



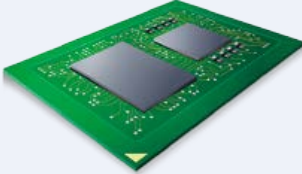
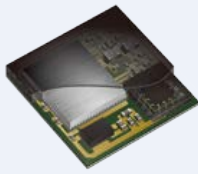
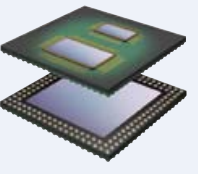
Applications IC Package

FC-xGA, Module, CSP,
FC-CSP

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
	 • CPU for Server/Desktop/Laptop • GPU for AI/ADAS/Gaming • FPGA etc.	 • AiP • PAM • FEM etc.	 • DRAM • NAND • PMIC etc.	 • APU • RF-IC etc.
Product	LEXCMGX			
	Ultra Low CTE / High Reliability		Low CTE / Ultra Thin Material	
	R-1515V / R-1515K		R-G515S / R-G515E	
	• Low warpage • Stress release		• Low warpage • Fine laminate-ability • Ultra thin prepreg line-up	
	Low CTE / High Heat Resistance		R-151YE	
	R-1515W	R-1515A	• Low warpage • High modulus	
	• Low warpage • High modulus	• Low warpage • High heat resistance		

General properties

Item	Glass transition temp.(Tg)	CTE x-axis / y-axis	Dielectric constant(Dk)*1	Dissipation factor(Df)*1	Flexural modulus*1	
		α 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℃	250℃
Unit	℃	ppm /℃	-		GPa	
R-1515V	260	3-5	4.4	0.016	30	14
R-1515K	260	7	4.6	0.015	27	12
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/www/electronic-materials

Panasonic Industry LEXCM GX

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