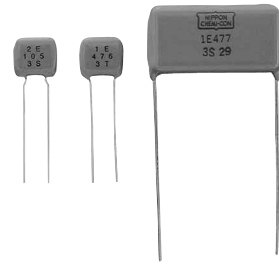


## THD Series Radial Lead Type (Down sized)



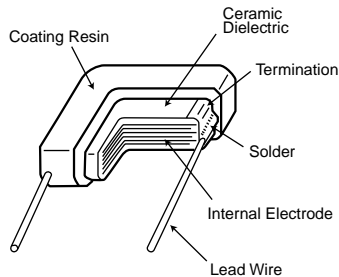
### ◆FEATURES

1. Small in size and wide capacitance range.  
Max. 680 $\mu$ F is available.
2. Temperature characteristic is Y5U in EIA code.
3. Superior humidity characteristic and long life.
4. Excellent high frequency characteristic due to low ESR.
5. High rated ripple current.
6. 250V<sub>dc</sub> items are available.
7. Resin(UL94 V-0) used for coating.

### ◆APPLICATIONS

1. Smoothing circuit of switching mode AC-DC or DC-DC converter.
2. Noise suppressor for various kinds of equipments.
3. By-pass or decoupling circuits.
4. Automotive equipments.

### ◆CONSTRUCTION



### ◆RATINGS

1. Category Temperature Range	-55 to +125°C
2. Rated Voltage Range	16, 25, 50, 100, 250 V <sub>dc</sub>
3. Rated Capacitance Range	0.1 to 680 $\mu$ F
4. Rated Capacitance Tolerance	M( $\pm$ 20%), Z( $\pm$ 20%)
5. Temperature Characteristics	E(JIS) $\approx$ Y5U(EIA)
6. Rated Ripple Current	See No.5 on the following table

### ◆SPECIFICATIONS

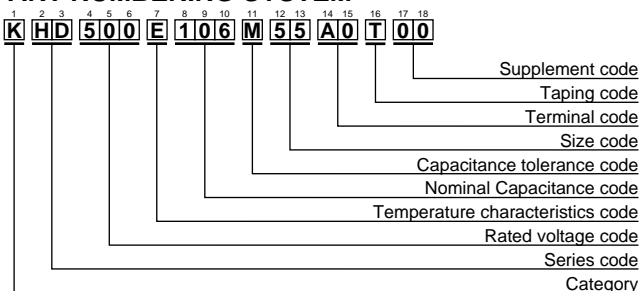
No.	Items	Specification	Test Condition
1	Withstand Voltage Between Terminals Terminals to Coating Resin	No abnormality.	250% of rated voltage shall be applied for 5 seconds.
2	Insulation Resistance	1000/C <sub>R</sub> (M $\Omega$ ) or 10000(M $\Omega$ ) whichever is less.	Rated voltage shall be applied for 60 $\pm$ 5 seconds at temperature 20 $\pm$ 2°C.
3	Rated Capacitance	Within specified tolerance.	Temperature : 20 $\pm$ 2°C Frequency : 1 $\pm$ 0.1kHz( $\geq$ 100 $\mu$ F, 120Hz) Voltage : 1 $\pm$ 0.2V <sub>rms</sub>
4	Dissipation Factor	5.0% maximum.	Temperature : 20 $\pm$ 2°C Frequency : 1 $\pm$ 0.1kHz( $\geq$ 100 $\mu$ F, 120Hz) Voltage : 1 $\pm$ 0.2V <sub>rms</sub>

### ◆ SPECIFICATIONS

No.	Items	Specification	Test Condition																		
5	Rated Ripple Current	<table border="1"> <tr> <td>Size code</td> <td>32</td> <td>43</td> <td>55</td> <td>76</td> <td>80</td> <td>90</td> <td>99</td> </tr> <tr> <td>Arms</td> <td>0.3</td> <td>0.8</td> <td>1.0</td> <td>1.5</td> <td>2.0</td> <td>3.0</td> <td>4.0</td> </tr> </table>	Size code	32	43	55	76	80	90	99	Arms	0.3	0.8	1.0	1.5	2.0	3.0	4.0	10kHz to 1MHz (sine curve) Ripple voltage $V_p$ shall be less than the rated voltage.		
Size code	32	43	55	76	80	90	99														
Arms	0.3	0.8	1.0	1.5	2.0	3.0	4.0														
6	Robustness of Terminations	No visible damage.	The force applied shall be : <table border="1"> <tr> <td>Lead <math>\phi</math> (mm)</td> <td>Tensile(N)</td> <td>(sec.)</td> </tr> <tr> <td>0.5 max.</td> <td>5</td> <td>10<math>\pm</math>1</td> </tr> <tr> <td>0.6 to 0.8 max.</td> <td>10</td> <td>10<math>\pm</math>1</td> </tr> </table> <table border="1"> <tr> <td>Lead <math>\phi</math> (mm)</td> <td>Bending(N)</td> <td>(kg)</td> </tr> <tr> <td>0.5 max.</td> <td>2.5</td> <td>0.25</td> </tr> <tr> <td>0.6 to 0.8 max.</td> <td>5</td> <td>0.51</td> </tr> </table> Time : 2times.	Lead $\phi$ (mm)	Tensile(N)	(sec.)	0.5 max.	5	10 $\pm$ 1	0.6 to 0.8 max.	10	10 $\pm$ 1	Lead $\phi$ (mm)	Bending(N)	(kg)	0.5 max.	2.5	0.25	0.6 to 0.8 max.	5	0.51
Lead $\phi$ (mm)	Tensile(N)	(sec.)																			
0.5 max.	5	10 $\pm$ 1																			
0.6 to 0.8 max.	10	10 $\pm$ 1																			
Lead $\phi$ (mm)	Bending(N)	(kg)																			
0.5 max.	2.5	0.25																			
0.6 to 0.8 max.	5	0.51																			
7	Vibration	Appearance : No abnormality. Capacitance : To meet the initial specification. D.F. : To meet the initial specifications.	Amplitude : 1.5mm Frequency range : 10-55-10Hz (1 min) Direction and time : 2 hours each to X, Y, Z axis. Total 6 hours.																		
8	Solderability	Min. 75% of surface of the termination shall be covered with new solder.	Solder Temperature : 235 $\pm$ 5 $^{\circ}$ C Dipping Time : 2 $\pm$ 0.5 sec. Solder : H60A or H63A																		
9	Resistance to Soldering Heat	Appearance : No abnormality. $\Delta C/C$ : $\pm$ 15% D.F. : Satisfy the initial spec.	Solder Temperature : 350 $\pm$ 10 $^{\circ}$ C Dipping Time : 3 $\pm$ 0.5 sec. Depth : 1.5 to 2mm																		
10	Temperature Cycle	Appearance : No abnormality.	<table border="1"> <tr> <th>Step</th> <th>Temperature (<math>^{\circ}</math>C)</th> <th>(min.)</th> </tr> <tr> <td>1</td> <td>Min. Category temperature <math>\pm</math>3</td> <td>30<math>\pm</math>3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>3 max.</td> </tr> <tr> <td>3</td> <td>Max. Category temperature <math>\pm</math>2</td> <td>30<math>\pm</math>3</td> </tr> <tr> <td>4</td> <td>Room temperature</td> <td>3 max.</td> </tr> </table> For 5 cycles for above temperature cycle.	Step	Temperature ( $^{\circ}$ C)	(min.)	1	Min. Category temperature $\pm$ 3	30 $\pm$ 3	2	Room temperature	3 max.	3	Max. Category temperature $\pm$ 2	30 $\pm$ 3	4	Room temperature	3 max.			
Step	Temperature ( $^{\circ}$ C)	(min.)																			
1	Min. Category temperature $\pm$ 3	30 $\pm$ 3																			
2	Room temperature	3 max.																			
3	Max. Category temperature $\pm$ 2	30 $\pm$ 3																			
4	Room temperature	3 max.																			
11	Humidity Load Life	Appearance : No abnormality. $\Delta C/C$ : $\pm$ 20% D.F. : 7% maximum I.R. : 50/ $C_R$ (M $\Omega$ ) or 1000(M $\Omega$ ) whichever is less. Withstand voltage : No abnormality.	Temperature : 40 $\pm$ 2 $^{\circ}$ C Humidity : 90 to 95%RH Voltage : Rated voltage Time : 500 $\pm$ <sub>0</sub> <sup>24</sup> hours																		
12	Endurance	Appearance : No abnormality. $\Delta C/C$ : $\pm$ 20% D.F. : 7% maximum I.R. : 100/ $C_R$ (M $\Omega$ ) or 1000(M $\Omega$ ) whichever is less. Withstand voltage : No abnormality.	Temperature : 85 $\pm$ 2 $^{\circ}$ C Voltage : 200% of rated voltage. Time : 1000 $\pm$ <sub>0</sub> <sup>48</sup> hours  Temperature : 125 $\pm$ 3 $^{\circ}$ C Voltage : Rated voltage Time : 1000 $\pm$ <sub>0</sub> <sup>48</sup> hours																		

\*Cr : Rated Capacitance( $\mu$ F)

### ◆ PART NUMBERING SYSTEM



### ◆THD SERIES STANDARD RATINGS

Part Number	Rated voltage (Vdc)	Rated Cap. (μF)	Dimensions (mm)					Previous Part Number (Just for your reference)	Part Number	Rated voltage (Vdc)	Rated Cap. (μF)	Dimensions (mm)					Previous Part Number (Just for your reference)	
			Lmax	Wmax	Tmax	F±0.8	φd±0.05					Lmax	Wmax	Tmax	F±0.8	φd±0.05		
KHD160E685M32A0T00	16	6.8	5.0	6.5	3.5	5.0	0.5	THD21E1C685MT	50	33	13.5	15.0	5.0	10.0	0.6	THD51E1H336M		
KHD160E106M32A0T00		10						THD21E1C106MT		47						THD60E1H476M		
KHD160E156M43A0T00		15						THD30E1C156MT		68						THD60E1H686M		
KHD160E226M43A0T00		22	6.5	7.5	4.0	5.0	0.5	THD30E1C226MT		100	22.5	20.0	6.0	20.0	0.8	THD60E1H107M		
KHD160E336M55A0T00		33						THD31E1C336MT		150						THD61E1H157M		
KHD160E476M55A0T00		47	8.0	9.0	4.5	5.0	0.5	THD31E1C476MT		220	28.5	20.0	7.5	25.0	0.8	THD61E1H227M		
KHD160E686M76A0T00		68						THD41E1C686MT		0.3						THD21E2A334MT		
KHD160E107M76A0T00		100	10.0	11.5	4.5	5.0	0.5	THD41E1C107MT		0.47	5.0	6.5	3.0	5.0	0.5	THD21E2A474MT		
KHD160E157M80A0B00		150						THD51E1C157M		0.68						THD21E2A684MT		
KHD160E227M80A0B00		220	13.5	15.0	5.0	10.0	0.6	THD51E1C227M		1.0	6.5	7.0	3.5	5.0	0.5	THD30E2A105MT		
KHD160E337M90C0B00		330						THD60E1C337M		1.5						THD30E2A155MT		
KHD160E477M90C0B00		470	22.5	20.0	6	20.0	0.8	THD60E1C477M		2.2	6.5	7.0	4.0	5.0	0.5	THD30E2A225MT		
KHD160E687M99C0B00		680						THD61E1C687M		3.3						THD31E2A335MT		
KHD250E335M32A0T00		25	3.3	5.0	6.5	3.0	5.0	0.5		THD21E1E335MT	100	4.7	7.5	9.0	4.5	5.0	0.5	THD31E2A475MT
KHD250E475M32A0T00			4.7							THD21E1E475MT		6.8						THD41E2A685MT
KHD250E685M43A0T00			6.8							THD30E1E685MT		10						THD51E2A106M
KHD250E106M43A0T00	10		6.5	7.0	3.5	5.0	0.5	THD30E1E106MT	15	13.5		15.0	5.0	10.0	0.6	THD51E2A156M		
KHD250E156M43A0T00	15							THD30E1E156MT	22							THD60E2A226M		
KHD250E226M55A0T00	22		7.5	9.0	4.0	5.0	0.5	THD31E1E226MT	33	22.5		20.0	6.0	20.0	0.8	THD60E2A336M		
KHD250E336M55A0T00	33							THD31E1E336MT	47							THD61E2A476M		
KHD250E476M76A0T00	47		10.0	11.5	4.5	5.0	0.5	THD41E1E476MT	68	28.5		20.0	7.5	25.0	0.8	THD61E2A686M		
KHD250E686M80A0B00	68							THD51E1E686M	100							THD61E2A107M		
KHD250E107M80A0B00	100		13.5	15.0	5.0	10.0	0.6	THD51E1E107M	0.1	6.5		7.0	3.5	5.0	0.5	THD30E2E104MT		
KHD250E157M90C0B00	150							THD60E1E157M	0.15							THD30E2E154MT		
KHD250E227M90C0B00	220		22.5	20.0	6.0	20.0	0.8	THD60E1E227M	0.22	6.5		7.0	4.0	5.0	0.5	THD30E2E224MT		
KHD250E337M99C0B00	330							THD61E1E337M	0.33							THD30E2E334MT		
KHD250E477M99C0B00	470		28.5	20.0	7.5	25.0	0.8	THD61E1E477M	0.47	7.5		9.0	4.0	5.0	0.5	THD31E2E474MT		
KHD500E105M32A0T00	1.0							THD21E1H105MT	0.68							THD31E2E684MT		
KHD500E155M32A0T00	1.5		5.0	6.5	3.0	5.0	0.5	THD21E1H155MT	1.0	10.0		11.5	4.5	5.0	0.5	THD41E2E105MT		
KHD500E225M32A0T00	2.2	THD21E1H225MT						1.5	THD41E2E155MT									
KHD500E335M43A0T00	3.3	6.5	7.0	3.5	5.0	0.5	THD30E1H335MT	2.2	13.5	15.0	5.0	10.0	0.6	THD51E2E225M				
KHD500E475M43A0T00	4.7						THD30E1H475MT	3.3						THD60E2E335M				
KHD500E685M55A0T00	6.8	7.5	9.0	4.0	5.0	0.5	THD31E1H685MT	4.7	22.5	20.0	6.0	20.0	0.8	THD60E2E475M				
KHD500E106M55A0T00	10						THD31E1H106MT	6.8						THD61E2E685M				
KHD500E156M55A0T00	15	10.0	11.5	4.5	5.0	0.5	THD31E1H156MT	10	28.5	20.0	7.5	25.0	0.8	THD61E2E106M				
KHD500E226M76A0T00	22						THD41E1H226MT	15						THD61E2E156M				

### ◆DIMENSIONS (mm)

