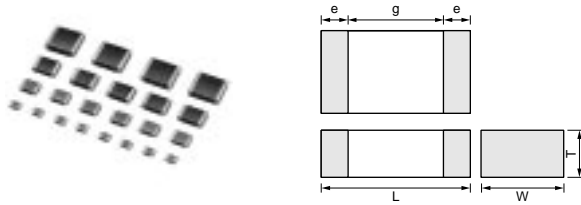


# Monolithic Ceramic Capacitors GCM (CH/CJ/CK)

Temperature Compensating Type 50V



Part Number	Dimensions (mm)				
	L	W	T	e	g min.
GCP/GCM155	1.0 ±0.05	0.5 ±0.05	0.5 ±0.05	0.15 to 0.3	0.4
GCM188*	1.6 ±0.1	0.8 ±0.1	0.8 ±0.1	0.2 to 0.5	0.5
GCM216	2.0 ±0.15	1.25 ±0.15	0.6 ±0.1	0.2 to 0.7	0.7
GCM219			0.85 ±0.1		
GCM21B			1.25 ±0.15		
GCM319	3.2 ±0.15	1.6 ±0.15	0.85 ±0.1	0.3 to 0.8	1.5
GCM31M			1.15 ±0.1		

\* Bulk Case : 1.6 ±0.07(L) × 0.8 ±0.07(W) × 0.8 ±0.07(T)

Part Number	TC Code	Rated Voltage (Vdc)	Capacitance*	Length L (mm)	Width W (mm)	Thickness T (mm)
GCP1552C1H4R0CZ01	CH (JIS)	50	4pF±0.25pF	1.0	0.50	0.50
GCP1552C1H5R0CZ01	CH (JIS)	50	5pF±0.25pF	1.0	0.50	0.50
GCP1552C1H6R0DZ01	CH (JIS)	50	6pF±0.5pF	1.0	0.50	0.50
GCP1552C1H7R0DZ01	CH (JIS)	50	7pF±0.5pF	1.0	0.50	0.50
GCP1552C1H8R0DZ01	CH (JIS)	50	8pF±0.5pF	1.0	0.50	0.50
GCP1552C1H9R0DZ01	CH (JIS)	50	9pF±0.5pF	1.0	0.50	0.50
GCP1552C1H100JZ01	CH (JIS)	50	10pF±5%	1.0	0.50	0.50
GCP1552C1H120JZ01	CH (JIS)	50	12pF±5%	1.0	0.50	0.50
GCP1552C1H150JZ01	CH (JIS)	50	15pF±5%	1.0	0.50	0.50
GCP1552C1H180JZ01	CH (JIS)	50	18pF±5%	1.0	0.50	0.50
GCP1552C1H220JZ01	CH (JIS)	50	22pF±5%	1.0	0.50	0.50
GCP1552C1H270JZ01	CH (JIS)	50	27pF±5%	1.0	0.50	0.50
GCP1552C1H330JZ01	CH (JIS)	50	33pF±5%	1.0	0.50	0.50
GCP1552C1H390JZ01	CH (JIS)	50	39pF±5%	1.0	0.50	0.50
GCP1552C1H470JZ01	CH (JIS)	50	47pF±5%	1.0	0.50	0.50
GCM1882C1H4R0CD01	CH (JIS)	50	4pF±0.25pF	1.6	0.80	0.80
GCM1882C1H5R0CD01	CH (JIS)	50	5pF±0.25pF	1.6	0.80	0.80
GCM1882C1H6R0DD01	CH (JIS)	50	6pF±0.5pF	1.6	0.80	0.80
GCM1882C1H7R0DD01	CH (JIS)	50	7pF±0.5pF	1.6	0.80	0.80
GCM1882C1H8R0DD01	CH (JIS)	50	8pF±0.5pF	1.6	0.80	0.80
GCM1882C1H9R0DD01	CH (JIS)	50	9pF±0.5pF	1.6	0.80	0.80
GCM1882C1H100JA01	CH (JIS)	50	10pF±5%	1.6	0.80	0.80
GCM1882C1H120JA01	CH (JIS)	50	12pF±5%	1.6	0.80	0.80
GCM1882C1H150JA01	CH (JIS)	50	15pF±5%	1.6	0.80	0.80
GCM1882C1H180JA01	CH (JIS)	50	18pF±5%	1.6	0.80	0.80
GCM1882C1H220JA01	CH (JIS)	50	22pF±5%	1.6	0.80	0.80
GCM1882C1H270JA01	CH (JIS)	50	27pF±5%	1.6	0.80	0.80
GCM1882C1H330JA01	CH (JIS)	50	33pF±5%	1.6	0.80	0.80
GCM1882C1H390JA01	CH (JIS)	50	39pF±5%	1.6	0.80	0.80
GCM1882C1H470JA01	CH (JIS)	50	47pF±5%	1.6	0.80	0.80
GCM1882C1H560JA01	CH (JIS)	50	56pF±5%	1.6	0.80	0.80
GCM1882C1H680JA01	CH (JIS)	50	68pF±5%	1.6	0.80	0.80
GCM1882C1H820JA01	CH (JIS)	50	82pF±5%	1.6	0.80	0.80
GCM1882C1H101JA01	CH (JIS)	50	100pF±5%	1.6	0.80	0.80
GCM1882C1H121JA01	CH (JIS)	50	120pF±5%	1.6	0.80	0.80

Continued on the following page.

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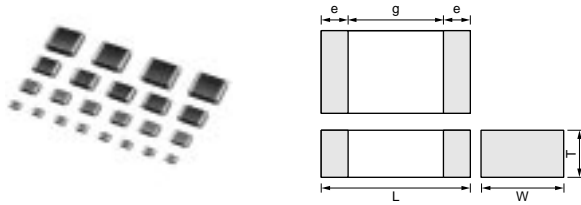
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Part Number	TC Code	Rated Voltage (Vdc)	Capacitance*	Length L (mm)	Width W (mm)	Thickness T (mm)
GCM1882C1H151JA01	CH (JIS)	50	150pF±5%	1.6	0.80	0.80
GCM1882C1H181JA01	CH (JIS)	50	180pF±5%	1.6	0.80	0.80
GCM1882C1H221JA01	CH (JIS)	50	220pF±5%	1.6	0.80	0.80
GCM1882C1H271JA01	CH (JIS)	50	270pF±5%	1.6	0.80	0.80
GCM1882C1H331JA01	CH (JIS)	50	330pF±5%	1.6	0.80	0.80
GCM1882C1H391JA01	CH (JIS)	50	390pF±5%	1.6	0.80	0.80
GCM1882C1H471JA01	CH (JIS)	50	470pF±5%	1.6	0.80	0.80
GCM1882C1H561JA01	CH (JIS)	50	560pF±5%	1.6	0.80	0.80
GCM1882C1H681JA01	CH (JIS)	50	680pF±5%	1.6	0.80	0.80
GCM1882C1H821JA01	CH (JIS)	50	820pF±5%	1.6	0.80	0.80
GCM1882C1H102JA01	CH (JIS)	50	1000pF±5%	1.6	0.80	0.80
GCM2162C1H122JA01	CH (JIS)	50	1200pF±5%	2.0	1.25	0.60
GCM2162C1H152JA01	CH (JIS)	50	1500pF±5%	2.0	1.25	0.60
GCM2162C1H182JA01	CH (JIS)	50	1800pF±5%	2.0	1.25	0.60
GCM2162C1H222JA01	CH (JIS)	50	2200pF±5%	2.0	1.25	0.60
GCM2162C1H272JA01	CH (JIS)	50	2700pF±5%	2.0	1.25	0.60
GCM2162C1H332JA01	CH (JIS)	50	3300pF±5%	2.0	1.25	0.60
GCM31M2C1H152JD01	CH (JIS)	50	1500pF±5%	3.2	1.60	1.15
GCM31M2C1H182JD01	CH (JIS)	50	1800pF±5%	3.2	1.60	1.15
GCM31M2C1H222JD01	CH (JIS)	50	2200pF±5%	3.2	1.60	1.15
GCM31M2C1H272JD01	CH (JIS)	50	2700pF±5%	3.2	1.60	1.15
GCM31M2C1H332JD01	CH (JIS)	50	3300pF±5%	3.2	1.60	1.15
GCP1553C1H3R0CZ01	CJ (JIS)	50	3pF±0.25pF	1.0	0.50	0.50
GCM1883C1H3R0CD01	CJ (JIS)	50	3pF±0.25pF	1.6	0.80	0.80
GCP1554C1HR50CZ01	CK (JIS)	50	0.5pF±0.25pF	1.0	0.50	0.50
GCP1554C1HR75CZ01	CK (JIS)	50	0.75pF±0.25pF	1.0	0.50	0.50
GCP1554C1H1R0CZ01	CK (JIS)	50	1pF±0.25pF	1.0	0.50	0.50
GCP1554C1H2R0CZ01	CK (JIS)	50	2pF±0.25pF	1.0	0.50	0.50
GCM1884C1H0R5CD01	CK (JIS)	50	0.5pF±0.25pF	1.6	0.80	0.80
GCM1884C1HR75CD01	CK (JIS)	50	0.75pF±0.25pF	1.6	0.80	0.80
GCM1884C1H1R0CD01	CK (JIS)	50	1pF±0.25pF	1.6	0.80	0.80
GCM1884C1H2R0CD01	CK (JIS)	50	2pF±0.25pF	1.6	0.80	0.80

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# Monolithic Ceramic Capacitors GCM (CH/CJ/CK)

Temperature Compensating Type 100/200/500V



Part Number	Dimensions (mm)				
	L	W	T	e	g min.
<b>GCP/GCM155</b>	1.0 ±0.05	0.5 ±0.05	0.5 ±0.05	0.15 to 0.3	0.4
<b>GCM188*</b>	1.6 ±0.1	0.8 ±0.1	0.8 ±0.1	0.2 to 0.5	0.5
<b>GCM216</b>	2.0 ±0.15	1.25 ±0.15	0.6 ±0.1	0.2 to 0.7	0.7
<b>GCM219</b>			0.85 ±0.1		
<b>GCM21B</b>			1.25 ±0.15		
<b>GCM319</b>	3.2 ±0.15	1.6 ±0.15	0.85 ±0.1	0.3 to 0.8	1.5
<b>GCM31M</b>			1.15 ±0.1		

\* Bulk Case : 1.6 ±0.07(L)×0.8 ±0.07(W)×0.8 ±0.07(T)

Part Number	TC Code	Rated Voltage (Vdc)	Capacitance*	Length L (mm)	Width W (mm)	Thickness T (mm)
<b>GCM1882C2D4R0CD01</b>	CH (JIS)	200	4pF±0.25pF	1.6	0.80	0.80
<b>GCM1882C2D5R0CD01</b>	CH (JIS)	200	5pF±0.25pF	1.6	0.80	0.80
<b>GCM1882C2D6R0DD01</b>	CH (JIS)	200	6pF±0.5pF	1.6	0.80	0.80
<b>GCM1882C2D7R0DD01</b>	CH (JIS)	200	7pF±0.5pF	1.6	0.80	0.80
<b>GCM1882C2D8R0DD01</b>	CH (JIS)	200	8pF±0.5pF	1.6	0.80	0.80
<b>GCM1882C2D9R0DD01</b>	CH (JIS)	200	9pF±0.5pF	1.6	0.80	0.80
<b>GCM1882C2D100JD01</b>	CH (JIS)	200	10pF±5%	1.6	0.80	0.80
<b>GCM1882C2D120JD01</b>	CH (JIS)	200	12pF±5%	1.6	0.80	0.80
<b>GCM1882C2D150JD01</b>	CH (JIS)	200	15pF±5%	1.6	0.80	0.80
<b>GCM1882C2D180JD01</b>	CH (JIS)	200	18pF±5%	1.6	0.80	0.80
<b>GCM1882C2D220JD01</b>	CH (JIS)	200	22pF±5%	1.6	0.80	0.80
<b>GCM1882C2D270JD01</b>	CH (JIS)	200	27pF±5%	1.6	0.80	0.80
<b>GCM1882C2D330JD01</b>	CH (JIS)	200	33pF±5%	1.6	0.80	0.80
<b>GCM1882C2A390JD01</b>	CH (JIS)	100	39pF±5%	1.6	0.80	0.80
<b>GCM1882C2A470JD01</b>	CH (JIS)	100	47pF±5%	1.6	0.80	0.80
<b>GCM1882C2A560JD01</b>	CH (JIS)	100	56pF±5%	1.6	0.80	0.80
<b>GCM1882C2A680JD01</b>	CH (JIS)	100	68pF±5%	1.6	0.80	0.80
<b>GCM1882C2A820JD01</b>	CH (JIS)	100	82pF±5%	1.6	0.80	0.80
<b>GCM1882C2A101JD01</b>	CH (JIS)	100	100pF±5%	1.6	0.80	0.80
<b>GCM1882C2A121JD01</b>	CH (JIS)	100	120pF±5%	1.6	0.80	0.80
<b>GCM1882C2A151JD01</b>	CH (JIS)	100	150pF±5%	1.6	0.80	0.80
<b>GCM2192C2D390JD01</b>	CH (JIS)	200	39pF±5%	2.0	1.25	0.85
<b>GCM2192C2D470JD01</b>	CH (JIS)	200	47pF±5%	2.0	1.25	0.85
<b>GCM2192C2D560JD01</b>	CH (JIS)	200	56pF±5%	2.0	1.25	0.85
<b>GCM21B2C2D680JD01</b>	CH (JIS)	200	68pF±5%	2.0	1.25	1.25
<b>GCM21B2C2D820JD01</b>	CH (JIS)	200	82pF±5%	2.0	1.25	1.25
<b>GCM21B2C2D101JD01</b>	CH (JIS)	200	100pF±5%	2.0	1.25	1.25
<b>GCM21B2C2D121JD01</b>	CH (JIS)	200	120pF±5%	2.0	1.25	1.25
<b>GCM21B2C2D151JD01</b>	CH (JIS)	200	150pF±5%	2.0	1.25	1.25
<b>GCM2192C2A181JD01</b>	CH (JIS)	100	180pF±5%	2.0	1.25	0.85
<b>GCM2192C2A221JD01</b>	CH (JIS)	100	220pF±5%	2.0	1.25	0.85
<b>GCM2192C2A271JD01</b>	CH (JIS)	100	270pF±5%	2.0	1.25	0.85
<b>GCM2192C2A331JD01</b>	CH (JIS)	100	330pF±5%	2.0	1.25	0.85
<b>GCM21B2C2A391JD01</b>	CH (JIS)	100	390pF±5%	2.0	1.25	1.25
<b>GCM21B2C2A471JD01</b>	CH (JIS)	100	470pF±5%	2.0	1.25	1.25

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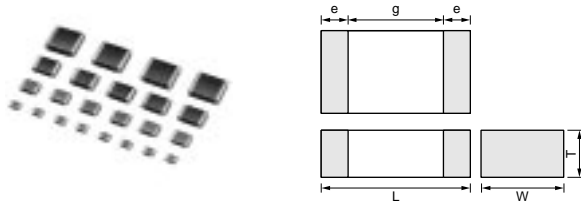
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Part Number	TC Code	Rated Voltage (Vdc)	Capacitance*	Length L (mm)	Width W (mm)	Thickness T (mm)
GCM21B2C2A561JD01	CH (JIS)	100	560pF±5%	2.0	1.25	1.25
GCM21B2C2A681JD01	CH (JIS)	100	680pF±5%	2.0	1.25	1.25
GCM31M2C2H4R0CD01	CH (JIS)	500	4pF±0.25pF	3.2	1.60	1.15
GCM31M2C2H5R0CD01	CH (JIS)	500	5pF±0.25pF	3.2	1.60	1.15
GCM31M2C2H6R0DD01	CH (JIS)	500	6pF±0.5pF	3.2	1.60	1.15
GCM31M2C2H7R0DD01	CH (JIS)	500	7pF±0.5pF	3.2	1.60	1.15
GCM31M2C2H8R0DD01	CH (JIS)	500	8pF±0.5pF	3.2	1.60	1.15
GCM31M2C2H9R0DD01	CH (JIS)	500	9pF±0.5pF	3.2	1.60	1.15
GCM31M2C2H100JD01	CH (JIS)	500	10pF±5%	3.2	1.60	1.15
GCM31M2C2H120JD01	CH (JIS)	500	12pF±5%	3.2	1.60	1.15
GCM31M2C2H150JD01	CH (JIS)	500	15pF±5%	3.2	1.60	1.15
GCM31M2C2H180JD01	CH (JIS)	500	18pF±5%	3.2	1.60	1.15
GCM31M2C2H220JD01	CH (JIS)	500	22pF±5%	3.2	1.60	1.15
GCM31M2C2H270JD01	CH (JIS)	500	27pF±5%	3.2	1.60	1.15
GCM31M2C2H330JD01	CH (JIS)	500	33pF±5%	3.2	1.60	1.15
GCM31M2C2H390JD01	CH (JIS)	500	39pF±5%	3.2	1.60	1.15
GCM31M2C2H470JD01	CH (JIS)	500	47pF±5%	3.2	1.60	1.15
GCM31M2C2H560JD01	CH (JIS)	500	56pF±5%	3.2	1.60	1.15
GCM31M2C2H680JD01	CH (JIS)	500	68pF±5%	3.2	1.60	1.15
GCM31M2C2H820JD01	CH (JIS)	500	82pF±5%	3.2	1.60	1.15
GCM31M2C2H101JD01	CH (JIS)	500	100pF±5%	3.2	1.60	1.15
GCM31M2C2D181JD01	CH (JIS)	200	180pF±5%	3.2	1.60	1.15
GCM31M2C2D221JD01	CH (JIS)	200	220pF±5%	3.2	1.60	1.15
GCM31M2C2D271JD01	CH (JIS)	200	270pF±5%	3.2	1.60	1.15
GCM31M2C2D331JD01	CH (JIS)	200	330pF±5%	3.2	1.60	1.15
GCM31M2C2D391JD01	CH (JIS)	200	390pF±5%	3.2	1.60	1.15
GCM31M2C2A821JD01	CH (JIS)	100	820pF±5%	3.2	1.60	1.15
GCM31M2C2A102JD01	CH (JIS)	100	1000pF±5%	3.2	1.60	1.15
GCM31M2C2A122JD01	CH (JIS)	100	1200pF±5%	3.2	1.60	1.15
GCM31M2C2A152JD01	CH (JIS)	100	1500pF±5%	3.2	1.60	1.15
GCM31M2C2A182JD01	CH (JIS)	100	1800pF±5%	3.2	1.60	1.15
GCM1883C2D3R0CD01	CJ (JIS)	200	3pF±0.25pF	1.6	0.80	0.80
GCM31M3C2H3R0CD01	CJ (JIS)	500	3pF±0.25pF	3.2	1.60	1.15
GCM31M4C2H1R0CD01	CK (JIS)	500	1pF±0.25pF	3.2	1.60	1.15
GCM31M4C2H1R5CD01	CK (JIS)	500	1.5pF±0.25pF	3.2	1.60	1.15
GCM31M4C2H2R0CD01	CK (JIS)	500	2pF±0.25pF	3.2	1.60	1.15

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# Monolithic Ceramic Capacitors GCM\_R1 (R)

High Dielectric Constant Type 10/16/25/50V



Part Number	Dimensions (mm)				
	L	W	T	e	g min.
GCP/GCM155	1.0 ±0.05	0.5 ±0.05	0.5 ±0.05	0.15 to 0.3	0.4
GCM188*	1.6 ±0.1	0.8 ±0.1	0.8 ±0.1	0.2 to 0.5	0.5
GCM216	2.0 ±0.15	1.25 ±0.15	0.6 ±0.1	0.2 to 0.7	0.7
GCM219			0.85 ±0.1		
GCM21B			1.25 ±0.15		
GCM319	3.2 ±0.15	1.6 ±0.15	0.85 ±0.1	0.3 to 0.8	1.5
GCM31M			1.15 ±0.1		

\* Bulk Case : 1.6 ±0.07(L) × 0.8 ±0.07(W) × 0.8 ±0.07(T)

Part Number	TC Code	Rated Voltage (Vdc)	Capacitance*	Length L (mm)	Width W (mm)	Thickness T (mm)
GCM155R11H221KA01	R (JIS)	50	220pF±10%	1.0	0.50	0.50
GCM155R11H331KA01	R (JIS)	50	330pF±10%	1.0	0.50	0.50
GCM155R11H471KA01	R (JIS)	50	470pF±10%	1.0	0.50	0.50
GCM155R11H681KA01	R (JIS)	50	680pF±10%	1.0	0.50	0.50
GCM155R11H102KA01	R (JIS)	50	1000pF±10%	1.0	0.50	0.50
GCM155R11H222KA01	R (JIS)	50	2200pF±10%	1.0	0.50	0.50
GCM155R11H332KA01	R (JIS)	50	3300pF±10%	1.0	0.50	0.50
GCM155R11H472KA01	R (JIS)	50	4700pF±10%	1.0	0.50	0.50
GCM155R11E682KA01	R (JIS)	25	6800pF±10%	1.0	0.50	0.50
GCM155R11E103KA01	R (JIS)	25	0.01μF±10%	1.0	0.50	0.50
GCM188R11H221KD01	R (JIS)	50	220pF±10%	1.6	0.80	0.80
GCM188R11H331KD01	R (JIS)	50	330pF±10%	1.6	0.80	0.80
GCM188R11H471KD01	R (JIS)	50	470pF±10%	1.6	0.80	0.80
GCM188R11H681KD01	R (JIS)	50	680pF±10%	1.6	0.80	0.80
GCM188R11H102KA01	R (JIS)	50	1000pF±10%	1.6	0.80	0.80
GCM188R11H152KA01	R (JIS)	50	1500pF±10%	1.6	0.80	0.80
GCM188R11H222KA01	R (JIS)	50	2200pF±10%	1.6	0.80	0.80
GCM188R11H332KA01	R (JIS)	50	3300pF±10%	1.6	0.80	0.80
GCM188R11H472KA01	R (JIS)	50	4700pF±10%	1.6	0.80	0.80
GCM188R11H682KA01	R (JIS)	50	6800pF±10%	1.6	0.80	0.80
GCM188R11H103KA01	R (JIS)	50	0.01μF±10%	1.6	0.80	0.80
GCM188R11H153KA01	R (JIS)	50	0.015μF±10%	1.6	0.80	0.80
GCM188R11H223KA01	R (JIS)	50	0.022μF±10%	1.6	0.80	0.80
GCM188R11E333KA01	R (JIS)	25	0.033μF±10%	1.6	0.80	0.80
GCM188R11E473KA01	R (JIS)	25	0.047μF±10%	1.6	0.80	0.80
GCM188R11C104KA01	R (JIS)	16	0.1μF±10%	1.6	0.80	0.80
GCM21BR11H473KA01	R (JIS)	50	0.047μF±10%	2.0	1.25	1.25
GCM21BR11H683KA01	R (JIS)	50	0.068μF±10%	2.0	1.25	1.25
GCM21BR11H104KA01	R (JIS)	50	0.1μF±10%	2.0	1.25	1.25
GCM21BR11E154KA01	R (JIS)	25	0.15μF±10%	2.0	1.25	1.25
GCM21BR11E224KA01	R (JIS)	25	0.22μF±10%	2.0	1.25	1.25
GCM219R11C224KC01	R (JIS)	16	0.22μF±10%	2.0	1.25	0.85
GCM21BR11C334KC01	R (JIS)	16	0.33μF±10%	2.0	1.25	1.25
GCM21BR11C474KC01	R (JIS)	16	0.47μF±10%	2.0	1.25	1.25
GCM219R11A474KC01	R (JIS)	10	0.47μF±10%	2.0	1.25	0.85

Continued on the following page.

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Continued from the preceding page.

Part Number	TC Code	Rated Voltage (Vdc)	Capacitance*	Length L (mm)	Width W (mm)	Thickness T (mm)
GCM219R11A684KC01	R (JIS)	10	0.68 $\mu$ F $\pm$ 10%	2.0	1.25	0.85
GCM21BR11A105KC01	R (JIS)	10	1 $\mu$ F $\pm$ 10%	2.0	1.25	1.25
GCM31MR11H154KA01	R (JIS)	50	0.15 $\mu$ F $\pm$ 10%	3.2	1.60	1.15
GCM31MR11H224KA01	R (JIS)	50	0.22 $\mu$ F $\pm$ 10%	3.2	1.60	1.15
GCM319R11E334KA01	R (JIS)	25	0.33 $\mu$ F $\pm$ 10%	3.2	1.60	0.85
GCM31MR11E474KA01	R (JIS)	25	0.47 $\mu$ F $\pm$ 10%	3.2	1.60	1.15
GCM319R11C684KC01	R (JIS)	16	0.68 $\mu$ F $\pm$ 10%	3.2	1.60	0.85
GCM31MR11C105KC01	R (JIS)	16	1 $\mu$ F $\pm$ 10%	3.2	1.60	1.15
GCM31MR11A225KC11	R (JIS)	10	2.2 $\mu$ F $\pm$ 10%	3.2	1.60	1.15
GCM32ER11H105KA01	R (JIS)	50	1 $\mu$ F $\pm$ 10%	3.2	2.50	2.50
GCM32NR11E684KA01	R (JIS)	25	0.68 $\mu$ F $\pm$ 10%	3.2	2.50	1.35
GCM32RR11E105KA01	R (JIS)	25	1 $\mu$ F $\pm$ 10%	3.2	2.50	1.80
GCM32ER11E225KA01	R (JIS)	25	2.2 $\mu$ F $\pm$ 10%	3.2	2.50	2.50
GCM43RR11H334KA01	R (JIS)	50	0.33 $\mu$ F $\pm$ 10%	4.5	3.20	1.80
GCM43RR11H474KA01	R (JIS)	50	0.47 $\mu$ F $\pm$ 10%	4.5	3.20	1.80
GCM43ER11H225KA01	R (JIS)	50	2.2 $\mu$ F $\pm$ 10%	4.5	3.20	2.50
GCM43ER11E475KA01	R (JIS)	25	4.7 $\mu$ F $\pm$ 10%	4.5	3.20	2.50
GCM55RR11H684KA01	R (JIS)	50	0.68 $\mu$ F $\pm$ 10%	5.7	5.00	1.80
GCM55RR11H105KA01	R (JIS)	50	1 $\mu$ F $\pm$ 10%	5.7	5.00	1.80

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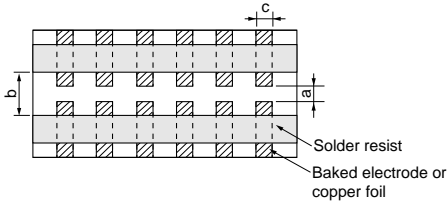
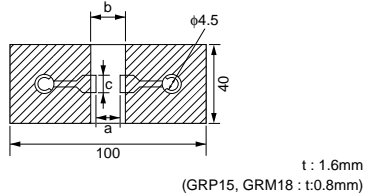
## ■ Specifications and Test Methods

No.	Item	Specification		Test Method																																	
		Temperature Compensating Type	High Dielectric Constant Type																																		
1	Operating Temperature Range	$\Delta C$ : -55°C to 125°C	R1, R3, R7 : -55°C to 125°C F1 : -25°C to 85°C F5 : -30°C to 85°C	Standard Temperature : 20°C (R7, F5 : 25°C)																																	
2	Rated Voltage	See the previous page.		The rated voltage is defined as the maximum voltage which may be applied continuously to the capacitor. When AC voltage is superimposed on DC voltage, $V^{P-P}$ or $V^{O-P}$ , whichever is larger, shall be maintained within the rated voltage range.																																	
3	Appearance	No defects or abnormalities.		Visual inspection.																																	
4	Dimensions	Within the specified dimensions.		Using calipers.																																	
5	Dielectric Strength	No defects or abnormalities.		No failure shall be observed when 300% of the rated voltage (temperature compensating type) or 250% of the rated voltage (high dielectric constant type) is applied between the terminations for 1 to 5 seconds, provided the charge/discharge current is less than 50mA.																																	
6	Insulation Resistance (I.R.)	C $\geq$ 0.047 $\mu$ F : More than 10,000M $\Omega$ C>0.047 $\mu$ F : 500 $\Omega$ • F C : Nominal Capacitance		The insulation resistance shall be measured with a DC voltage not exceeding the rated voltage at 20°C/25°C and 75%RH max. and within 2 minutes of charging, provided the charge/discharge current is less than 50mA.																																	
7	Capacitance	Within the specified tolerance.		The capacitance/D.F. shall be measured at 20°C/25°C at the frequency and voltage shown in the table.																																	
8	Q/Dissipation Factor (D.F.)	30pF and over : Q $\geq$ 1,000 30pF and below : Q $\geq$ 400+20C C : Nominal Capacitance (pF)	[B1, R1, R7] W.V. : 25Vmin. : 0.025max. W.V. : 16/10V : 0.035max. [F1, F5] W.V. : 25Vmin. : 0.05max.	<table border="1"> <thead> <tr> <th>Char. Item</th> <th><math>\Delta C</math> (1000pF and below)</th> <th><math>\Delta C</math> (more than 1000pF) R1, R7, F1, F5</th> </tr> </thead> <tbody> <tr> <td>Frequency</td> <td>1<math>\pm</math>0.1MHz</td> <td>1<math>\pm</math>0.1kHz</td> </tr> <tr> <td>Voltage</td> <td>0.5 to 5Vrms</td> <td>1<math>\pm</math>0.2Vrms</td> </tr> </tbody> </table>	Char. Item	$\Delta C$ (1000pF and below)	$\Delta C$ (more than 1000pF) R1, R7, F1, F5	Frequency	1 $\pm$ 0.1MHz	1 $\pm$ 0.1kHz	Voltage	0.5 to 5Vrms	1 $\pm$ 0.2Vrms																								
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Frequency	1 $\pm$ 0.1MHz	1 $\pm$ 0.1kHz																																			
Voltage	0.5 to 5Vrms	1 $\pm$ 0.2Vrms																																			
9	Capacitance Temperature Characteristics	<p>No bias</p> <p>Within the specified tolerance. (Table A)</p> <p>50% of the rated voltage</p> <p>Capacitance Drift</p> <p>Within <math>\pm</math>0.2% or <math>\pm</math>0.05pF (Whichever is larger.)</p>	<p>R1, R3, R7 : Within <math>\pm</math>15% (-55°C to +125°C) F1 : Within +30/-80% (-25°C to +85°C) F5 : Within +22/-82% (-30°C to +85°C)</p> <p>R1 : Within +15/-40% F1 : Within +30/-95%</p>	<p>The capacitance change shall be measured after 5min. at each specified temp. stage.</p> <p>(1) Temperature Compensating Type The temperature coefficient is determined using the capacitance measured in step 3 as a reference. When cycling the temperature sequentially from step 1 through 5 (<math>\Delta C</math> : +20°C to +125°C) the capacitance shall be within the specified tolerance for the temperature coefficient and capacitance change as Table A. The capacitance drift is calculated by dividing the differences between the maximum and minimum measured values in the step 1, 3 and 5 by the cap. value in step 3.</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> </tr> </thead> <tbody> <tr><td>1</td><td>20<math>\pm</math>2</td></tr> <tr><td>2</td><td>-55<math>\pm</math>3</td></tr> <tr><td>3</td><td>20<math>\pm</math>2</td></tr> <tr><td>4</td><td>125<math>\pm</math>3</td></tr> <tr><td>5</td><td>20<math>\pm</math>2</td></tr> </tbody> </table> <p>(2) High Dielectric Constant Type The ranges of capacitance change compared with the 20°C value over the temperature ranges shown in the table shall be within the specified ranges.* In case of applying voltage, the capacitance change shall be measured after 1 more min. with applying voltage in equilibration of each temp. stage.</p> <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>Applying voltage(V)</th> </tr> </thead> <tbody> <tr><td>1</td><td>20<math>\pm</math>2/25<math>\pm</math>2</td><td rowspan="5">No bias</td></tr> <tr><td>2</td><td>-55<math>\pm</math>3 (for R1, R3, R7)/ -25<math>\pm</math>3 (for F1)/ -30<math>\pm</math>3 (for F5)/</td></tr> <tr><td>3</td><td>20<math>\pm</math>2/25<math>\pm</math>2</td></tr> <tr><td>4</td><td>125<math>\pm</math>3 (for R1, R3, R7)/ 85<math>\pm</math>3 (for F1, F5)</td></tr> <tr><td>5</td><td>20<math>\pm</math>2</td></tr> <tr><td>6</td><td>-55<math>\pm</math>3 (for R1)/ -25<math>\pm</math>3 (for F1)</td><td rowspan="3">50% of the rated voltage</td></tr> <tr><td>7</td><td>20<math>\pm</math>2</td></tr> <tr><td>8</td><td>125<math>\pm</math>3 (for R1)/ 85<math>\pm</math>3 (for F1)</td></tr> </tbody> </table> <p>*Initial measurement for high dielectric constant type Perform a heat treatment at 150 0/-10°C for one hour and then set for 48<math>\pm</math>4 hours at room temperature. Perform the initial measurement.</p>	Step	Temperature (°C)	1	20 $\pm$ 2	2	-55 $\pm$ 3	3	20 $\pm$ 2	4	125 $\pm$ 3	5	20 $\pm$ 2	Step	Temperature (°C)	Applying voltage(V)	1	20 $\pm$ 2/25 $\pm$ 2	No bias	2	-55 $\pm$ 3 (for R1, R3, R7)/ -25 $\pm$ 3 (for F1)/ -30 $\pm$ 3 (for F5)/	3	20 $\pm$ 2/25 $\pm$ 2	4	125 $\pm$ 3 (for R1, R3, R7)/ 85 $\pm$ 3 (for F1, F5)	5	20 $\pm$ 2	6	-55 $\pm$ 3 (for R1)/ -25 $\pm$ 3 (for F1)	50% of the rated voltage	7	20 $\pm$ 2	8	125 $\pm$ 3 (for R1)/ 85 $\pm$ 3 (for F1)
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No.	Item	Specification		Test Method																																
		Temperature Compensating Type	High Dielectric Constant Type																																	
10	Adhesive Strength of Termination	No removal of the terminations or other defect shall occur.		<p>Solder the capacitor on the test jig (glass epoxy board) shown in Fig.1 using an eutectic solder. Then apply 10N* force in parallel with the test jig for 10±1sec.</p> <p>The soldering shall be done either with an iron or using the reflow method and shall be conducted with care so that the soldering is uniform and free of defects such as heat shock.</p> <p>*5N (GC□15, GCM18)</p>  <table border="1" data-bbox="1105 921 1611 1122"> <thead> <tr> <th>Type</th> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>GC□15</td> <td>0.4</td> <td>1.5</td> <td>0.5</td> </tr> <tr> <td>GCM18</td> <td>1.0</td> <td>3.0</td> <td>1.2</td> </tr> <tr> <td>GCM21</td> <td>1.2</td> <td>4.0</td> <td>1.65</td> </tr> <tr> <td>GCM31</td> <td>2.2</td> <td>5.0</td> <td>2.0</td> </tr> <tr> <td>GCM32</td> <td>2.2</td> <td>5.0</td> <td>2.9</td> </tr> <tr> <td>GCM43</td> <td>3.5</td> <td>7.0</td> <td>3.7</td> </tr> <tr> <td>GCM55</td> <td>4.5</td> <td>8.0</td> <td>5.6</td> </tr> </tbody> </table> <p style="text-align: right;">(in mm)</p> <p style="text-align: center;">Fig. 1</p>	Type	a	b	c	GC□15	0.4	1.5	0.5	GCM18	1.0	3.0	1.2	GCM21	1.2	4.0	1.65	GCM31	2.2	5.0	2.0	GCM32	2.2	5.0	2.9	GCM43	3.5	7.0	3.7	GCM55	4.5	8.0	5.6
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11	Vibration Resistance	Appearance	No defects or abnormalities.	<p>Solder the capacitor on the test jig (glass epoxy board) in the same manner and under the same conditions as (10).</p> <p>The capacitor shall be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied uniformly between the approximate limits of 10 and 55Hz. The frequency range, from 10 to 55Hz and return to 10Hz, shall be traversed in approximately 1 minute. This motion shall be applied for a period of 2 hours in each 3 mutually perpendicular directions (total of 6 hours).</p>																																
		Capacitance	Within the specified tolerance.																																	
12	Deflection	Q/D.F.	<p>30pF and over : <math>Q \geq 1,000</math></p> <p>30pF and below : <math>Q \geq 400+20C</math></p> <p>C : Nominal Capacitance (pF)</p>	<p>[R1, R3, R7]</p> <p>W.V. : 25Vmin. : 0.025max.</p> <p>W.V. : 16/10V : 0.035max.</p> <p>[F1, F5]</p> <p>W.V. : 25Vmin : 0.05max.</p>	<p>Solder the capacitor on the test jig (glass epoxy board) shown in Fig.2 using an eutectic solder. Then apply a force in the direction shown in Fig 3 for 5±1 sec. The soldering shall be done either with an iron or using the reflow method and shall be conducted with care so that the soldering is uniform and free of defects such as heat shock.</p>  <table border="1" data-bbox="1105 1772 1611 1950"> <thead> <tr> <th>Type</th> <th>a</th> <th>b</th> <th>c</th> </tr> </thead> <tbody> <tr> <td>GC□15</td> <td>0.4</td> <td>1.5</td> <td>0.5</td> </tr> <tr> <td>GCM18</td> <td>1.0</td> <td>3.0</td> <td>1.2</td> </tr> <tr> <td>GCM21</td> <td>1.2</td> <td>4.0</td> <td>1.65</td> </tr> <tr> <td>GCM32</td> <td>2.2</td> <td>5.0</td> <td>2.9</td> </tr> <tr> <td>GCM43</td> <td>3.5</td> <td>7.0</td> <td>3.7</td> </tr> <tr> <td>GCM55</td> <td>4.5</td> <td>8.0</td> <td>5.6</td> </tr> </tbody> </table> <p style="text-align: right;">(in mm)</p> <p style="text-align: center;">Fig. 2</p>	Type	a	b	c	GC□15	0.4	1.5	0.5	GCM18	1.0	3.0	1.2	GCM21	1.2	4.0	1.65	GCM32	2.2	5.0	2.9	GCM43	3.5	7.0	3.7	GCM55	4.5	8.0	5.6			
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13	Solderability of Termination	No crack or marked defect shall occur.		<p>Immerse the capacitor in a solution of ethanol (JIS-K-8101) and rosin (JIS-K-5902) (25% rosin in weight proportion) .</p> <p>Preheat at 80 to 120°C for 10 to 30 seconds.</p> <p>After preheating, immerse in an eutectic solder solution for 2±0.5 seconds at 230±5°C.</p>																																
		75% of the terminations is to be soldered evenly and continuously.																																		

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No.	Item	Specification		Test Method															
		Temperature Compensating Type	High Dielectric Constant Type																
14	Resistance to Soldering Heat	The measured and observed characteristics shall satisfy the specifications in the following table.		Preheat the capacitor at 120 to 150°C for 1 minute. Immerse the capacitor in an eutectic solder solution at 270±5°C for 10±0.5 seconds. Set at room temperature for 24±2 hours (temperature compensating type) or 48±4 hours (high dielectric constant type), then measure.  • Initial measurement for high dielectric constant type Perform a heat treatment at 150+0/-10°C for one hour and then set at room temperature for 48±4 hours. Perform the initial measurement.  *Preheating for GRM32/43/55 <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Step</th> <th>Temperature</th> <th>Time</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>100°C to 120°C</td> <td>1 min.</td> </tr> <tr> <td>2</td> <td>170°C to 200°C</td> <td>1 min.</td> </tr> </tbody> </table>	Step	Temperature	Time	1	100°C to 120°C	1 min.	2	170°C to 200°C	1 min.						
	Step	Temperature	Time																
	1	100°C to 120°C	1 min.																
	2	170°C to 200°C	1 min.																
	Appearance	No defects or abnormalities.																	
Capacitance Change	Within ±2.5% or ±0.25pF (Whichever is larger)	R1, R3, R7 : Within ±7.5% F1, F5 : Within ±20%																	
Q/D.F.	30pF and over : Q≥1,000 30pF and below : Q≥400+20C C : Nominal Capacitance (pF)	[R1, R3, R7] W.V. : 25Vmin. : 0.025max. W.V. : 16/10V : 0.035max. [F1, F5] W.V. : 25Vmin. : 0.05max.																	
I.R.	More than 10,000MΩ or 500Ω • F (Whichever is smaller)																		
	Dielectric Strength	No defects.																	
15	Temperature Cycle	The measured and observed characteristics shall satisfy the specifications in the following table.		Fix the capacitor to the supporting jig in the same manner and under the same conditions as (10). Perform the 100 cycles according to the four heat treatments shown in the following table. Set for 24±2 hours (temperature compensating type) or 48±4 hours (high dielectric constant type) at room temperature, then measure. <table border="1" style="margin-left: 20px;"> <thead> <tr> <th>Step</th> <th>1</th> <th>2</th> <th>3</th> <th>4</th> </tr> </thead> <tbody> <tr> <td>Temp. (°C)</td> <td>Min. Operating Temp.+0/-3</td> <td>Room Temp.</td> <td>Max. Operating Temp.+0/-3</td> <td>Room Temp.</td> </tr> <tr> <td>Time (min.)</td> <td>30±3</td> <td>2 to 3</td> <td>30±3</td> <td>2 to 3</td> </tr> </tbody> </table> • Initial measurement measurement for high dielectric constant type Perform a heat treatment at 150+0/-10°C for one hour and then set at room temperature for 48±4 hours. Perform the initial measurement.	Step	1	2	3	4	Temp. (°C)	Min. Operating Temp.+0/-3	Room Temp.	Max. Operating Temp.+0/-3	Room Temp.	Time (min.)	30±3	2 to 3	30±3	2 to 3
	Step	1	2		3	4													
	Temp. (°C)	Min. Operating Temp.+0/-3	Room Temp.		Max. Operating Temp.+0/-3	Room Temp.													
	Time (min.)	30±3	2 to 3		30±3	2 to 3													
	Appearance	No defects or abnormalities.																	
Capacitance Change	Within ±2.5% or ±0.25pF (Whichever is larger)	R1, R3, R7 : Within ±7.5% F1, F5 : Within ±20%																	
Q/D.F.	30pF and over : Q≥1,000 30pF and below : Q≥400+20C C : Nominal Capacitance (pF)	[R1, R3, R7] W.V. : 25Vmin. : 0.025max. W.V. : 16/10V : 0.035max. [F1, F5] W.V. : 25Vmin. : 0.05max.																	
I.R.	More than 10,000MΩ or 500Ω • F (Whichever is smaller)																		
	Dielectric Strength	No defects.																	
16	Humidity (Steady State)	The measured and observed characteristics shall satisfy the specifications in the following table.		Set the capacitor at 40±2°C and in 90 to 95% humidity for 500±12 hours. Remove and set for 24±2 hours (temperature compensating type) or 48±4 hours (high dielectric constant type) at room temperature, then measure.															
	Appearance	No defects or abnormalities.																	
	Capacitance Change	Within ±5% or ±0.5pF (Whichever is larger)	R1, R3, R7 : Within ±12.5% F1, F5 : Within ±30%																
	Q/D.F.	30pF and over : Q≥350 10pF and Over 30pF and below : Q≥275+2.5C 10pF and below : Q≥200+10C C : Nominal Capacitance (pF)	[R1, R3, R7] W.V. : 25Vmin. : 0.05max. W.V. : 16/10V : 0.05max. [F1, F5] W.V. : 25Vmin. : 0.075max.																
	I.R.	More than 1,000MΩ or 50Ω • F (Whichever is smaller)																	
17	Humidity Load	The measured and observed characteristics shall satisfy the specifications in the following table.		Apply the rated voltage at 40±2°C and 90 to 95% humidity for 500±12 hours. Remove and set for 24±2 hours (temperature compensating type) or 48±4 hours (high dielectric constant type) at room temperature, then measure. The charge/discharge current is less than 50mA.															
	Appearance	No defects or abnormalities.																	
	Capacitance Change	Within ±7.5% or ±0.75pF (Whichever is larger)	R1, R3, R7 : Within ±12.5% F1, F5 : Within ±30% [W.V. : 10Vmax.] F1 : Within +30/-40%																
	Q/D.F.	30pF and over : Q≥200 30pF and below : Q≥100+10C/3 C : Nominal Capacitance (pF)	[R1, R3, R7] W.V. : 25Vmin. : 0.05max. W.V. : 16/10V : 0.05max. [F1, F5] W.V. : 25Vmin. : 0.075max.																
	I.R.	More than 500MΩ or 25Ω • F (Whichever is smaller)																	

Continued on the following page.

**Note** • This catalog has only typical specifications because there is no space for detailed specifications. Therefore, please approve our product specification or transact the approval sheet for product specification before ordering. Especially, please read rating and CAUTION (for storage and operating, rating, soldering and mounting, handling) in them to prevent smoking and/or burning, etc.  
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Continued from the preceding page.

No.	Item	Specification		Test Method
		Temperature Compensating Type	High Dielectric Constant Type	
18	High Temperature Load	The measured and observed characteristics shall satisfy the specifications in the following table.		Apply 200% of the rated voltage at the maximum operating temperature $\pm 3^{\circ}\text{C}$ for $1000 \pm 12$ hours. Set for $24 \pm 2$ hours (temperature compensating type) or $48 \pm 4$ hours (high dielectric constant type) at room temperature, then measure. The charge/discharge current is less than 50mA.  •Initial measurement for high dielectric constant type. Apply 200% of the rated DC voltage at the maximum operating temperature $\pm 3^{\circ}\text{C}$ for one hour. Remove and set for $48 \pm 4$ hours at room temperature. Perform initial measurement.
	Appearance	No defects or abnormalities.		
	Capacitance Change	Within $\pm 3\%$ or $\pm 0.3\text{pF}$ (Whichever is larger)	R1, R3, R7 : Within $\pm 12.5\%$ F1, F5 : Within $\pm 30\%$	
	Q/D.F.	30pF and over : $Q \geq 350$ 10pF and Over 30pF and below : $Q \geq 275 + 2.5C$ 10pF and below : $Q \geq 200 + 10C$ C : Nominal Capacitance (pF)	[R1, R3, R7] W.V. : 25Vmin. : 0.04max. W.V. : 16/10V : 0.05max. [F1, F5] W.V. : 25Vmin : 0.075max.	
I.R.	More than $1,000\text{M}\Omega$ or $50\Omega \cdot \text{F}$ (Whichever is smaller)			

Table A

Char.	Nominal Values (ppm/ $^{\circ}\text{C}$ ) *	Capacitance Change from $20^{\circ}\text{C}$ (%)					
		-55		-25		-10	
		Max.	Min.	Max.	Min.	Max.	Min.
2C	$0 \pm 60$	0.82	-0.45	0.49	-0.27	0.33	-0.18
3C	$0 \pm 120$	1.37	-0.90	0.82	-0.54	0.55	-0.36
4C	$0 \pm 250$	2.56	-1.88	1.54	-1.13	1.02	-0.75

\* Nominal values denote the temperature coefficient within a range of  $20^{\circ}\text{C}$  to  $125^{\circ}\text{C}$ .

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