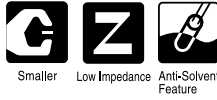
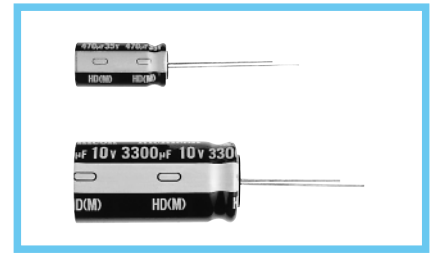
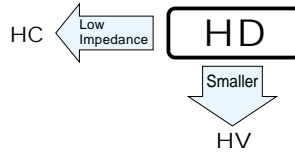


HD High Ripple Low Impedance series



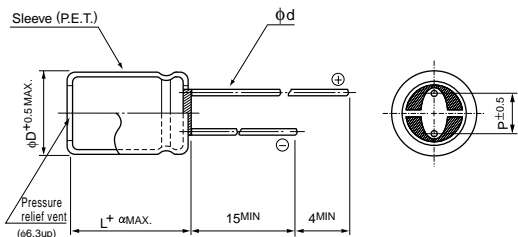
- Lower impedance at high frequency range.
- Smaller case size and high ripple current.
- Adapted to the RoHS directive (2002/95/EC).



Specifications

Item	Performance Characteristics							
Category Temperature Range	-40 to +105°C							
Rated Voltage Range	6.3 to 50V							
Rated Capacitance Range	22 to 6800μF							
Capacitance Tolerance	±20% at 120Hz, 20°C							
Leakage Current	After 2 minutes' application of rated voltage, leakage current is not more than 0.01CV or 3 (μA), whichever is greater.							
tan δ	Rated voltage (V)	6.3	10	16	25	35	50	120Hz 20°C
	tan δ (MAX.)	0.22	0.19	0.16	0.14	0.12	0.10	
	For capacitance of more than 1000μF, add 0.02 for every increase of 1000μF.							
Stability at Low Temperature	Rated voltage (V)	6.3	10	16	25	35	50	120Hz
	Impedance ratio ZT / Z20 (MAX.)	Z-25°C / Z+20°C	2	2	2	2	2	
		Z-40°C / Z+20°C	3	3	3	3	3	3
Endurance	After an application of D.C. bias voltage plus the rated ripple current for 5000 hours (φD ≤ 6.3 : 2000 hours, φD=8 : 3000 hours, φD=10 : 4000 hours) at 105°C the peak voltage shall not exceed the rated D.C. voltage, capacitors meet the characteristic requirements listed below.							
	Capacitance change	Within ± 25% of initial value						
	tan δ	200% or less of initial specified value						
	Leakage current	Initial specified value or less						
Marking	Printed with white color letter on black sleeve.							

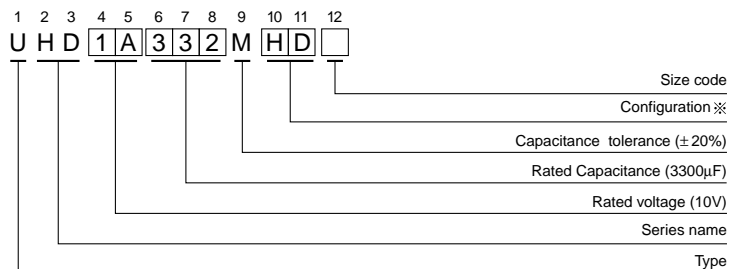
Radial Lead Type



α	(mm)						
	(L < 20)	5	6.3	8	10	12.5	16
(L ≥ 20)	2.0	2.5	3.5	5.0	5.0	5.0	7.5
φd	0.5	0.5	0.6	0.6	*0.6	0.8	

*In case L > 25 for the φ12.5 dia. unit, lead dia. φ d = 0.8mm.

Type numbering system (Example : 10V 3300μF)



※ Configuration

φ D	Pb-free leadwire Pb-free PET sleeve
5	DD
6.3	ED
8 · 10	PD
12.5 · 16	HD

- Please refer to page 20 about the end seal configuration.

Please refer to page 20, 21, 22 about the formed or taped product spec.
Please refer to page 4 for the minimum order quantity.

● Dimension table in next page.

Standard ratings

V (Code)		6.3 (0J)				10 (1A)			
Cap. (μF)	Item Code	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA _{rms}) 105°C / 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA _{rms}) 105°C / 100kHz
			20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
100	101					5 × 11	0.30	1.0	250
150	151	5 × 11	0.30	1.0	250				
220	221					6.3 × 11	0.13	0.41	405
330	331	6.3 × 11	0.13	0.41	405				
470	471					8 × 11.5	0.072	0.22	760
560	561	8 × 11.5	0.072	0.22	760				
680	681					8 × 15	0.056	0.17	995
820	821	8 × 15	0.056	0.17	995	▲ 10 × 12.5	0.053	0.16	1030
1000	102	10 × 12.5	0.053	0.16	1030				
1200	122	8 × 20	0.041	0.13	1250	8 × 20	0.041	0.13	1250
1500	152	▲ 10 × 16	0.038	0.12	1430	▲ 10 × 16	0.038	0.12	1430
2200	222	10 × 20	0.023	0.069	1820	10 × 25	0.022	0.066	2150
3300	332	10 × 25	0.022	0.066	2150	12.5 × 20	0.021	0.053	2360
3900	392	12.5 × 20	0.021	0.053	2360	12.5 × 25	0.018	0.045	2770
4700	472	12.5 × 25	0.018	0.045	2770	12.5 × 31.5	0.016	0.041	3290
5600	562	▲ 16 × 20	0.018	0.045	3140	▲ 16 × 20	0.018	0.045	3140
6800	682	12.5 × 35.5	0.015	0.039	3400	12.5 × 35.5	0.015	0.039	3400
		▲ 16 × 20	0.018	0.045	3140	16 × 25	0.016	0.043	3460
		16 × 25	0.016	0.043	3460				

V (Code)		16 (1C)				25 (1E)			
Cap. (μF)	Item Code	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA _{rms}) 105°C / 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA _{rms}) 105°C / 100kHz
			20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
47	470					5 × 11	0.30	1.0	250
56	560	5 × 11	0.30	1.0	250				
100	101					6.3 × 11	0.13	0.41	405
120	121	6.3 × 11	0.13	0.41	405				
220	221					8 × 11.5	0.072	0.22	760
330	331	8 × 11.5	0.072	0.22	760	8 × 15	0.056	0.17	995
470	471					▲ 10 × 12.5	0.053	0.16	1030
680	681	8 × 15	0.056	0.17	995	8 × 20	0.041	0.13	1250
820	821	▲ 10 × 12.5	0.053	0.16	1030	▲ 10 × 16	0.038	0.12	1430
1000	102	8 × 20	0.041	0.13	1250				
1200	122	▲ 10 × 16	0.038	0.12	1430	10 × 20	0.023	0.069	1820
1500	152	10 × 20	0.023	0.069	1820	10 × 25	0.022	0.066	2150
1800	182	10 × 25	0.022	0.066	2150	12.5 × 20	0.021	0.053	2360
2200	222	12.5 × 20	0.021	0.053	2360	12.5 × 25	0.018	0.045	2770
2700	272	12.5 × 25	0.018	0.045	2770	12.5 × 31.5	0.016	0.041	3290
3300	332	12.5 × 31.5	0.016	0.041	3290	▲ 16 × 20	0.018	0.045	3140
3900	392	▲ 16 × 20	0.018	0.045	3140	12.5 × 35.5	0.015	0.039	3400
		12.5 × 35.5	0.015	0.039	3400	16 × 25	0.016	0.043	3460
		16 × 25	0.016	0.043	3460				

▲ : In this case, [6] will be put at 12th digit of type numbering system.

■ Standard ratings

Cap. (μF)		V (Code)	Item Code	35 (1V)			50 (1H)				
				Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA _{rms}) 105°C / 100kHz	Case size φD × L (mm)	Impedance (Ω) MAX.		Rated ripple (mA _{rms}) 105°C / 100kHz
					20°C / 100kHz	-10°C / 100kHz			20°C / 100kHz	-10°C / 100kHz	
22	220						5 × 11	0.34	1.18	238	
33	330		5 × 11	0.30	1.0	250					
56	560		6.3 × 11	0.13	0.41	405	6.3 × 11	0.14	0.50	385	
100	101						8 × 11.5	0.074	0.22	724	
120	121						8 × 15	0.061	0.18	950	
150	151		8 × 11.5	0.072	0.22	760	10 × 12.5	0.061	0.18	979	
180	181						8 × 20	0.046	0.14	1190	
220	221		8 × 15	0.056	0.17	995	10 × 16	0.042	0.12	1370	
		▲10 × 12.5	0.053	0.16	1030						
270	271		8 × 20	0.041	0.13	1250	10 × 20	0.030	0.090	1580	
330	331		10 × 16	0.038	0.12	1430	10 × 25	0.028	0.085	1870	
470	471		10 × 20	0.023	0.069	1820	12.5 × 20	0.027	0.068	2050	
560	561		10 × 25	0.022	0.066	2150	12.5 × 25	0.023	0.059	2410	
680	681		12.5 × 20	0.021	0.053	2360	12.5 × 31.5	0.021	0.052	2860	
820	821						12.5 × 35.5	0.019	0.051	2960	
		▲16 × 20	0.023	0.059	2730						
1000	102		12.5 × 25	0.018	0.045	2770	16 × 25	0.021	0.056	3010	
1200	122		12.5 × 31.5	0.016	0.041	3290					
		▲16 × 20	0.018	0.045	3140						
1500	152		12.5 × 35.5	0.015	0.039	3400					
1800	182		16 × 25	0.016	0.043	3460					

▲ : In this case, [6] will be put at 12th digit of type numbering system.

● Frequency coefficient of rated ripple current

Cap. (μF)	Frequency	50Hz	120Hz	1kHz	10kHz	100kHz
22 to 33		0.45	0.55	0.75	0.90	1.00
39 to 330		0.60	0.70	0.85	0.95	1.00
390 to 1000		0.65	0.75	0.90	0.98	1.00
1200 to 6800		0.75	0.80	0.95	1.00	1.00