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## T-preg™ 1KA Dielectric

T-preg™ 1KA is a thermally conductive electrically insulating pre-preg.

The T-lam thermally conductive printed circuit boards use T-preg™ 1KA dielectric sheets in conjunction with copper foil and an integral metal base plate to provide a circuit board laminate that has superior thermal management capabilities compared to conventional FR4-based printed circuit boards (PCBs).

Free-standing T-preg™ 1KA dielectric sheets facilitate multi-layer and FR4-hybrid PCB construction.

For sales information:

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In Europe, please telephone +44-1342-315044

In the USA please telephone +1-888-246-9050

or visit: [www.lairdtech.com](http://www.lairdtech.com)

### Features and Benefits:

- High thermal conductivity for applications that require a thick dielectric
- Low modulus for resistance to mechanical shock, vibration and thermal cycling
- Fills holes in copper core boards to create insulation through holes in double-sided assemblies
- Compatible with heavy copper foil, multiple layer and FR-4 composite constructions

### Applications:

- Multi-layer DC/DC converters
- Double sided copper core boards for avionics LEDs

## Typical Properties of T-preg™ 1KA Dielectric

Operating Voltage	Units	1KA04	1KA06	1KA08	1KA10	1KA12
Continuous AC	VAC	50	120	240	360	480
Continuous DC	VDC	95	225	450	630	950VDC
Peak Recurring	Vp	140	300	600	900	1200
Thermal Properties		1KA04	1KA06	1KA08	1KA10	1KA12
Thermal Conductivity*	Watt/mK	3.0	3.0	3.0	3.0	3.0
Thermal Resistance	°C-in <sup>2</sup> /Watt (°C-cm <sup>2</sup> /Watt)	0.05 (0.35)	0.081 (0.552)	0.109 (0.703)	0.14 (0.88)	0.163 (1.05)
Glass Transition Temperature	°C	105	105	105	105	105
Operating Temperature, Maximum	°C	110	120	130	130	130
Soldering Temperature, Maximum	°C	288	288	288	288	288
Heat Capacity	J/g <sup>o</sup>	1.53	153	1.53	1.53	1.53
Electrical Properties		1KA04	1KA06	1KA08	1KA10	1KA12
Dielectric Constant @ 1KHz/1MHz		4.3/4.1	4.3/4.1	4.3/4.1	4.3/4.1	4.3/4.1
Dissipation Factor @ 1KHz/1MHz		0.008/0.035	0.008/0.035	0.008/0.035	0.008/0.035	0.008/0.035
Capacitance @ 1KHz	pF/in <sup>2</sup> (pF/cm <sup>2</sup> )	121 (18.8)	161 (25)	121 (18.8)	121 (18.8)	81 (12.6)
Volume Resistivity	ohm-cm	12E+14	1.2E+14	1.2E+14	1.2E+14	1.2E+14
Surface Resistivity	ohm	1.0E+10	1.0E+10	1.0E+10	1.0E+10	1.0E+10
Dielectric Strength	V/mil (kV/mm)	800 (20.3)	800 (20.3)	800 (20.3)	800 (20.3)	800 (20.3)
Hi-Pot Withstand	VDC	1200	2500	3500	4200	5000
Mechanical Properties		1KA04	1KA06	1KA08	1KA10	1KA12
Dielectric Thickness	inches (mm)	0.004 (0.102)	0.006 (0.152)	0.008 (0.203)	0.010 (0.245)	0.012 (0.305)
Peel Strength	lbs/in (Kg/cm)	4.5 (0.8)	4.5 (0.8)	5.0 (1.0)	6.0 (1.20)	6.0 (1.20)
CTE in XY/Z axis < Tg	ppm	32/43	32/43	32/43	32/43	32/43
CTE in XY/Z axis > Tg	ppm	81/171	81/171	81/171	81/171	81/171
Tensile Strength	MPa	52.2	52.2	52.2	52.2	52.2
Elongation 25/150°C	%	0.8/1.1	0.8/1.1	0.8/1.1	0.8/1.1	0.8/1.1
Young's Modulus @ 25/150°C	MPa	9700/2700	9700/2700	9700/2700	9700/2700	9700/2700
Poisson's Ratio @ 25/150°C		0.26/0.16	0.26/0.16	0.26/0.16	0.26/0.16	0.26/0.16
Flexural Strength	MPa	49.7	49.7	49.7	49.7	49.7
Chemical Properties		1KA04	1KA06	1KA08	1KA10	1KA12
Water Absorption after 168 hours	% wt.	0.1	0.1	0.1	0.1	0.1
Out-gassing-Total Mass Loss	% wt.	0.57	0.57	0.57	0.57	0.57
Collect Volatile Condensable Material	% wt.	0.06	0.06	0.06	0.06	0.06
Agency Ratings & Durability		1KA04	1KA06	1KA08	1KA10	1KA12
UL Continuous Operating Temperature	°C	110	120	130	130	130
UL Flammability	E165095	94V0	94V0	94V0	94V0	94V0
Comparative Tracking Index		600	600	600	600	600
Solder Float (10 sec. @ 288°C)		Pass	Pass	Pass	Pass	Pass
Time to Delamination (10 min. @ 260°C)		Pass	Pass	Pass	Pass	Pass

\*As measured on dielectric compound only.

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T-preg 1KA A14654-00 Rev. C, EO#6257, 2/07