



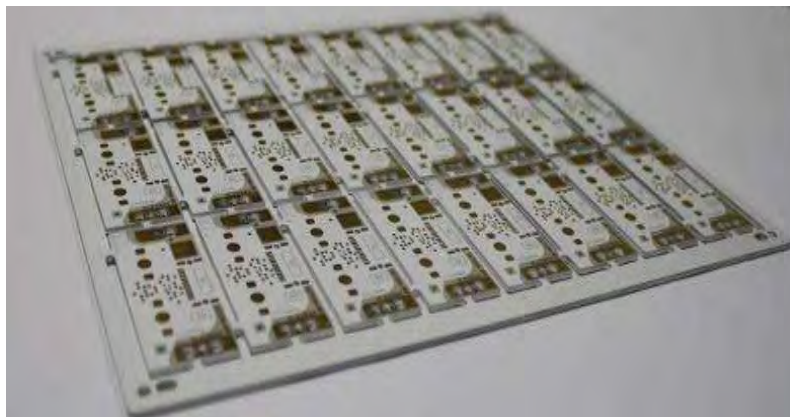
KW-ALE Aluminium Base Copper Clad Laminate

FEATURES

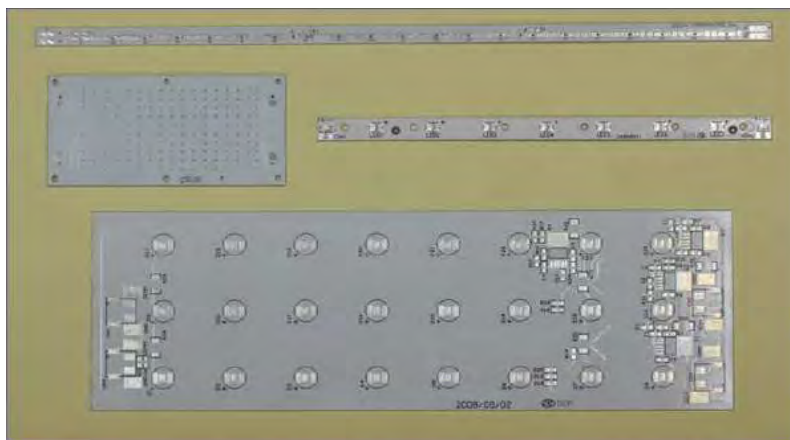
- Excellent heat dissipation
- Excellent thermal and insulation reliability
- Excellent withstand voltage
- Superior processability
- High CTI

APPLICATIONS

- Automotive Electronics
- High Brightness LED
- Power Electronics



Automotive Electronics



Light bar/board for LED lighting



GENERAL PROPERTIES

Test Item	Test Condition	Unit	Property Data
Peel Strength	A	N/mm	1.3
Flammability	94-V0	\	V-0
Volume resistivity	E-24/125	MΩ·cm	$>10^7$
Surface resistivity	E-24/125	MΩ	$>10^7$
Dielectric constant	1 GHz	\	4.5
Dissipation Factor	1 GHz	\	0.027
Thermal Impedance	ASTM D5470	m ² ·K/W	0.00011
Thermal Conductivity	ASTM D5470	W/(m·K)	2.0
Solder Heat Resistance	288°C	sec	>360
Hi-pot Test	DC	KV	2.0
Breakdown Voltage	AC	KV	>5
	DC	KV	>5
Tg	DSC	°C	120
Td	5% Loss	°C	340
Water Content	D-24/23	%	0.06
CTI	IEC60112	V	>600

PURCHASING INFORMATION

	Type	Thickness
Copper	E/D Cu	1/2, 1, 2, 4 (oz)
Dielectric Layer	Epoxy resin filled with inorganic filler	80~200 ±30(μm)
Al	1050, 5052, 6061	0.8, 1.0, 1.2, 1.5, 2.0, 3.0 (mm)
Masking Film	PET/PI Film	\
Standard Size	Max: 457×640 (mm)	



QMTS2.E334888

Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards - Component

Enhanced searching capability for this category can be found in UL's iQ Family of Databases (iq.ul.com).

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Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards - Component

See General Information for Polymeric Materials - Filament-wound Tubing, Industrial Laminates, Vulcanized Fiber, and Materials for Use in Fabricating Recognized Printed Wiring Boards - Component

KINWONG ELECTRONIC (SHENZHEN) CO LTD

E334888

166 SHUIKU RD
TIEGANG VILLAGE, XIXIANG TOWN
BAO'AN
SHENZHEN, GUANGDONG 518102 CHINA

Metal base industrial laminates:

Mtl Dsg	Color	Metal	Dielectric		Flame Class	R.T.I.		H			Meets 746E DSR	
		Min Thk (mm)	Min Thk (mic)	Max Thk (mic)		Elec (° C)	Mech (° C)	H W I	H A I	V T R		C T I
Aluminum base with Epoxy (EP) dielectric, industrial laminates.												
KW-ALE	NC	0.8	100	200	V-0	90	90	0	0	-	0	Yes
KW-ALG	NC	0.80	130	190	V-0	90	90	0	0	-	1	Yes

Metal clad metal base industrial laminates:

Metal Clad Dsg	Lam-inate Dsg	Pre-preg Dsg	Metal	Dielectric		Clad Cond Thk			Max	Flame Class	Max	Solder Lts	
			Min Thk (mm)	Min Thk (mic)	Max Thk (mic)	Min Ext (mic)	Max Ext (mic)	Max Int (mic)	Area Dia (mm)		Oper Temp (° C)	Temp (° C)	Time (sec)
Aluminum base with Epoxy (EP) dielectric, Metal clad industrial laminates with copper on one side only.													
KW-ALE													
	KW-ALE	-	0.8	100	200	34	140	-	50.8	V-0	90	288	10
KW-ALG													
	KW-ALG	-	0.8	130	190	34	102	-	50.8	V-0	90	288	10

Marking: Company name and material designation on container or wrapper.

Last Updated on 2011-06-01

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景旺企业集团有限公司
Kinwong Group Co., Ltd

PANEL CERTIFICATION—KW-ALE

This document certifies that the material in this shipment was manufactured within the following specifications:

GENERAL REQUIREMENTS

Material Specification

Aluminum Alloy Customer Specific

Dimensional Specification

Overall Panel Dimension Customer Requested +2/-0mm
Usable Area: Voltage proof-tested panels:to within 12.7mm of panel edge.
 Non-Voltage proof-tested panels:to within 10mm of the panel edge.
Base Panel Thickness Customer Specific ±10%
Dielectric Thickness Tolerance

Model	Dielectric Thickness	Tolerance
KW-ALE	100μm	±20%

Copper Foil Thinkness Customer Specific(1oz ~4oz) +/-10%
KW-ALE Panel Bow & Twist ≤0.75%

Copper foil side Visual Specification

Stratches IPC-4101,3.8.3.1.3
Indentations IPC-4101,3.8.3.1.1 class A
Raised areas Evaluated as foil indentations
Workmanship IPC-4101,3.14

Base Panel Side Visual Specification

Surface Appearance Uniform scrubbed surface
Scratches IPC-4101,3.8.3.1.3
Workmanship IPC-4101,3.14

ADDRESS: No,167 Shuiku Road, Tiegang Village, Xixiang Town, Baoan District, Shenzhen City, China
Tel : (86-755) 2769 7333 Fax : (86-755) 2769 7399 Website : <http://www.kinwong.com>

CERTIFICATION PERFORMANCE VALUES

Model	Specification	Thermal Performance		Dielectric Performance		Flammability	CTI	Peel Strength	Thermal Stress
		Impedance	Conductivity	Hi-Pot Test	Breakdown				
	[$\mu\text{m}/\text{mil}$]	[$^{\circ}\text{C}/\text{W}$]	[$\text{W}/\text{m}\cdot\text{k}$]	[KV/DC]	[KV/AC]	---	[V]	[N/mm]	[Second]
KW-ALE	100	0.2~0.4	2.0	1.5	3.0	UL94 V-0	600	$\cong 1.0$	288 $^{\circ}\text{C}$ ×240Sec

Method description:

1. Thermal Performance: Testing methods for ASTM D5470.
2. Dielectric Performance:
 - 1) Hi-Pot Test: Ramp up DC 100V/sec, 5 sec hold.
 - 2) Breakdown Voltage: Etching copper foil test, Ramp up AC 500V/sec, 0.5sec hold, Electrode has a diameter 20mm.
3. CTI: IPC-TM-650 2.5.18
4. Flammability: UL94 inspection.
5. Peel Strength: JIS C 6481
6. Thermal Stress: IPC-TM650 2.4.13.1

STORAGE CONDITION

Stored in the room temperature conditions and 60% relative humidity maximum, its shelf life maintain for 3 months.

BAKING PROCESS

Pre-bake the laminate at 150 $^{\circ}\text{C}$ for 2 hours before production.

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