

Multilayer Ceramic Capacitors for Automotive Body & Chassis and Infotainment

REFLOW

AEC-Q200

PART NUMBER

M	C	A	S	J	3	1	L	S	B	5	1	0	6	K	T	N	A	0	1
①				②	③		④	⑤		⑥	⑦			⑧	⑨			⑩	

① Series

Code (1)(2)(3)(4)	
MCAS	Multilayer Ceramic Capacitor (High dielectric type) for Automotive Body & Chassis and Infotainment Multilayer Ceramic Capacitor (Temperature compensating type) for Automotive Body & Chassis and Infotainment Medium-High voltage Multilayer Ceramic Capacitor for Automotive Body & Chassis and Infotainment
MCAR	High frequency/Low loss Medium-High Voltage Multilayer Ceramic Capacitor for Automotive Body & Chassis and Infotainment
MCJC	Soft Termination Multilayer Ceramic Capacitor for Automotive Body & Chassis and Infotainment
MCRL	LW Reversal Decoupling Low ESL Capacitor (LWDC™) for Automotive Body & Chassis and Infotainment

(1) Product Group

Code	
M	Multilayer Ceramic Capacitor

(2) Category

Code	Recommended equipment	Quality Grade
C	Automotive Electronic Equipment (Body & Chassis, Infotainment)	2

(3) Type

Code	
A	2 terminals
J	Soft Termination
R	LW reversal

(4) Features, Characteristics

Code	
S	Standard/General
R	High frequency/Low loss
C	Internal code (Soft Termination)
L	Low ESL

② Rated voltage

Code	Rated voltage [VDC]
A	4
J	6.3
L	10
E	16
T	25
G	35
U	50
H	100
Q	250
S	630

④ Thickness

Code	Thickness [mm]
3	0.3
5	0.5
7	0.7
8	0.8
9	0.85
Q	1.15
G	1.25
L	1.6
N	1.9 (0.088 max ※)
M	2.5

Note : ※LW reverse type (MCRL)

③ Dimension (L × W)

Code	L × W [mm]	JIS(mm)	EIA(inch)
06	0.6 × 0.3	0603	0201
10	1.0 × 0.5	1005	0402
	0.52 × 1.0 ※	0510	0204
16	1.6 × 0.8	1608	0603
	0.8 × 1.6 ※	0816	0306
21	2.0 × 1.25	2012	0805
	1.25 × 2.0 ※	1220	0508
31	3.2 × 1.6	3216	1206
32	3.2 × 2.5	3225	1210
45	4.5 × 3.2	4532	1812

Note : ※LW reverse type (MCRL)

⑤Dimension tolerance

Code	Dimension code	L[mm]	W[mm]	T[mm]	Thickness code
A	10	1.0 ± 0.10	0.5 ± 0.10	0.5 ± 0.10	5
	16	$1.6 + 0.15 / - 0.05$	$0.8 + 0.15 / - 0.05$	$0.8 + 0.15 / - 0.05$	8
	21	$2.0 + 0.15 / - 0.05$	$1.25 + 0.15 / - 0.05$	$1.25 + 0.15 / - 0.05$	G
	31	3.2 ± 0.20	1.6 ± 0.20	1.15 ± 0.20	Q
	32	3.2 ± 0.30	2.5 ± 0.30	1.6 ± 0.20	L
B	10	$1.0 + 0.15 / - 0.05$	$0.5 + 0.15 / - 0.05$	$0.5 + 0.15 / - 0.05$	5
	16	$1.6 + 0.20 / - 0$	$0.8 + 0.20 / - 0$	$0.8 + 0.20 / - 0$	8
	21	$2.0 + 0.20 / - 0$	$1.25 + 0.20 / - 0$	$1.25 + 0.20 / - 0$	G
	31	3.2 ± 0.30	1.6 ± 0.30	1.6 ± 0.30	L
C	10	$1.0 + 0.20 / - 0$	$0.5 + 0.20 / - 0$	$0.5 + 0.20 / - 0$	5
	16	$1.6 + 0.25 / - 0$	$0.8 + 0.25 / - 0$	$0.8 + 0.25 / - 0$	8
	21	$2.0 + 0.25 / - 0$	$1.25 + 0.25 / - 0$	$1.25 + 0.25 / - 0$	G
D	21	$2.0 + 0.30 / - 0$	$1.25 + 0.30 / - 0$	$1.25 + 0.30 / - 0$	G
H	31	3.2 ± 0.15	1.6 ± 0.15	1.15 ± 0.10	Q
J	21	$2.0 + 0.15 / - 0.05$	$1.25 + 0.15 / - 0.05$	0.85 ± 0.10	9
L	21	$2.0 + 0.20 / - 0$	$1.25 + 0.20 / - 0$	0.85 ± 0.10	9
	32	3.2 ± 0.50	2.5 ± 0.30	2.5 ± 0.30	M
N	21	2.0 ± 0.15	1.25 ± 0.15	0.85 ± 0.15	9
S	06	0.6 ± 0.03	0.3 ± 0.03	0.3 ± 0.03	3
	10	1.0 ± 0.05	0.5 ± 0.05	0.5 ± 0.05	5
		0.52 ± 0.05 ※	1.0 ± 0.05	0.3 ± 0.05	3
	16	1.6 ± 0.10	0.8 ± 0.10	0.7 ± 0.10	7
				0.8 ± 0.10	8
		0.8 ± 0.10 ※	1.6 ± 0.10	0.5 ± 0.05	5
	21	2.0 ± 0.10	1.25 ± 0.10	0.85 ± 0.10	9
				1.25 ± 0.10	G
		1.25 ± 0.15 ※	2.0 ± 0.15	0.85 ± 0.10	9
	31	3.2 ± 0.15	1.6 ± 0.15	1.6 ± 0.20	L
	32	3.2 ± 0.30	2.5 ± 0.20	1.9 ± 0.20	N
				2.5 ± 0.20	M
	45	4.5 ± 0.40	3.2 ± 0.30	2.5 ± 0.20	M

Note :※LW reverse type(MCRL)

⑥ Temperature characteristics code

■ High dielectric type

Code	Applicable standard		Temperature range [°C]	Ref. Temp. [°C]	Capacitance change	Capacitance tolerance	Tolerance code
B5	EIA	X5R	-55 ~ + 85	25	± 15%	± 10%	K
						± 20%	M
C6	EIA	X6S	-55 ~ + 105	25	± 22%	± 10%	K
						± 20%	M
B7	EIA	X7R	-55 ~ + 125	25	± 15%	± 10%	K
						± 20%	M
C7	EIA	X7S	-55 ~ + 125	25	± 22%	± 10%	K
						± 20%	M
D7	EIA	X7T	-55 ~ + 125	25	+ 22% / - 33%	± 10%	K
						± 20%	M

■ Temperature compensating type

Code	Applicable standard		Temperature range[°C]	Ref. Temp.[°C]	Capacitance change	Capacitance tolerance	Tolerance code
CG	JIS	CG	-55~ +125	20	0±30ppm/°C	±0.05pF	A
						±0.1pF	B
						±0.25pF	C
	EIA	C0G		25		±0.5pF	D
						±2%	G
						±5%	J
CH	JIS	CH	20	0±60ppm/°C	±0.25pF	C	
					±0.5pF	D	
	EIA	C0H	25		±5%	J	
CJ	JIS	CJ	20	0±120ppm/°C	±0.25pF	C	
	EIA	C0J	25				
CK	JIS	CK	20	0±250ppm/°C	±0.25pF	C	
	EIA	C0K	25				

⑦ Nominal capacitance

Code (example)	Nominal capacitance
0R5	0.5pF
010	1pF
100	10pF
101	100pF
102	1,000pF
103	0.01μF
104	0.1μF
105	1μF
106	10μF
107	100μF

Note : R=Decimal point

⑧ Capacitance tolerance

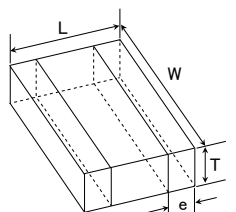
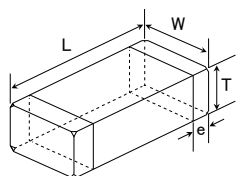
Code	Capacitance tolerance
A	± 0.05pF
B	± 0.1pF
C	± 0.25pF
D	± 0.5pF
G	± 2%
J	± 5%
K	± 10%
M	± 20%

⑨ Packaging

Code	Packaging
F	φ178mm Taping (2mm pitch)
R	φ178mm Embossed Taping (4mm pitch)
T	φ178mm Taping (4mm pitch)
P	φ178mm Taping (4mm pitch, 1000 pcs/reel) 3225 type (Thickness code M)

⑩ Internal code

■ STANDARD EXTERNAL DIMENSIONS



※LW reverse type

Type	JIS (mm)	EIA (inch)	Dimension [mm] (inch)				
			L	W	T	*1	e
MCAS□06	0603	0201	0.6±0.03 (0.024±0.001)	0.3±0.03 (0.012±0.001)	0.3±0.03 (0.012±0.001)	3	0.15±0.05 (0.006±0.002)
MCAR□10 MCAS□10	1005	0402	1.0±0.05 (0.039±0.002)	0.5±0.05 (0.020±0.002)	0.5±0.05 (0.020±0.002)	5	0.25±0.10 (0.010±0.004)
MCRL□10 ※	0510	0204	0.52±0.05 (0.020±0.002)	1.0±0.05 (0.039±0.002)	0.3±0.05 (0.012±0.002)	3	0.18±0.08 (0.007±0.003)
MCAS□16 MCAR□16	1608	0603	1.6±0.10 (0.063±0.004)	0.8±0.10 (0.031±0.004)	0.7±0.10 (0.028±0.004)	7	0.35±0.25 (0.014±0.010)
					0.8±0.10 (0.031±0.004)	8	
MCJC□16	1608	0603	1.6±0.10 (0.063±0.004)	0.8±0.10 (0.031±0.004)	0.8±0.10 (0.031±0.004)	8	0.35+0.3/-0.25 (0.014+0.012/-0.010)
MCRL□16 ※	0816	0306	0.8±0.10 (0.031±0.004)	1.6±0.10 (0.063±0.004)	0.5±0.05 (0.020±0.002)	5	0.25±0.15 (0.010±0.006)
MCAS□21 MCAR□21	2012	0805	2.0±0.10 (0.079±0.004)	1.25±0.10 (0.049±0.004)	0.85±0.10 (0.033±0.004)	9	0.5±0.25 (0.020±0.010)
					1.25±0.10 (0.049±0.004)	G	
MCJC□21	2012	0805	2.0±0.10 (0.079±0.004)	1.25±0.10 (0.049±0.004)	0.85±0.10 (0.033±0.004)	9	0.5+0.35/-0.25 (0.020+0.014/-0.010)
					1.25±0.10 (0.049±0.004)	G	
MCRL□21 ※	1220	0508	1.25±0.15 (0.049±0.006)	2.0±0.15 (0.079±0.006)	0.85±0.10 (0.033±0.004)	9	0.3±0.2 (0.012±0.008)
MCAS□31	3216	1206	3.2±0.15 (0.126±0.006)	1.6±0.15 (0.063±0.006)	1.15±0.10 (0.045±0.004)	Q	0.5+0.35/-0.25 (0.020+0.014/-0.010)
					1.6±0.20 (0.063±0.008)	L	
MCJC□31	3216	1206	3.2±0.15 (0.126±0.006)	1.6±0.15 (0.063±0.006)	1.15±0.10 (0.045±0.004)	Q	0.6+0.4/-0.3 (0.024+0.016/-0.012)
					1.6±0.20 (0.063±0.008)	L	
MCAS□32	3225	1210	3.2±0.30 (0.126±0.012)	2.5±0.20 (0.098±0.008)	1.9±0.20 (0.075±0.008)	N	0.6±0.3 (0.024±0.012)
					2.5±0.20 (0.098±0.008)	M	
MCJC□32	3225	1210	3.2±0.30 (0.126±0.012)	2.5±0.20 (0.098±0.008)	1.9±0.20 (0.075±0.008)	N	0.6+0.4/-0.3 (0.024+0.016/-0.012)
					2.5±0.20 (0.098±0.008)	M	
MCAS□45	4532	1812	4.5±0.40 (0.177±0.016)	3.2±0.30 (0.126±0.012)	2.5±0.20 (0.098±0.008)	M	0.9±0.6 (0.035±0.024)

Note :※LW reverse type (MCRL), *1.Thickness code

■ STANDARD QUANTITY

Type			Thickness		Standard quantity [pcs]	
Code	JIS(mm)	EIA(inch)	[mm]	Code	Paper tape	Embossed tape
06	0603	0201	0.3	3	15000	—
10	1005	0402	0.5	5	10000	—
	0510 ※	0204 ※	0.3	3		
16	1608	0603	0.7	7	4000	—
			0.8	8		
			0.8	8	3000 (Soft Termination)	3000 (Soft Termination)
	0816 ※	0306 ※	0.5	5	—	4000
21	2012	0805	0.85	9	4000	—
			1.25	G	—	3000
			1.25	G	—	2000 (Soft Termination)
	1220 ※	0508 ※	0.85	9	4000	—
31	3216	1206	1.15	Q	—	3000
			1.6	L	—	2000
32	3225	1210	1.9	N	—	2000
			2.5	M	—	500(T), 1000(P)
45	4532	1812	2.5	M	—	500

Note : ※.LW Reverse type (MCRL)

PART NUMBER

Medium-High Voltage Multilayer Ceramic Capacitors for Automotive Body & Chassis and Infotainment

1005TYPE

【Temperature Characteristic B7 : X7R(−55~+125℃), C7 : X7S(−55~+125℃)】 0.5mm Thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics		Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness*1 [mm]	Note
								Rated voltage x %		
MCASH105SB7221□FCA01	HMK105 B7221□VHFE	100		X7R	220 p	±10, ±20	3.5	200	0.5±0.05	
MCASH105SB7331□FCA01	HMK105 B7331□VHFE			X7R	330 p	±10, ±20	3.5	200	0.5±0.05	
MCASH105SB7471□FCA01	HMK105 B7471□VHFE			X7R	470 p	±10, ±20	3.5	200	0.5±0.05	
MCASH105SB7681□FCA01	HMK105 B7681□VHFE			X7R	680 p	±10, ±20	3.5	200	0.5±0.05	
MCASH105SB7102□FCA01	HMK105 B7102□VHFE			X7R	1000 p	±10, ±20	3.5	200	0.5±0.05	
MCASH105SB7152□FCA01	HMK105 B7152□VHFE			X7R	1500 p	±10, ±20	3.5	200	0.5±0.05	
MCASH105SB7222□FCA01	HMK105 B7222□VHFE			X7R	2200 p	±10, ±20	3.5	200	0.5±0.05	
MCASH105SB7332□FCA01	HMK105 B7332□VHFE			X7R	3300 p	±10, ±20	3.5	200	0.5±0.05	
MCASH105SB7472□FCA01	HMK105 B7472□VHFE			X7R	4700 p	±10, ±20	3.5	200	0.5±0.05	
MCASH105SB7682□FCA01	HMK105 B7682□VHFE			X7R	6800 p	±10, ±20	3.5	200	0.5±0.05	
MCASH105SB7103□FCA01	HMK105 B7103□VHFE			X7R	0.01 μ	±10, ±20	3.5	200	0.5±0.05	

1608TYPE

【Temperature Characteristic B7 : X7R(−55~+125℃), C7 : X7S(−55~+125℃)】 0.8mm Thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics		Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness*1 [mm]	Note
								Rated voltage x %		
MCASH168SB7102□TNA01	HMK107 B7102□AHT	100		X7R	1000 p	±10, ±20	3.5	200	0.8±0.10	
MCASH168SB7152□TNA01	HMK107 B7152□AHT			X7R	1500 p	±10, ±20	3.5	200	0.8±0.10	
MCASH168SB7222□TNA01	HMK107 B7222□AHT			X7R	2200 p	±10, ±20	3.5	200	0.8±0.10	
MCASH168SB7332□TNA01	HMK107 B7332□AHT			X7R	3300 p	±10, ±20	3.5	200	0.8±0.10	
MCASH168SB7472□TNA01	HMK107 B7472□AHT			X7R	4700 p	±10, ±20	3.5	200	0.8±0.10	
MCASH168SB7682□TNA01	HMK107 B7682□AHT			X7R	6800 p	±10, ±20	3.5	200	0.8±0.10	
MCASH168SB7103□TNA01	HMK107 B7103□AHT			X7R	0.01 μ	±10, ±20	3.5	200	0.8±0.10	
MCASH168SB7153□TNA01	HMK107 B7153□AHT			X7R	0.015 μ	±10, ±20	3.5	200	0.8±0.10	
MCASH168SB7223□TNA01	HMK107 B7223□AHT			X7R	0.022 μ	±10, ±20	3.5	200	0.8±0.10	
MCASH168SB7333□TNA01	HMK107 B7333□AHT			X7R	0.033 μ	±10, ±20	3.5	200	0.8±0.10	
MCASH168SB7473□TNA01	HMK107 B7473□AHT			X7R	0.047 μ	±10, ±20	3.5	200	0.8±0.10	
MCASH168AB7683□TCA01	HMK107AB7683□AHTE			X7R	0.068 μ	±10, ±20	3.5	200	0.8±0.15/-0.05	
MCASH168SB7104□TNA01	HMK107 B7104□AHT			X7R	0.1 μ	±10, ±20	3.5	200	0.8±0.10	
MCASH168AC7154□TCA01	HMK107AC7154□AHTE			X7S	0.15 μ	±10, ±20	3.5	150	0.8±0.15/-0.05	
MCASH168SC7224□TCA01	HMK107 C7224□AHTE			X7S	0.22 μ	±10, ±20	3.5	150	0.8±0.10	

2012TYPE

【Temperature Characteristic B7 : X7R(−55~+125℃), C7 : X7S(−55~+125℃)】 1.25mm Thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics		Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness*1 [mm]	Note
								Rated voltage x %		
MCASH21GSB7472□TNA01	HMK212 B7472□GHT	100		X7R	4700 p	±10, ±20	2.5	200	1.25±0.10	
MCASH21GSB7682□TNA01	HMK212 B7682□GHT			X7R	6800 p	±10, ±20	2.5	200	1.25±0.10	
MCASH21GSB7103□TNA01	HMK212 B7103□GHT			X7R	0.01 μ	±10, ±20	3.5	200	1.25±0.10	
MCASH21GSB7153□TNA01	HMK212 B7153□GHT			X7R	0.015 μ	±10, ±20	3.5	200	1.25±0.10	
MCASH21GSB7223□TNA01	HMK212 B7223□GHT			X7R	0.022 μ	±10, ±20	3.5	200	1.25±0.10	
MCASH21GSB7333□TNA01	HMK212 B7333□GHT			X7R	0.033 μ	±10, ±20	3.5	200	1.25±0.10	
MCASH21GSB7473□TNA01	HMK212 B7473□GHT			X7R	0.047 μ	±10, ±20	3.5	200	1.25±0.10	
MCASH21GSB7683□TNA01	HMK212 B7683□GHT			X7R	0.068 μ	±10, ±20	3.5	200	1.25±0.10	
MCASH21GSB7104□TNA01	HMK212 B7104□GHT			X7R	0.1 μ	±10, ±20	3.5	200	1.25±0.10	
MCASH21GBB7154□TCA01	HMK212BB7154□GHTE			X7R	0.15 μ	±10, ±20	3.5	200	1.25±0.20/-0	
MCASH21GSB7224□TNA01	HMK212 B7224□GHT			X7R	0.22 μ	±10, ±20	3.5	200	1.25±0.10	
MCASH21GBC7334□TCA01	HMK212BC7334□GHTE			X7S	0.33 μ	±10, ±20	3.5	150	1.25±0.20/-0	
MCASH21GSC7474□TCA01	HMK212 C7474□GHTE			X7S	0.47 μ	±10, ±20	3.5	150	1.25±0.10	
MCASH21GCC7684□TCA01	HMK212CC7684□GHTE			X7S	0.68 μ	±10, ±20	3.5	150	1.25±0.25/-0	
MCASH21GBC7105□TCA01	HMK212BC7105□GHTE			X7S	1 μ	±10, ±20	3.5	150	1.25±0.20/-0	
MCASQ21GSB7472□TNA01	QMK212 B7472□GHT	250		X7R	4700 p	±10, ±20	2.5	150	1.25±0.10	
MCASQ21GSB7682□TNA01	QMK212 B7682□GHT			X7R	6800 p	±10, ±20	2.5	150	1.25±0.10	
MCASQ21GSB7103□TNA01	QMK212 B7103□GHT			X7R	0.01 μ	±10, ±20	2.5	150	1.25±0.10	
MCASQ21GSB7153□TNA01	QMK212 B7153□GHT			X7R	0.015 μ	±10, ±20	2.5	150	1.25±0.10	
MCASQ21GSB7223□TNA01	QMK212 B7223□GHT			X7R	0.022 μ	±10, ±20	2.5	150	1.25±0.10	
MCASQ21GAB7473□TCA01	QMK212AB7473□GHTE			X7R	0.047 μ	±10, ±20	2.5	150	1.25±0.15/-0.05	

【Temperature Characteristic B7 : X7R(−55~+125℃)】 0.85mm Thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics		Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness*1 [mm]	Note
								Rated voltage x %		
MCASH219SB7102□TNA01	HMK212 B7102□DHT	100		X7R	1000 p	±10, ±20	2.5	200	0.85±0.10	
MCASH219SB7152□TNA01	HMK212 B7152□DHT			X7R	1500 p	±10, ±20	2.5	200	0.85±0.10	
MCASH219SB7222□TNA01	HMK212 B7222□DHT			X7R	2200 p	±10, ±20	2.5	200	0.85±0.10	
MCASH219SB7332□TNA01	HMK212 B7332□DHT			X7R	3300 p	±10, ±20	2.5	200	0.85±0.10	
MCASQ219SB7102□TNA01	QMK212 B7102□DHT			X7R	1000 p	±10, ±20	2.5	150	0.85±0.10	
MCASQ219SB7152□TNA01	QMK212 B7152□DHT	250		X7R	1500 p	±10, ±20	2.5	150	0.85±0.10	
MCASQ219SB7222□TNA01	QMK212 B7222□DHT			X7R	2200 p	±10, ±20	2.5	150	0.85±0.10	
MCASQ219SB7332□TNA01	QMK212 B7332□DHT			X7R	3300 p	±10, ±20	2.5	150	0.85±0.10	

PART NUMBER

3216TYPE

【Temperature Characteristic B7 : X7R(−55~+125°C), C7 : X7S(−55~+125°C)】 1.6mm Thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness*1 [mm]	Note
							Rated voltage x %		
MCASH31LSB7473□TNA01	HMK316 B7473□LHT	100	X7R	0.047 μ	±10, ±20	3.5	200	1.6±0.20	
MCASH31LSB7683□TNA01	HMK316 B7683□LHT		X7R	0.068 μ	±10, ±20	3.5	200	1.6±0.20	
MCASH31LSB7104□TNA01	HMK316 B7104□LHT		X7R	0.1 μ	±10, ±20	3.5	200	1.6±0.20	
MCASH31LSB7154□TNA01	HMK316 B7154□LHT		X7R	0.15 μ	±10, ±20	3.5	200	1.6±0.20	
MCASH31LSB7224□TNA01	HMK316 B7224□LHT		X7R	0.22 μ	±10, ±20	3.5	200	1.6±0.20	
MCASH31LSB7334□TNA01	HMK316 B7334□LHT		X7R	0.33 μ	±10, ±20	3.5	200	1.6±0.20	
MCASH31LSB7474□TNA01	HMK316 B7474□LHT		X7R	0.47 μ	±10, ±20	3.5	200	1.6±0.20	
MCASH31LSB7684□TCA01	HMK316 B7684□LHTE		X7R	0.68 μ	±10, ±20	3.5	200	1.6±0.20	
MCASH31LSB7105□TNA01	HMK316 B7105□LHT		X7R	1 μ	±10, ±20	3.5	200	1.6±0.20	
MCASH31LBC7155□TCA01	HMK316BC7155□LHTE		X7S	1.5 μ	±10, ±20	3.5	150	1.6±0.30	
MCASH31LAC7225□TCA01	HMK316AC7225□LHTE		X7S	2.2 μ	±10, ±20	3.5	150	1.6±0.20	
MCASQ31LSB7223□TNA01	QMK316 B7223□LHT	250	X7R	0.022 μ	±10, ±20	2.5	150	1.6±0.20	
MCASQ31LSB7333□TNA01	QMK316 B7333□LHT		X7R	0.033 μ	±10, ±20	2.5	150	1.6±0.20	
MCASQ31LSB7473□TNA01	QMK316 B7473□LHT		X7R	0.047 μ	±10, ±20	2.5	150	1.6±0.20	
MCASQ31LSB7683□TNA01	QMK316 B7683□LHT		X7R	0.068 μ	±10, ±20	2.5	150	1.6±0.20	
MCASQ31LSB7104□TNA01	QMK316 B7104□LHT		X7R	0.1 μ	±10, ±20	2.5	150	1.6±0.20	
MCASS31LSB7153□TNA01	SMK316 B7153□LHT	630	X7R	0.015 μ	±10, ±20	2.5	120	1.6±0.20	
MCASS31LSB7223□TNA01	SMK316 B7223□LHT		X7R	0.022 μ	±10, ±20	2.5	120	1.6±0.20	
MCASS31LAB7333□TNA01	SMK316AB7333□LHT		X7R	0.033 μ	±10, ±20	2.5	120	1.6±0.20	
MCASS31LAB7473□TNA01	SMK316AB7473□LHT		X7R	0.047 μ	±10, ±20	2.5	120	1.6±0.20	
			X7R	0.047 μ	±10, ±20	2.5	120	1.6±0.20	

【Temperature Characteristic B7 : X7R(−55~+125°C)】 1.15mm Thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness*1 [mm]	Note
							Rated voltage x %		
MCASS31QHB7102□TNA01	SMK316 B7102□FHT	630	X7R	1000 p	±10, ±20	2.5	120	1.15±0.10	
MCASS31QHB7152□TNA01	SMK316 B7152□FHT		X7R	1500 p	±10, ±20	2.5	120	1.15±0.10	
MCASS31QHB7222□TNA01	SMK316 B7222□FHT		X7R	2200 p	±10, ±20	2.5	120	1.15±0.10	
MCASS31QHB7332□TNA01	SMK316 B7332□FHT		X7R	3300 p	±10, ±20	2.5	120	1.15±0.10	
MCASS31QHB7472□TNA01	SMK316 B7472□FHT		X7R	4700 p	±10, ±20	2.5	120	1.15±0.10	
MCASS31QHB7682□TNA01	SMK316 B7682□FHT		X7R	6800 p	±10, ±20	2.5	120	1.15±0.10	
MCASS31QHB7103□TNA01	SMK316 B7103□FHT		X7R	0.01 μ	±10, ±20	2.5	120	1.15±0.10	
			X7R	0.01 μ	±10, ±20	2.5	120	1.15±0.10	

3225TYPE

【Temperature Characteristic B7 : X7R(−55~+125°C), C7 : X7S(−55~+125°C)】 2.5mm Thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness*1 [mm]	Note
							Rated voltage x %		
MCASH32MSB7225□PNA01	HMK325 B7225□MHP	100	X7R	2.2 μ	±10, ±20	3.5	200	2.5±0.20	
MCASH32MSC7475□PCA01	HMK325 C7475□NHPE		X7S	4.7 μ	±10, ±20	3.5	150	2.5±0.20	

【Temperature Characteristic B7 : X7R(−55~+125°C)】 1.9mm Thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness*1 [mm]	Note
							Rated voltage x %		
MCASH32NSB7224□TNA01	HMK325 B7224□NHT	100	X7R	0.22 μ	±10, ±20	3.5	200	1.9±0.20	
MCASH32NSB7474□TNA01	HMK325 B7474□NHT		X7R	0.47 μ	±10, ±20	3.5	200	1.9±0.20	
MCASH32NSB7684□TNA01	HMK325 B7684□NHT		X7R	0.68 μ	±10, ±20	3.5	200	1.9±0.20	
MCASH32NSB7105□TNA01	HMK325 B7105□NHT		X7R	1 μ	±10, ±20	3.5	200	1.9±0.20	
MCASQ32NSB7473□TNA01	QMK325 B7473□NHT		X7R	0.047 μ	±10, ±20	2.5	150	1.9±0.20	
MCASQ32NSB7104□TNA01	QMK325 B7104□NHT	250	X7R	0.1 μ	±10, ±20	2.5	150	1.9±0.20	
MCASQ32NSB7154□TNA01	QMK325 B7154□NHT		X7R	0.15 μ	±10, ±20	2.5	150	1.9±0.20	
MCASQ32NSB7224□TNA01	QMK325 B7224□NHT		X7R	0.22 μ	±10, ±20	2.5	150	1.9±0.20	
MCASS32NSB7223□TNA01	SMK325 B7223□NHT	630	X7R	0.022 μ	±10, ±20	2.5	120	1.9±0.20	
MCASS32NSB7333□TNA01	SMK325 B7333□NHT		X7R	0.033 μ	±10, ±20	2.5	120	1.9±0.20	
MCASS32NSB7473□TNA01	SMK325 B7473□NHT		X7R	0.047 μ	±10, ±20	2.5	120	1.9±0.20	

4532TYPE

【Temperature Characteristic B7 : X7R(−55~+125°C)】 2.5mm Thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness*1 [mm]	Note
							Rated voltage x %		
MCASH45MSB7474□TNA01	HMK432 B7474□MHT	100	X7R	0.47 μ	±10, ±20	3.5	200	2.5±0.20	
MCASH45MSB7105□TNA01	HMK432 B7105□MHT		X7R	1 μ	±10, ±20	3.5	200	2.5±0.20	
MCASH45MSB7155□TNA01	HMK432 B7155□MHT		X7R	1.5 μ	±10, ±20	3.5	200	2.5±0.20	
MCASH45MSB7225□TNA01	HMK432 B7225□MHT		X7R	2.2 μ	±10, ±20	3.5	200	2.5±0.20	
MCASQ45MSB7104□TNA01	QMK432 B7104□MHT	250	X7R	0.1 μ	±10, ±20	2.5	150	2.5±0.20	
MCASQ45MSB7224□TNA01	QMK432 B7224□MHT		X7R	0.22 μ	±10, ±20	2.5	150	2.5±0.20	
MCASQ45MSB7334□TNA01	QMK432 B7334□MHT		X7R	0.33 μ	±10, ±20	2.5	150	2.5±0.20	
MCASQ45MSB7474□TNA01	QMK432 B7474□MHT		X7R	0.47 μ	±10, ±20	2.5	150	2.5±0.20	
MCASS45MSB7473□TNA01	SMK432 B7473□MHT	630	X7R	0.047 μ	±10, ±20	2.5	120	2.5±0.20	
MCASS45MSB7683□TNA01	SMK432 B7683□MHT		X7R	0.068 μ	±10, ±20	2.5	120	2.5±0.20	
MCASS45MSB7104□TNA01	SMK432 B7104□MHT		X7R	0.1 μ	±10, ±20	2.5	120	2.5±0.20	