



Circuit board materials for IC substrate

LEXCMGX Series

Enables thinner and smaller IC substrates with lower warpage.

Line-up

Package Application	FC-xGA <ul style="list-style-type: none"> • CPU for Sever/Desktop/Laptop • GPU for AI/ADAS/Gaming • FPGA 	Module <ul style="list-style-type: none"> • AiP • PAM • FEM 	CSP <ul style="list-style-type: none"> • DRAM • NAND/PMIC • Mini LED 	FC-CSP <ul style="list-style-type: none"> • APU • RF-IC 	
	LEXCMGX				
Product	Ultra Low CTE / High Reliability R-1515V / R-1515K • Low warpage • Stress release R-G535S / R-G535E • Low warpage • High modulus		Low Dk / Low Df R-G545L / R-G545E • Excellent transmission loss • Excellent low Dk/Df performance in wide frequency • Low warpage		Low CTE / Ultra Thin Material R-G515S / R-G515E • Low warpage • Fine laminate-ability • Ultra thin prepreg line-up R-1515E • Low warpage • High modulus
	Low CTE / High Heat Resistance R-1515W • Low warpage • High modulus R-1515A • Low warpage • High heat resistance				

General properties

Item	Glass transition temp.(Tg)	CTE x-axis	CTE y-axis	Dielectric constant(Dk)*1	Dissipation factor(Df)*1	Flexural modulus*1		Peel strength	Product thickness line-up
		$\alpha 1$						1GHz	
Test method	DMA*2	Internal method		IPC-TM-650 2.5.5.9		JIS C 6481		IPC-TM-650 2.4.8	
Condition	A	A		C-24/23/50		25°C	250°C	A	
Unit	°C	ppm / °C		-		GPa		kN/m	mm
R-1515V	260	3-5	3-5	4.4	0.016	30	14	0.6	0.20~1.8
R-1515K	260	7	7	4.6	0.015	27	12	0.6	0.20~1.8
R-G545L	230	10	10	3.6	0.002	23	10	0.6	0.04~0.2
R-G545E	230	10	10	4.1	0.002	27	13	0.6	0.04~0.2
R-1515E	270	9	9	4.7	0.011	33	18	0.9	0.04~0.2
R-G535S	260	4-6	4-6	4.4	0.015	32-34	20-22	0.7	0.20~1.8
R-G535E	260	7-8	7-8	4.6	0.015	28-30	18-20	0.7	0.20~1.8
R-G515S	220-240	4-6	4-6	4.2	0.008	28	-	0.7	0.03~0.1
R-G515E	220-240	6-8	6-8	4.4	0.008	24	-	0.7	0.03~0.1
R-1515W	250	9	9	4.8	0.015	35	21	0.9	0.20~0.8
R-1515A	205	12	12	4.8	0.015	27	10	0.9	0.10~0.8

The sample thickness is 0.1 mm.

*1 0.8mm *2 Measurement in tensile mode. R-1515W, R-1515A: Measurement in bending mode.

Please see our website for Notes before you use.

Our Halogen-free materials are based on JPCA-ES-01-2003 standard and others.

The above data are typical values and not guaranteed values.

industrial.panasonic.com/ww/electronic-materials

Panasonic Industry LEXCM GX

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