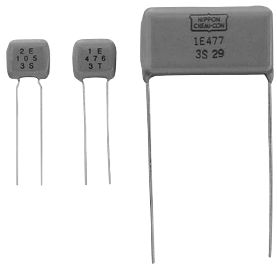
DIPPED RADIAL LEAD MULTILAYER CERAMIC CAPACITORS

THD Series

RoHS Compliant



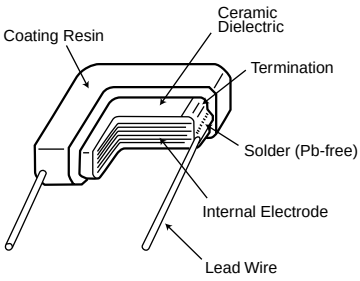
◆FEATURES

1. Small size and large capacitance, high ripple current.
2. Temperature characteristic is Y5U in EIA code.
3. Superior humidity characteristic and long life.
4. Excellent noise absorption.
5. Resin(UL94 V-0) used for coating.

◆APPLICATIONS

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

◆CONSTRUCTION



◆RATINGS

1. Category Temperature Range	-55 to +125℃
2. Rated Voltage Range	16, 25, 50, 100, 250 V_{dc}
3. Rated Capacitance Range	0.1 to 680μF
4. Rated Capacitance Tolerance	M(±20%), Z($\pm^{80}_{20}$%)
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	Between Terminals	No abnormality.	250% of rated voltage shall be applied for 5 seconds.
		Terminals to Coating Resin		
2	Insulation Resistance		1000/C_R(MΩ) or 10000(MΩ) whichever is less.	Rated voltage shall be applied for 60±5 seconds at temperature 20±2℃.
3	Rated Capacitance		Within specified tolerance.	Temperature : 20±2℃ Frequency : 1±0.1kHz(≧100μF,120Hz) Voltage : 1±0.2Vrms
4	Dissipation Factor		5.0% maximum.	Temperature : 20±2℃ Frequency : 1±0.1kHz(≧100μF,120Hz) Voltage : 1±0.2Vrms

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◆SPECIFICATIONS

No.	Items		Specification	Test Condition
5	Rated Ripple Current		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 Vp shall be less than the rated voltage.
6	Robustness of Terminations	Tension	No visible damage.	The force applied shall be : Lead φ (mm) / Tensile(N) / (sec.) 0.5 max. / 5 / 10±1 0.6 to 0.8 max. / 10 / 10±1
		Bending		Lead φ (mm) / Bending(N) / (kg) 0.5 max. / 2.5 / 0.25 0.6 to 0.8 max. / 5 / 0.51 Time : 2times.
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 / Pb Free / Eutectic Solder Temperature / 245±5℃ / 235±5℃ Dipping Time / 2±0.5sec.
9	Resistance to Soldering Heat		Appearance : No abnormality. ΔC/C : ±15% D.F. : Satisfy the initial spec.	Solder Temperature : 350±10℃ Dipping Time : 3±0.5 sec. Depth : 1.5 to 2mm
10	Temperature Cycle		Appearance : No abnormality. ΔC/C : ±15% D.F. : To meet the initial specification I.R. : To meet the initial specification	Step / Temperature (℃) / (min.) 1 / Min. Category temperature ±3 / 30±3 2 / Room temperature / 3 max. 3 / Max. Category temperature ±3 / 30±3 4 / Room temperature / 3 max. For 5 cycles for above temperature cycle.
11	Humidity Load Life		Appearance : No abnormality. ΔC/C : ±20% D.F. : 7% maximum I.R. : 50/C_R(MΩ) or 1000(MΩ) whichever is less.	Temperature : 40±2℃ Humidity : 90 to 95%RH Voltage : Rated voltage Time : 500^{+24}_{0}hours
12	Endurance		Appearance : No abnormality. ΔC/C : ±20% D.F. : 7% maximum I.R. : 100/C_R(MΩ) or 1000(MΩ) whichever is less.	Temperature : 85±2℃ Voltage : 200% of rated voltage. Time : 1000^{+48}_{0}hours Temperature : 125±3℃ Voltage : Rated voltage Time : 1000^{+48}_{0}hours

*C_R : Rated Capacitance(μF)

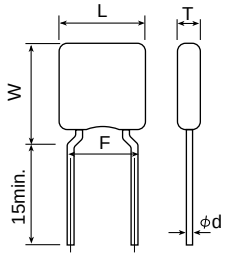
◆PART NUMBERING SYSTEM

1	2 3	4 5 6	7	8 9 10	11	12 13	14 15	16	17 18
K	HD	500	E	106	M	55	A0	T	00

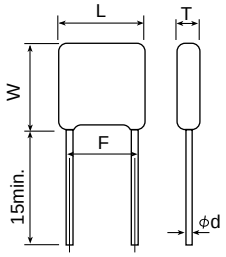
- 1 Category
- 2 3 Series code
- 4 5 6 Rated voltage code
- 7 Temperature characteristics code
- 8 9 10 Nominal Capacitance code
- 11 Capacitance tolerance code
- 12 13 Size code
- 14 15 Terminal code
- 16 Taping code
- 17 18 Supplement code

◆DIMENSIONS

Crimped lead
32～76 size



Straight lead
For all size



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◆THD SERIES STANDARD RATINGS

Rated voltage (Vdc)	Rated Capacitance (μF)	Dimensions (mm)					Maximum ripple current (Arms)	Part Number	Previous Part Number (Just for your reference)
		Lmax.	Wmax.	Tmax.	F±0.8	φd±0.05			
16	6.8	5.0	6.5	3.5	5.0	0.5	0.3	KHD160E685M32A0T00	THD21E1C685MT
	10							KHD160E106M32A0T00	THD21E1C106MT
	15	6.5	7.5	4.0	5.0	0.5	0.8	KHD160E156M43A0T00	THD30E1C156MT
	22							KHD160E226M43A0T00	THD30E1C226MT
	33	8.0	9.0	4.5	5.0	0.5	1.0	KHD160E336M55A0T00	THD31E1C336MT
	47							KHD160E476M55A0T00	THD31E1C476MT
	68	10.0	11.5	4.5	5.0	0.5	1.5	KHD160E686M76A0T00	THD41E1C686MT
	100							KHD160E107M76A0T00	THD41E1C107MT
	150	13.5	15.0	5.0	10.0	0.6	2.0	KHD160E157M80A0B00	THD51E1C157M
	220			5.5				KHD160E227M80A0B00	THD51E1C227M
	330	22.5	20.0	6	20.0	0.8	3.0	KHD160E337M90C0B00	THD60E1C337M
	470							KHD160E477M90C0B00	THD60E1C477M
	680	28.5	20.0	7.5	25.0	0.8	4.0	KHD160E687M99C0B00	THD61E1C687M
25	3.3	5.0	6.5	3.0	5.0	0.5	0.3	KHD250E335M32A0T00	THD21E1E335MT
	4.7			3.5				KHD250E475M32A0T00	THD21E1E475MT
	6.8	6.5	7.0	3.5	5.0	0.5	0.8	KHD250E685M43A0T00	THD30E1E685MT
	10							KHD250E106M43A0T00	THD30E1E106MT
	15			4.0				KHD250E156M43A0T00	THD30E1E156MT
	22	7.5	9.0	4.0	5.0	0.5	1.0	KHD250E226M55A0T00	THD31E1E226MT
	33			4.5				KHD250E336M55A0T00	THD31E1E336MT
	47	10.0	11.5	4.5	5.0	0.5	1.5	KHD250E476M76A0T00	THD41E1E476MT
	68	13.5	15.0	5.0	10.0	0.6	2.0	KHD250E686M80A0B00	THD51E1E686M
	100			5.5				KHD250E107M80A0B00	THD51E1E107M
	150	22.5	20.0	6.0	20.0	0.8	3.0	KHD250E157M90C0B00	THD60E1E157M
	220							KHD250E227M90C0B00	THD60E1E227M
	330	28.5	20.0	7.5	25.0	0.8	4.0	KHD250E337M99C0B00	THD61E1E337M
	470							KHD250E477M99C0B00	THD61E1E477M
50	1.0	5.0	6.5	3.0	5.0	0.5	0.3	KHD500E105M32A0T00	THD21E1H105MT
	1.5							KHD500E155M32A0T00	THD21E1H155MT
	2.2			3.5				KHD500E225M32A0T00	THD21E1H225MT
	3.3	6.5	7.0	3.5	5.0	0.5	0.8	KHD500E335M43A0T00	THD30E1H335MT
	4.7			4.0				KHD500E475M43A0T00	THD30E1H475MT
	6.8	7.5	9.0	4.0	5.0	0.5	1.0	KHD500E685M55A0T00	THD31E1H685MT
	10							KHD500E106M55A0T00	THD31E1H106MT
	15			4.5				KHD500E156M55A0T00	THD31E1H156MT
	22	10.0	11.5	4.5	5.0	0.5	1.5	KHD500E226M76A0T00	THD41E1H226MT
	33	13.5	15.0	5.0	10.0	0.6	2.0	KHD500E336M80A0B00	THD51E1H336M
	47	22.5	20.0	6.0	20.0	0.8	3.0	KHD500E476M90C0B00	THD60E1H476M
	68							KHD500E686M90C0B00	THD60E1H686M
	100							KHD500E107M90C0B00	THD60E1H107M
	150	28.5	20.0	7.5	25.0	0.8	4.0	KHD500E157M99C0B00	THD61E1H157M
	220							KHD500E227M99C0B00	THD61E1H227M
100	0.33	5.0	6.5	3.0	5.0	0.5	0.3	KHD101E334M32A0T00	THD21E2A334MT
	0.47							KHD101E474M32A0T00	THD21E2A474MT
	0.68			3.5				KHD101E684M32A0T00	THD21E2A684MT
	1.0	6.5	7.0	3.5	5.0	0.5	0.8	KHD101E105M43A0T00	THD30E2A105MT
	1.5							KHD101E155M43A0T00	THD30E2A155MT
	2.2			4.0				KHD101E225M43A0T00	THD30E2A225MT
	3.3	7.5	9.0	4.0	5.0	0.5	1.0	KHD101E335M55A0T00	THD31E2A335MT
	4.7			4.5				KHD101E475M55A0T00	THD31E2A475MT
	6.8	10.0	11.5	4.5	5.0	0.5	1.5	KHD101E685M76A0T00	THD41E2A685MT
	10	13.5	15.0	5.0	10.0	0.6	2.0	KHD101E106M80A0B00	THD51E2A106M
	15							KHD101E156M80A0B00	THD51E2A156M
	22	22.5	20.0	6.0	20.0	0.8	3.0	KHD101E226M90C0B00	THD60E2A226M
	33							KHD101E336M90C0B00	THD60E2A336M
	47	28.5	20.0	7.5	25.0	0.8	4.0	KHD101E476M99C0B00	THD61E2A476M
	68							KHD101E686M99C0B00	THD61E2A686M
	100							KHD101E107M99C0B00	THD61E2A107M
250	0.1	6.5	7.0	3.5	5.0	0.5	0.8	KHD251E104M43A0T00	THD30E2E104MT
	0.15							KHD251E154M43A0T00	THD30E2E154MT
	0.22							KHD251E224M43A0T00	THD30E2E224MT
	0.33			4.0				KHD251E334M43A0T00	THD30E2E334MT
	0.47	7.5	9.0	4.0	5.0	0.5	1.0	KHD251E474M55A0T00	THD31E2E474MT
	0.68			4.5				KHD251E684M55A0T00	THD31E2E684MT
	1.0	10.0	11.5	4.5	5.0	0.5	1.5	KHD251E105M76A0T00	THD41E2E105MT
	1.5							KHD251E155M76A0T00	THD41E2E155MT
	2.2	13.5	15.0	5.0	10.0	0.6	2.0	KHD251E225M80A0B00	THD51E2E225M
	3.3	22.5	20.0	6.0	20.0	0.8	3.0	KHD251E335M90C0B00	THD60E2E335M
	4.7							KHD251E475M90C0B00	THD60E2E475M
	6.8	28.5	20.0	7.5	25.0	0.8	4.0	KHD251E685M99C0B00	THD61E2E685M
	10							KHD251E106M99C0B00	THD61E2E106M
	15							KHD251E156M99C0B00	THD61E2E156M