



MITSUI  
KINZOKU

### Resin type

MRG100  
MRG200

### Resin thickness

40  $\mu$ m to 100  $\mu$ m  
(standard 65  $\mu$ m/80  $\mu$ m)

### Copper Foil

MicroThin 3 / 5  $\mu$ m  
3EC-3 12 / 18  $\mu$ m

# Halogen Free RCC MRG Series

- Field proven reliability is assured with wide use in telecommunication equipment.
- Flame resistance, UL94 V-0, is achieved without halogen and inorganic filler.
- MRG100 has lower CTE at high temperature.
- MRG200 has superior flame resistance and can be used up to 3 layers build up on a HDI design.
- Resin thickness is available from 40 micron to 100 micron.

Properties	Unit	MRG100	MRG200	
Halogen	%	<0.05	<0.05	
Sb	*1	no	no	
N	*1	yes	no	
P	*1	no	yes	
inorganic filler	*1	no	no	
Properties	Unit	MRG100	MRG200	
Tg	Celsius	130/230	165	DMA
Flammability class	-	UL-94V0	UL-94V0	UL-94
Peel Strength (18mic. Cu)	kN/m	1.1	1.2	JIS C 6481
Tensile strength	MPa	84	79	JIS K 7113
Tensile modulus	GPa	4.0	3.2	JIS K 7113
Flexural strength	MPa	133	130	JIS K 7203
Flexural modulus	GPa	4.4	2.9	JIS K 7203
Fracture toughness	Nmm <sup>-1.5</sup>	21.4	58.6	ASTM
Charpy impact strength	kJ/m <sup>2</sup>	27.3	63.2	JIS K 7111
Elongation at break	%	4.4	5.8	JIS K 7113
Youngs modulus	GPa	4.0	3.2	JIS K 7203
Poissons ratio	-	0.38	0.39	JIS K 7073
CTE ( $\alpha_1/\alpha_2$ )	ppm/Celsius	70/135	70/160	IPC-TM650
Water absorption	%	2.5	2.1	JIS C 6481
Dielectric Constant	at 1 GHz	3.2	3.4	IPC-TM650
	at 2 GHz	3.2	3.1	
Dissipation Factor	at 1 GHz	0.012	0.020	IPC-TM650
	at 2 GHz	0.018	0.023	
Surface resistivity of dielectric	Mohm	2.2*10 <sup>^8</sup>	2.7*10 <sup>^8</sup>	JIS C 6481
Volume resistivity of dielectric	Mohm·cm	1.0*10 <sup>^8</sup>	3.4*10 <sup>^8</sup>	JIS C 6481
Solder floating at 260	sec.	>300	>300	
Migration Test *2	$\Omega$	>1.0*10 <sup>^9</sup>	>1.0*10 <sup>^9</sup>	

\*1 "no" means less than detection limit or trace quantity \*2 85 85% DC35V 1000h measured in an oven

## MCAP (Mitsui Copper Foil Asia Pacific)

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