

## PT Chip Type Series

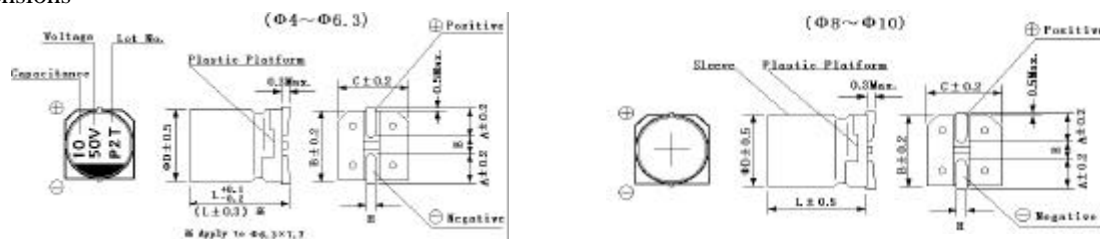
- Case diameter:  $\Phi 4\text{mm} \sim \Phi 10\text{mm}$
- Reflow soldering is available
- Available for high density surface mounting
- Operating over wide temperature range( $-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$ )

### ■ Specifications

Item	Characteristics																								
Operating Temperature Range	$-40^{\circ}\text{C} \sim +105^{\circ}\text{C}$																								
Rated Voltage Range	4V ~ 50V																								
Nominal Capacitance Range	0.1 $\mu\text{F}$ ~ 1000 $\mu\text{F}$																								
Capacitance Tolerance	M ( $\pm 20\%$ ) (20 $^{\circ}\text{C}$ , 120Hz)																								
Leakage Current	$I \leq 0.01C_R U_R$ or 3 ( $\mu\text{A}$ ), whichever is greater. $C_R$ : Nominal capacitance ( $\mu\text{F}$ ) $U_R$ : Rated voltage(V) (20 $^{\circ}\text{C}$ , after 2 minutes)																								
Dissipation Factor (Max)	<table border="1"> <thead> <tr> <th><math>U_R</math>(V)</th> <th>4</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><math>\tan \delta</math></td> <td>0.35</td> <td>0.26</td> <td>0.20</td> <td>0.16</td> <td>0.14</td> <td>0.12</td> <td>0.12</td> </tr> </tbody> </table> (20 $^{\circ}\text{C}$ , 120Hz)	$U_R$ (V)	4	6.3	10	16	25	35	50	$\tan \delta$	0.35	0.26	0.20	0.16	0.14	0.12	0.12								
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Low Temperature Stability (Impedance Ratio)	<table border="1"> <thead> <tr> <th><math>U_R</math>(V)</th> <th>4</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><math>Z(-25^{\circ}\text{C})/Z(+20^{\circ}\text{C})</math></td> <td>7</td> <td>4</td> <td>3</td> <td>2</td> <td>2</td> <td>2</td> <td>2</td> </tr> <tr> <td><math>Z(-40^{\circ}\text{C})/Z(+20^{\circ}\text{C})</math></td> <td>15</td> <td>8</td> <td>6</td> <td>4</td> <td>4</td> <td>3</td> <td>3</td> </tr> </tbody> </table> (120Hz)	$U_R$ (V)	4	6.3	10	16	25	35	50	$Z(-25^{\circ}\text{C})/Z(+20^{\circ}\text{C})$	7	4	3	2	2	2	2	$Z(-40^{\circ}\text{C})/Z(+20^{\circ}\text{C})$	15	8	6	4	4	3	3
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Load Life	After 1000 hours' application of rated voltage at 105 $^{\circ}\text{C}$ , the capacitor shall meet the following requirement: <table border="1"> <tbody> <tr> <td>Capacitance change</td> <td>Within <math>\pm 20\%</math> of the initial value (<math>\leq 16\text{V}</math>: Within <math>\pm 25\%</math> of the initial value)</td> </tr> <tr> <td>Dissipation factor</td> <td>Not more than 200% of the initial specified value.</td> </tr> <tr> <td>Leakage current</td> <td>Not more than the initial specified value.</td> </tr> </tbody> </table>	Capacitance change	Within $\pm 20\%$ of the initial value ( $\leq 16\text{V}$ : Within $\pm 25\%$ of the initial value)	Dissipation factor	Not more than 200% of the initial specified value.	Leakage current	Not more than the initial specified value.																		
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Shelf Life	After storage for 1000 hours at +105 $^{\circ}\text{C}$ , the capacitors shall meet the requirement of load life above.																								
Resistance to Soldering Heat	The capacitors shall be kept on the hot plate maintained at 250 $^{\circ}\text{C}$ for 30 seconds. After removing from the hot plate and restored at room temperature, they meet the following requirement: <table border="1"> <tbody> <tr> <td>Capacitance Change</td> <td>Within <math>\pm 10\%</math> of the initial value.</td> </tr> <tr> <td>Dissipation Factor</td> <td>Not more than the initial specified value.</td> </tr> <tr> <td>Leakage Current</td> <td>Not more than the initial specified value.</td> </tr> </tbody> </table>	Capacitance Change	Within $\pm 10\%$ of the initial value.	Dissipation Factor	Not more than the initial specified value.	Leakage Current	Not more than the initial specified value.																		
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Rated Ripple Current & Frequency Multipliers	<table border="1"> <thead> <tr> <th>Frequency</th> <th>50Hz</th> <th>120Hz</th> <th>300Hz</th> <th>1kHz</th> <th><math>\geq 10\text{kHz}</math></th> </tr> </thead> <tbody> <tr> <td>Multiplier</td> <td>0.70</td> <td>1.00</td> <td>1.17</td> <td>1.36</td> <td>1.50</td> </tr> </tbody> </table>	Frequency	50Hz	120Hz	300Hz	1kHz	$\geq 10\text{kHz}$	Multiplier	0.70	1.00	1.17	1.36	1.50												
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### ■ Dimensions



	(mm)					
	4×5.4	5×5.4	6.3×5.4	6.3×7.7	8×10	10×10
A	1.8	2.1	2.4	2.4	2.9	3.2
B	4.3	5.3	6.6	6.6	8.3	10.3
C	4.3	5.3	6.6	6.6	8.3	10.3
E	1.0	1.3	2.2	2.2	3.1	4.5
L	5.4	5.4	5.4	7.7	10	10
H	0.5 ~ 0.8				0.8 ~ 1.1	

### ■ Nominal capacitance, rated voltage, rated ripple current and case size table

U <sub>k</sub> (V) Item	4		6.3		10		16		25		35		50	
	D×L mm	I~	D×L mm	I~	D×L mm	I~	D×L mm	I~	D×L mm	I~	D×L mm	I~	D×L mm	I~
0.1													4×5.4	0.7
0.22													4×5.4	1.6
0.33													4×5.4	2.5
0.47													4×5.4	3.5
1.0													4×5.4	7
2.2													4×5.4	11
3.3											4×5.4	13	4×5.4	13
4.7									4×5.4	13	4×5.4	14	5×5.4	16
10							4×5.4	18	5×5.4	20	5×5.4	21	6.3×5.4	24
22			4×5.4	22	5×5.4	25	5×5.4	27	6.3×5.4	36	6.3×5.4	38	6.3×7.7	51
33	4×5.4	18	5×5.4	27	5×5.4	30	6.3×5.4	40	6.3×5.4	44	6.3×5.4	42	6.3×7.7	60
47	4×5.4	23	5×5.4	33	6.3×5.4	41	6.3×5.4	48	6.3×5.4	48	6.3×7.7	49	6.3×7.7	63
100	5×5.4	42	6.3×5.4	50	6.3×5.4	53	6.3×5.4	60	6.3×7.7	91	8×10	155	8×10	155
150	6.3×5.4	61	6.3×5.4	55	6.3×5.4	62	6.3×7.7	95	8×10	140	8×10	155	10×10	300
220	6.3×5.4	68	6.3×7.7	105	6.3×7.7	105	6.3×7.7	105	8×10	175	10×10	300		
330	6.3×7.7	73	6.3×7.7	105	8×10	175	8×10	195	10×10	220				
470	6.3×7.7	105	8×10	170	8×10	210	8×10	310						
680	8×10	210	8×10	210	10×10	310	10×10	350						
1000	8×10	260	10×10	230	↑ _____ Rated ripple current (mA rms) (105°C, 120Hz)									