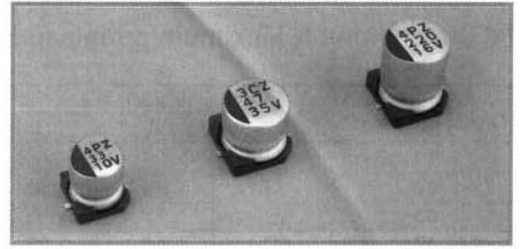


CXZ SERIES

Chip type, For surface mounting

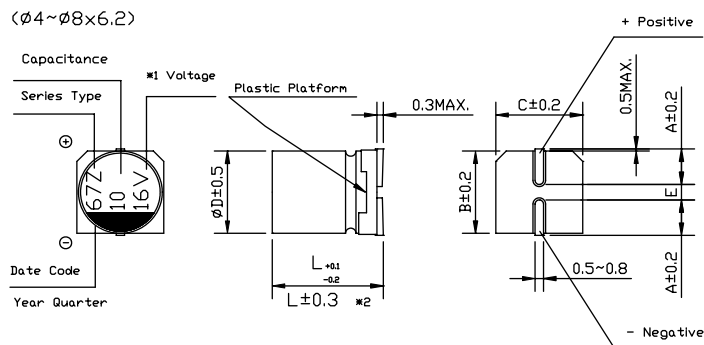
- Extra low impedance with temperature range -55°C to +105°C and load life of 1000~3000 hours.
- Impedance 40~60% less than CZ series.
- Lead-free reflow soldering is available subject to customers' request.



◆ Specifications

Items	Performance Characteristics																																				
Operating Temperature Range	-55~+105°C																																				
Voltage Range	6.3~50V																																				
Capacitance Range	4.7~4700 μF																																				
Capacitance Tolerance	±20% at 120 Hz, 20°C																																				
Leakage Current	For φ4~φ10, after 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3(μA), whichever is greater. For φ12.5~φ16, after 1 minute's application of rated voltage, leakage current is not more than 0.03CV or 4(μA), whichever is greater.																																				
Tan δ	Measurement frequency : 120Hz, Temperature: 20°C <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Rated voltage (V. DC)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Tan δ (max)</td> <td>φ4~φ10</td> <td>0.22</td> <td>0.19</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> </tr> <tr> <td>φ12.5~φ16</td> <td>0.26</td> <td>0.22</td> <td>0.18</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> </tr> </tbody> </table>	Rated voltage (V. DC)		6.3	10	16	25	35	50	Tan δ (max)	φ4~φ10	0.22	0.19	0.16	0.14	0.12	0.12	φ12.5~φ16	0.26	0.22	0.18	0.16	0.14	0.12													
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Stability at Low Temperature	Measurement frequency : 120Hz <table border="1" style="margin-left: 20px;"> <thead> <tr> <th colspan="2">Rated voltage (V.DC)</th> <th>6.3</th> <th>10</th> <th>16</th> <th>25</th> <th>35</th> <th>50</th> </tr> </thead> <tbody> <tr> <td rowspan="2">Impedance ratio</td> <td rowspan="2">φ4~φ10</td> <td>Z(-25°C)/Z(20°C)</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(20°C)</td> <td>5</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> <tr> <td rowspan="2">ZT/Z20 (max)</td> <td rowspan="2">φ12.5~φ16</td> <td>Z(-25°C)/Z(20°C)</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td>Z(-55°C)/Z(20°C)</td> <td>10</td> <td>8</td> <td>6</td> <td>4</td> <td>3</td> </tr> </tbody> </table>	Rated voltage (V.DC)		6.3	10	16	25	35	50	Impedance ratio	φ4~φ10	Z(-25°C)/Z(20°C)	3	2	2	2	2	Z(-55°C)/Z(20°C)	5	4	4	3	3	ZT/Z20 (max)	φ12.5~φ16	Z(-25°C)/Z(20°C)	3	2	2	2	2	Z(-55°C)/Z(20°C)	10	8	6	4	3
Rated voltage (V.DC)		6.3	10	16	25	35	50																														
Impedance ratio	φ4~φ10	Z(-25°C)/Z(20°C)	3	2	2	2	2																														
		Z(-55°C)/Z(20°C)	5	4	4	3	3																														
ZT/Z20 (max)	φ12.5~φ16	Z(-25°C)/Z(20°C)	3	2	2	2	2																														
		Z(-55°C)/Z(20°C)	10	8	6	4	3																														
Load Life	After 3000 hours' (1000 hours' for φ4~φ6.3x5.4, 2000 hours' for φ6.3x7.7 and φ8) application of rated voltage at 105°C, capacitors meet the characteristics requirements listed at right. <table border="1" style="margin-left: 20px;"> <tr> <td>Capacitance Change</td> <td>Within ±25% of the initial value</td> </tr> <tr> <td>Tan δ</td> <td>200% or less of the initial specified value</td> </tr> <tr> <td>Leakage Current</td> <td>Initial specified value or less</td> </tr> </table>	Capacitance Change	Within ±25% of the initial value	Tan δ	200% or less of the initial specified value	Leakage Current	Initial specified value or less																														
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Leakage Current	Initial specified value or less																																				
Shelf Life	After leaving capacitors under no load at 105°C for 1000 hours, they meet the specified value for load life characteristics listed above.																																				
Resistance to Soldering Heat	After reflow soldering and restored at room temperature, they meet the characteristics requirements listed at right. <table border="1" style="margin-left: 20px;"> <tr> <td>Capacitance Change</td> <td>Within ±10% of the initial value</td> </tr> <tr> <td>Tan δ</td> <td>Initial specified value or less</td> </tr> <tr> <td>Leakage Current</td> <td>Initial specified value or less</td> </tr> </table>	Capacitance Change	Within ±10% of the initial value	Tan δ	Initial specified value or less	Leakage Current	Initial specified value or less																														
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Leakage Current	Initial specified value or less																																				
Applicable Standards	JIS C-5141 and JIS C-5102																																				

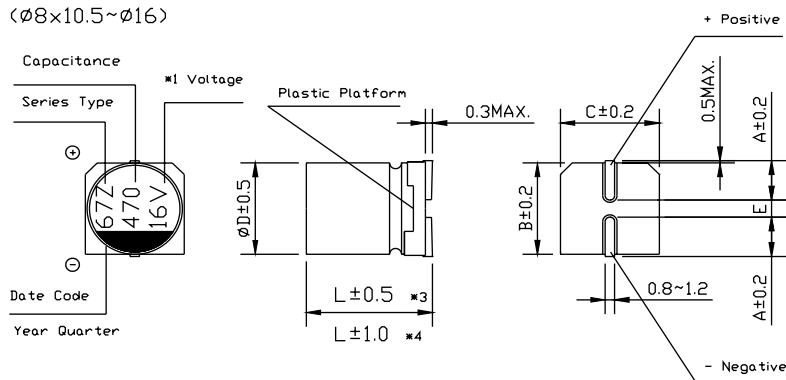
◆ Dimensions & Marking





CXZ SERIES

Chip type, For surface mounting



- *1 Voltage mark [6V] represents 6.3V for $\Phi 4 \sim \Phi 10$;
- *2 $[L \pm 0.3]$ is applicable to $\Phi 6.3 \times 7.7$ and $\Phi 8 \times 6.2$;
- *3 $[L \pm 0.5]$ is applicable to $\Phi 8 \times 10.5 \sim \Phi 10$;
- *4 $[L \pm 1.0]$ is applicable to $\Phi 12.5 \sim \Phi 16$.

Re: Date code and series type — 1st digit for Year; 2nd digit for Quarter, 4 quarter codes in one year are 1, 4, 7, 0; 3rd character for Series; CXZ Series = Z.

(mm)											
D×L	Φ4×5.4	Φ5×5.4	Φ6.3×5.4	Φ6.3×7.7	Φ8×6.2	Φ8×10.5	Φ10×10.5	Φ10×13.5	Φ12.5×13.5	Φ12.5×16	Φ16×16.5
A	1.8	2.1	2.4	2.4	3.3	2.9	3.2	3.2	4.7	4.7	5.5
B	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	13.0	13.0	17.0
C	4.3	5.3	6.6	6.6	8.3	8.3	10.3	10.3	13.0	13.0	17.0
E ± 0.2	1.0	1.3	2.2	2.2	2.2	3.1	4.4	4.4	4.4	4.4	6.7
L	5.4	5.4	5.4	7.7	6.2	10.5	10.5	13.5	13.5	16.0	16.5

◆ Standard sizes & Maximum permissible ripple current & Impedance

WV Cap. (μF)		6.3			10			16		
		0J			1A			1C		
10	100							4×5.4	1.8	80
15	150							4×5.4	1.8	80
22	220	4×5.4	1.8	80	4×5.4	1.8	80	5×5.4 (4×5.4)	0.76 (1.8)	150 (80)
33	330	5×5.4 (4×5.4)	0.76 (1.8)	150 (80)	5×5.4 (4×5.4)	0.76 (1.8)	150 (80)	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)
47	470	5×5.4 (4×5.4)	0.76 (1.8)	150 (80)	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)
56	560	5×5.4	0.76	150	6.3×5.4	0.44	230	6.3×5.4	0.44	230
68	680	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×5.4	0.44	230	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)
100	101	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)
150	151	6.3×5.4	0.44	230	6.3×7.7	0.34	280	6.3×7.7	0.34	280
220	221	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)	6.3×7.7 (8×6.2)	0.34 (0.34)	280 (280)	8×10.5 (6.3×7.7)	0.17 (0.34)	450 (280)
330	331	6.3×7.7 (8×6.2)	0.34	280	8×10.5	0.17	450	10×10.5 (8×10.5)	0.09 (0.17)	670 (450)
470	471	8×10.5	0.17	450	8×10.5	0.17	450	10×10.5 (8×10.5)	0.09 (0.17)	670 (450)
680	681	10×10.5 (8×10.5)	0.09 (0.17)	670 (450)	10×10.5	0.09	670	10×13.5 (10×10.5)	0.075 (0.09)	800 (670)
1000	102	10×10.5 (8×10.5)	0.09 (0.17)	670 (450)	10×10.5	0.09	670	16×16.5 (12.5×16) (12.5×13.5)	0.055 (0.06) (0.065)	1350 (1050) (900)
1500	152	10×13.5 (10×10.5)	0.075 (0.09)	800 (670)	12.5×13.5	0.065	900	16×16.5	0.055	1350
2200	222	12.5×13.5	0.065	900	12.5×16	0.060	1050	16×16.5	0.055	1350
3300	332	12.5×16	0.060	1050	16×16.5	0.055	1350	Case Size	Impedance	Ripple Current
4700	472	16×16.5	0.055	1350						

Maximum Impedance (Ω) at 20°C 100kHz, Ripple Current (mA rms) at 105°C 100kHz



CXZ SERIES

Chip type, For surface mounting

◆ Standard sizes & Maximum permissible ripple current & Impedance

VV Cap. (μF)		25			35			50		
		1E			1V			1H		
4.7	4R7				4×5.4	1.8	80	5×5.4 (4×5.4)	1.52 (3.0)	85 (60)
10	100	4×5.4	1.8	80	5×5.4 (4×5.4)	0.76 (1.8)	150 (80)	6.3×5.4 (5×5.4)	0.88 (1.52)	165 (85)
15	150	5×5.4	0.76	150	5×5.4	0.76	150	6.3×5.4	0.88	165
22	220	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×7.7 (6.3×5.4) (8×6.2)	0.68 (0.88) (0.68)	185 (165) (185)
33	330	6.3×5.4 (5×5.4)	0.44 (0.76)	230 (150)	6.3×5.4 (8×6.2)	0.44 (0.34)	230 (280)	6.3×7.7 (8×6.2)	0.68	185
47	470	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)	6.3×7.7 (6.3×5.4) (8×6.2)	0.34 (0.44) (0.34)	280 (230) (280)	6.3×7.7 (8×6.2)	0.68	185
56	560	6.3×7.7 (6.3×5.4)	0.34 (0.44)	280 (230)	6.3×7.7	0.34	280	8×10.5 (6.3×7.7)	0.34 (0.68)	350 (185)
68	680	6.3×7.7	0.34	280	6.3×7.7	0.34	280	8×10.5	0.34	350
100	101	6.3×7.7 (8×6.2)	0.34	280	8×10.5	0.17	450	10×10.5 (8×10.5)	0.18 (0.34)	670 (350)
150	151	8×10.5 (6.3×7.7)	0.17 (0.34)	450 (280)	10×10.5	0.09	670	10×10.5	0.18	670
220	221	8×10.5	0.17	450	10×10.5	0.09	670	10×13.5 (10×10.5)	0.16 (0.18)	750 (670)
330	331	10×10.5 (8×10.5)	0.09 (0.17)	670 (450)	10×10.5	0.09	670	12.5×13.5	0.14	800
470	471	10×13.5 (10×10.5)	0.075 (0.09)	800 (670)	12.5×13.5 (10×13.5)	0.065 (0.075)	900 (800)	16×16.5 (12.5×16)	0.10 (0.12)	1150 (900)
680	681	12.5×13.5	0.065	900	12.5×16 (12.5×13.5)	0.060 (0.065)	1050 (900)			
1000	102	16×16.5 (12.5×16)	0.055 (0.060)	1350 (1050)	16×16.5	0.055	1350	Case Size	Impedance	Ripple Current
1500	152	16×16.5	0.055	1350						

Maximum Impedance (Ω) at 20°C 100kHz, Ripple Current (mA rms) at 105°C 100kHz

◆ Frequency Correction Factor of Rated Ripple Current

Frequency Capacitance (μF)		50Hz	120Hz	300Hz	1kHz	10kHz~
		Φ4~Φ10	4.7~68	0.35	0.50	0.64
100~1500	0.40		0.55	0.70	0.85	1.00
Φ12.5~Φ16	~680	0.45	0.65	0.80	0.90	1.00
	1000~4700	0.65	0.85	0.95	1.00	1.00

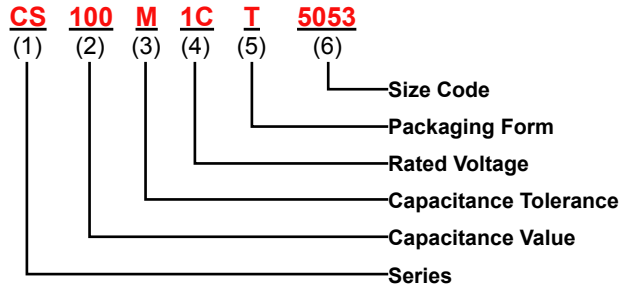
ORDERING INFORMATION (SMD)



Daewoo Components Corp.

Surface Mount Part Numbering System Example:

CS = SMD Series, **100** = 10µF, **M** =20% Tolerance, **1C** = W.V = 16 Volts, **TR** = Tape & Reel, **5053** = Case size (Dia x H) = 5.0 x 5.3mm



(1) Series

See quick guide on website.
 Surface mount (CS, CU, CZ, CZH, CN, CK)
 Example: CS = 2000hrs @ 85°C
 CU = 1000hrs @ 105°C

(5) Packaging Form Code

Surface Mount	T	Tape & Reel for Surface Mount
	XX	Tape & Reel SMD 13" Reels (330mm)

(2) Capacitance Value Code

Capacitance expressed in micro Farads (µF)
 First two digits are significant figures
 Third digit denotes the number of zeros
 Use R for decimal point for values less than 10µF

Examples:

CODE	Capacitance
R10	0.1 µF
R68	0.68 µF
1R0	1.0 µF
100	10 µF
680	68 µF
471	470 µF
102	1000 µF
103	10000 µF

(6) Size Code

Size Code	Dimensions (mm)	
	Diameter	Length
3054	3.0	5.4
4053	4.0	5.3
4055	4.0	5.5
5053	5.0	5.3
5055	5.0	5.5
6353	6.3	5.3
6355	6.3	5.5
6357	6.3	5.7
6377	6.3	7.7
8069	8.0	6.3
8010	8.0	10.0
1010	10.0	10.0
1213	12.5	13.5
1216	12.5	16.0

(3) Capacitance Tolerance Code

CODE	Cap. Tol.
M	±20%

(4) Rated Voltage Code

CODE	Voltage	CODE	Voltage
	4.0V	2A	100V
0J	6.3V	2C	160V
1A	10V	2D	200V
1C	16V	2E	250V
1E	25V	2V	350V
1V	35V	2G	400V
1H	50V	2W	450V