Grace Electron Corp.

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Trust ***Hardwork*** ***Warmth***

Specification

Customer：
Product appellation：Halogen free double-side FCCL
Material spec：CND0120NB1

Customer：

Engineering	Quality Control	Purchase

Company：Grace Electron Corp.(GUANG ZHOU)

Department：FCCL Department

Quality Control	Engineering	Sale

Date：2016.09.13
Version：01

ONE、Application：

This specification form is applied to Halogen free double--side FCCL that_____**Co.,ltd** Advanced Technology Inc., purchased from Grace Electron Corp. to uses for protecting FPC purpose. The manufacturer is FCCL Dept. of Grace Electron Corp.

TWO、Product Codes：

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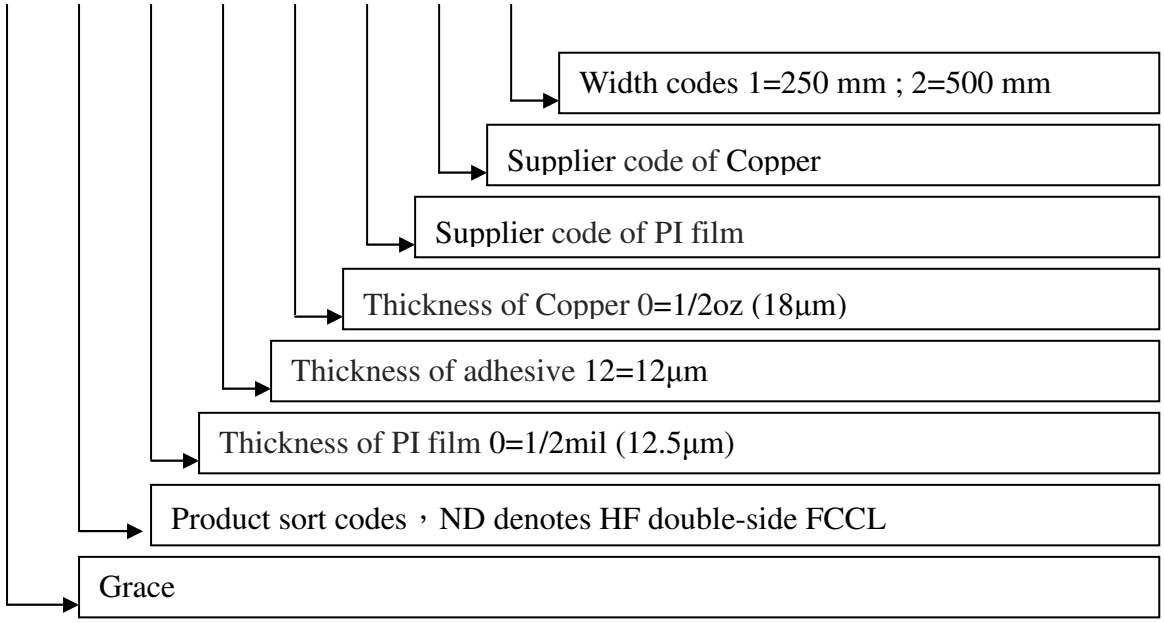


THREE、Performance List

CND0120NB1 (RA Copper)

Characteristic		**Unit**	**Conditioning**	**Standard**	**Test method**
Peel strength	Normal	kgf/cm	90°	≥0.8	IPC-TM- 650 2.4.9
Chemical Resistance (fall rate)	IPA	%	Dipping/10min	≤20	IPC-TM- 650 2.3.2
	NaOH	%	Dipping/10min		
	HCl	%	Dipping/10min		
Solder float resistance		---	300℃/30sec solder float	No change in Appearance	IPC-TM- 650 2.4.13
Dimension Stability	MD	%	Method B	≤±0.15	IPC-TM- 650 2.2.4
	TD				
	MD	%	Method C	≤±0.20	
	TD				
Volume resistance		Ω-cm	C-96/23/65	$\geq 10^{15}$	IPC-TM- 650 2.5.17
Surface resistance		Ω	C-96/23/65	$\geq 10^{13}$	
Insulation Resistance		Ω	C-96/23/65	$\geq 10^{9}$	IPC-TM -650 2.6.3.2
Dielectric constant (5GHz)		---	C-24/23/50	≤4.0	IPC-TM- 650 2.5.5.3
Dissipation factor (5GHz)		---	C-24/23/50	≤0.04	
Moisture absorption		%	D-24/23	≤2.0	IPC-TM- 650 2.6.2

FOUR、Size and Appearance

CND0120NB1 (RA Copper)

Item		Size	Standard
Total Thickness		72.5	±3μm
Width(mm)		250	±0.5mm
Length(m)		100	-0 +1.0m
Aberrant marks		Indemnify 0.5m/ Splice	≦2 Splices/Roll
Appearance	inclusions	inclusions、Pits and dents、voids、discoloration: 0.13~0.50mm (as two dot) 0.51~1.00mm (as one dot) Above 1.00mm is not allowed	≦15 dot (No precept)
	voids		
	Pits and dents		≦20 dot Can look bruise but touch nothing
	discoloration		Normal vision≦10 Splices/Roll

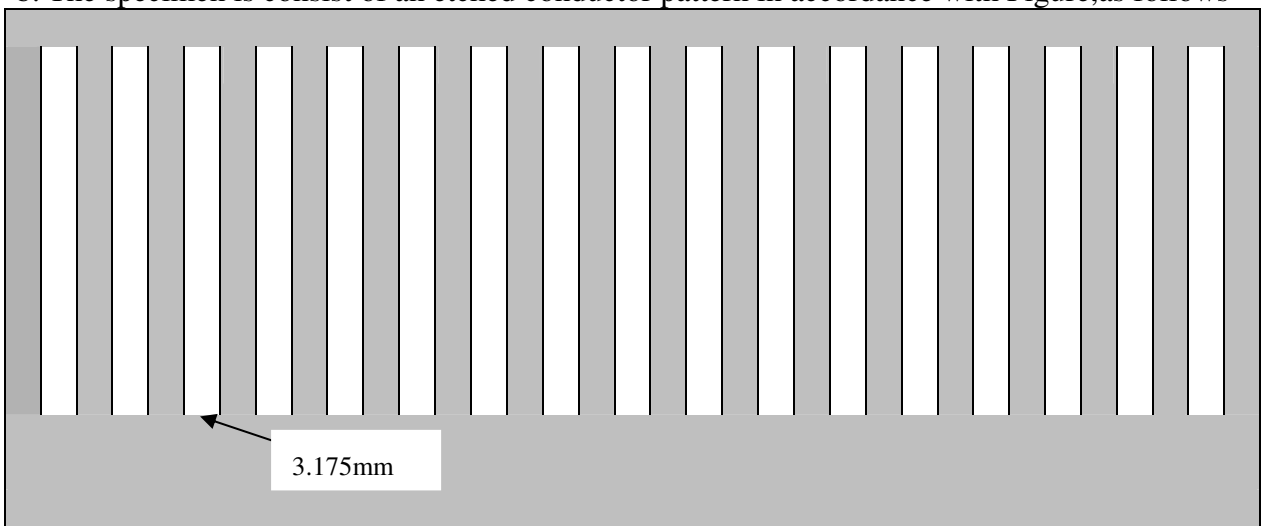
FIVE、Test Method

1. Peel Strength ------Refer to IPC-TM-650,Method 2.4.9

1-1 Making specimen：

a. Cutter to prepare approximately 25cm×25cm specimens;

b. The specimen is consist of an etched conductor pattern in accordance with Figure,as follows



1-2 Test equipment：Multifunctional Material Testing Machine

1-3 Test condition：

Speed：50mm/min

Width：3.175mm

Delete left and right limit of the testing value：5mm

Testing distance：40mm

Test with roll wheel and 90°angle

1-4 Calculate formula:

Peel Strength (Kgf/cm) = pull (Kgf) / width of the specimen (cm)

2. Solder Float Resistance------ Refer to IPC-TM-650,Method 2..4.13

2-1 Making specimen：Cutter to prepare approximately 5cm×5cm specimens

2-2 Test equipment：Solder Pot

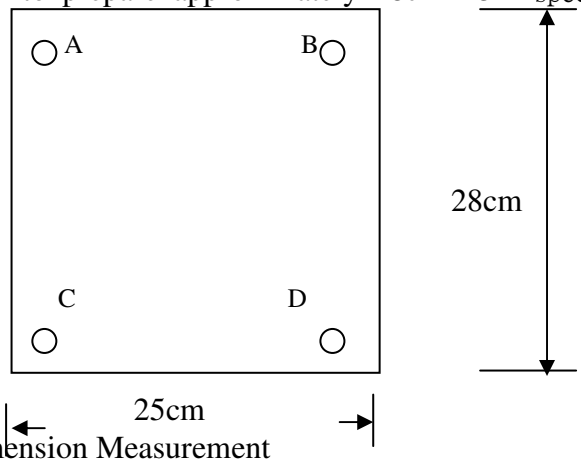
2-3 Test process：

Dry in oven for 60min at a temperature 105℃ , immerse solder pot and observe appearance.

2-4 Standard：No change in Appearance

3. Dimension Stability ------ Refer to IPC-TM-650,Method 2.2.4

3-1 Making specimen：Cutter to prepare approximately 28cm×25m specimens, Samples drilled square hole,as follows



3-2 Test equipment：X-Y Dimension Measurement

3-3 Test process：

a. The sample is earmarked with A.B.C.D., then measure the difference of dimension.

b. Remeasure separation of holes and record as final measurement after etching , this result is Method B.

c.Place the specimen from Method B in oven maintained at a temperature of 150±2℃ for 30±2 minutes and lay it at a temperature of room for 24 hours, then measure the difference of dimension, ,this result is Method C.

3-4 Calculate the linear dimensional changes as follow

$$TD=\frac{【(A-B)_F-(A-B)_1】/(A-B)_1+【(C-D)_F-(C-D)_1】/(C-D)_1\times 100}{2}$$

$$MD=\frac{【(A-C)_F-(A-C)_1】/(A-C)_1+【(B-D)_F-(B-D)_1】/(B-D)_1\times 100}{2}$$

TD：% change in Transverse Direction

MD：% change in Machine Direction

I：Initial Reading

F：Final Reading

4. Volume and Surface Resistance ------ Refer to IPC-TM-650,Method 2.5.17

4-1 Making specimen：

Cutter to prepare approximately 10cm×10cm specimen with etched, then dry in oven for 10min at a temperature 105℃；

4-2 Test equipment：RF Impedance/Material Analyzer

4-3 Test process：

Condition specimen together with the test fixture at 23℃ and 65%R.H. for 96±2 hours,then measure.

5. Insulation Resistance ------ Refer to IPC-TM-650,Method 2.6.3.2

5-1 Making specimen：

The specimen is etched pattern in accordance with figure , then dry in oven for 10min at a temperature 105℃；

5-2 Test equipment：RF Impedance/Material Analyzer

5-3 Test process：

Condition specimen together with the test fixture at 23℃ and 65%R.H. for 96±2 hours,then measure.

6. Dielectric constant and Dissipation Factor ------ Refer to IPC-TM-650,Method 2.5.5.3

6-1 Making specimen：

Cutter to prepare approximately 5cm×7cm specimen with etched.

6-2 Test equipment：Constant Temperature &Humidity Unit and RF Impedance/Material Analyzer

6-3 Test process：

Condition specimen together with the test fixture at 23℃ and 50%R.H. for 24hours,then measure.

7. Moisture Absorption ------ Refer to IPC-TM-650,Method 2.6.2

7-1 Making specimen：

Cutter to prepare approximately 5cm×5cm specimen with etched.

7-2 Test equipment：Scale and Oven

7-3 Test process：

a. Dry in oven for 60min at a temperature 105℃ , put in dry- ware for 10min;

b. Weight out the sample W1；

c. The specimen by immersing in distilled water for 24±0.5hours at 23℃；

d. Wipe away water , and weight out immediately the sample W2

7-4 Calculate：

Moisture Absorption = (W2-W1) / W1× 100%

SIX、Storage Condition

Vacuum Packaging: Below 30℃ for 12months

SEVEN、Environmental Management Material

The product in accord with Sony SS-00259 and ROHS normal