



## Circuit board materials for IC substrate

# LEXCMGX Series

Enables thinner and smaller IC substrates with lower warpage.

### Line-up

Package Application	FC-xGA	Module	CSP	FC-CSP
	<ul style="list-style-type: none"> <li>• CPU for Sever/Desktop/Laptop</li> <li>• GPU for AI/ADAS/Gaming</li> <li>• FPGA</li> </ul>	<ul style="list-style-type: none"> <li>• AiP</li> <li>• PAM</li> <li>• FEM</li> </ul>	<ul style="list-style-type: none"> <li>• DRAM</li> <li>• NAND/PMIC</li> <li>• Mini LED</li> </ul>	<ul style="list-style-type: none"> <li>• APU</li> <li>• RF-IC</li> </ul>

Product	LEXCMGX		
	Ultra Low CTE / High Reliability	Low Dk / Low Df	Low CTE / Ultra Thin Material
	<b>R-1515V / R-1515K</b> • Low warpage • Stress release	<b>R-G545L / R-G545E</b> • Excellent transmission loss • Excellent low Dk/Df performance in wide frequency • Low warpage	<b>R-G515S / R-G515E</b> • Low warpage • Fine laminate-ability • Ultra thin prepreg line-up <b>R-151YE</b> • Low warpage • High modulus
	<b>Low CTE / High Heat Resistance</b> <b>R-1515W</b> • Low warpage • High modulus <b>R-1515A</b> • Low warpage • High heat resistance		

### General properties

Item	Glass transition temp.(Tg)	CTE	Dielectric constant(Dk)*1	Dissipation factor(Df)*1	Flexural modulus*1	
		x-axis / y-axis				
		$\alpha$ 1	1GHz			
Test method	DMA*2	Internal method	IPC-TM-650 2.5.5.9		JIS C 6481	
Condition	A	A	C-24/23/50		25°C	250°C
Unit	°C	ppm /°C	-		GPa	
R-1515V	260	3-5	4.4	0.016	30	14
R-1515K	260	7	4.6	0.015	27	12
R-G545L	230	10	3.6	0.002	23	10
R-G545E	230	10	4.1	0.002	27	13
R-151YE	270	9	4.7	0.011	33	18
R-G515S	220-240	4-6	4.2	0.008	28	-
R-G515E	220-240	6-8	4.4	0.008	24	-
R-1515W	250	9	4.8	0.015	35	21
R-1515A	205	12	4.8	0.015	27	10

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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