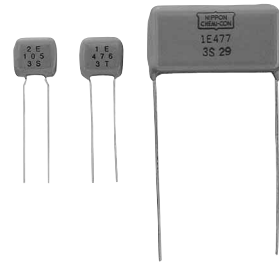


THD Series Radial Lead Type (Down sized)



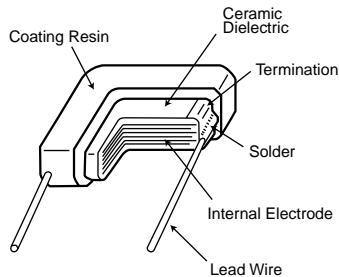
◆FEATURES

1. Small in size and wide capacitance range.
Max. 680 μ 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_{dc} 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 _{dc}
3. Rated Capacitance Range	0.1 to 680 μ 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	No abnormality.	250% of rated voltage shall be applied for 5 seconds.
		Terminals to Coating Resin		
2	Insulation Resistance		1000/C _R (M Ω) or 10000(M Ω) 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 μ F, 120Hz) Voltage : 1 \pm 0.2V _{rms}
4	Dissipation Factor		5.0% maximum.	Temperature : 20 \pm 2°C Frequency : 1 \pm 0.1kHz(\geq 100 μ F, 120Hz) Voltage : 1 \pm 0.2V _{rms}



DIPPED RADIAL LEAD MULTILAYER CERAMIC CAPACITORS

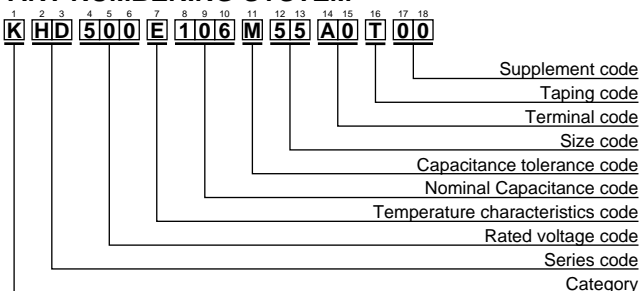
THD Series

◆ 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 ϕ (mm)</td> <td>Tensile(N)</td> <td>(sec.)</td> </tr> <tr> <td>0.5 max.</td> <td>5</td> <td>10\pm1</td> </tr> <tr> <td>0.6 to 0.8 max.</td> <td>10</td> <td>10\pm1</td> </tr> </table> <table border="1"> <tr> <td>Lead ϕ (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 ϕ (mm)	Tensile(N)	(sec.)	0.5 max.	5	10 \pm 1	0.6 to 0.8 max.	10	10 \pm 1	Lead ϕ (mm)	Bending(N)	(kg)	0.5 max.	2.5	0.25	0.6 to 0.8 max.	5	0.51
Lead ϕ (mm)	Tensile(N)	(sec.)																			
0.5 max.	5	10 \pm 1																			
0.6 to 0.8 max.	10	10 \pm 1																			
Lead ϕ (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 ($^{\circ}$C)</th> <th>(min.)</th> </tr> <tr> <td>1</td> <td>Min. Category temperature \pm3</td> <td>30\pm3</td> </tr> <tr> <td>2</td> <td>Room temperature</td> <td>3 max.</td> </tr> <tr> <td>3</td> <td>Max. Category temperature \pm2</td> <td>30\pm3</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 Ω) or 1000(M Ω) whichever is less. Withstand voltage : No abnormality.	Temperature : 40 \pm 2 $^{\circ}$ C Humidity : 90 to 95%RH Voltage : Rated voltage Time : 500 \pm ₀ ²⁴ hours																		
12	Endurance	Appearance : No abnormality. $\Delta C/C$: \pm 20% D.F. : 7% maximum I.R. : 100/ C_R (M Ω) or 1000(M Ω) whichever is less. Withstand voltage : No abnormality.	Temperature : 85 \pm 2 $^{\circ}$ C Voltage : 200% of rated voltage. Time : 1000 \pm ₀ ⁴⁸ hours Temperature : 125 \pm 3 $^{\circ}$ C Voltage : Rated voltage Time : 1000 \pm ₀ ⁴⁸ hours																		

*Cr : Rated Capacitance(μ 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	6.5	7.5	4.0	5.0	0.5	THD30E1C156MT		68	22.5	20.0	6.0	20.0	0.8	THD60E1H686M	
KHD160E226M43A0T00		22						THD30E1C226MT								100	THD60E1H107M
KHD160E336M55A0T00		33	8.0	9.0	4.5	5.0	0.5	THD31E1C336MT		150	28.5	20.0	7.5	25.0	0.8	THD61E1H157M	
KHD160E476M55A0T00		47						THD31E1C476MT								220	THD61E1H227M
KHD160E686M76A0T00		68	10.0	11.5	4.5	5.0	0.5	THD41E1C686MT		0.3	5.0	6.5	3.0	5.0	0.5	THD21E2A334MT	
KHD160E107M76A0T00		100						THD41E1C107MT								0.47	THD21E2A474MT
KHD160E157M80A0B00		150	13.5	15.0	5.0	10.0	0.6	THD51E1C157M		0.68	6.5	7.0	3.5	5.0	0.5	THD21E2A684MT	
KHD160E227M80A0B00		220			5.5			THD51E1C227M								1.0	THD30E2A105MT
KHD160E337M90C0B00		330	22.5	20.0	6	20.0	0.8	THD60E1C337M		1.5	6.5	7.0	4.0	5.0	0.5	THD30E2A155MT	
KHD160E477M90C0B00		470						THD60E1C477M								2.2	THD30E2A225MT
KHD160E687M99C0B00		680	28.5	20.0	7.5	25.0	0.8	THD61E1C687M		3.3	7.5	9.0	4.0	5.0	0.5	THD31E2A335MT	
KHD250E335M32A0T00		3.3	5.0	6.5	3.0	5.0	0.5	THD21E1E335MT		4.7						4.5	THD31E2A475MT
KHD250E475M32A0T00		4.7			3.5			THD21E1E475MT		6.8	10.0	11.5	4.5	5.0	0.5	THD41E2A685MT	
KHD250E685M43A0T00		6.8	6.5	7.0	3.5	5.0	0.5	THD30E1E685MT		10	13.5	15.0	5.0	10.0	0.6	THD51E2A106M	
KHD250E106M43A0T00	10	3.5			THD30E1E106MT			15	15.0	5.0						10.0	0.6
KHD250E156M43A0T00	15	7.5	9.0	4.0	5.0	0.5	THD30E1E156MT	22	22.5	20.0	6.0	20.0	0.8	THD60E2A226M			
KHD250E226M55A0T00	22			4.0			THD31E1E226MT	33						THD60E2A336M			
KHD250E336M55A0T00	33	10.0	11.5	4.5	5.0	0.5	THD31E1E336MT	47	28.5	20.0	7.5	25.0	0.8	THD61E2A476M			
KHD250E476M76A0T00	47			4.5			THD41E1E476MT	68						THD61E2A686M			
KHD250E686M80A0B00	68	13.5	15.0	5.0	10.0	0.6	THD51E1E686M	100	10.0	11.5	4.5	5.0	0.5	THD41E2A105MT			
KHD250E107M80A0B00	100			5.5			THD51E1E107M	15						15.0	5.0	10.0	0.6
KHD250E157M90C0B00	150	22.5	20.0	6.0	20.0	0.8	THD60E1E157M	0.1	6.5	7.0	3.5	5.0	0.5	THD30E2E104MT			
KHD250E227M90C0B00	220						THD60E1E227M	0.15						THD30E2E154MT			
KHD250E337M99C0B00	330	28.5	20.0	7.5	25.0	0.8	THD61E1E337M	0.22	7.5	9.0	4.0	5.0	0.5	THD30E2E224MT			
KHD250E477M99C0B00	470						THD61E1E477M	0.33						THD30E2E334MT			
KHD500E105M32A0T00	1.0	5.0	6.5	3.0	5.0	0.5	THD21E1H105MT	0.47	10.0	11.5	4.5	5.0	0.5	THD31E2E474MT			
KHD500E155M32A0T00	1.5			3.5			THD21E1H155MT	0.68						4.5	THD31E2E684MT		
KHD500E225M32A0T00	2.2	6.5	7.0	3.5	5.0	0.5	THD21E1H225MT	1.0	13.5	15.0	5.0	10.0	0.6	THD51E2E225M			
KHD500E335M43A0T00	3.3			4.0			THD30E1H335MT	1.5						22.5	20.0	6.0	20.0
KHD500E475M43A0T00	4.7	7.5	9.0	4.0	5.0	0.5	THD30E1H475MT	3.3	28.5	20.0	7.5	25.0	0.8	THD61E2E475M			
KHD500E685M55A0T00	6.8			4.0			THD31E1H685MT	4.7						25.0	0.8	THD61E2E685M	
KHD500E106M55A0T00	10	10.0	11.5	4.5	5.0	0.5	THD31E1H106MT	6.8	10.0	11.5	4.5	5.0	0.5	THD61E2E106M			
KHD500E156M55A0T00	15			4.5			THD31E1H156MT	10						25.0	0.8	THD61E2E106M	
KHD500E226M76A0T00	22	10.0	11.5	4.5	5.0	0.5	THD41E1H226MT	15	28.5	20.0	7.5	25.0	0.8	THD61E2E156M			

◆DIMENSIONS (mm)

