Halogen Free, High Tg, High Elastic Modulus, Ultra Low CTE material

MCL-E-795G

High Tg Glass Epoxy Material

■Features

- ●MCL-E-795G has low CTE value in X, Y directions and can reduce warpage of package significantly.
- ●MCL-E-795G type (LH) has ultra low CTE value(<1.0ppm/℃)
- ●Well-suited for center core of build-up construction.

■Applications

- ●Semiconductor pakages (FC-BGA)
- ●Center core for build-up construction

■Standard Specifications

Part Number	Type	Copper foil thickness	Thickness code	Actual thickness and Tolerance
MCL-E-795G	–	12μm(STD,LP)	0.11	0.11±0.02mm
			0.21	0.21±0.02mm
			0.41	0.41±0.04mm
			0.62	0.62±0.06mm
			0.72	0.72±0.06mm
			0.82	0.82±0.08mm
			1.03	1.03±0.10mm
			1.23	1.23±0.12mm
			1.44	1.44±0.14mm
	(LH)		0.11	0.11±0.02mm
			0.21	0.21±0.02mm
			0.42	0.41±0.04mm
			0.63	0.62±0.06mm
			0.73	0.72±0.06mm
			0.84	0.82±0.08mm
			1.05	1.03±0.10mm
			1.26	1.23±0.12mm
			1.47	1.44±0.14mm

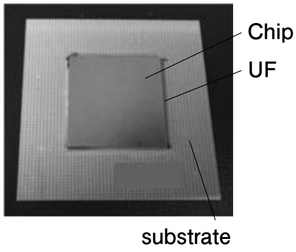
Note1) STD:Standard copper foil, LP:Low profile copper foil.
Note2) The thickness means that of dielectric layer.

■Characteristics

(t0.2mm)

Item	Condition *2	Unit	Actual Value		Test Method (IPC-TM-650)
			MCL-E-795G	MCL-E-795G type (LH)	
Tg	TMA	℃	260～290		2.4.24
	DMA		300～360		–
CTE *1	X	℃	3.0～5.0	0.5～1.5	2.4.24
	Y		3.0～5.0	0.5～1.5	
Flexural Modulus(Lengthwise)	A	GPa	37～39	42～44	2.4.4
Decomposition Temperature (5% weight loss)	TGA	℃	430～450	430～450	2.3.40
Solder heat resistance(260℃)	A	sec.	>300	>300	–
T-260	TMA	min.	>60	>60	2.4.24.1
T-288			>60	>60	
Copper Peel strength(12μm)	A	kN/m	0.7～0.9	0.7～0.9	2.4.8

*1)Heating Rate:10℃/min. *2)Refer to last page "Condition Note"



●Warpage of 8 layer TEG

*Substrate : 3-2-3 construction, BU thickness 20μm
*Package size : 40mm×40mm
*Die size : 20mm×20mm
*Die height : 775μm
*Underfill thickness : 60μm
* L1,4,5,8 : 12μm Cu 65%, L2,3,6,7 : No copper, SR thickness:19μm