



MGRZ-868

For Lead Free 4-12 Layer, Server/Notebook/ Tg 160°C

Item	Test method		Test condition	Unit	Laminate	
	IPC-TM-650				IPC Spec.	Typical Value
Glass transition temp.	2.4.25		DSC	°C	Min. 150	160
CTE, X-, Y-axis	2.4.24		Pre-Tg, TMA	ppm/°C	—	12/15
CTE, Z-axis	2.4.24		Alpha 1, TMA	ppm/°C	Max. 60	40
			Alpha 2, TMA	ppm/°C	Max. 300	218
Z-axis expansion	2.4.24		50~260°C, TMA	%	Max. 3.5	2.72
Decomposition temp.	2.4.24.26		TGA	°C	Min. 325	357
Thermal resistance (Copper removed)	2.4.24.1		T260	minutes	Min. 30	>60
			T288	minutes	Min. 5	>60
Water absorption	2.6.2.1		E-1/105+D-24/23	%	Max. 0.5	0.12
Peel strength	1 OZ	2.4.8	As received	lb/in	Min. 6	10
			After thermal stress	lb/in	Min. 6	10
Permittivity (RC 50%)	1 MHz	2.5.5.9	C-24/23/50	—	Max. 5.4	4.7
	1 GHz			—		4.4
Loss tangent (RC 50%)	1 MHz	2.5.5.9	C-24/23/50	—	Max. 0.035	0.016
	1 GHz			—		0.017
Flame resistance	UL-94		A&E-24/125	—	Min. V-0	V-0