



Siemens Matsushita Components

Multilayer Ceramic Capacitors

High-Capacitance Series

X5R/X7R/Y5V

Data Book Supplement

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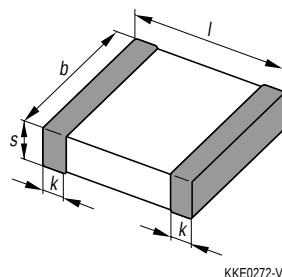
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Terminations

- Nickel barrier

Dimensions (mm)

Size inch/mm	<i>l</i>	<i>b</i>	<i>s</i>	<i>k</i>
0402 /1005	1,0 ± 0,10	0,50 ± 0,05	0,5 ± 0,05	0,2
0603 /1608	1,6 ± 0,15	0,80 ± 0,10	0,8 ± 0,10	0,3
0805 /2012	2,0 ± 0,20	1,25 ± 0,15	1,35 max.	0,5
1206 /3216	3,2 ± 0,20	1,60 ± 0,15	1,80 max.	0,5
1210 /3225	3,2 ± 0,30	2,50 ± 0,30	2,10 max.	0,5
1812 /4532	4,5 ± 0,40	3,20 ± 0,30	2,70 max.	0,5
2220 /5750	5,7 ± 0,50	5,00 ± 0,50	2,70 max.	0,5



Tolerances in acc. with CECC 32101- 801

	X5R	X7R	Y5V
Electrical characteristics			
Dielectric	Class 2	Class 2	Class 2
Rated voltage V_R	6,3/10/16	10/16/25/50	10/16/25/35/50
Temperature range	– 55 °C ... + 85 °C	– 55 °C ... + 125 °C	– 30 °C ... + 85 °C
Available capacitance values C_R	150 nF ... 22 μ F	47 nF ... 4,7 μ F	100 nF ... 100 μ F
Capacitance tolerance	$\pm 10 \%$ $\pm 20 \%$	$\pm 10 \%$ $\pm 20 \%$	+ 80 % / – 20 %
Max. rel. capacitance change $\Delta C/C$	$\pm 15 \%$	$\pm 15 \%$	– 82% ... + 22 %
Dissipation factor $\tan \delta$ (limit value)	$< 60 \cdot 10^{-3}$	$< 60 \cdot 10^{-3}$	$< 125 \cdot 10^{-3}$ $< 160 \cdot 10^{-3}$ (100 μ F)
Insulation resistance ¹⁾ at 20 °C	$\geq 10^4$ M Ω –	$\geq 10^4$ M Ω –	$\geq 10^4$ M Ω –
Time constant τ ¹⁾ at 20 °C	> 500 s	> 500 s	> 500 s
Solderability (IEC 68–2–58)			
Wetting of pads > 95%	215 °C, 3 sec		
Resistance to soldering heat	260 °C, 10 sec		

1) Whichever is lower.

Product range

Size ¹⁾ inch mm	0603 1608		0805 2012		1206 3216		1210 3225		1812 4532	
Type	B37631		B37641		B37572		B37650		B37653	
V _R (Vdc)	10		10	16	6,3		16		10	
	Chip thickness (s) in mm ²⁾									
150 nF	0,8									
220 nF	0,8									
330 nF	0,8									
470 nF	0,8									
1,0 µF				1,25						
2,2 µF			1,25							
4,7 µF							1,9			
10 µF					1,6		1,9			
22 µF									2,5	

1) $l \times b$ (inch) / $l \times b$ (mm)

2) Chip thickness tolerance: 0,8 ... 1,25 ± 0,1 mm; 1,6 ... 2,5 ± 0,2 mm



Ordering codes

Size inch	V_R (Vdc)	C_R (nF)	Ordering code	Packing units	Taping
0603	10	150	B37631- K8154- K60	4 000	Cardboard
		220	B37631- K8224- K60	4 000	Cardboard
		330	B37631- K8334- K60	4 000	Cardboard
		470	B37631- K8474- K60	4 000	Cardboard
0805	10	2 200	B37641- K8225- K62	3 000	Blister
	16	1 000	B37641- K9105- K62	3 000	Blister
1206	6,3	10 000	B37572- K7106- K62	2 000	Blister
1210	16	4 700	B37650- K9475- K62	2 000	Blister
		10 000	B37650- K9106- K62	2 000	Blister
1812	10	22 000	B37653- K8226- K62	500	Blister

Product range

Size ¹⁾ inch mm	0402 1005		0603 1608		0805 2012		1206 3216			
Type	B37921		B37931		B37941		B37872			
V _R (Vdc)	10		16		10	16	10	16	25	50
	Chip thickness (s) in mm ²⁾									
47 nF	0,5									
100 nF	0,5		0,8							
150 nF										1,15
220 nF						0,85				1,60
330 nF						1,25			0,85	
470 nF						1,25			1,15	
680 nF						1,25		1,15	1,60	
1,0 µF					1,25			1,15	1,60	
2,2 µF								1,60		
3,3 µF							1,60			
4,7 µF							1,60			

1) $l \times b$ (inch) / $l \times b$ (mm)

2) Chip thickness tolerance: 0,5 ± 0,05 mm; 0,8 ... 1,25 ± 0,1 mm; 1,60 ± 0,2 mm



Ordering codes

Size inch	V_R (Vdc)	C_R (nF)	Ordering code	Packing units	Taping
0402	10	47 100	B37921- K8473- K60 B37921- K8104- K60	10 000 10 000	Cardboard Cardboard
0603	16	100	B37931- K9104- K60	4 000	Cardboard
0805	10	1 000	B37941- K8105- K62	3 000	Blister
	16	220	B37941- K9224- K62/ 60	4 000	Blister/ Cardboard
		330	B37941- K9334- K62	3 000	Blister
		470	B37941- K9474- K62	3 000	Blister
		680	B37941- K9684- K62	3 000	Blister
1206	10	3 300	B37872- K8335- K62	2 000	Blister
		4 700	B37872- K8475- K62	2 000	Blister
	16	680	B37872- K9684- K62	3 000	Blister
		1 000	B37872- K9105- K62	3 000	Blister
		2 200	B37872- K9225- K62	2 000	Blister
	25	330	B37872- K0334- K62/ 60	4 000	Blister/ Cardboard
		470	B37872- K0474- K62	3 000	Blister
		680	B37872- K0684- K62	2 000	Blister
		1 000	B37872- K0105- K62	2 000	Blister
	50	150	B37872- K5154- K62	3 000	Blister
		220	B37872- K5224- K62	2 000	Blister

Product range

Size ¹⁾ inch mm	0402 1005		0603 1608		0805 2012				1206 3216			
Type	B37924		B37934		B37944				B37875			
V _R (Vdc)	10		10	16	10	16	25	50	10	16	25	35
	Chip thickness (s) in mm ²⁾											
100 nF							0,60	0,85				
220 nF	0,5			0,8			0,85					
470 nF						0,85	1,25	1,25				
1,0 µF			0,8			0,85	1,25	1,25			1,15	1,15
2,2 µF						1,25				1,15	1,25	1,25
4,7 µF					1,25					1,25	1,25	1,25
10 µF									1,6			
22 µF									1,6			
47 µF												
100 µF												

Size ¹⁾ inch mm	1210 3216				1812 4532		2220 5750	
Type	B37991				B37994		B37997	
V _R (Vdc)	10	16	25	35	10		10	
	Chip thickness (s) in mm ²⁾							
100 nF								
220 nF								
470 nF								
1,0 µF								
2,2 µF								
4,7 µF								
10 µF		1,5	1,5	1,5				
22 µF	1,9							
47 µF					2,5			
100 µF							2,5	

1) l × b (inch) / l × b (mm)

2) Chip thickness tolerance: 0,5 ± 0,05 mm; 0,60 ... 1,5 ± 0,1 mm; 1,6 ... 2,5 ± 0,2 mm



Ordering codes

Size inch	V _R (Vdc)	C _R (nF)	Ordering code	Packing units	Taping
0402	10	220	B37924- K8224- Z60	10 000	Cardboard
0603	10	1 000	B37934- K8105- Z60	4 000	Cardboard
	16	220	B37934- K9224- Z60	4 000	Cardboard
0805	10	4 700	B37944- K8475- Z62	3 000	Blister
	16	470	B37944- K9474- Z62/ 60	4 000	Blister/ Cardboard
		1 000	B37944- K9105- Z62	4 000	Blister
		2 200	B37944- K9225- Z62	3 000	Blister
	25	100	B37944- K0104- Z62/ 60	5 000	Blister/ Cardboard
		220	B37944- K0224- Z62/ 60	4 000	Blister/ Cardboard
		470	B37944- K0474- Z62	3 000	Blister
		1 000	B37944- K0105- Z62	3 000	Blister
	50	100	B37944- K5104- Z62/ 60	4 000	Blister/ Cardboard
		470	B37944- K5474- Z62	3 000	Blister
		1 000	B37944- K5105- Z62	3 000	Blister
1206	10	10 000	B37875- K8106- Z62	2 000	Blister
		22 000	B37875- K8226- Z62	2 000	Blister
	16	2 200	B37875- K9225- Z62	3 000	Blister
		4 700	B37875- K9475- Z62	3 000	Blister
	25	1 000	B37875- K0105- Z62	3 000	Blister
		2 200	B37875- K0225- Z62	3 000	Blister
		4 700	B37875- K0475- Z62	3 000	Blister
	35	1 000	B37875- K4105- Z62	3 000	Blister
2 200		B37875- K4225- Z62	3 000	Blister	
4 700		B37875- K4475- Z62	3 000	Blister	
1210	10	22 000	B37991- K8226- Z62	2 000	Blister
	16	10 000	B37991- K9106- Z62	2 000	Blister
	25	10 000	B37991- K0106- Z62	2 000	Blister
	35	10 000	B37991- K4106- Z62	2 000	Blister
1812	10	47 000	B37994- K8476- Z62	500	Blister
2220	10	100 000	B37997- K8107- Z62	500	Blister

Ordering code system

B37631-

K

5

010-

D

5

60

Packaging
62 = blister tape, reel dia. 180 mm
60 = cardboard tape, reel dia. 180 mm

Decimal place for cap. values < 10 pF, otherwise not used

Capacitance tolerance
(tolerance code in acc. with IEC 62, standard values bold)

X5R	X7R	Y5V
K = ± 10 % M = ± 20 %	K = ± 10 % M = ± 20 %	Z = + 80 % - 20 %

Capacitance, coded	103 = 10 nF 104 = 100 nF	105 = 1 µF 106 = 10 µF	107 = 100 µF 475 = 4,7 µF
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Rated voltage	Rated voltage [Vdc]	6,3	10	16	25	35	50
	Code	7	8	9	0	4	5

Terminations Standard: K = nickel barrier for chip sizes 0402 ... 2220

Type and size

Chip size (inch / mm)	Temperature characteristics		
	X5R	X7R	Y5V
0402 / 1005		B37921	B37924
0603 / 1608		B37931	B37934
0805 / 2012	B37631	B37941	B37944
1206 / 3216	B37641		B37875
1210 / 3225	B37572		B37991
1812 / 4532	B37650		B37994
2220 / 5750	B37653	B37872	B37997

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