

### Radial Lead Type

Series: **HD** Type: **A**



#### ■ Features

- Endurance : 105 °C 1000 h to 2000 h
- Minaturize, Higher Capacitance :  
1 Size Minaturized Product of Current A-NHG
- RoHS directive compliant

#### ■ Specifications

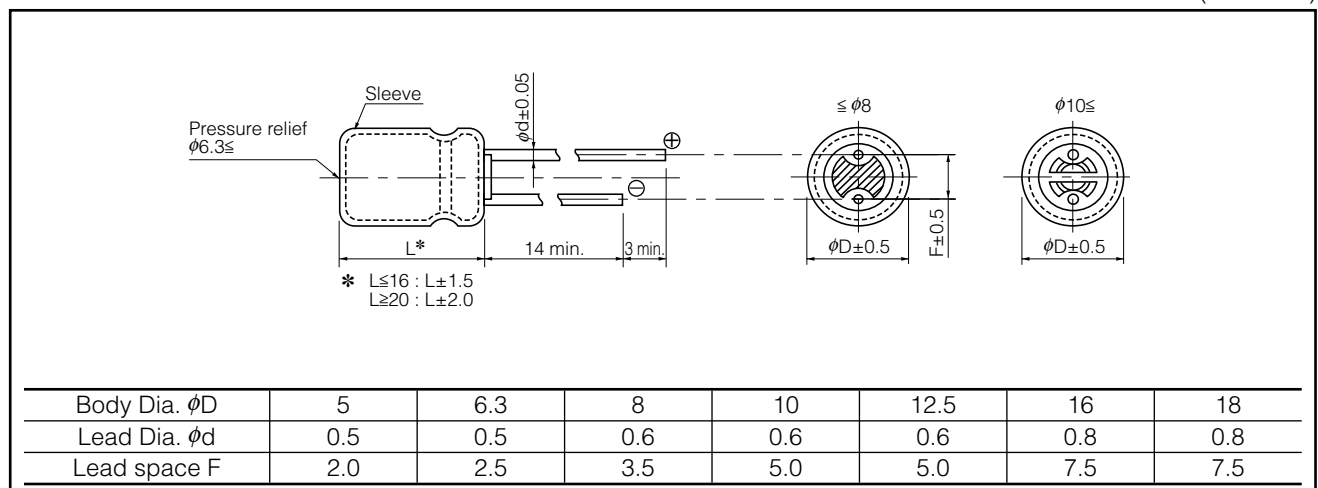
Category Temp. Range	-55 °C to +105 °C	
Rated W.V. Range	10 V.DC to 50 V.DC	
Nominal Cap. Range	2.2 μF to 22000 μF	
Capacitance Tolerance	±20 % (120 Hz/+20 °C)	
DC Leakage Current	$I \leq 0.01 CV$ or 3 (μA) After 2 minutes (Which is greater)	
tan δ	Please see the attached standard products list	
Endurance	After following life test with DC voltage and +105 °C±2 °C ripple current value applied (The sum of DC and ripple peak voltage shall not exceed the rated working voltage), When the capacitors are restored to 20 °C, the capacitors shall meet the limits specified below.  Duration : φ5 to φ8=1000 hours, φ10 to φ18=2000 hours	
	Capacitance change	±20 % of initial measured value
	tan δ	≤ 200 % of initial specified value
	DC leakage current	≤ initial specified value
Shelf Life	After storage for 1000 hours at +105 °C±2 °C with no voltage applied and then being stabilized at +20 °C, capacitors shall meet the limits specified in Endurance. (With voltage treatment)	

#### ■ Frequency correction factor for ripple current

W.V.(V.DC)	Cap. (μF)	Frequency (Hz)				
		60	120	1 k	10 k	100 k
10 to 50	2.2 to 33	0.75	1.00	1.55	1.80	2.00
	47 to 470	0.80	1.00	1.35	1.50	1.50
	1000 to 22000	0.85	1.00	1.10	1.15	1.15

#### ■ Dimensions in mm (not to scale)

(Unit : mm)



Design and specifications are each subject to change without notice. Ask factory for the current technical specifications before purchase and/or use. Should a safety concern arise regarding this product, please be sure to contact us immediately.

02 May, 2014

### Standard Products

Endurance : 105 °C  $\phi 5$  to  $\phi 8$ =1000 h,  $\phi 10$  to  $\phi 18$ =2000 h

W.V. (V)	Cap. ( $\pm 20\%$ ) ( $\mu\text{F}$ )	Case size		Specification			Lead Length				Part No.	Min. Packaging Qty	
		Dia. (mm)	Length (mm)	Ripple Current (120 Hz) (+105 °C) (mA r.m.s.)	$\tan \delta$ (120 Hz) (+20 °C)	Endurance (hours)	Lead Dia. (mm)	Lead Space				Straight Leads (pcs)	Taping (pcs)
								Straight (mm)	Taping *B (mm)	Taping *H (mm)			
10	330	6.3	11.2	200	0.24	1000	0.5	2.5	5.0	2.5	EEUHD1A331( )	200	2000
	470	8	11.5	250	0.24	1000	0.6	3.5	5.0		EEUHD1A471( )	200	1000
	1000	10	12.5	460	0.24	2000	0.6	5.0	5.0		EEUHD1A102( )	200	500
	2200	10	16	760	0.26	2000	0.6	5.0	5.0		EEUHD1A222( )	200	500
	4700	12.5	20	1260	0.30	2000	0.6	5.0	5.0		EEUHD1A472( )	200	500
	6800	12.5	25	1570	0.34	2000	0.6	5.0	5.0		EEUHD1A682( )	200	500
	10000	16	25	1890	0.42	2000	0.8	7.5	7.5		EEUHD1A103( )	100	250
	15000	16	31.5	2180	0.52	2000	0.8	7.5			EEUHD1A153	100	
	22000	18	35.5	2400	0.66	2000	0.8	7.5			EEUHD1A223	50	
16	100	5	11	110	0.20	1000	0.5	2.5	5.0	2.5	EEUHD1C101( )	200	2000
	220	6.3	11.2	180	0.20	1000	0.5	2.5	5.0	2.5	EEUHD1C221( )	200	2000
	330	8	11.5	260	0.20	1000	0.6	3.5	5.0		EEUHD1C331( )	200	1000
	470	8	11.5	310	0.20	1000	0.6	3.5	5.0		EEUHD1C471( )	200	1000
	3300	12.5	20	1170	0.24	2000	0.6	5.0	5.0		EEUHD1C332( )	200	500
	4700	12.5	25	1480	0.26	2000	0.6	5.0	5.0		EEUHD1C472( )	200	500
	6800	16	25	1780	0.30	2000	0.8	7.5	7.5		EEUHD1C682( )	100	250
	8200	16	25	1780	0.34	2000	0.8	7.5	7.5		EEUHD1C822( )	100	250
	10000	16	31.5	2060	0.38	2000	0.8	7.5			EEUHD1C103	100	
15000	18	35.5	2210	0.48	2000	0.8	7.5			EEUHD1C153	50		
25	47	5	11	91	0.16	1000	0.5	2.5	5.0	2.5	EEUHD1E470( )	200	2000
	68	5	11	91	0.16	1000	0.5	2.5	5.0	2.5	EEUHD1E680( )	200	2000
	100	6.3	11.2	130	0.16	1000	0.5	2.5	5.0	2.5	EEUHD1E101( )	200	2000
	220	8	11.5	230	0.16	1000	0.6	3.5	5.0		EEUHD1E221( )	200	1000
	330	8	11.5	310	0.16	1000	0.6	3.5	5.0		EEUHD1E331( )	200	1000
	470	10	12.5	380	0.16	2000	0.6	5.0	5.0		EEUHD1E471( )	200	500
	1000	10	16	680	0.16	2000	0.6	5.0	5.0		EEUHD1E102( )	200	500
	2200	12.5	20	1090	0.18	2000	0.6	5.0	5.0		EEUHD1E222( )	200	500
	3300	12.5	25	1400	0.20	2000	0.6	5.0	5.0		EEUHD1E332( )	200	500
	4700	16	25	1750	0.22	2000	0.8	7.5	7.5		EEUHD1E472( )	100	250
	5600	16	25	1750	0.24	2000	0.8	7.5	7.5		EEUHD1E562( )	100	250
	6800	16	31.5	2040	0.26	2000	0.8	7.5			EEUHD1E682	100	
10000	18	35.5	2200	0.34	2000	0.8	7.5			EEUHD1E103	50		
35	47	5	11	90	0.14	1000	0.5	2.5	5.0	2.5	EEUHD1V470( )	200	2000
	100	6.3	11.2	150	0.14	1000	0.5	2.5	5.0	2.5	EEUHD1V101( )	200	2000
	220	8	11.5	270	0.14	1000	0.6	3.5	5.0		EEUHD1V221( )	200	1000
	330	10	12.5	350	0.14	2000	0.6	5.0	5.0		EEUHD1V331( )	200	500
	470	10	16	460	0.14	2000	0.6	5.0	5.0		EEUHD1V471( )	200	500
	680	10	16	460	0.14	2000	0.6	5.0	5.0		EEUHD1V681( )	200	500
	2200	12.5	25	1260	0.16	2000	0.6	5.0	5.0		EEUHD1V222( )	200	500
	3300	16	25	1610	0.18	2000	0.8	7.5	7.5		EEUHD1V332( )	100	250
	4700	16	31.5	1910	0.20	2000	0.8	7.5			EEUHD1V472	100	
	6800	18	35.5	2050	0.24	2000	0.8	7.5			EEUHD1V682	50	

· When requesting taped product, please put the letter "B" or "H" between the "( )". Lead wire pitch \*B=5 mm, 7.5 mm, H=2.5 mm.  
 · Please refer to the page of "Taping Dimensions".

### ■ Standard Products

Endurance : 105 °C  $\phi$ 5 to  $\phi$ 8=1000 h,  $\phi$ 10 to  $\phi$ 18=2000 h

W.V. (V)	Cap. ( $\pm 20\%$ ) ( $\mu$ F)	Case size		Specification			Lead Length				Part No.	Min. Packaging Qty	
		Dia. (mm)	Length (mm)	Ripple Current (120 Hz) (+105 °C) (mA r.m.s.)	$\tan \delta$ (120 Hz) (+20 °C)	Endurance (hours)	Lead Dia. (mm)	Lead Space				Straight Leads (pcs)	Taping (pcs)
								Straight (mm)	Taping *B (mm)	Taping *H (mm)			
50	0.1	5	11	1.1	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1HR10( )***	200	2000
	0.22	5	11	2.3	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1HR22( )***	200	2000
	0.33	5	11	3.5	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1HR33( )***	200	2000
	0.47	5	11	5	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1HR47( )***	200	2000
	1	5	11	10	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H1R0( )***	200	2000
	2.2	5	11	18	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H2R2( )	200	2000
	3.3	5	11	22	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H3R3( )	200	2000
	4.7	5	11	26	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H4R7( )	200	2000
	10	5	11	39	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H100( )	200	2000
	22	5	11	65	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H220( )	200	2000
	33	5	11	90	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H330( )	200	2000
	47	6.3	11.2	110	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H470( )	200	2000
	68	6.3	11.2	110	0.12	1000	0.5	2.5	5.0	2.5	EEUHD1H680( )	200	2000
	100	8	11.5	180	0.12	1000	0.6	3.5	5.0		EEUHD1H101( )	200	1000
	220	10	12.5	300	0.12	2000	0.6	5.0	5.0		EEUHD1H221( )	200	500
	330	10	16	410	0.12	2000	0.6	5.0	5.0		EEUHD1H331( )	200	500
	470	10	20	530	0.12	2000	0.6	5.0	5.0		EEUHD1H471( )	200	500
	560	16	15	650	0.12	2000	0.8	7.5	7.5		EEUHD1H561S( )	100	250
	680	16	15	650	0.12	2000	0.8	7.5	7.5		EEUHD1H681S( )	100	250
	1000	12.5	25	950	0.12	2000	0.6	5.0	5.0		EEUHD1H102( )	200	500
2200	16	31.5	1470	0.14	2000	0.8	7.5			EEUHD1H222	100		
3300	18	35.5	1770	0.16	2000	0.8	7.5			EEUHD1H332	50		

· When requesting taped product, please put the letter "B" or "H" between the "( )". Lead wire pitch \*B=5 mm, 7.5 mm, H=2.5 mm.

· Please refer to the page of "Taping Dimensions".

\*\*\* Please kindly accept last shipment : 31/Mar/2015