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## **T-lam SS 1KA**

### **Thermally Conductive Printed Circuit Board Substrate.**

T-lam SS 1KA is a thermally conductive PCB Substrate. The substrate consists of a copper circuit layer bonded to an aluminum or copper base plate with Laird Technologies' 3 watt/m-K 1KA dielectric. T-lam SS 1KA materials are processed through standard FR4 print and etch operations.

T-lam SS 1KA has 8-10 times better thermal conductivity compared to FR4 and this is the key to keeping components cool. The T-lam SS 1KA boards run through standard pick and place SMT and manual wire bond processes.

T-lam SS 1KA is designed for applications that require the best thermal performance and resistance to thermal cycling. Customers have found that T-lam SS 1KA reduces the stress on solder bonds with ceramic devices.

Standard constructions are made with 1 and 2 ounce copper and 0.040 (1 mm) and 0.062 (1.6 mm) inch thick aluminum. Custom constructions of heavier weight circuit copper and thicker aluminum and copper base plates are also available.

**For sales information:**

In the USA please telephone +1 800 843.4556

In Europe please telephone +49 8031.2460.0

In Asia please telephone +86 755.2714.1166

**Features and Benefits:**

- UL® 746 B Electrical/Mechanical RTI as high as 130°C
- RoHS compliant
- Environmentally green
- Lead free solder compatible
- Compliant for low bond stress

**Applications:**

- Network DC/DC power converters
- Battery powered equipment DC/DC power converters
- Ultra bright LED substrate

## Typical Properties of T-lam SS 1KA Dielectric

Operating Voltage	Units	T-lam SS 1KA04	T-lam SS 1KA06	T-lam SS 1KA08
Continuous AC	VAC	50	120	240
Continuous DC	VDC	95	225	450
Peak Recurring	Vp	140	300	600
Thermal Properties	Units	T-lam SS 1KA04	T-lam SS 1KA06	T-lam SS 1KA08
Thermal Conductivity*	Watt/m °K	3.0	3.0	3.0
Thermal Resistance	°C-in <sup>2</sup> /watt (°C-cm <sup>2</sup> /watt)	0.05 (0.34)	0.08 (0.52)	0.11 (0.70)
Glass Transition Temperature	°C	105	105	105
Operating Temperature, Maximum	°C	110	120	130
Soldering Temperature, Maximum	°C	288	288	288
Heat Capacity	J/g °K	1.53	1.53	1.53
Electrical Properties	Units	T-lam SS 1KA04	T-lam SS 1KA06	T-lam SS 1KA08
Dielectric Constant @ 1KHz/1MHz		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
Capacitance @ 1KHz/1MHz	pF/in <sup>2</sup>	244/230	161/153	121/115
Volume Resistivity	ohm-cm	1.2E+14	1.2E+14	1.2E+14
Surface Resistivity	ohm	1.0E+10	1.0E+10	1.0E+10
Dielectric Strength	V/mil (kV/mm)	650 (16.5)	800 (20.3)	800 (20.3)
Hi-Pot Withstand	VDC	1200	2500	3500
Mechanical Properties	Units	T-lam SS 1KA04	T-lam SS 1KA06	T-lam SS 1KA08
Dielectric Thickness	inches (mm)	0.004 (0.102)	0.006 (0.152)	0.008 (0.203)
Peel Strength	lbs/in (Kg/cm)	4.5 (0.8)	4.5 (0.8)	5.0 (1.0)
CTE in XY/Z axis < Tg	ppm	32/43	32/43	32/43
CTE in XY/Z axis > Tg	ppm	81/171	81/171	81/171
Tensile Strength	MPa	52.2	52.2	52.2
Elongation 25/150°C	%	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
Poisson's Ratio @ 25/150°C		0.26/0.16	0.26/0.16	0.26/0.16
Flexural Strength	MPa	49.7	49.7	49.7
Chemical Properties	Units	T-lam SS 1KA04	T-lam SS 1KA06	T-lam SS 1KA08
Water Absorption after 168 hours	% wt.	0.1	0.1	0.1
Out-Gassing-Total Mass Loss	% wt.	0.57	0.57	0.57
Collect Volatile Condensable Material	% wt.	0.06	0.06	0.06
Agency Ratings & Durability	Units	T-lam SS 1KA04	T-lam SS 1KA06	T-lam SS 1KA08
UL Continuous Operating Temperature	°C	110	120	130
UL Flammability	E165095	94V0	94V0	94V0
Comparative Tracking Index		600	600	600
Solder Float ( 3 min. @ 288°C)		Pass	Pass	Pass

\*As measured on dielectric compound only.

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