solder dip-\geq 1.0s>100sPeel Strength (1 Oz)288°C/10sN/mm\geq 1.05No DelaminationFlexural Strength\mathbb{C}\mathbb{C}\mathbb{C}\mathbb{C}Water AbsorptionD-24/23N/mm\geq 1.05\mathbb{C}CTE(Z-xrs)Before Tg\mathbb{P}M/°C\leq 3.00\mathbb{C}TdMtfer Tg\mathbb{P}M/°C\leq 3.00\mathbb{C}Td\mathbb{C}\mathbb{C}\mathbb{C}\mathbb{C}The Mathematic Strength\mathbb{C}$	Constant	(1MHz)	C-24/23/50	-	≤5.4	4.9	
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Dissipation	(1GHz)	C-24/23/50	-	-	0.018	
Thermal Stress 288° C, solder dip-No DelaminationNo DelaminationPeel Strength (1 Oz) 288° C/10sN/mm ≥ 1.05 1.3Flexural StrengthLWMpa ≥ 415 567CWMpa ≥ 345 442Water AbsorptionD-24/23% ≤ 0.5 0.08CTE(Z-axis)Before TgPPM/°C ≤ 60 416S0-260°C% ≤ 3.00 208CTE(Z-axis)TdWt5%loss°C ≥ 340 355T260TMAmin ≥ 300 60T288TMAmin ≥ 15 30T300TMAmin ≥ 2 15	Factor	(1MHz)	C-24/23/50	-	≤0.035	0.015	
$ \begin{array}{c c c c c c c c } \hline ILW & Imp & & & & & & & & & & & & & & & & & & &$	Thermal Stress		288℃, solder dip	-			
Flexural Strength CW Mpa ≥ 345 442 Water Absorption D-24/23 % ≤ 0.5 0.08 Mpa ≥ 345 442 ≤ 0.5 0.08 Mpa $\geq 60^{\circ}$ ≤ 0.5 0.08 Mpa $\geq 60^{\circ}$ $\leq 60^{\circ}$ 41 Mpa $\geq 60^{\circ}$ ≤ 300 208 Mpa ≤ 3.0 ≤ 3.0 2.4 Mpa $\sim C$ ≥ 340 355 Td Wt5%loss $^{\circ}$ C ≥ 340 355 T260 TMA min ≥ 300 60 T288 TMA min ≥ 15 30 T300 TMA min ≥ 2 15 <td colspan="2">Peel Strength (1 Oz)</td> <td>288℃/10s</td> <td>N/mm</td> <td>≥1.05</td> <td>1.3</td>	Peel Strength (1 Oz)		288℃/10s	N/mm	≥1.05	1.3	
CWI ≥ 345 442 Water AbsorptionD-24/23% ≤ 0.5 0.08Before TgPPM/°C ≤ 60 41CTE(Z-axis)After TgPPM/°C ≤ 300 20850-260°C% ≤ 3.0 2.4TdWt5%loss°C ≥ 340 355T260TMAmin ≥ 30 60T300TMAmin ≥ 15 30	Flexural Strength		LW	Mag	≥415	567	
$\begin{array}{ c c c c c } \hline Before Tg & PPM/^{\circ}C & \leq 60 & 41 \\ \hline & After Tg & PPM/^{\circ}C & \leq 300 & 208 \\ \hline & After Tg & PPM/^{\circ}C & \leq 300 & 208 \\ \hline & 50-260^{\circ}C & \% & \leq 3.0 & 2.4 \\ \hline & 50-260^{\circ}C & \% & \leq 340 & 355 \\ \hline & Td & Wt5\%loss & ^{\circ}C & \geq 340 & 355 \\ \hline & T260 & TMA & min & \geq 30 & 60 \\ \hline & T288 & TMA & min & \geq 15 & 30 \\ \hline & T300 & TMA & min & \geq 2 & 15 \\ \hline \end{array}$			CW	мра	≥345	442	
$\begin{array}{ c c c c c c } \hline CTE(Z-axis) & After Tg & PPM/^{\circ}C & \leq 300 & 208 \\ \hline & & & & & & & & & & & & & & & & & &$	Water Absorption		D-24/23	%	≤0.5	0.08	
$50-260^{\circ}$ % ≤ 3.0 2.4 TdWt5%loss°C ≥ 340 355 T260TMAmin ≥ 30 60 T288TMAmin ≥ 15 30 T300TMAmin ≥ 2 15	CTE(Z-axis)		Before Tg	PPM/℃	≤60	41	
Td Wt5%loss $^{\circ}$ C ≥ 340 355 T260 TMA min ≥ 30 60 T288 TMA min ≥ 15 30 T300 TMA min ≥ 2 15			After Tg	PPM/° C	≤300	208	
T260TMAmin ≥ 30 60T288TMAmin ≥ 15 30T300TMAmin ≥ 2 15			50-260 ℃	%	≤3.0	2.4	
T288 TMA min ≥15 30 T300 TMA min ≥2 15	Td		Wt5%loss	°C	≥340	355	
T300 TMA min ≥2 15	T260		ТМА	min	≥30	60	
	T288		ТМА	min	≥15	30	
CTI IEC60112Method Rating PLC 3(175V-249V) PLC 3	T300		ТМА	min	≥2	15	
	CTI		IEC60112Method	Rating	PLC 3(175V-249V)	PLC 3	

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

Remarks: 1.Specification sheet:IPC-4101/126, 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 $\,^\circ\!\!\mathbb{C}$ and with the third digit the relative humidity.







S1000-2M

(ULANSI:FR-4.0) High Performance, Low CTE, Hi-Tg Lead-free

High layer count application evaluation



24-layer, core 0.13 H/H, PP: 1080/2116 Overall thickness: 4.0mm Hole size: 0.35mm Aspect ratio: 11.5:1 260℃ Lead free reflow: 5X, OK



BGA :26010 lead free reflow: 5X-1.0P



3.1m, 1080+2116 prepreg construction, Hole size: 0.3mm 1.0mmP, 0.8mmP Precondition: 6X reflow (Peak 260°C) Test condition: Room temp. ~ 150℃ Failure Method: Power/sense Result: Power cycles > 2000

Heavy copper board application



12 Layer - 5oz Inner Copper Sample Construction Glass types(1080/106) Copper weights(3oz/5oz) Thermal Stress: 288°C/10s/dip, 3X Test result: No Resin Crack & No Delamination

IST





Anti-CAF performance



20L, TH-TH 16mil, 20mil; Test condition: 65°C/87%/100V DC; Precondition: 6X lead-free reflow

Glass types:106/1080/2116 Hole size: 0.30mm Result: Passed 1000hrs





S1000-2MB PREPREG

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Glass fabric type	Resin content (%)	Cured thickness (mm)	DK(1GHz)	Df(1GHz)	Standard size (Roll type)
400/4007	72	0.050	4.0	0.019	1.260m X150m
106/1037	77	0.060	3.9	0.020	
1000/1070	64	0.072	4.3	0.018	
1080/1078	69	0.086	4.1	0.019	1.260m X300m
2313/3313	56	0.096	4.5	0.016	
	51	0.108	4.6	0.015	1.260m X250m
2116	55	0.120	4.5	0.016	
	57	0.127	4.6	0.016	
1506	45	0.150	4.8	0.014	
	44	0.187	4.8	0.014	
7628	46	0.196	4.8	0.014	1.260m X150m
1020	50	0.216	4.7	0.015	
	52	0.227	4.6	0.015	

PREPREG PARAMETERS

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°C/min(80~140°C)

Curing time:>60min (185~195℃)

The hot pressing parameters is for your reference only, please turn to Shengyi Technology Co., Ltd for detailed information.

Storage Condition:

- The hot pressing parameter is for your reference only. Please turn to Shengyi Technology Co., Ltd for detailed information.
- For short term storage, it is good to keep it in <23 $^\circ\!\!\mathbb{C}$ and <50% RH within three months.
- For long term storage, keep it in 5° C within 6 months, it should be normalized in the room temperature at least 4 hours before use.
- Beware of moisture, if kept in normal conditions, prepreg absorbs moisture and its bonding strength is weakened. So always keep it wrapped in damp-proof material.
- Avoid ultraviolet rays and strong lights.