

EM-A50 / EM-A5B

Low Loss / Very Low CTE / Halogen Free

- Applications include: automotive and other higher performance requirements.
- Designed for high thermal reliability with excellent CAF resistance.
- Lower Dk/Df value, excellent electrical performance.
- Very low Z-axis CTE: 1.3% (50~260°C)
- RoHS Compliant
- UL File: E150504
- Applicable IPC Slash Sheets: IPC-4103 /240, /540

Basic Laminate Property

Property	Item		Typical Value	Unit	Test Condition	IPC-TM-650
Thermal	Tg		N/A	°C	DSC	2.4.25
			230	°C	TMA	2.4.24
			260	°C	DMA	2.4.24.4
	CTE, X/Y-axis		9/10	ppm/°C	< Tg, TMA	2.4.24.5
	CTE, Z-axis		25~30	ppm/°C	< Tg, TMA	2.4.24
			120~140	ppm/°C	> Tg, TMA	
	Z-axis Expansion		1.3	%	50~260°C	2.4.24
	Td		430	°C	TGA (5% W.L)	2.4.24.6
	T288		>60	min.	Clad	2.4.24.1
			>60	min.	Etched	
	Thermal Conductivity		0.60	W/m.K	-	ASTM D5470
Electrical	Dk (R/C: 50/70%)	10GHz	3.9/3.4	-	C-24/23/50	Cavity Resonator
	Df (R/C: 50/70%)	10GHz	0.007/0.008	-	C-24/23/50	Cavity Resonator
	Volume Resistivity		>10 ¹⁰	MΩ-cm	C-96/35/90	2.5.17.1
	Surface Resistivity		>10 ⁹	MΩ	C-96/35/90	2.5.17.1
	Electric Strength		>40	kV/mm	D-48/50+D-0.5/23	2.5.6.2
	Dielectric Breakdown		>40	kV	D-48/50+D-0.5/23	2.5.6
Physical	Water Absorption		0.12	%	E-1/105+D-24/23	2.6.2.1
	Peel Strength (RTF)	0.5 oz	5.5	lb/in	As Received	2.4.8
		1.0 oz	6.0	lb/in	As Received	
	Flexural Modulus	Warp	24~26	GPa	As Received	2.4.4
		Fill	23~25	GPa	As Received	
	Flame Resistance		V-0	-	C-48/23/50	UL-94

Above typical values are tested under specified constructions and not intended for specification.