Issured : 2008-03-01
New : 2008-03-01

NAN YA PLASTICS CORPORATION
ELECTRONIC MATERIALS DIVISION.
COPPER CLAD LAMINATE DEPARTMENT

NO. 201. TUNG HWA N. ROAD,
TAIPEI, TAIWAN.

Glass cloth base epoxy resin
flame retardant copper clad laminate

NPG-R

■ FEATURES

- Halogen, antimony, and red phosphorous free
- Flammability meets UL 94 V-0
- Excellent long term reliability
- UV blocking type
- Reactive type flame retardants
- High Tg and lower C.T.E will provide excellent through-hole reliability
- Superior CAF-Resistance (Anti-migration)

■ PERFORMANCE LIST

haracteristics		Unit	Conditioning	Typical Values	SPEC	Test Method
Volume resistivity		MΩ-cm	C-96/35/90	5 x10^8 ~ 5x10^9	10^6 ↑	2.5.17
Surface resistivity		MΩ	C-96/35/90	5 x10^6 ~ 5x10^7	10^4 ↑	2.5.17
Permittivity 1MHZ		-	C-24/23/50	4.6-4.8	5.4 ↓	2.5.5.9
Permittivity 1GHZ		-	C-24/23/50	4.1-4.3	-	2.5.5.9
Loss Tangent 1MHZ		-	D-24/23/50	0.014-0.016	0.035 ↓	2.5.5.9
Loss Tangent 1GHZ		-	D-24/23/50	0.012-0.014	-	2.5.5.9
Arc resistance		SEC	D-48/50+D-0.5/23	120 ↑	60 ↑	2.5.1
Dielectric breakdown		KV	D-48/50	60 ↑	40 ↑	2.5.6
Moisture absorption		%	D-24/23	0.05-0.10	0.35 ↓	2.6.2.1
Flammability		-	C-48/23/50	94V0	94V0	UL94
Peel strength 1 oz		lb/in	288℃x10" solder floating	7-9	6 ↑	2.4.8
Thermal stress		SEC	288℃ solder dipping	200 ↑	10 ↑	2.4.13.1
Pressure cooker (2 atm 120℃)	1/2 hr	SEC	288℃ dipping	150 ↑	N/A	-
	1 hr	SEC	288℃ dipping	150 ↑	N/A	-
	2 hr	SEC	288℃ dipping	150	N/A	-
Flexural strength	LW	N/mm^2	A	430-500	415 ↑	2.4.4
	CW	N/mm^2	A	350-420	345 ↑	2.4.4
Dimensional stability X-Y axis		%	E-0.5/170	0.005-0.030	0.050 ↓	2.4.39
Coefficient of thermal expansion X-Y axis Z-axis before Tg Z-axis after Tg		ppm/℃ ppm/℃ ppm/℃	TMA TMA TMA	9-13 30-50 200-230	N/A	2.4.24
Glass transition temp		℃	DSC	150± 5	N/A	2.4.25

Data shown are nominal values for reference only.

NOTE:
The average value in the table refers to samples of .062" 1/1.
Test method per IPC-TM-650