

# HIGH VALUE MULTILAYER CERAMIC CAPACITORS



WAVE

REFLOW

## FEATURES

- The use of nickel as electrode material and plating processing improve the solderability and heat resistance characteristics. It also prevents migration and raises the level of reliability.
- Low equivalent series resistance(ESR) provides superior noise absorption characteristics.
- Compared to tantalum or aluminum electrolytic capacitors, multilayer ceramic capacitors offer a number of superior features, including:  
Higher permissible ripple current values  
Smaller case sizes with high rated voltage  
Improved reliability due to higher insulation resistance and breakdown voltage.

## APPLICATIONS

- General digital circuit
- Power supply bypass capacitors  
Liquid crystal modules  
Liquid crystal drive voltage lines  
LSI, IC, converters(both for input and output)
- Smoothing capacitors  
DC-DC converters (for both input and output)  
Switching power supplies (secondary side)

## ORDERING CODE

J M K 3 1 6 B J 1 0 6 M L - T  $\Delta$

**1** Rated voltage (VDC)

A	4
J	6.3
L	10
E	16
T	25
G	35
U	50

**2** Series name

M Multilayer ceramic capacitor

**3** End termination

K	Plated
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**4** Dimensions (EIA) L×W (mm)

107 (0603)	1.6×0.8
212 (0805)	2.0×1.25
316 (1206)	3.2×1.6
325 (1210)	3.2×2.5

**5** Temperature characteristics code

BJ	B
	X5R
B7	X7R
	F
$\Delta$ F	Y5V

$\Delta$ =Blank space

**6** Nominal capacitance (pF)

example	
473	47,000
105	1,000,000

**7** Capacitance tolerance

K	±10%
M	±20%
Z	+80% -20%

**8** Thickness (mm)

K	0.45
A	0.8
D	0.85
L	1.6
N	1.9
Y	2.0max
M	2.5

**9** Special code

-	Standard product
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**10** Internal code

$\Delta$	Standard product
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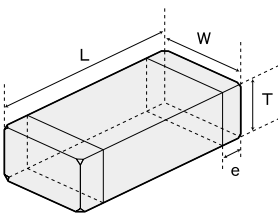
$\Delta$ =Blank space

**11** Packaging

T	$\phi$ 178mm Taping (4mm pitch) All types
P	$\phi$ 178mm Taping (4mm pitch, 1000pcs/reel) 1210Type Thickness : M

Datasheet.Directory

## EXTERNAL DIMENSIONS/STANDARD QUANTITY



Note:

- \*1. Including dimension tolerance  $\pm 0.15$ mm ( $\pm 0.006$  inch).
- \*2. Including dimension tolerance  $\pm 0.3$ mm ( $\pm 0.012$  inch).
- \*3. Including dimension tolerance  $\pm 0.2$ mm ( $\pm 0.008$  inch).
- \*4. Including dimension tolerance  $+0.15/-0.1$ mm ( $+0.006/-0.004$  inch).

Type(EIA)	L	W	T		e	Standard quantity [pcs]	
			Capacitance (pF)	Thickness (mm)		Paper tape	Embossed tape
□MK107 (0603)	1.6±0.10 <sup>-3,4</sup> (0.063±0.004)	0.8±0.10 <sup>-3,4</sup> (0.031±0.004)	0.45±0.05(0.018±0.002)	K	0.35±0.25 (0.014±0.010)	4000	—
			0.8±0.10 <sup>-3,4</sup> (0.031±0.004)	A			
□MK212 (0805)	2.0±0.10 <sup>-1,3</sup> (0.079±0.004)	1.25±0.10 <sup>-1,3</sup> (0.049±0.004)	0.45±0.05(0.018±0.002)	K	0.5±0.25 (0.020±0.010)	4000	—
			0.85±0.10(0.033±0.004)	D			
			1.25±0.10 <sup>-1,3</sup> (0.049±0.004)	G			
□MK316 (1206)	3.2±0.15 <sup>-3</sup> (0.126±0.006)	1.6±0.15 <sup>-3</sup> (0.063±0.006)	0.85±0.10(0.033±0.004)	D	0.5 <sup>+0.25</sup> <sub>-0.25</sub> (0.020±0.014)	4000	—
			1.25±0.10(0.049±0.004)	G			
			1.6±0.20(0.063±0.008)	L			
			0.85±0.10(0.033±0.004)	D			
□MK325 (1210)	3.2±0.30 (0.126±0.012)	2.5±0.20 <sup>-2</sup> (0.098±0.008)	1.9±0.20(0.075±0.008)	N	0.6±0.3 (0.024±0.012)	—	2000
			1.9 <sup>+0.1</sup> <sub>-0.2</sub> (0.075 <sup>+0.004</sup> <sub>-0.008</sub> )	Y			
			2.5±0.20 <sup>-2</sup> (0.098±0.008)	M			
			0.85±0.10(0.033±0.004)	D			

Unit : mm (inch)

## AVAILABLE CAPACITANCE RANGE

Cap (μF)	Type	107				212				316				325			
		X7R	B/X5R	X5R	F/Y5V	X7R	B/X5R	X5R	F/Y5V	X7R	B/X5R	X5R	F/Y5V	X7R	B/X5R	X5R	F/Y5V
0.1	104				A			G									
0.15	154																
0.22	224	A	A	A			A	G									
0.33	334																
0.47	474	A	A	A			A	A	G								
0.68	684	A	A	A	A	A		A	A	G	G	G					
1	105	A	A	A	A	A	A		A	A	G	G	G				
2.2	225						A	A			G	G	G				
3.3	335																
4.7	475						A	A			G	G	G	G			
6.8	685																
10	106						A	A	A			G	G	G			
22	226																
47	476																
100	107																

Note : Letters in the table indicate thickness.

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● Low Profile Multilayer Ceramic Capacitors

Cap [μF]	TC VDC	107					212					316					325	
		B/X5R	X5R	X7R	B/X5R	X5R	F/Y5V	B/X5R	X5R	F/Y5V	B/X5R	X5R	F/Y5V	B/X5R				
0.1	104																	
0.22	224																	
0.33	334																	
0.47	474																	
0.68	684																	
1	105	K	K	K	K		D	D	D	D								
2.2	225						K	K	D	D								
3.3	335																	
4.7	475																	
6.8	685																	
10	106																	
22	226																	
47	476																	

Note : Letters in the table indicate thickness.

Temp. char. Code	Temperature characteristics				Capacitance tolerance (%)
	Applicable standard	Temperature range [°C]	Ref. Temp. [°C]	Capacitance change (%)	
BJ	JIS B	-25~+85	20	±10	±10 (K)
	EIA X5R	-55~+85	25	±15	
B7	EIA X7R	-55~+125	25	±15	±20 (M)
F	JIS F	-25~+85	20	+30/-80	+80 (Z)
	EIA Y5V	-30~+85	25	+22/-82	

■ PART NUMBERS

● 107TYPE

[Temp.char. B: B/X5R]

Rated Voltage	Ordering code	EHS (Environmental Hazardous Substances)	Capacitance [μF]	Temperature characteristics	Dissipation factor (%) Max.	Soldering method R:Reflow soldering W:Wave soldering	Capacitance tolerance	Thickness [mm]
50V	UMK107 BJ105□A <sup>1</sup>	RoHS	1	X5R	10	R	±10% ±20%	0.8±0.1
35V	GMK107 BJ105□A <sup>1</sup>	RoHS	1	B/X5R	5			0.8±0.1
25V	TMK107 BJ105□K <sup>1</sup>	RoHS	1	X5R	10	R/W	±10% ±20%	0.45±0.05
	TMK107 BJ224□A	RoHS	0.22	B/X5R	3.5			0.8±0.1
	TMK107 BJ474□A <sup>1</sup>	RoHS	0.47	B/X5R	3.5	0.8±0.1		
	TMK107 BJ105□A <sup>1</sup>	RoHS	1	B/X5R	5	0.8±0.1		
16V	EMK107 BJ105□K <sup>1</sup>	RoHS	1	X5R	10	R/W	±10% ±20%	0.45±0.05
	EMK107 BJ224□A	RoHS	0.22	B/X5R <sup>2</sup>	3.5			0.8±0.1
	EMK107 BJ474□A	RoHS	0.47	B/X5R <sup>2</sup>	3.5	0.8±0.1		
	EMK107 BJ105□A <sup>1</sup>	RoHS	1	B/X5R <sup>2</sup>	5	0.8±0.1		
10V	EMK107 BJ225□A <sup>1</sup>	RoHS	2.2	B/X5R	10	R	±10% ±20%	0.8±0.1
	LMK107 BJ105□K <sup>1</sup>	RoHS	1	B/X5R	10			0.45±0.05
	LMK107 BJ225□K <sup>1</sup>	RoHS	2.2	X5R	10	0.45±0.05		
	LMK107 BJ475MK <sup>1,4</sup>	RoHS	4.7	X5R	10	±20%	0.45±0.05	
	LMK107 BJ224□A	RoHS	0.22	B/X5R <sup>2</sup>	3.5	R/W	±10% ±20%	0.8±0.1
	LMK107 BJ474□A	RoHS	0.47	B/X5R <sup>2</sup>	3.5	0.8±0.1		
	LMK107 BJ105□A <sup>1</sup>	RoHS	1	B/X5R <sup>2</sup>	5	0.8±0.1		
	LMK107 BJ225□A <sup>1</sup>	RoHS	2.2	B/X5R <sup>2</sup>	10	0.8±0.1		
6.3V	LMK107 BJ475□A <sup>1</sup>	RoHS	4.7	X5R	10	R	±10% ±20%	0.8±0.1
	LMK107 BJ106MA <sup>1,4</sup>	RoHS	10	X5R	10			±20%
	JMK107 BJ105□K <sup>1</sup>	RoHS	1	B/X5R	10	±10% ±20%	0.45±0.05	
	JMK107 BJ225□K <sup>1</sup>	RoHS	2.2	X5R	10	±20%	0.45±0.05	
	JMK107 BJ475MK <sup>1</sup>	RoHS	4.7	X5R	10	±20%	0.45±0.05	
	JMK107 BJ225□A <sup>1</sup>	RoHS	2.2	B/X5R	10	±10% ±20%	0.8±0.1	
4V	JMK107 BJ475□A <sup>1</sup>	RoHS	4.7	X5R	10	R	±20%	0.8±0.1
	JMK107 BJ106MA <sup>1</sup>	RoHS	10	X5R	10			0.8+0.15/-0.1
4V	AMK107 BJ106MA <sup>1</sup>	RoHS	10	X5R	10	±20%	±20%	0.8±0.1
	AMK107 BJ226MA <sup>1,3</sup>	RoHS	22	X5R	10			0.8±0.2

[Temp.char. B7:X7R]

Rated Voltage	Ordering code	EHS (Environmental Hazardous Substances)	Capacitance [μF]	Temperature characteristics	Dissipation factor (%) Max.	Soldering method R:Reflow soldering W:Wave soldering	Capacitance tolerance	Thickness [mm]
16V	EMK107 B7 224□A <sup>1</sup>	RoHS	0.22	X7R	3.5	R/W	±10% ±20%	0.8±0.1
	EMK107 B7 474□A <sup>1</sup>	RoHS	0.47	X7R	3.5	R		0.8±0.1
	EMK107 B7 105□A <sup>1</sup>	RoHS	1	X7R	5	0.8±0.1		
10V	LMK107 B7 224□A	RoHS	0.22	X7R	3.5	R/W	±10% ±20%	0.8±0.1
	LMK107 B7 474□A	RoHS	0.47	X7R	3.5	R		0.8±0.1
	LMK107 B7 105□A <sup>1</sup>	RoHS	1	X7R	5	0.8±0.1		
6.3V	JMK107 B7 224□A	RoHS	0.22	X7R	3.5	R/W	R	0.8±0.1
	JMK107 B7 474□A	RoHS	0.47	X7R	3.5	0.8±0.1		
6.3V	JMK107 B7 105□A <sup>1</sup>	RoHS	1	X7R	5	0.8±0.1		

[Temp.char. F:F/Y5V]

Rated Voltage	Ordering code	EHS (Environmental Hazardous Substances)	Capacitance [μF]	Temperature characteristics	Dissipation factor (%) Max.	Soldering method R:Reflow soldering W:Wave soldering	Capacitance tolerance	Thickness [mm]
50V	UMK107 F104ZA	RoHS	0.1	F/Y5V	7	R/W	+80% -20%	0.8±0.1
25V	TMK107 F474ZA	RoHS	0.47	F/Y5V	7			0.8±0.1
16V	EMK107 F224ZA	RoHS	0.22	F/Y5V	7	R	+80% -20%	0.8±0.1
	EMK107 F474ZA	RoHS	0.47	F/Y5V	7			0.8±0.1
	EMK107 F105ZA	RoHS	1	F/Y5V	16	0.8±0.1		
	EMK107 F225ZA	RoHS	2.2	F/Y5V	16	0.8±0.1		
10V	LMK107 F105ZA	RoHS	1	F/Y5V	16	R	+80% -20%	0.8±0.1
	LMK107 F225ZA	RoHS	2.2	F/Y5V	16			0.8±0.1

□ Please specify the capacitance tolerance code. \*1 1.5 times the rated voltage is applied to the chip during the high temperature loading test. \*2 We may provide X7R for some items according to the individual specification. \*3 The exchange of individual specification is necessary depending on the application and circuit condition. Please contact Taiyo Yuden sales channels. \*4 "D" is used for the internal code.

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**PART NUMBERS**

**● 212TYPE**

[Temp.char. B: B/X5R]

Rated Voltage	Ordering code	EHS (Environmental Hazardous Substances)	Capacitance (μF)	Temperature characteristics	Dissipation factor (%) Max.	Soldering method R:Reflow soldering W:Wave soldering	Capacitance tolerance	Thickness (mm)
50V	UMK212 BJ104□G	RoHS	0.1	B/X5R <sup>+2</sup>	3.5	R/W	±10%	1.25±0.1
	UMK212 BJ224□G <sup>+1</sup>	RoHS	0.22	B/X5R <sup>+2</sup>	3.5			1.25±0.1
	UMK212 BJ474□G <sup>+1</sup>	RoHS	0.47	B/X5R <sup>+2</sup>	3.5			1.25±0.1
	UMK212 BJ105□D	RoHS	1	X5R	5			1.25±0.1
25V	TMK212 BJ474□D	RoHS	0.47	B/X5R	3.5	R	±10%	0.85±0.1
	TMK212 BJ105□D	RoHS	1	B/X5R	5			0.85±0.1
	TMK212 BJ225□D <sup>+1</sup>	RoHS	2.2	B/X5R	5			0.85±0.1
	TMK212 BJ475□D <sup>+1+4</sup>	RoHS	4.7	X5R	10			0.85±0.1
	TMK212 BJ225□G <sup>+1</sup>	RoHS	2.2	B/X5R	5			1.25±0.1
	TMK212 BJ475□G <sup>+1</sup>	RoHS	4.7	X5R	10			1.25±0.15
	EMK212 BJ105□D	RoHS	1	B/X5R <sup>+2</sup>	5			0.85±0.1
16V	EMK212 BJ225□D	RoHS	2.2	B/X5R <sup>+2</sup>	5	R	±10%	0.85±0.1
	EMK212 BJ475□D <sup>+1</sup>	RoHS	4.7	B/X5R	10			0.85±0.1
	EMK212 BJ106□D <sup>+1+4</sup>	RoHS	10	X5R	10			0.85±0.1
	EMK212 BJ225□G	RoHS	2.2	B/X5R <sup>+2</sup>	5			1.25±0.1
	EMK212 BJ475□G <sup>+1</sup>	RoHS	4.7	B/X5R <sup>+2</sup>	5			1.25±0.15
	EMK212 BJ106□G <sup>+1</sup>	RoHS	10	X5R	10			1.25±0.15
	LMK212 BJ475□K <sup>+1</sup>	RoHS	4.7	X5R	10			0.45±0.05
10V	LMK212 BJ105□D	RoHS	1	B/X5R <sup>+2</sup>	3.5	R	±20%	0.85±0.1
	LMK212 BJ225□D	RoHS	2.2	B/X5R <sup>+2</sup>	5			0.85±0.1
	LMK212 BJ475□D	RoHS	4.7	B/X5R	10			0.85±0.1
	LMK212 BJ106□D <sup>+1</sup>	RoHS	10	X5R	10			0.85±0.1
	LMK212 BJ225□G	RoHS	2.2	B/X5R <sup>+2</sup>	5			1.25±0.1
	LMK212 BJ475□G	RoHS	4.7	B/X5R <sup>+2</sup>	5			1.25±0.15
	LMK212 BJ106□G	RoHS	10	X5R	10			1.25±0.15
	LMK212 BJ226MG <sup>+1</sup>	RoHS	22	X5R	10			1.25±0.2
6.3V	JMK212 BJ475□K <sup>+1</sup>	RoHS	4.7	X5R	10	R	±10%	0.45±0.05
	JMK212 BJ106MK <sup>+1</sup>	RoHS	10	X5R	10			0.45±0.05
	JMK212 BJ475□D	RoHS	4.7	X5R	10			0.85±0.1
	JMK212 BJ106□D	RoHS	10	X5R	10			0.85±0.1
	JMK212 BJ226MD <sup>+1</sup>	RoHS	22	X5R	10			0.85±0.1
	JMK212 BJ475□G	RoHS	4.7	B/X5R	5			1.25±0.15
	JMK212 BJ106□G	RoHS	10	X5R <sup>+2</sup>	10			1.25±0.15
	JMK212 BJ226MG <sup>+1</sup>	RoHS	22	X5R	10			1.25±0.15
JMK212 BJ476MG <sup>+1</sup>	RoHS	47	X5R	10	1.25±0.2			

[Temp.char. B7: X7R]

Rated Voltage	Ordering code	EHS (Environmental Hazardous Substances)	Capacitance (μF)	Temperature characteristics	Dissipation factor (%) Max.	Soldering method R:Reflow soldering W:Wave soldering	Capacitance tolerance	Thickness (mm)	
50V	UMK212 B7 104□G	RoHS	0.1	X7R	3.5	R/W	±10%	1.25±0.1	
	UMK212 B7 224□G <sup>+1</sup>	RoHS	0.22	X7R	3.5			1.25±0.1	
	UMK212 B7 474□G <sup>+1</sup>	RoHS	0.47	X7R	3.5			1.25±0.1	
35V	GMK212 B7 105□G <sup>+1</sup>	RoHS	1	X7R	3.5	R	±20%	1.25±0.1	
25V	TMK212 B7 105□G <sup>+1</sup>	RoHS	1	X7R	5			1.25±0.1	
16V	EMK212 B7 474□D	RoHS	0.47	X7R	3.5	R/W	±10%	0.85±0.1	
	EMK212 B7 105□D	RoHS	1	X7R	5	R		0.85±0.1	
	EMK212 B7 225□D <sup>+1</sup>	RoHS	2.2	X7R	5	R		0.85±0.1	
	EMK212 B7 105□G	RoHS	1	X7R	3.5	R/W		1.25±0.1	
	EMK212 B7 225□G <sup>+1</sup>	RoHS	2.2	X7R	10	R		1.25±0.1	
	EMK212 B7 475□G <sup>+1</sup>	RoHS	4.7	X7R	10			1.25±0.1	
10V	LMK212 B7 105□D	RoHS	1	X7R	3.5	R	±20%	0.85±0.1	
	LMK212 B7 225□D	RoHS	2.2	X7R	5			0.85±0.1	
	LMK212 B7 105□G	RoHS	1	X7R	3.5			R/W	1.25±0.1
	LMK212 B7 225□G	RoHS	2.2	X7R	5			R	1.25±0.1
6.3V	LMK212 B7 475□G <sup>+1</sup>	RoHS	4.7	X7R	10	R/W	±20%	1.25±0.1	
	JMK212 B7 106□G <sup>+1</sup>	RoHS	10	X7R	10	R		1.25±0.15	

[Temp.char. F:F/Y5V]

Rated Voltage	Ordering code	EHS (Environmental Hazardous Substances)	Capacitance (μF)	Temperature characteristics	Dissipation factor (%) Max.	Soldering method R:Reflow soldering W:Wave soldering	Capacitance tolerance	Thickness (mm)
50V	UMK212 F224ZD	RoHS	0.22	F/Y5V	7	R/W	+80% -20%	0.85±0.1
	UMK212 F474ZG	RoHS	0.47	F/Y5V	7			1.25±0.1
	UMK212 F105ZG	RoHS	1	F/Y5V	7			1.25±0.1
16V	EMK212 F225ZG	RoHS	2.2	F/Y5V	7	R	±20%	1.25±0.1
10V	LMK212 F225ZD	RoHS	2.2	F/Y5V	9			0.85±0.1
	LMK212 F475ZG	RoHS	4.7	F/Y5V	9			1.25±0.1
	LMK212 F106ZG	RoHS	10	F/Y5V	16	1.25±0.1		
6.3V	JMK212 F475ZD	RoHS	4.7	F/Y5V	16	R	±20%	0.85±0.1
	JMK212 F106ZG	RoHS	10	F/Y5V	16			1.25±0.1

□ Please specify the capacitance tolerance code. \*1 1.5 times the rated voltage is applied to the chip during the high temperature loading test. \*2 We may provide X7R for some items according to the individual specification. \*4 "D" is used for the internal code.

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**PART NUMBERS**

**316TYPE**

[Temp.char. B: B/X5R]

Rated Voltage	Ordering code	EHS (Environmental Hazardous Substances)	Capacitance (μF)	Temperature characteristics	Dissipation factor (%) Max.	Soldering method R: Reflow soldering W: Wave soldering	Capacitance tolerance	Thickness (mm)		
50V	UMK316 BJ105□D* <sup>1</sup>	RoHS	1	B/X5R	3.5	R	±10% ±20%	0.85±0.1		
	UMK316 BJ225□D* <sup>1</sup>	RoHS	2.2	B/X5R	3.5			0.85±0.1		
	UMK316 BJ105□L	RoHS	1	B/X5R* <sup>2</sup>	3.5			1.6±0.2		
	UMK316 BJ475□L* <sup>1</sup>	RoHS	4.7	X5R	10			1.6±0.2		
25V	TMK316 BJ105□D	RoHS	1	B/X5R	3.5			R/W	±10% ±20%	0.85±0.1
	TMK316 BJ225□D* <sup>1</sup>	RoHS	2.2	B/X5R	3.5					0.85±0.1
	TMK316 BJ475□D* <sup>1</sup>	RoHS	4.7	X5R	5					0.85±0.1
	TMK316 BJ106□D* <sup>1</sup>	RoHS	10	X5R	10					0.85±0.1
	TMK316 BJ225□L	RoHS	2.2	B/X5R* <sup>2</sup>	3.5					1.6±0.2
	TMK316 BJ475□L* <sup>1</sup>	RoHS	4.7	B/X5R	5					1.6±0.2
	TMK316 BJ106□L* <sup>1</sup>	RoHS	10	X5R* <sup>2</sup>	5					1.6±0.2
	EMK316 BJ225□D	RoHS	2.2	B/X5R	3.5					1.6±0.2
16V	EMK316 BJ475□D	RoHS	4.7	X5R	5	R	±10% ±20%			0.85±0.1
	EMK316 BJ106□D* <sup>1</sup>	RoHS	10	X5R	10					0.85±0.1
	EMK316 BJ225□L	RoHS	2.2	B/X5R* <sup>2</sup>	3.5					1.6±0.2
	EMK316 BJ475□L	RoHS	4.7	B/X5R	5					1.6±0.2
	EMK316 BJ106□L* <sup>1</sup>	RoHS	10	B/X5R* <sup>2</sup>	5			1.6±0.2		
	EMK316 BJ226ML* <sup>1</sup>	RoHS	22	B/X5R	10			±20%	1.6±0.2	
	LМК316 BJ475□D	RoHS	4.7	B/X5R	5			±10%	0.85±0.1	
	LМК316 BJ106□D	RoHS	10	B/X5R	10			±20%	0.85±0.1	
	LМК316 BJ226MD* <sup>1</sup>	RoHS	22	X5R	10			±20%	0.85±0.1	
	LМК316 BJ106□L	RoHS	10	B/X5R* <sup>2</sup>	5			±10% ±20%	1.6±0.2	
10V	LМК316 BJ226ML* <sup>1</sup>	RoHS	22	B/X5R	10			R	±20%	1.6±0.2
	LМК316 BJ476ML* <sup>1</sup>	RoHS	47	X5R	10					1.6±0.2
	JMK316 BJ106□D	RoHS	10	B/X5R	10	±10% ±20%	0.85±0.1			
	JMK316 BJ226MD* <sup>1</sup>	RoHS	22	X5R	10	±20%	0.85±0.1			
	JMK316 BJ476MD* <sup>1</sup>	RoHS	47	X5R	10	±20%	0.85±0.1			
	JMK316 BJ106□L	RoHS	10	B/X5R* <sup>2</sup>	5	±10% ±20%	1.6±0.2			
	JMK316 BJ226□L	RoHS	22	B/X5R	10	±20%	1.6±0.2			
	JMK316 BJ476ML	RoHS	47	X5R	10	±20%	1.6±0.2			
6.3V	JMK316 BJ107ML* <sup>1,3</sup>	RoHS	100	X5R	10	R	±20%			1.6±0.2
	JMK316 BJ107ML* <sup>1,3</sup>	RoHS	100	X5R	10					1.6±0.2
	AMK316 BJ107ML* <sup>1</sup>	RoHS	100	X5R	10					1.6±0.2
4V	AMK316 BJ107ML* <sup>1</sup>	RoHS	100	X5R	10					

□ Please specify the capacitance tolerance code.

\*1 1.5 times the rated voltage is applied to the chip during the high temperature loading test.

\*2 We may provide X7R for some items according to the individual specification.

\*3 The exchange of individual specification is necessary depending on the application and circuit condition. Please contact Taiyo Yuden sales channels.

[Temp.char. B7: X7R]

Rated Voltage	Ordering code	EHS (Environmental Hazardous Substances)	Capacitance (μF)	Temperature characteristics	Dissipation factor (%) Max.	Soldering method R: Reflow soldering W: Wave soldering	Capacitance tolerance	Thickness (mm)	
50V	UMK316 B7 224□L	RoHS	0.22	X7R	2.5	R/W	±10% ±20%	1.6±0.2	
	UMK316 B7 474□L	RoHS	0.47	X7R	3.5			1.6±0.2	
	UMK316 B7 105□L	RoHS	1	X7R	3.5			1.6±0.2	
25V	TMK316 B7 105□L	RoHS	1	X7R	3.5	R		±10% ±20%	1.6±0.2
	TMK316 B7 225□L	RoHS	2.2	X7R	3.5				1.6±0.2
	TMK316 B7 106□L* <sup>1,4</sup>	RoHS	10	X7R	10				1.6±0.2
	EMK316 B7 225□L	RoHS	2.2	X7R	3.5				1.6±0.2
16V	EMK316 B7 106□L* <sup>4</sup>	RoHS	10	X7R	10	R/W			1.6±0.2
	EMK316 B7 106□L* <sup>4</sup>	RoHS	10	X7R	10	R			1.6±0.2
10V	LМК316 B7 225□L	RoHS	2.2	X7R	3.5	R/W			1.6±0.2
	LМК316 B7 475□L	RoHS	4.7	X7R	5	R/W			1.6±0.2
	LМК316 B7 106□L* <sup>1,4</sup>	RoHS	10	X7R	10	R			1.6±0.2
6.3V	JMK316 B7 106□L	RoHS	10	X7R	5				1.6±0.2

□ Please specify the capacitance tolerance code.

\*1 1.5 times the rated voltage is applied to the chip during the high temperature loading test.

\*4 \*D\* is used for the internal code.

[Temp.char. F: F/Y5V]

Rated Voltage	Ordering code	EHS (Environmental Hazardous Substances)	Capacitance (μF)	Temperature characteristics	Dissipation factor (%) Max.	Soldering method R: Reflow soldering W: Wave soldering	Capacitance tolerance	Thickness (mm)
50V	UMK316 F225ZG	RoHS	2.2	F/Y5V	7	R/W	+80% -20%	1.25±0.1
35V	GМК316 F475ZG	RoHS	4.7	F/Y5V	7	R		1.25±0.1
	GМК316 F106ZL	RoHS	10	F/Y5V	9			1.6±0.2
25V	TMK316 F106ZL	RoHS	10	F/Y5V	9			1.6±0.2
16V	EMK316 F106ZL	RoHS	10	F/Y5V	9			1.6±0.2
	LМК316 F475ZD	RoHS	4.7	F/Y5V	9			0.85±0.1
10V	LМК316 F226ZL	RoHS	22	F/Y5V	16			1.6±0.2
	JMK316 F106ZD	RoHS	10	F/Y5V	16			0.85±0.1

\* This catalog contains the typical specification only due to the limitation of space. When you consider purchase of our products, please check our specification. For details of each product (characteristics graph, reliability information, precautions for use, and so on), see our Web site (<http://www.ty-top.com/>) or CD catalogs.

**PART NUMBERS**

**● 325TYPE**

[Temp.char. BJ:B/X5R]

Rated Voltage	Ordering code		EHS (Environmental Hazardous Substances)	Capacitance 〔μF〕	Temperature characteristics	Dissipation factor 〔%〕Max.	Soldering method R:Reflow soldering W:Wave soldering	Capacitance tolerance	Thickness 〔mm〕
50V	UMK325 BJ475MM <sup>*1</sup>		RoHS	4.7	X5R	5	R	±20%	2.5±0.2
	UMK325 BJ106MM <sup>*1</sup>		RoHS	10	X5R	5			2.5±0.2
35V	GMK325 BJ225MN		RoHS	2.2	B/X5R	3.5			1.9±0.2
	GMK325 BJ475MN <sup>*1</sup>		RoHS	4.7	X5R	10			1.9±0.2
	GMK325 BJ106MN <sup>*1</sup>		RoHS	10	B/X5R	5			1.9±0.2
25V	TMK325 BJ106MD <sup>*1</sup>		RoHS	10	B/X5R	5			0.85±0.1
	TMK325 BJ335MN		RoHS	3.3	B/X5R <sup>*2</sup>	3.5			1.9±0.2
	TMK325 BJ475MN		RoHS	4.7	B/X5R <sup>*2</sup>	3.5			1.9±0.2
	TMK325 BJ106MN		RoHS	10	B/X5R	5			1.9±0.2
	TMK325 BJ106MM <sup>*1</sup>		RoHS	10	B/X5R <sup>*2</sup>	3.5			2.5±0.2
16V	EMK325 BJ106MD <sup>*1</sup>		RoHS	10	B/X5R	5			0.85±0.1
	EMK325 BJ226MD <sup>*1</sup>		RoHS	22	B/X5R	10			0.85±0.1
	EMK325 BJ475MN		RoHS	4.7	B/X5R <sup>*2</sup>	3.5			1.9±0.2
	EMK325 BJ106MN		RoHS	10	B/X5R	3.5			1.9±0.2
	EMK325 BJ226MM <sup>*1</sup>		RoHS	22	B/X5R	5			2.5±0.2
	EMK325 BJ476MM <sup>*1</sup>		RoHS	47	X5R	10			2.5±0.2
10V	LMK325 BJ335MD		RoHS	3.3	B/X5R	3.5			0.85±0.1
	LMK325 BJ475MD		RoHS	4.7	B/X5R	5			0.85±0.1
	LMK325 BJ106MD <sup>*1</sup>		RoHS	10	B/X5R	5			0.85±0.1
	LMK325 BJ226MY <sup>*1</sup>		RoHS	22	B/X5R	5			1.9+0.1/-0.2
	LMK325 BJ106MN		RoHS	10	B/X5R <sup>*2</sup>	3.5	1.9±0.2		
	LMK325 BJ226MM		RoHS	22	B/X5R	5	2.5±0.2		
	LMK325 BJ476MM <sup>*1</sup>		RoHS	47	X5R	10	2.5±0.2		
	LMK325 BJ107MM <sup>*1</sup>		RoHS	100	X5R	10	2.5±0.3		
6.3V	JMK325 BJ226MY		RoHS	22	B/X5R	5	1.9+0.1/-0.2		
	JMK325 BJ107MY <sup>*1</sup>		RoHS	100	X5R	10	1.9+0.1/-0.2		
	JMK325 BJ476MN <sup>*1</sup>		RoHS	47	X5R	10	1.9±0.2		
	JMK325 BJ476MM <sup>*1</sup>		RoHS	47	X5R	10	2.5±0.2		
	JMK325 BJ107MM <sup>*1</sup>		RoHS	100	X5R	10	2.5±0.3		

Please specify the capacitance tolerance code.

\*1 1.5 times the rated voltage is applied to the chip during the high temperature loading test.

\*2 We may provide X7R for some items according to the individual specification.

[Temp.char. B7:X7R]

Rated Voltage	Ordering code		EHS (Environmental Hazardous Substances)	Capacitance 〔μF〕	Temperature characteristics	Dissipation factor 〔%〕Max.	Soldering method R:Reflow soldering W:Wave soldering	Capacitance tolerance	Thickness 〔mm〕
25V	TMK325 B7 335MN		RoHS	3.3	X7R	3.5	R	±20%	1.9±0.2
	TMK325 B7 475MN <sup>*1</sup>		RoHS	4.7	X7R	3.5			1.9±0.2
16V	EMK325 B7 475MN		RoHS	4.7	X7R	3.5			1.9±0.2
10V	LMK325 B7 106MN		RoHS	10	X7R	3.5			1.9±0.2

Please specify the capacitance tolerance code.

\*1 1.5 times the rated voltage is applied to the chip during the high temperature loading test.

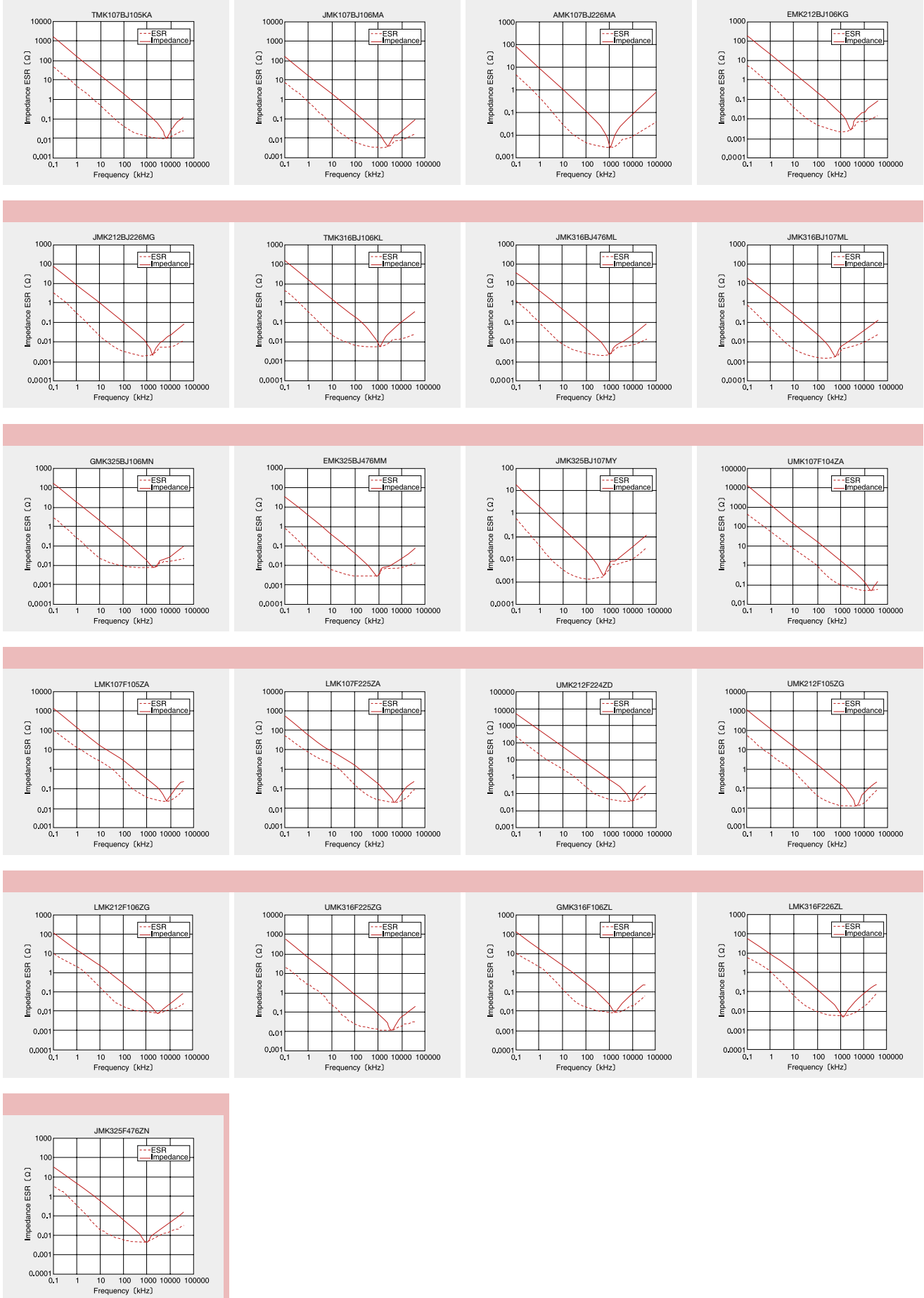
[Temp.char. F:F/Y5V]

Rated Voltage	Ordering code		EHS (Environmental Hazardous Substances)	Capacitance 〔μF〕	Temperature characteristics	Dissipation factor 〔%〕Max.	Soldering method R:Reflow soldering W:Wave soldering	Capacitance tolerance	Thickness 〔mm〕
16V	EMK325 F226ZN		RoHS	22	F/Y5V	16	R	+80% -20%	1.9±0.2
10V	LMK325 F226ZN		RoHS	22	F/Y5V	16			1.9±0.2
6.3V	JMK325 F476ZN		RoHS	47	F/Y5V	16			1.9±0.2

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● Example of Impedance ESR vs. Frequency characteristics

■ Taiyo Yuden multilayer ceramic capacitor



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