

Multilayer Ceramic Capacitors for General Electronic Equipment for Consumer

REFLOW

PART NUMBER

M	S	A	S	U	3	1	L	B	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)	
MSAS	Multilayer Ceramic Capacitor (High dielectric type) for General Electronic Equipment for Consumer Multilayer Ceramic Capacitor (Temperature compensating type) for General Electronic Equipment for Consumer Medium-High Voltage Multilayer Ceramic Capacitor for General Electronic Equipment for Consumer
MSAR	High frequency/Low loss Multilayer Ceramic Capacitor for General Electronic Equipment for Consumer
MSAY	Low distortion design/Audible/Good bias Multilayer Ceramic Capacitor for General Electronic Equipment for Consumer
MSRL	LW Reversal Decoupling Low ESL Capacitor (LWDC™) for General Electronic Equipment for Consumer

(1) Product Group

Code	
M	Multilayer Ceramic Capacitor

(2) Category

Code	Recommended equipment	Quality Grade
S	General Electronic Equipment for Consumer	3

(3) Type

Code	
A	2 terminals
R	LW reversal

(4) Features, Characteristics

Code	
S	Standard/General
R	High frequency/Low loss
Y	Low distortion design/Audible/Good bias
L	Low ESL

② Rated voltage

Code	Rated voltage [VDC]
P	2.5
A	4
J	6.3
L	10
E	16
T	25
G	35
U	50
H	100
Q	250
S	630
X	2000

③ Dimension

Code	(L × W) [mm]	JIS(mm)	EIA(inch)
02	0.25 × 0.125	0201	008004
04	0.4 × 0.2	0402	01005
06	0.6 × 0.3	0603	0201
1L	1.0 × 0.5	1005	0402
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 (MSRL)

④ Thickness

Code	Thickness [mm]
1	0.125
H	0.13 (1.5 max ※)
E	0.18 (1.1 max ※)
2	0.2
3	0.3
K	0.45
5	0.5
8	0.8
9	0.85
Q	1.15
G	1.25
L	1.6
N	1.9 (0.088 ※)
Y	2.0 max
M	2.5

Note : ※LW reverse type (MSRL)

⑤Dimension tolerance

Code	Dimension code	L[mm]	W[mm]	T[mm]	Thickness code
A	06	0.6 ± 0.05	0.3 ± 0.05	0.3 ± 0.05	3
	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	1.6 ± 0.20	L
	32	3.2 ± 0.30	2.5 ± 0.30	2.5 ± 0.30	M
B	45	4.5 ± 0.40	3.2 ± 0.30	$2.0 + 0 / - 0.30$	Y
	06	0.6 ± 0.09	0.3 ± 0.09	0.3 ± 0.09	3
	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	32	3.2 ± 0.30	2.5 ± 0.20	$1.9 + 0.1 / - 0.20$	Y
	10	$1.0 + 0.20 / - 0$	$0.5 + 0.20 / - 0$	$0.5 + 0.20 / - 0$	5
E	06	$0.6 + 0.25 / - 0$	$0.3 + 0.25 / - 0$	$0.3 + 0.25 / - 0$	3
	10	$1.0 + 0.30 / - 0$	$0.5 + 0.30 / - 0$	$0.5 + 0.30 / - 0$	5
H	31	3.2 ± 0.15	1.6 ± 0.15	0.85 ± 0.10	9
				1.15 ± 0.10	Q
J	16	$1.6 + 0.20 / - 0$	$0.8 + 0.20 / - 0$	0.45 ± 0.05	K
	21	$2.0 + 0.15 / - 0.05$	$1.25 + 0.15 / - 0.05$	0.85 ± 0.10	9
	32	3.2 ± 0.30	2.5 ± 0.20	0.85 ± 0.10	9
				1.15 ± 0.10	Q
L	21	$2.0 + 0.20 / - 0$	$1.25 + 0.20 / - 0$	0.85 ± 0.10	9
	31	3.2 ± 0.20	1.6 ± 0.20	0.85 ± 0.10	9
S	02	0.25 ± 0.013	0.125 ± 0.013	0.125 ± 0.013	1
	04	0.4 ± 0.02	0.2 ± 0.02	0.2 ± 0.02	2
	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	0.8 ± 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
				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	2.5 ± 0.20	M
				1.9 ± 0.20	N
	45	4.5 ± 0.40	3.2 ± 0.30	2.5 ± 0.20	M
T	16	1.6 ± 0.10	0.8 ± 0.10	0.45 ± 0.05	K
X	1L	1.0 ± 0.05	0.5 ± 0.05	0.13 ± 0.02	H
				0.18 ± 0.02	E
				0.2 ± 0.02	2
Y	1L	1.0 ± 0.05	0.5 ± 0.05	0.3 ± 0.03	3

Note :※LW reverse type (MSRL)

⑥ Temperature characteristics code

■ High dielectric type (SD: Excluding Low distortion design/Audible/Good bias Multilayer Ceramic Capacitor)

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

Note : ※LD: Low distortion design/Audible/Good bias Multilayer Ceramic Capacitor

■ 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	-55~+125	20	0±60ppm/°C	±0.05pF	A
						±0.1pF	B
						±0.25pF	C
	EIA	C0H		25		±0.5pF	D
						±2%	G
						±5%	J
CJ	JIS	CJ	-55~+125	20	0±120ppm/°C	±0.05pF	A
						±0.1pF	B
	EIA	C0J		25		±0.25pF	C
CK	JIS	CK	-55~+125	20	0±250ppm/°C	±0.05pF	A
						±0.1pF	B
	EIA	C0K		25		±0.25pF	C

⑥ Series code

• Low distortion design/Audible/Good bias Multilayer Ceramic Capacitor

Code	Series code
SD	Standard

• Medium-High Voltage Multilayer Ceramic Capacitor

Code	Series code
SD	Standard

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

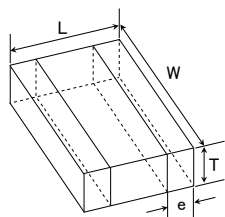
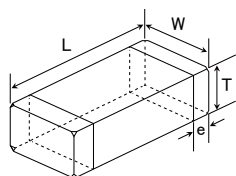
Code	Capacitance tolerance
A	± 0.05pF
B	± 0.1pF
C	± 0.25pF
D	± 0.5pF
G	± 2%
J	± 5%
K	± 10%
M	± 20%

⑨ Packaging

Code	Packaging
F	φ178mm Taping (2mm pitch)
T	φ178mm Taping (4mm pitch)
P	φ178mm Taping (4mm pitch, 1000 pcs/reel) 3225 type (Thickness code M)
R	φ178mm Embossed Taping 1005type (2mm pitch) 1608type (4mm pitch)
W	φ178mm Embossed Taping (1mm pitch) 0201/0402type

⑩ Internal code

■ STANDARD EXTERNAL DIMENSIONS



※LW reverse type

Type	JIS (mm)	EIA (inch)	Dimension [mm]				
			L	W	T	*1	e
MSAS□02	0201	008004	0.25±0.013	0.125±0.013	0.125±0.013	1	0.0675±0.0275
MSAR□02	0201	008004	0.25±0.013	0.125±0.013	0.125±0.013	1	0.0675±0.0275
MSAS□04	0402	01005	0.4±0.02	0.2±0.02	0.2±0.02	2	0.1±0.03
MSAR□04	0402	01005	0.4±0.02	0.2±0.02	0.2±0.02	2	0.1±0.03
MSAS□06	0603	0201	0.6±0.03	0.3±0.03	0.3±0.03	3	0.15±0.05
MSAS□1L	1005	0402	1.0±0.05	0.5±0.05	0.13±0.02	H	0.25±0.10
					0.18±0.02	E	
					0.2±0.02	2	
					0.3±0.03	3	
MSAS□10	1005	0402	1.0±0.05	0.5±0.05	0.5±0.05	5	0.25±0.10
MSAY□1L	1005	0402	1.0±0.05	0.5±0.05	0.3±0.03	3	0.25±0.10
MSAY□10	1005	0402	1.0±0.05	0.5±0.05	0.5±0.05	5	0.25±0.10
MSRL□10 ※	0510	0204	0.52±0.05	1.0±0.05	0.3±0.05	3	0.18±0.08
MSAS□16	1608	0603	1.6±0.10	0.8±0.10	0.45±0.05	K	0.35±0.25
					0.8±0.10	8	
MSAY□16	1608	0603	1.6±0.10	0.8±0.10	0.8±0.10	8	0.35±0.25
MSRL□16 ※	0816	0306	0.8±0.10	1.6±0.10	0.5±0.05	5	0.25±0.15
MSAS□21	2012	0805	2.0±0.10	1.25±0.10	0.85±0.10	9	0.5±0.25
					1.25±0.10	G	
MSRL□21 ※	1220	0508	1.25±0.15	2.0±0.15	0.85±0.10	9	0.3±0.2
MSAS□31	3216	1206	3.2±0.15	1.6±0.15	0.85±0.10	9	0.5+0.35/-0.25
					1.15±0.10	Q	
					1.6±0.20	L	
MSAY□31	3216	1206	3.2±0.15	1.6±0.15	1.15±0.10	Q	0.5+0.35/-0.25
					1.6±0.20	L	
MSAS□32	3225	1210	3.2±0.30	2.5±0.20	0.85±0.10	9	0.6±0.3
					1.15±0.10	Q	
					1.9±0.20	N	
					1.9+0.1/-0.20	Y	
MSAY□32	3225	1210	3.2±0.30	2.5±0.20	2.5±0.20	M	0.6±0.3
					1.9±0.20	N	
MSAS□45	4532	1812	4.5±0.40	3.2±0.30	2.0+0/-0.30	Y	0.6±0.4
					2.5±0.20	M	0.9±0.6

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

■ STANDARD QUANTITY

Type			Thickness		Standard quantity [pcs]	
Code	JIS(mm)	EIA(inch)	[mm]	Code	Paper tape	Embossed tape
02	0201	008004	0.125	1	—	50000
04	0402	01005	0.2	2	—	40000
06	0603	0201	0.3	3	15000	—
1L	1005	0402	0.13	H	—	20000
			0.18	E	—	15000
			0.2	2	20000	—
			0.3	3	15000	—
10	1005	0402	0.5	5	10000	—
	0510 ※	0204 ※	0.3	3		
16	1608	0603	0.45	K	4000	—
			0.8	8		
	0816 ※	0306 ※	0.5	5	—	4000
21	2012	0805	0.85	9	4000	—
			1.25	G	—	3000
	1220 ※	0508 ※	0.85	9	4000	—
31	3216	1206	0.85	9	4000	—
			1.15	Q	—	3000
			1.6	L	—	2000
32	3225	1210	0.85	9	—	2000
			1.15	Q		
			1.9	N		
			2.0 max	Y		
			2.5	M	—	1000
45	4532	1812	2.0 max	Y	—	1000
			2.5	M	—	500

Note : ※: LW Reverse type (MSRL)

PART NUMBER

Medium-High Voltage Multilayer Ceramic Capacitors for General Electronic Equipment for Consumer

1005TYPE

【Temperature Characteristic B7 : X7R(−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 ^{*3} [mm]	Note
								Rated voltage x %		
MSASH105SB7221□FNA01	HMK105 B7221□V-F	100		X7R	220 p	±10, ±20	2.5	200	0.5±0.05	
MSASH105SB7331□FNA01	HMK105 B7331□V-F			X7R	330 p	±10, ±20	2.5	200	0.5±0.05	
MSASH105SB7471□FNA01	HMK105 B7471□V-F			X7R	470 p	±10, ±20	2.5	200	0.5±0.05	
MSASH105SB7681□FNA01	HMK105 B7681□V-F			X7R	680 p	±10, ±20	2.5	200	0.5±0.05	
MSASH105SB7102□FNA01	HMK105 B7102□V-F			X7R	1000 p	±10, ±20	2.5	200	0.5±0.05	
MSASH105SB7152□FNA01	HMK105 B7152□V-F			X7R	1500 p	±10, ±20	2.5	200	0.5±0.05	
MSASH105SB7222□FNA01	HMK105 B7222□V-F			X7R	2200 p	±10, ±20	2.5	200	0.5±0.05	
MSASH105SB7332□FNA01	HMK105 B7332□V-F			X7R	3300 p	±10, ±20	2.5	200	0.5±0.05	
MSASH105SB7472□FNA01	HMK105 B7472□V-F			X7R	4700 p	±10, ±20	2.5	200	0.5±0.05	

【Temperature Characteristic CΔ : CΔ/C0Δ(−55~+125℃)】 0.5mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics		Capacitance [F]	Capacitance tolerance	Q (at 1MHz) (min)	HTLT	Thickness ^{*3} [mm]	Note
								Rated voltage x %		
MSASH105SCH080DFNA01	HMK105 CH080DV-F	100	CH	C0H	8 p	±0.5pF	560	200	0.5±0.05	
MSASH105SCH090DFNA01	HMK105 CH090DV-F		CH	C0H	9 p	±0.5pF	580	200	0.5±0.05	
MSASH105SCH100DFNA01	HMK105 CH100DV-F		CH	C0H	10 p	±0.5pF	600	200	0.5±0.05	
MSASH105SCH120JFNA01	HMK105 CH120JV-F		CH	C0H	12 p	±5%	640	200	0.5±0.05	
MSASH105SCH150JFNA01	HMK105 CH150JV-F		CH	C0H	15 p	±5%	700	200	0.5±0.05	
MSASH105SCH180JFNA01	HMK105 CH180JV-F		CH	C0H	18 p	±5%	760	200	0.5±0.05	
MSASH105SCH220JFNA01	HMK105 CH220JV-F		CH	C0H	22 p	±5%	840	200	0.5±0.05	
MSASH105SCH240JFNA01	HMK105 CH240JV-F		CH	C0H	24 p	±5%	880	200	0.5±0.05	
MSASH105SCH270JFNA01	HMK105 CH270JV-F		CH	C0H	27 p	±5%	940	200	0.5±0.05	
MSASH105SCH330JFNA01	HMK105 CH330JV-F		CH	C0H	33 p	±5%	1000	200	0.5±0.05	
MSASH105SCH390JFNA01	HMK105 CH390JV-F		CH	C0H	39 p	±5%	1000	200	0.5±0.05	
MSASH105SCH470JFNA01	HMK105 CH470JV-F		CH	C0H	47 p	±5%	1000	200	0.5±0.05	
MSASH105SCH560JFNA01	HMK105 CH560JV-F		CH	C0H	56 p	±5%	1000	200	0.5±0.05	
MSASH105SCH680JFNA01	HMK105 CH680JV-F		CH	C0H	68 p	±5%	1000	200	0.5±0.05	
MSASH105SCH820JFNA01	HMK105 CH820JV-F		CH	C0H	82 p	±5%	1000	200	0.5±0.05	
MSASH105SCH101JFNA01	HMK105 CH101JV-F		CH	C0H	100 p	±5%	1000	200	0.5±0.05	
MSASH105SCG080DFNA01	HMK105 CG080DV-F		CG	C0G	8 p	±0.5pF	560	200	0.5±0.05	
MSASH105SCG090DFNA01	HMK105 CG090DV-F		CG	C0G	9 p	±0.5pF	580	200	0.5±0.05	
MSASH105SCG100DFNA01	HMK105 CG100DV-F		CG	C0G	10 p	±0.5pF	600	200	0.5±0.05	
MSASH105SCG120JFNA01	HMK105 CG120JV-F		CG	C0G	12 p	±5%	640	200	0.5±0.05	
MSASH105SCG150JFNA01	HMK105 CG150JV-F		CG	C0G	15 p	±5%	700	200	0.5±0.05	
MSASH105SCG180JFNA01	HMK105 CG180JV-F		CG	C0G	18 p	±5%	760	200	0.5±0.05	
MSASH105SCG220JFNA01	HMK105 CG220JV-F		CG	C0G	22 p	±5%	840	200	0.5±0.05	
MSASH105SCG240JFNA01	HMK105 CG240JV-F		CG	C0G	24 p	±5%	880	200	0.5±0.05	
MSASH105SCG270JFNA01	HMK105 CG270JV-F		CG	C0G	27 p	±5%	940	200	0.5±0.05	
MSASH105SCG330JFNA01	HMK105 CG330JV-F		CG	C0G	33 p	±5%	1000	200	0.5±0.05	
MSASH105SCG390JFNA01	HMK105 CG390JV-F		CG	C0G	39 p	±5%	1000	200	0.5±0.05	
MSASH105SCG470JFNA01	HMK105 CG470JV-F		CG	C0G	47 p	±5%	1000	200	0.5±0.05	
MSASH105SCG560JFNA01	HMK105 CG560JV-F		CG	C0G	56 p	±5%	1000	200	0.5±0.05	
MSASH105SCG680JFNA01	HMK105 CG680JV-F		CG	C0G	68 p	±5%	1000	200	0.5±0.05	
MSASH105SCG820JFNA01	HMK105 CG820JV-F		CG	C0G	82 p	±5%	1000	200	0.5±0.05	
MSASH105SCG101JFNA01	HMK105 CG101JV-F		CG	C0G	100 p	±5%	1000	200	0.5±0.05	

1608TYPE

【Temperature Characteristic B5(BJ) : B(−25~+85℃)/X5R(−55~+85℃)】 0.8mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics		Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
								Rated voltage x %		
MSASH168SB5102□TNA01	HMK107 BJ102□A-T	100	B	X5R ^{*1}	1000 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5152□TNA01	HMK107 BJ152□A-T		B	X5R ^{*1}	1500 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5222□TNA01	HMK107 BJ222□A-T		B	X5R ^{*1}	2200 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5332□TNA01	HMK107 BJ332□A-T		B	X5R ^{*1}	3300 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5472□TNA01	HMK107 BJ472□A-T		B	X5R ^{*1}	4700 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5682□TNA01	HMK107 BJ682□A-T		B	X5R ^{*1}	6800 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5103□TNA01	HMK107 BJ103□A-T		B	X5R ^{*1}	0.01 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5153□TNA01	HMK107 BJ153□A-T		B	X5R ^{*1}	0.015 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5223□TNA01	HMK107 BJ223□A-T		B	X5R ^{*1}	0.022 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5333□TNA01	HMK107 BJ333□A-T		B	X5R ^{*1}	0.033 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5473□TNA01	HMK107 BJ473□A-T		B	X5R ^{*1}	0.047 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5104□TNA01	HMK107 BJ104□A-T		B	X5R ^{*1}	0.1 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB5224□TCA01	HMK107 BJ224□A-TE		B	X5R ^{*1}	0.22 μ	±10, ±20	3.5	150	0.8±0.10	

【Temperature Characteristic 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 ^{*3} [mm]	Note
								Rated voltage x %		
MSASH168SC7224□TCA01	HMK107 C7224□A-TE	100		X7S	0.22 μ	±10, ±20	3.5	150	0.8±0.10	

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【Temperature Characteristic B7 : X7R(−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 ^{*3} [mm]	Note
							Rated voltage x %		
MSASH168SB7102□TNA01	HMK107 B7102□A-T	100	X7R	1000 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7152□TNA01	HMK107 B7152□A-T		X7R	1500 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7222□TNA01	HMK107 B7222□A-T		X7R	2200 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7332□TNA01	HMK107 B7332□A-T		X7R	3300 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7472□TNA01	HMK107 B7472□A-T		X7R	4700 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7682□TNA01	HMK107 B7682□A-T		X7R	6800 p	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7103□TNA01	HMK107 B7103□A-T		X7R	0.01 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7153□TNA01	HMK107 B7153□A-T		X7R	0.015 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7223□TNA01	HMK107 B7223□A-T		X7R	0.022 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7333□TNA01	HMK107 B7333□A-T		X7R	0.033 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7473□TNA01	HMK107 B7473□A-T		X7R	0.047 μ	±10, ±20	3.5	200	0.8±0.10	
MSASH168SB7104□TNA01	HMK107 B7104□A-T		X7R	0.1 μ	±10, ±20	3.5	200	0.8±0.10	

【Temperature Characteristic SD : Standard(−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 ^{*3} [mm]	Note
							Rated voltage x %		
MSASH168SSD101KTNA01	HMK107 SD101KA-T	100	Standard Type	100 p	±10	0.1	200	0.8±0.10	
MSASH168SSD121KTNA01	HMK107 SD121KA-T		Standard Type	120 p	±10	0.1	200	0.8±0.10	
MSASH168SSD151KTNA01	HMK107 SD151KA-T		Standard Type	150 p	±10	0.1	200	0.8±0.10	
MSASH168SSD181KTNA01	HMK107 SD181KA-T		Standard Type	180 p	±10	0.1	200	0.8±0.10	
MSASH168SSD221KTNA01	HMK107 SD221KA-T		Standard Type	220 p	±10	0.1	200	0.8±0.10	
MSASH168SSD271KTNA01	HMK107 SD271KA-T		Standard Type	270 p	±10	0.1	200	0.8±0.10	
MSASH168SSD331KTNA01	HMK107 SD331KA-T		Standard Type	330 p	±10	0.1	200	0.8±0.10	
MSASH168SSD391KTNA01	HMK107 SD391KA-T		Standard Type	390 p	±10	0.1	200	0.8±0.10	
MSASH168SSD471KTNA01	HMK107 SD471KA-T		Standard Type	470 p	±10	0.1	200	0.8±0.10	
MSASH168SSD561KTNA01	HMK107 SD561KA-T		Standard Type	560 p	±10	0.1	200	0.8±0.10	
MSASH168SSD681KTNA01	HMK107 SD681KA-T		Standard Type	680 p	±10	0.1	200	0.8±0.10	
MSASH168SSD821KTNA01	HMK107 SD821KA-T		Standard Type	820 p	±10	0.1	200	0.8±0.10	
MSASH168SSD102KTNA01	HMK107 SD102KA-T		Standard Type	1000 p	±10	0.1	200	0.8±0.10	

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【Temperature Characteristic B5(BJ) : B(−25~+85℃)/X5R(−55~+85℃)】 1.25mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASH21GSB5103□TNA01	HMK212 BJ103□G-T	100	B X5R ^{*1}	0.01 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB5153□TNA01	HMK212 BJ153□G-T		B X5R ^{*1}	0.015 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB5223□TNA01	HMK212 BJ223□G-T		B X5R ^{*1}	0.022 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB5333□TNA01	HMK212 BJ333□G-T		B X5R ^{*1}	0.033 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB5473□TNA01	HMK212 BJ473□G-T		B X5R ^{*1}	0.047 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB5683□TNA01	HMK212 BJ683□G-T		B X5R ^{*1}	0.068 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB5104□TNA01	HMK212 BJ104□G-T		B X5R ^{*1}	0.1 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB5224□TNA01	HMK212 BJ224□G-T		B X5R ^{*1}	0.22 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB5474□TCA01	HMK212 BJ474□G-TE		B X5R ^{*1}	0.47 μ	±10, ±20	3.5	150	1.25±0.10	
MSASH21GBB5105□TCA01	HMK212BBJ105□G-TE		B X5R ^{*1}	1 μ	±10, ±20	3.5	150	1.25+0.20/-0	
MSASQ21GSB5472□TNA01	QMK212 BJ472□G-T	250	B X5R ^{*1}	4700 p	±10, ±20	2.5	150	1.25±0.10	
MSASQ21GSB5682□TNA01	QMK212 BJ682□G-T		B X5R ^{*1}	6800 p	±10, ±20	2.5	150	1.25±0.10	
MSASQ21GSB5103□TNA01	QMK212 BJ103□G-T		B X5R ^{*1}	0.01 μ	±10, ±20	2.5	150	1.25±0.10	
MSASQ21GSB5153□TNA01	QMK212 BJ153□G-T		B X5R ^{*1}	0.015 μ	±10, ±20	2.5	150	1.25±0.10	
MSASQ21GSB5223□TNA01	QMK212 BJ223□G-T		B X5R ^{*1}	0.022 μ	±10, ±20	2.5	150	1.25±0.10	

【Temperature Characteristic B5(BJ) : B(−25~+85℃)/X5R(−55~+85℃)】 0.85mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASQ219SB5102□TNA01	QMK212 BJ102□D-T	250	B X5R ^{*1}	1000 p	±10, ±20	2.5	150	0.85±0.10	
MSASQ219SB5152□TNA01	QMK212 BJ152□D-T		B X5R ^{*1}	1500 p	±10, ±20	2.5	150	0.85±0.10	
MSASQ219SB5222□TNA01	QMK212 BJ222□D-T		B X5R ^{*1}	2200 p	±10, ±20	2.5	150	0.85±0.10	
MSASQ219SB5332□TNA01	QMK212 BJ332□D-T		B X5R ^{*1}	3300 p	±10, ±20	2.5	150	0.85±0.10	

【Temperature Characteristic 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 ^{*3} [mm]	Note
							Rated voltage x %		
MSASH21GSC7474□TCA01	HMK212 C7474□G-TE	100	X7S	0.47 μ	±10, ±20	3.5	150	1.25±0.10	
MSASH21GBC7105□TCA01	HMK212BC7105□G-TE		X7S	1 μ	±10, ±20	3.5	150	1.25+0.20/-0	

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PART NUMBER

【Temperature Characteristic B7 : X7R(−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 ³ [mm]	Note
								Rated voltage x %		
MSASH21GSB7103□TNA01	HMK212 B7103□G-T	100		X7R	0.01 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB7153□TNA01	HMK212 B7153□G-T			X7R	0.015 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB7223□TNA01	HMK212 B7223□G-T			X7R	0.022 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB7333□TNA01	HMK212 B7333□G-T			X7R	0.033 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB7473□TNA01	HMK212 B7473□G-T			X7R	0.047 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB7683□TNA01	HMK212 B7683□G-T			X7R	0.068 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB7104□TNA01	HMK212 B7104□G-T			X7R	0.1 μ	±10, ±20	3.5	200	1.25±0.10	
MSASH21GSB7224□TNA01	HMK212 B7224□G-T			X7R	0.22 μ	±10, ±20	3.5	200	1.25±0.10	
MSASQ21GSB7472□TNA01	QMK212 B7472□G-T	250		X7R	4700 p	±10, ±20	2.5	150	1.25±0.10	
MSASQ21GSB7682□TNA01	QMK212 B7682□G-T			X7R	6800 p	±10, ±20	2.5	150	1.25±0.10	
MSASQ21GSB7103□TNA01	QMK212 B7103□G-T			X7R	0.01 μ	±10, ±20	2.5	150	1.25±0.10	
MSASQ21GSB7153□TNA01	QMK212 B7153□G-T			X7R	0.015 μ	±10, ±20	2.5	150	1.25±0.10	
MSASQ21GSB7223□TNA01	QMK212 B7223□G-T			X7R	0.022 μ	±10, ±20	2.5	150	1.25±0.10	

【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 ³ [mm]	Note
								Rated voltage x %		
MSASQ219SB7102□TNA01	QMK212 B7102□D-T	250		X7R	1000 p	±10, ±20	2.5	150	0.85±0.10	
MSASQ219SB7152□TNA01	QMK212 B7152□D-T			X7R	1500 p	±10, ±20	2.5	150	0.85±0.10	
MSASQ219SB7222□TNA01	QMK212 B7222□D-T			X7R	2200 p	±10, ±20	2.5	150	0.85±0.10	
MSASQ219SB7332□TNA01	QMK212 B7332□D-T			X7R	3300 p	±10, ±20	2.5	150	0.85±0.10	

【Temperature Characteristic SD : Standard(−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 ³ [mm]	Note
								Rated voltage x %		
MSASH219SSD222KTNA01	HMK212 SD222KD-T	100	Standard Type		2200 p	±10	0.1	200	0.85±0.10	
MSASH219SSD472KTNA01	HMK212 SD472KD-T		Standard Type		4700 p	±10	0.1	200	0.85±0.10	
MSASQ219SSD101KTNA01	QMK212 SD101KD-T		Standard Type		100 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD121KTNA01	QMK212 SD121KD-T		Standard Type		120 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD151KTNA01	QMK212 SD151KD-T	250	Standard Type		150 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD181KTNA01	QMK212 SD181KD-T		Standard Type		180 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD221KTNA01	QMK212 SD221KD-T		Standard Type		220 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD331KTNA01	QMK212 SD331KD-T		Standard Type		330 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD391KTNA01	QMK212 SD391KD-T		Standard Type		390 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD471KTNA01	QMK212 SD471KD-T		Standard Type		470 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD561KTNA01	QMK212 SD561KD-T		Standard Type		560 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD681KTNA01	QMK212 SD681KD-T		Standard Type		680 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD821KTNA01	QMK212 SD821KD-T	100	Standard Type		820 p	±10	0.1	150	0.85±0.10	
MSASQ219SSD102KTNA01	QMK212 SD102KD-T		Standard Type		1000 p	±10	0.1	150	0.85±0.10	

【Temperature Characteristic SD : Standard(−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 ³ [mm]	Note
								Rated voltage x %		
MSASH21GSSD392KTNA01	HMK212 SD392KG-T	100	Standard Type		3900 p	±10	0.1	200	1.25±0.10	

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【Temperature Characteristic B5(BJ) : B(−25~+85℃)/X5R(−55~+85℃)】 1.6mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics		Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ³ [mm]	Note
								Rated voltage x %		
MSASH31LSB5473□TNA01	HMK316 BJ473□L-T	100	B	X5R ⁺	0.047 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB5683□TNA01	HMK316 BJ683□L-T		B	X5R ⁺	0.068 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB5104□TNA01	HMK316 BJ104□L-T		B	X5R ⁺	0.1 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB5154□TNA01	HMK316 BJ154□L-T		B	X5R ⁺	0.15 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB5224□TNA01	HMK316 BJ224□L-T		B	X5R ⁺	0.22 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB5334□TNA01	HMK316 BJ334□L-T		B	X5R ⁺	0.33 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB5474□TNA01	HMK316 BJ474□L-T		B	X5R ⁺	0.47 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB5105□TNA01	HMK316 BJ105□L-T		B	X5R ⁺	1 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LAB5225□TCA01	HMK316ABJ225□L-TE	150	B	X5R ⁺	2.2 μ	±10, ±20	3.5	150	1.6±0.20	
MSASQ31LSB5333□TNA01	QMK316 BJ333□L-T		B	X5R ⁺	0.033 μ	±10, ±20	2.5	150	1.6±0.20	
MSASQ31LSB5473□TNA01	QMK316 BJ473□L-T		B	X5R ⁺	0.047 μ	±10, ±20	2.5	150	1.6±0.20	
MSASQ31LSB5683□TNA01	QMK316 BJ683□L-T		B	X5R ⁺	0.068 μ	±10, ±20	2.5	150	1.6±0.20	
MSASQ31LSB5104□TNA01	QMK316 BJ104□L-T	150	B	X5R ⁺	0.1 μ	±10, ±20	2.5	150	1.6±0.20	
MSASS31LSB5153□TNA01	SMK316 BJ153□L-T		B	X5R ⁺	0.015 μ	±10, ±20	2.5	120	1.6±0.20	
MSASS31LSB5223□TNA01	SMK316 BJ223□L-T		B	X5R ⁺	0.022 μ	±10, ±20	2.5	120	1.6±0.20	

【Temperature Characteristic B5(BJ) : B(−25~+85℃)/X5R(−55~+85℃)】 1.15mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics		Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ³ [mm]	Note
								Rated voltage x %		
MSASS31QHB5102□TNA01	SMK316 BJ102□F-T	630	B	X5R ⁺	1000 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB5152□TNA01	SMK316 BJ152□F-T		B	X5R ⁺	1500 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB5222□TNA01	SMK316 BJ222□F-T		B	X5R ⁺	2200 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB5332□TNA01	SMK316 BJ332□F-T		B	X5R ⁺	3300 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB5472□TNA01	SMK316 BJ472□F-T		B	X5R ⁺	4700 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB5682□TNA01	SMK316 BJ682□F-T		B	X5R ⁺	6800 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB5103□TNA01	SMK316 BJ103□F-T		B	X5R ⁺	0.01 μ	±10, ±20	2.5	120	1.15±0.10	

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PART NUMBER

【Temperature Characteristic C7 : X7S(−55~+125℃)】 1.6mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASH31LAC7225□TCA01	HMK316AC7225□L-TE	100	X7S	2.2 μ	±10, ±20	3.5	150	1.6±0.20	

【Temperature Characteristic B7 : X7R(−55~+125℃)】 1.6mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASH31LSB7473□TNA01	HMK316 B7473□L-T	100	X7R	0.047 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB7683□TNA01	HMK316 B7683□L-T		X7R	0.068 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB7104□TNA01	HMK316 B7104□L-T		X7R	0.1 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB7154□TNA01	HMK316 B7154□L-T		X7R	0.15 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB7224□TNA01	HMK316 B7224□L-T		X7R	0.22 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB7334□TNA01	HMK316 B7334□L-T		X7R	0.33 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB7474□TNA01	HMK316 B7474□L-T		X7R	0.47 μ	±10, ±20	3.5	200	1.6±0.20	
MSASH31LSB7105□TNA01	HMK316 B7105□L-T		X7R	1 μ	±10, ±20	3.5	200	1.6±0.20	
MSASQ31LSB7333□TNA01	QMK316 B7333□L-T	250	X7R	0.033 μ	±10, ±20	2.5	150	1.6±0.20	
MSASQ31LSB7473□TNA01	QMK316 B7473□L-T		X7R	0.047 μ	±10, ±20	2.5	150	1.6±0.20	
MSASQ31LSB7683□TNA01	QMK316 B7683□L-T		X7R	0.068 μ	±10, ±20	2.5	150	1.6±0.20	
MSASQ31LSB7104□TNA01	QMK316 B7104□L-T		X7R	0.1 μ	±10, ±20	2.5	150	1.6±0.20	
MSASS31LSB7153□TNA01	SMK316 B7153□L-T		X7R	0.015 μ	±10, ±20	2.5	120	1.6±0.20	
MSASS31LSB7223□TNA01	SMK316 B7223□L-T		X7R	0.022 μ	±10, ±20	2.5	120	1.6±0.20	
MSASS31LAB7333□TNA01	SMK316AB7333□L-T		X7R	0.033 μ	±10, ±20	2.5	120	1.6±0.20	
MSASS31LAB7473□TNA01	SMK316AB7473□L-T		X7R	0.047 μ	±10, ±20	2.5	120	1.6±0.20	

【Temperature Characteristic B7 : X7R(−55~+125℃)】 1.15mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASS31QHB7102□TNA01	SMK316 B7102□F-T	630	X7R	1000 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB7152□TNA01	SMK316 B7152□F-T		X7R	1500 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB7222□TNA01	SMK316 B7222□F-T		X7R	2200 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB7332□TNA01	SMK316 B7332□F-T		X7R	3300 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB7472□TNA01	SMK316 B7472□F-T		X7R	4700 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB7682□TNA01	SMK316 B7682□F-T		X7R	6800 p	±10, ±20	2.5	120	1.15±0.10	
MSASS31QHB7103□TNA01	SMK316 B7103□F-T		X7R	0.01 μ	±10, ±20	2.5	120	1.15±0.10	

【Temperature Characteristic SD : Standard(−55~+125℃)】 1.6mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASH31LSSD223KTN01	HMK316 SD223KL-T	100	Standard Type	0.022 μ	±10	0.1	200	1.6±0.20	
MSASQ31LSSD103KTN01	QMK316 SD103KL-T	250	Standard Type	0.01 μ	±10	0.1	150	1.6±0.20	

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【Temperature Characteristic B5(BJ) : B(−25~+85℃)/X5R(−55~+85℃)】 2.5mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASH32MSB5225□PNA01	HMK325 BJ225□M-P	100	B	X5R ^{*1}	2.2 μ	±10, ±20	3.5	200	2.5±0.20
MSASH32MSB5475□PCA01	HMK325 BJ475□M-PE		B	X5R ^{*1}	4.7 μ	±10, ±20	3.5	150	2.5±0.20

【Temperature Characteristic B5(BJ) : B(−25~+85℃)/X5R(−55~+85℃)】 1.9mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASH32NSB5154□TNA01	HMK325 BJ154□N-T	100	B	X5R ^{*1}	0.15 μ	±10, ±20	3.5	200	1.9±0.20
MSASH32NSB5224□TNA01	HMK325 BJ224□N-T		B	X5R ^{*1}	0.22 μ	±10, ±20	3.5	200	1.9±0.20
MSASH32NSB5334□TNA01	HMK325 BJ334□N-T		B	X5R ^{*1}	0.33 μ	±10, ±20	3.5	200	1.9±0.20
MSASH32NSB5474□TNA01	HMK325 BJ474□N-T		B	X5R ^{*1}	0.47 μ	±10, ±20	3.5	200	1.9±0.20
MSASH32NSB5684□TNA01	HMK325 BJ684□N-T		B	X5R ^{*1}	0.68 μ	±10, ±20	3.5	200	1.9±0.20
MSASH32NSB5105□TNA01	HMK325 BJ105□N-T		B	X5R ^{*1}	1 μ	±10, ±20	3.5	200	1.9±0.20
MSASH32NSB5475□TCA01	HMK325 BJ475□N-TE		B	X5R ^{*1}	4.7 μ	±10, ±20	3.5	150	1.9±0.20
MSASQ32NSB5473□TNA01	QMK325 BJ473□N-T	250	B	X5R ^{*1}	0.047 μ	±10, ±20	2.5	150	1.9±0.20
MSASQ32NSB5104□TNA01	QMK325 BJ104□N-T		B	X5R ^{*1}	0.1 μ	±10, ±20	2.5	150	1.9±0.20
MSASQ32NSB5154□TNA01	QMK325 BJ154□N-T		B	X5R ^{*1}	0.15 μ	±10, ±20	2.5	150	1.9±0.20
MSASQ32NSB5224□TNA01	QMK325 BJ224□N-T		B	X5R ^{*1}	0.22 μ	±10, ±20	2.5	150	1.9±0.20
MSASS32NSB5223□TNA01	SMK325 BJ223□N-T		B	X5R ^{*1}	0.022 μ	±10, ±20	2.5	120	1.9±0.20
MSASS32NSB5333□TNA01	SMK325 BJ333□N-T		B	X5R ^{*1}	0.033 μ	±10, ±20	2.5	120	1.9±0.20
MSASS32NSB5473□TNA01	SMK325 BJ473□N-T		B	X5R ^{*1}	0.047 μ	±10, ±20	2.5	120	1.9±0.20

【Temperature Characteristic B5(BJ) : B(−25~+85℃)/X5R(−55~+85℃)】 1.15mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASH32QJB5104□TNA01	HMK325 BJ104□F-T	100	B	X5R ^{*1}	0.1 μ	±10, ±20	3.5	200	1.15±0.10

【Temperature Characteristic B7 : X7R(−55~+125℃)】 2.5mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASH32MSB7225□PNA01	HMK325 B7225□M-P	100	X7R	2.2 μ	±10, ±20	3.5	200	2.5±0.20	

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PART NUMBER

【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 ^{*3} [mm]	Note
							Rated voltage x %		
MSASH32NSB7154□TNA01	HMK325 B7154□N-T	100	X7R	0.15 μ	±10, ±20	3.5	200	1.9±0.20	
MSASH32NSB7224□TNA01	HMK325 B7224□N-T		X7R	0.22 μ	±10, ±20	3.5	200	1.9±0.20	
MSASH32NSB7334□TNA01	HMK325 B7334□N-T		X7R	0.33 μ	±10, ±20	3.5	200	1.9±0.20	
MSASH32NSB7474□TNA01	HMK325 B7474□N-T		X7R	0.47 μ	±10, ±20	3.5	200	1.9±0.20	
MSASH32NSB7684□TNA01	HMK325 B7684□N-T		X7R	0.68 μ	±10, ±20	3.5	200	1.9±0.20	
MSASH32NSB7105□TNA01	HMK325 B7105□N-T		X7R	1 μ	±10, ±20	3.5	200	1.9±0.20	
MSASQ32NSB7473□TNA01	QMK325 B7473□N-T	250	X7R	0.047 μ	±10, ±20	2.5	150	1.9±0.20	
MSASQ32NSB7104□TNA01	QMK325 B7104□N-T		X7R	0.1 μ	±10, ±20	2.5	150	1.9±0.20	
MSASQ32NSB7154□TNA01	QMK325 B7154□N-T		X7R	0.15 μ	±10, ±20	2.5	150	1.9±0.20	
MSASQ32NSB7224□TNA01	QMK325 B7224□N-T		X7R	0.22 μ	±10, ±20	2.5	150	1.9±0.20	
MSASS32NSB7223□TNA01	SMK325 B7223□N-T	630	X7R	0.022 μ	±10, ±20	2.5	120	1.9±0.20	
MSASS32NSB7333□TNA01	SMK325 B7333□N-T		X7R	0.033 μ	±10, ±20	2.5	120	1.9±0.20	
MSASS32NSB7473□TNA01	SMK325 B7473□N-T		X7R	0.047 μ	±10, ±20	2.5	120	1.9±0.20	

【Temperature Characteristic 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 ^{*3} [mm]	Note
							Rated voltage x %		
MSASH32MSC7475□PCA01	HMK325 C7475□M-PE	100	X7S	4.7 μ	±10, ±20	3.5	150	2.5±0.20	

【Temperature Characteristic C7 : X7S(−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 ^{*3} [mm]	Note
							Rated voltage x %		
MSASH32NSC7475□TCA01	HMK325 C7475□N-TE	100	X7S	4.7 μ	±10, ±20	3.5	150	1.9±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 ^{*3} [mm]	Note
							Rated voltage x %		
MSASH32QJB7104□TNA01	HMK325 B7104□F-T	100	X7R	0.1 μ	±10, ±20	3.5	200	1.15±0.10	

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【Temperature Characteristic B5(BJ) : B(−25~+85°C)/X5R(−55~+85°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 ^{*3} [mm]	Note
							Rated voltage x %		
MSASH45MSB5474□TNA01	HMK432 BJ474□M-T	100	B	X5R ^{*1}	0.47 μ	±10, ±20	3.5	200	2.5±0.20
MSASH45MSB5105□TNA01	HMK432 BJ105□M-T		B	X5R ^{*1}	1 μ	±10, ±20	3.5	200	2.5±0.20
MSASH45MSB5155□TNA01	HMK432 BJ155□M-T		B	X5R ^{*1}	1.5 μ	±10, ±20	3.5	200	2.5±0.20
MSASH45MSB5225□TNA01	HMK432 BJ225□M-T		B	X5R ^{*1}	2.2 μ	±10, ±20	3.5	200	2.5±0.20
MSASQ45MSB5104□TNA01	QMK432 BJ104□M-T		B	X5R ^{*1}	0.1 μ	±10, ±20	2.5	150	2.5±0.20
MSASQ45MSB5224□TNA01	QMK432 BJ224□M-T		B	X5R ^{*1}	0.22 μ	±10, ±20	2.5	150	2.5±0.20
MSASQ45MSB5334□TNA01	QMK432 BJ334□M-T	250	B	X5R ^{*1}	0.33 μ	±10, ±20	2.5	150	2.5±0.20
MSASQ45MSB5474□TNA01	QMK432 BJ474□M-T		B	X5R ^{*1}	0.47 μ	±10, ±20	2.5	150	2.5±0.20
MSASS45MSB5473□TNA01	SMK432 BJ473□M-T		B	X5R ^{*1}	0.047 μ	±10, ±20	2.5	120	2.5±0.20
MSASS45MSB5683□TNA01	SMK432 BJ683□M-T	630	B	X5R ^{*1}	0.068 μ	±10, ±20	2.5	120	2.5±0.20
MSASS45MSB5104□TNA01	SMK432 BJ104□M-T		B	X5R ^{*1}	0.1 μ	±10, ±20	2.5	120	2.5±0.20

【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 ^{*3} [mm]	Note
							Rated voltage x %		
MSASH45MSB7474□TNA01	HMK432 B7474□M-T	100	X7R	0.47 μ	±10, ±20	3.5	200	2.5±0.20	
MSASH45MSB7105□TNA01	HMK432 B7105□M-T		X7R	1 μ	±10, ±20	3.5	200	2.5±0.20	
MSASH45MSB7155□TNA01	HMK432 B7155□M-T		X7R	1.5 μ	±10, ±20	3.5	200	2.5±0.20	
MSASH45MSB7225□TNA01	HMK432 B7225□M-T		X7R	2.2 μ	±10, ±20	3.5	200	2.5±0.20	
MSASQ45MSB7104□TNA01	QMK432 B7104□M-T	250	X7R	0.1 μ	±10, ±20	2.5	150	2.5±0.20	
MSASQ45MSB7224□TNA01	QMK432 B7224□M-T		X7R	0.22 μ	±10, ±20	2.5	150	2.5±0.20	
MSASQ45MSB7334□TNA01	QMK432 B7334□M-T		X7R	0.33 μ	±10, ±20	2.5	150	2.5±0.20	
MSASQ45MSB7474□TNA01	QMK432 B7474□M-T		X7R	0.47 μ	±10, ±20	2.5	150	2.5±0.20	
MSASS45MSB7473□TNA01	SMK432 B7473□M-T	630	X7R	0.047 μ	±10, ±20	2.5	120	2.5±0.20	
MSASS45MSB7683□TNA01	SMK432 B7683□M-T		X7R	0.068 μ	±10, ±20	2.5	120	2.5±0.20	
MSASS45MSB7104□TNA01	SMK432 B7104□M-T		X7R	0.1 μ	±10, ±20	2.5	120	2.5±0.20	

【Temperature Characteristic B7 : X7R(−55~+125°C)】 2.0mm thickness

New part number	Old part number (for reference)	Rated voltage [V]	Temperature characteristics	Capacitance [F]	Capacitance tolerance [%]	tan δ [%]	HTLT	Thickness ^{*3} [mm]	Note
							Rated voltage x %		
MSASX45YAB7222KTCA01	XMK432 B7222KY-TE	2000	X7R	2200 p	±10	2.5	110	2.0+0/-0.30	
MSASX45YAB7472KTCA01	XMK432 B7472KY-TE		X7R	4700 p	±10	2.5	110	2.0+0/-0.30	

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