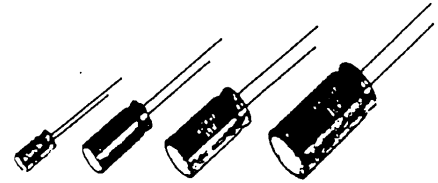


698-441
to

Series NHE

699-159



Features

- Compact size (same case size as series SU) and long life (1000 ~ 2000 hours at +105°C)
- Wide CV value range (0.1 ~ 15000μF/6.3 ~ 450V)

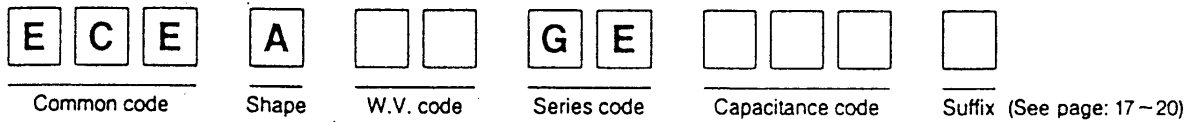
Specifications

Item -	Performance Characteristics										
Rated Working Voltage Range	6.3 to 100V DC	160 to 450V DC									
Operating Temperature Range	-55 to +105°C	-25 to +105°C									
Nominal Capacitance Range	0.1 to 15000μF	0.47 to 220μF									
Capacitance Tolerance	±20% (120Hz, +20°C)										
Leakage Current	I ≤ 0.01CV or 3 [μA]	I ≤ 0.06CV + 10 [μA]									
	whichever is greater after 2 minutes application of rated working voltage at +20°C										
tan δ (120Hz, +20°C)	Working voltage [V]	6.3	10	16	25	35	50	63	100		
	tan δ max.	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.07		
	Working voltage [V]	160	200	250	350	400	450				
	tan δ max.	0.15	0.15	0.15	0.20	0.24	0.24				
	For capacitance value >1000μF, add 0.02 per every 1000μF										
Maximum Permissible Ripple Current	Refer to standard products table (120Hz, +105°C) Correction factor for frequency:										
			Freq. [Hz]		60	120	1k	10k	100k		
	W.V. [V.DC]		Cap. [μF]								
	6.3 - 50	0.1 - 330		0.85	1	1.30	1.40	1.55			
		470 - 3300		0.95	1	1.15	1.20	1.25			
		≥ 4700		0.95	1	1.10	1.20	1.20			
	63 - 100	0.47 - 33		0.75	1	1.55	1.65	1.80			
		47 - 220		0.75	1	1.40	1.60	1.65			
		≥ 330		0.80	1	1.30	1.35	1.40			
	≥ 160	1 - 220		0.70	1	1.30	1.70	1.70			
Low Temperature Characteristics	Impedance ratio max. at 120Hz.										
	Working voltage [V]		6.3	10	16	25	35	50	63	100	
	-25°C/+20°C		4	3	2	2	2	2	2	2	
	-40°C/+20°C		8	6	4	3	3	3	3	3	
	-55°C/+20°C		12	10	8	6	6	6	6	6	
	Working voltage [V]		160'	200	250	350	400	450			
-25°C/+20°C		3	3	3	6	6	15				
For capacitance value >1000μF: Add 0.5 per every 1000μF for -25°C/+20°C. Add 1.0 per every 1000μF for -40°C/+20°C. Add 2.0 per every 1000μF for -55°C/+20°C.											

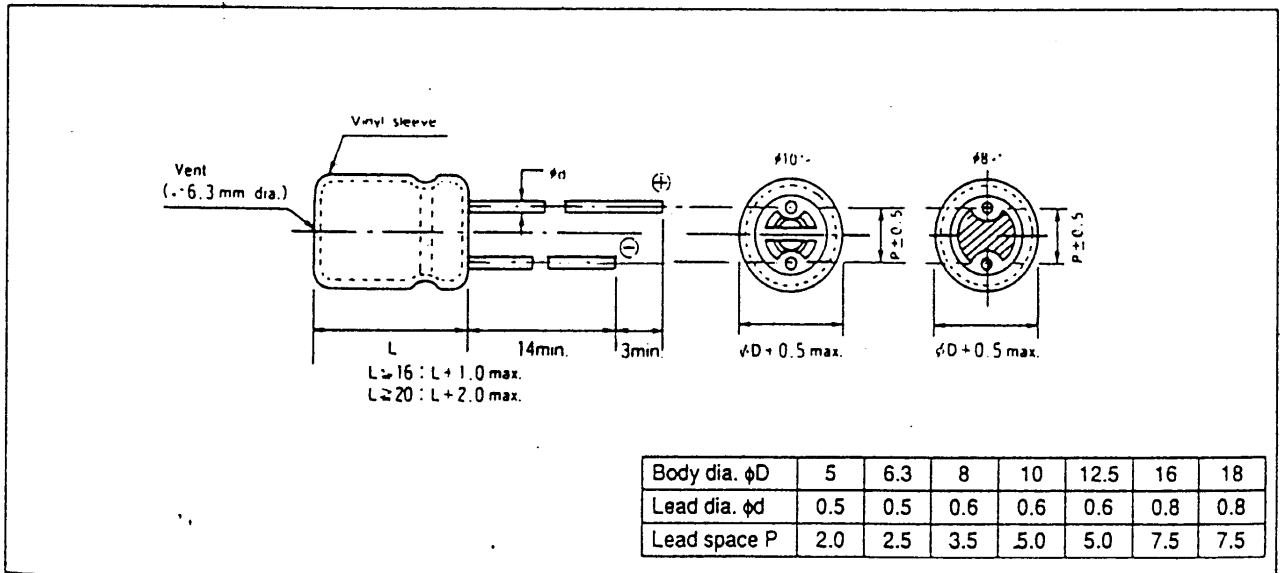
Specifications

Item	Performance Characteristics	
Endurance	Test conditions Duration : 2000 hours (1000 hours for $\leq \phi 8$ mm products) Ambient temperature : +105°C Applied voltage : DC voltage with maximum permissible ripple current specified at +105°C (Sum of the DC voltage and super-imposed peak AC voltage for maximum permissible ripple current should be equal to rated DC working voltage.)	
	Post test requirements at +20°C Leakage current : \leq Initial specified value Capacitance change : $\pm 20\%$ of initial measured value tan δ : $\leq 200\%$ of initial specified value	
Shelf Life	Test conditions Duration : 1000 hours Ambient temperature : +105°C Applied voltage : (None)	Post test requirements at +20°C Same limits for "Endurance".

Explanation of Part Numbers



Dimensions in mm (not to scale)



Aluminum Electrolytic Capacitors Radial Lead Type

Series NHE

Case Size

φD × L [mm]

W.V.[V.DC] Cap.[μF]	6.3 (0J)	10 (1A)	16 (1C)	25 (1E)	35 (1V)	50 (1H)	63 (1J)	100 (2A)
0.1 (0R1)						5 × 11		
0.22 (R22)						5 × 11		
0.33 (R33)						5 × 11		
0.47 (R47)						5 × 11		5 × 11
1 (010)						5 × 11		5 × 11
2.2 (2R2)						5 × 11		5 × 11
3.3 (3R3)						5 × 11		5 × 11
4.7 (4R7)	-					5 × 11		5 × 11
10 (100)						5 × 11	5 × 11	6.3 × 11.2
22 (220)						5 × 11	6.3 × 11.2	8 × 11.5
33 (330)					5 × 11	6.3 × 11.2	6.3 × 11.2	10 × 12.5
47 (470)			5 × 11	5 × 11	6.3 × 11.2	6.3 × 11.2	8 × 11.5	10 × 16
100 (101)	5 × 11	5 × 11	6.3 × 11.2	6.3 × 11.2	8 × 11.5	8 × 11.5	10 × 12.5	12.5 × 20
220 (221)	6.3 × 11.2	6.3 × 11.2	8 × 11.5	8 × 11.5	10 × 12.5	10 × 16	10 × 20	16 × 25
330 (331)	6.3 × 11.2	8 × 11.5	8 × 11.5	10 × 12.5	10 × 16	10 × 20	12.5 × 20	16 × 25
470 (471)	8 × 11.5	8 × 11.5	10 × 12.5	10 × 16	10 × 20	12.5 × 20	12.5 × 25	16 × 31.5
1000 (102)	10 × 12.5	10 × 16	10 × 20	12.5 × 20	12.5 × 25	16 × 25	16 × 31.5	
2200 (222)	12.5 × 20	12.5 × 20	12.5 × 25	16 × 25	16 × 31.5	18 × 35.5		
3300 (332)	12.5 × 20	12.5 × 25	16 × 25	16 × 31.5	18 × 35.5			
4700 (472)	16 × 25	16 × 25	16 × 31.5	18 × 35.5				
6800 (682)	16 × 25	16 × 31.5	18 × 35.5					
10000 (103)	16 × 31.5	18 × 35.5						
15000 (153)	18 × 35.5							

W.V.[V.DC] Cap.[μF]	160 (2C)	200 (2D)	250 (2E)	350 (2V)	400 (2G)	450 (2W)
1 (010)	6.3 × 11.2	6.3 × 11.2	6.3 × 11.2	10 × 12.5	10 × 12.5	10 × 16
2.2 (2R2)	6.3 × 11.2	6.3 × 11.2	8 × 11.5	10 × 16	10 × 16	10 × 20
3.3 (3R3)	8 × 11.5	8 × 11.5	10 × 12.5	10 × 16	10 × 20	12.5 × 20
4.7 (4R7)	8 × 11.5	10 × 12.5	10 × 12.5	10 × 20	10 × 20	12.5 × 20
10 (100)	10 × 12.5	10 × 16	10 × 20	12.5 × 20	12.5 × 25	16 × 25
22 (220)	10 × 20	10 × 20	12.5 × 25	16 × 25 ^Z	16 × 25	16 × 31.5
33 (330)	12.5 × 20	12.5 × 25	12.5 × 25	16 × 25	16 × 31.5	
47 (470)	12.5 × 25	12.5 × 25	16 × 25	16 × 31.5 ^W	18 × 31.5	
100 (101)	16 × 25	16 × 31.5	18 × 31.5 ^W			
220 (221)	18 × 31.5 ^W					

() indicates W.V. and capacitance code.

* W and Z in case size table indicates the suffix code of part number.

Aluminum Electrolytic Capacitors Radial Lead Type

Series NHE

Standard Products

W.V. [V.DC]	Cap. [μ F]	Part No.	Cap. tol. [%] (120Hz/+20°C)	D.C.L. (+20°C/2 min) [μ A] max.	tan δ (120Hz/+20°C) max.	Ripple current (120Hz/+105°C) [mA] rms max.	Dimensions [mm]	
							ϕ D	L
6.3	100	ECEA0JGE101	± 20	6.3	0.22	91	5	11
	220	ECEA0JGE221		13.8	0.22	150	6.3	11.2
	330	ECEA0JGE331		20.7	0.22	230	6.3	11.2
	470	ECEA0JGE471		29.6	0.22	250	8	11.5
	1000	ECEA0JGE102		63.0	0.22	450	10	12.5
	2200	ECEA0JGE222		138.6	0.24	780	12.5	20
	3300	ECEA0JGE332		207.9	0.26	920	12.5	20
	4700	ECEA0JGE472		296.1	0.28	1150	16	25
	6800	ECEA0JGE682		428.4	0.32	1440	16	25
	10000	ECEA0JGE103		630.0	0.40	1700	16	31.5
	15000	ECEA0JGE153		945.0	0.50	1910	18	35.5
10	100	ECEA1AGE101	± 20	10.0	0.19	110	5	11
	220	ECEA1AGE221		22.0	0.19	160	6.3	11.2
	330	ECEA1AGE331		33.0	0.19	230	8	11.5
	470	ECEA1AGE471		47.0	0.19	270	8	11.5
	1000	ECEA1AGE102		100.0	0.19	500	10	16
	2200	ECEA1AGE222		220.0	0.21	850	12.5	20
	3300	ECEA1AGE332		330.0	0.23	1080	12.5	25
	4700	ECEA1AGE472		470.0	0.25	1270	16	25
	6800	ECEA1AGE682		680.0	0.29	1530	16	31.5
	10000	ECEA1AGE103		1000.0	0.37	1870	18	35.5
16	47	ECEA1CGE470	± 20	7.5	0.16	77	5	11
	100	ECEA1CGE101		16.0	0.16	120	6.3	11.2
	220	ECEA1CGE221		35.2	0.16	210	8	11.5
	330	ECEA1CGE331		52.8	0.16	260	8	11.5
	470	ECEA1CGE471		75.2	0.16	330	10	12.5
	1000	ECEA1CGE102		160.0	0.16	600	10	20
	2200	ECEA1CGE222		352.0	0.18	1010	12.5	25
	3300	ECEA1CGE332		528.0	0.20	1210	16	25
	4700	ECEA1CGE472		752.0	0.22	1490	16	31.5
	6800	ECEA1CGE682		1088.0	0.26	1740	18	35.5
25	47	ECEA1EGE470	± 20	11.7	0.14	91	5	11
	100	ECEA1EGE101		25.0	0.14	130	6.3	11.2
	220	ECEA1EGE221		55.0	0.14	220	8	11.5
	330	ECEA1EGE331		82.5	0.14	300	10	12.5
	470	ECEA1EGE471		117.5	0.14	410	10	16
	1000	ECEA1EGE102		250.0	0.14	720	12.5	20
	2200	ECEA1EGE222		550.0	0.16	1110	16	25
	3300	ECEA1EGE332		825.0	0.18	1380	16	31.5
	4700	ECEA1EGE472		1175.0	0.20	1690	18	35.5
	35	33		ECEA1VGE330	± 20	11.5	0.12	84
47		ECEA1VGE470	16.4	0.12		98	6.3	11.2
100		ECEA1VGE101	35.0	0.12		160	8	11.5
220		ECEA1VGE221	77.0	0.12		260	10	12.5
330		ECEA1VGE331	115.5	0.12		360	10	16
470		ECEA1VGE471	164.5	0.12		480	10	20