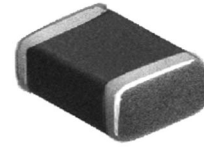


## THC Series Surface Mount Device (Down sized)



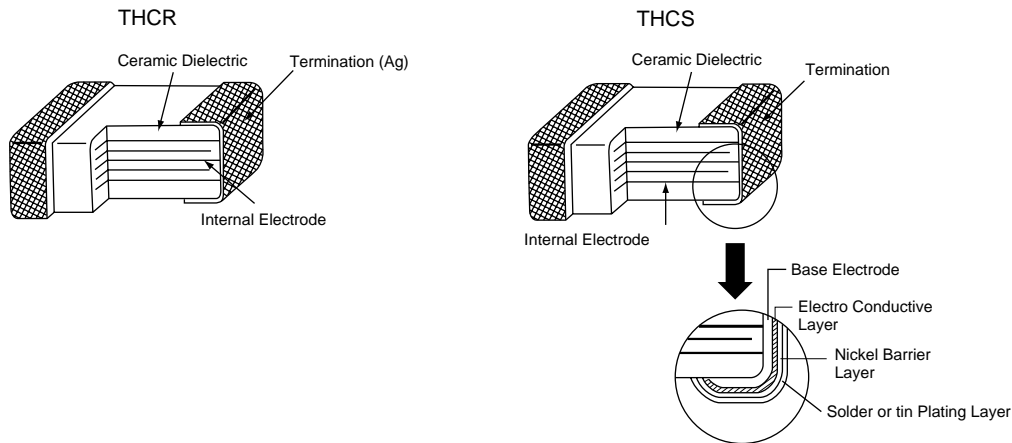
### ◆FEATURES

1. Small in size and wide capacitance range.
2. Temperature characteristic is Y5U in EIA code.  
Small temperature and DC bias dependency of capacitance.
3. Superior humidity characteristic and long life.
4. Excellent high frequency characteristic due to low ESR.
5. High rated ripple current.
6. Two types of terminal electrodes are available.  
Silver for reflow soldering and solder or tin plating for flow and reflow soldering.
7. 200V<sub>dc</sub> items are available.

### ◆APPLICATIONS

1. Smoothing circuit of small size DC-DC converter.
2. On-board power supply.
3. Noise suppressor for various kinds of equipments.
4. By-pass or decoupling circuits.

### ◆CONSTRUCTION



### ◆RATINGS

1. Category Temperature Range	-55 to +125°C
2. Rated Voltage Range	25, 50, 100, 200V <sub>dc</sub>
3. Rated Capacitance Range	0.047 to 47μF
4. Rated Capacitance Tolerance	M (±20%), Z (±80%)
5. Temperature Characteristics	E (JIS) ≡ Y5U (EIA)
6. Rated Ripple Current	See No.5 on the following table

### ◆SPECIFICATIONS

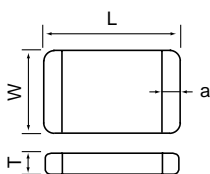
No.	Items	Specification	Test Condition														
1	Withstand Voltage	No abnormality.	250% of rated voltage shall be applied for 5 seconds.														
2	Insulation Resistance	1000/C <sub>R</sub> (MΩ) or 10000(MΩ) whichever is less.	Rated voltage shall be applied for 60±5 seconds at temperature 20±2°C.														
3	Rated Capacitance	Within specified tolerance.	Temperature : 20±2°C Frequency : 1±0.1kHz Voltage : 1±0.2V <sub>rms</sub>														
4	Dissipation Factor	5.0% maximum.	Temperature : 20±2°C Frequency : 1±0.1kHz Voltage : 1±0.2V <sub>rms</sub>														
5	Rated Ripple Current	<table border="1"> <tr> <td>Size code</td> <td>20</td> <td>30</td> <td>40</td> <td>50</td> <td>60</td> <td>70</td> </tr> <tr> <td>Arms</td> <td>0.2</td> <td>0.3</td> <td>0.5</td> <td>1.0</td> <td>2.0</td> <td>3.0</td> </tr> </table>	Size code	20	30	40	50	60	70	Arms	0.2	0.3	0.5	1.0	2.0	3.0	10kHz~1MHz (sine curve) Ripple voltage V <sub>p</sub> shall be less than the rated voltage.
Size code	20	30	40	50	60	70											
Arms	0.2	0.3	0.5	1.0	2.0	3.0											

### ◆SPECIFICATIONS

No.	Items	Specification	Test Condition															
6	Adhesion	No visible damage.	<p>Substrate 5N (0.51kgf) for 10±1 seconds Capacitor</p>															
7	Bend strength of the face plating	Appearance : No visible damage. ΔC/C : ±15%	<p>The substrate shall be bend by 1mm at a rate of 1mm/s for 5 seconds.</p> <p>Press Press bar Substrate Capacitor Support 1.0mm 45±2mm 45±2mm</p>															
8	Solderability	Min. 75% of surface of the termination shall be covered with new solder	<p>Solder Temperature : 235±5°C Dipping Time : 2±0.5 sec. Solder : Eutectic solder containing Ag2.5 to 3wt%</p>															
9	Resistance to Soldering Heat	Appearance : No visible damage. ΔC/C : ±15% D.F. : To meet the initial specification. I.R. : To meet the initial specification. Withstand voltage : No abnormality.	<p>Solder Temperature : 260±5°C Dipping Time : 2±0.5 seconds Solder : Eutectic solder containing Ag2.5 to 3wt%</p>															
10	Temperature Cycle	Appearance : No visible damage. ΔC/C : ±15% D.F. : To meet the initial specification. I.R. : To meet the initial specification. Withstand voltage : No abnormality.	<table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>(min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>Min. Category temperature ±3</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>3 max.</td> </tr> <tr> <td>3</td> <td>Max. Category temperature ±2</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>3 max.</td> </tr> </tbody> </table> <p>For 5 cycles for above temperature cycle.</p>	Step	Temperature (°C)	(min.)	1	Min. Category temperature ±3	30±3	2	Room temperature	3 max.	3	Max. Category temperature ±2	30±3	4	Room temperature	3 max.
Step	Temperature (°C)	(min.)																
1	Min. Category temperature ±3	30±3																
2	Room temperature	3 max.																
3	Max. Category temperature ±2	30±3																
4	Room temperature	3 max.																
11	Humidity Load Life	Appearance : No abnormality. ΔC/C : ±20% D.F. : 7% maximum I.R. : 50/C <sub>R</sub> (MΩ) or 1000(MΩ) whichever is less. Withstand voltage : No abnormality.	<p>Temperature : 40±2°C Humidity : 90 to 95%RH Voltage : Rated voltage Time : 500±<sup>24</sup><sub>0</sub>hours</p>															
12	Endurance	Appearance : No abnormality. ΔC/C : ±20% D.F. : 7% maximum I.R. : 100/C <sub>R</sub> (MΩ) or 1000(MΩ) whichever is less. Withstand voltage : No abnormality.	<p>Temperature : 85±2°C Voltage : 200% of rated voltage. Time : 1000±<sup>48</sup><sub>0</sub>hours</p> <p>Temperature : 125±3°C Voltage : Rated voltage Time : 1000±<sup>48</sup><sub>0</sub>hours</p>															

\*C<sub>R</sub> : Rated Capacitance(μF)

### ◆DIMENSIONS



Size Code	Dimensions (mm)			
	L	W	T max.	a
20	2.0±0.2	1.25±0.2	1.25	0.3±0.2
30	3.2±0.2	1.6±0.2	1.6	0.5±0.3
40	3.2±0.2	2.5±0.2	2.0 or 2.5	0.6±0.3
50	4.5±0.3	3.2±0.2	2.2 or 3.0	0.6±0.3
60	5.7±0.4	5.0±0.4	2.2 or 3.0	0.8±0.5
70	7.5±0.5	6.3±0.5	2.5 or 3.0	0.8±0.5



# MULTILAYER CERAMIC CHIP CAPACITORS

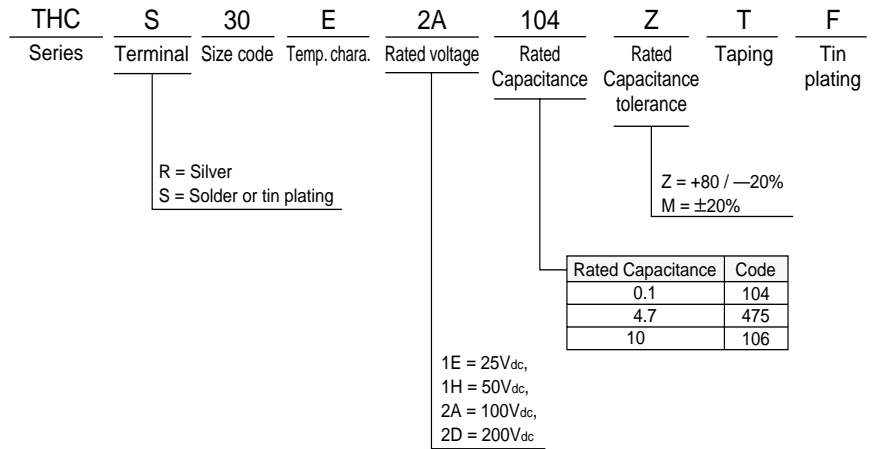
**THC** Series

## ◆STANDARD RATING

μF \ V <sub>dc</sub>	25	50	100	200
0.047			20	30
0.068			20	30
0.1		20	30	40
0.15		20	30	40
0.22		20	30	40
0.33	20	30	40	50
0.47	20	30	40	50
0.68	20	30	40	60
1.0	30	40	50	60
1.5	30	40	50	70
2.2	30	40	50	70
3.3	40	50	60	
4.7	40	50	60	
6.8	50	60	70	
10	50	60		
15	50	60		
22	60	70		
33	60			
47	70			

\*A code in the table represents size code.

## ◆PART NUMBERING SYSTEM



## ◆THC SERIES STANDARD RATINGS

Part Number	Rated voltage (V <sub>dc</sub> )	Rated Capacitance (μF)	Dimensions (mm)			
			L	W	Tmax.	a
THC○20E1E334□ THC○20E1E474□ THC○20E1E684□	25	0.33	2.0±0.2	1.25±0.2	1.25	0.3±0.2
0.47						
0.68						
THC○30E1E105□ THC○30E1E155□ THC○30E1E225□		3.2±0.2	1.0	1.6±0.2	1.6	0.5±0.3
1.5						
2.2						
THC○40E1E335□ THC○40E1E475□		3.2±0.2	3.3	2.5±0.2	2.0	0.6±0.3
4.7						
6.8						
THC○50E1E685□ THC○50E1E106□ THC○50E1E156□		4.5±0.3	10	3.2±0.2	2.2	0.6±0.3
15						
3.0						
THC○60E1E226□ THC○60E1E336□		5.7±0.4	22	5.0±0.4	2.2	0.8±0.5
33						
3.0						
THC○70E1E476□	7.5±0.5	6.3±0.5	3.0	0.8±0.5		
THC○20E1H104□ THC○20E1H154□ THC○20E1H224□	50	0.1	2.0±0.2	1.25±0.2	1.25	0.3±0.2
0.15						
0.22						
THC○30E1H334□ THC○30E1H474□ THC○30E1H684□		3.2±0.2	0.33	1.6±0.2	1.6	0.5±0.3
0.47						
0.68						
THC○40E1H105□ THC○40E1H155□ THC○40E1H225□		3.2±0.2	1.0	2.5±0.2	2.0	0.6±0.3
1.5						
2.2						
THC○50E1H335□ THC○50E1H475□		4.5±0.3	3.3	3.2±0.2	2.2	0.6±0.3
4.7						
3.0						
THC○60E1H685□ THC○60E1H106□ THC○60E1H156□		5.7±0.4	6.8	5.0±0.4	2.2	0.8±0.5
10						
15						
THC○70E1H226□	7.5±0.5	6.3±0.5	2.5	0.8±0.5		
THC○20E2A473□ THC○20E2A683□	100	0.047	2.0±0.2	1.25±0.2	1.25	0.3±0.2
0.068						
0.1						
THC○30E2A104□ THC○30E2A154□ THC○30E2A224□		3.2±0.2	0.15	1.6±0.2	1.6	0.5±0.3
0.22						
0.33						
THC○40E2A334□ THC○40E2A474□ THC○40E2A684□		3.2±0.2	0.47	2.5±0.2	2.0	0.6±0.3
0.68						
2.5						
THC○50E2A105□ THC○50E2A155□ THC○50E2A225□		4.5±0.3	1.0	3.2±0.2	2.2	0.6±0.3
1.5						
3.0						
THC○60E2A335□ THC○60E2A475□		5.7±0.4	3.3	5.0±0.4	2.2	0.8±0.5
4.7						
3.0						
THC○70E2A685□	7.5±0.5	6.3±0.5	3.0	0.8±0.5		
THC○30E2D473□ THC○30E2D683□	200	0.047	3.2±0.2	1.6±0.2	1.6	0.5±0.3
0.068						
0.1						
THC○40E2D104□ THC○40E2D154□ THC○40E2D224□		3.2±0.2	0.15	2.5±0.2	2.0	0.6±0.3
0.22						
2.5						
THC○50E2D334□ THC○50E2D474□		4.5±0.3	0.33	3.2±0.2	2.2	0.6±0.3
0.47						
3.0						
THC○60E2D684□ THC○60E2D105□		5.7±0.4	0.68	5.0±0.4	2.2	0.8±0.5
1.0						
3.0						
THC○70E2D155□ THC○70E2D225□		7.5±0.5	1.5	6.3±0.5	2.5	0.8±0.5
2.2						
3.0						

\*Specify R (Silver Termination) or S (Plating Termination) in ○.

Specify M or Z in □.

THCS60 and THCS70 sizes are for reflow soldering use only.