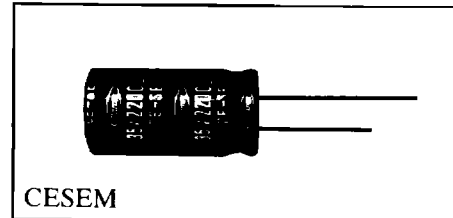


## CESEM SERIES

### MINIATURE RADIAL TYPE

#### • FEATURES

1. Miniaturized, 1 ~ 2 rank smaller than USM series.
2. Suitable for miniaturizing of electronic equipment.
3. 85°C, 2000 hours guaranteed.
4. Washable with Freon TE, TES, TMS for 5 minutes for rated voltage  $\leq$  250VDC.



#### • GENERAL SPECIFICATIONS

Operating temperature range  $-40^{\circ}\text{C} \sim +85^{\circ}\text{C}$

Rated voltage range 6.3WV ~ 250WV

Nominal capacitance range  $0.1 \mu\text{F} \sim 15000 \mu\text{F}$

Capacitance tolerance  $\pm 20\%$   
(At  $20^{\circ}\text{C}$ , 120 Hz)

Max. ripple current See standard rating table  
(At  $85^{\circ}\text{C}$ , 120 Hz)

Leakage current  $I \leq 0.01\text{CV}$  or  $3\mu\text{A}$  (whichever is greater) ; 6.3 to 100WV  
(At  $20^{\circ}\text{C}$ , after 2 minutes)  $I \leq 0.01\text{CV} + 3\mu\text{A}$  ; 160 to 250WV  
I : Leakage Current ( $\mu\text{A}$ ), C: Nominal capacitance ( $\mu\text{F}$ ),  
V: Rated voltage (VDC)

Tangent of loss angle Shall not exceed the following value.  
 $\tan \delta$  (At  $20^{\circ}\text{C}$ , 120 Hz)

CAP. \ RV (VDC)	6.3	10	16	25	35	50	63 ~ 100	160 ~ 250
1000 $\mu\text{F}$ or less	0.35	0.30	0.25	0.20	0.15	0.12	0.10	0.20
More than 1000 $\mu\text{F}$	Add .02 to above value for every 1000 $\mu\text{F}$ or less.							

Impedance ratio at low temperature Shall not exceed the following value.  
(At 120 Hz)

RV (VDC)	6.3	10	16	25	35 ~ 100	160 ~ 250
$-25^{\circ}\text{C}/20^{\circ}\text{C}$	4	3	2	2	2	2
$-40^{\circ}\text{C}/20^{\circ}\text{C}$	10	8	6	4	3	3

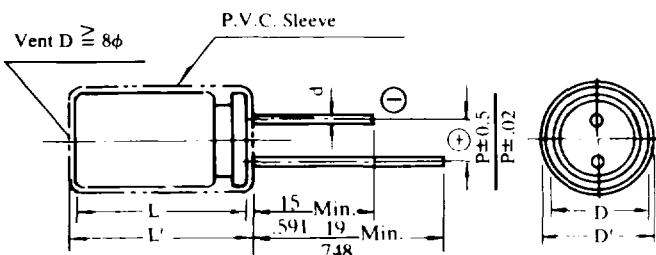
Life test At  $85^{\circ}\text{C} \pm 2^{\circ}\text{C}$  for a period of 2,000 hours with rated voltage.

Capacitance change	$\leq \pm 20\%$ of initial value
Leakage current	Same as specified value in this table or less
Tan $\delta$	150% or less of the value in this table

Standard

JIS C 5141(1982) characteristic W

● Dimensions



**DIMENSION** Unit =  $\frac{mm}{inch}$

Dφ	5	6.3	8	10	13	16	18
	.197	.248	.315	.394	.512	.630	.709
P	2	2.5	3.5	5.0	5.0	7.5	7.5
	.079	.098	.138	.197	.197	.295	.295
dφ	0.5	0.5	0.6	0.6	0.6	0.8	0.8
	.020	.020	.024	.024	.024	.031	.031
AWG	24	24	23	23	23	20	20

• mm  $L \leq 16 : L' = (L + 1.0) \text{ Max}$   
 $L > 16 : L' = (L + 2.0) \text{ Max}$   
 $D' = (D + 0.5) \text{ Max}$

• Inches  $L \leq .630 : L' = (L + .039) \text{ Max}$   
 $L > .630 : L' = (L + .079) \text{ Max}$   
 $D' = (D + .020) \text{ Max}$

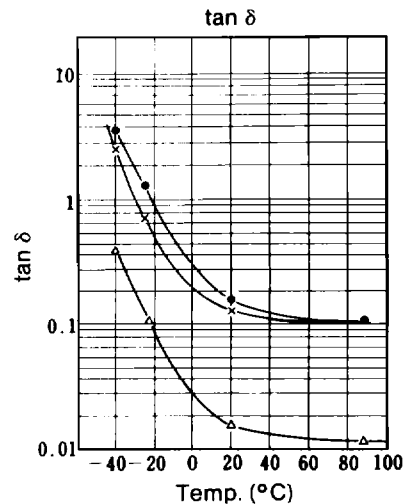
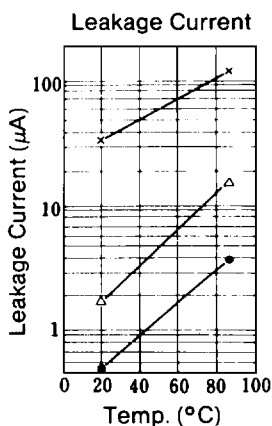
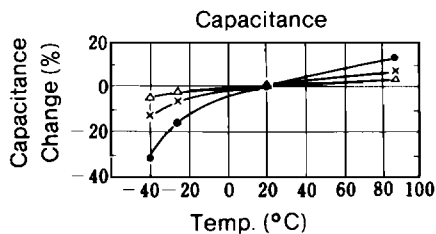
Part No.	W.V. (DC)	Cap. (μF) @120Hz, 20°C	Max. Leakage (μA)@20°C	Max. ESR(Ω) @120Hz, 20°C	Max. Ripple (mA) @120Hz, 85°C	Nominal Case Size	
						DxL (mm)	DxL (inches)
CESEM0J101	6.3	100	6.3	5.80	130	5 x 11	.197 x .433
CESEM0J221	6.3	220	13.9	2.64	240	6.3 x 11	.248 x .433
CESEM0J331	6.3	330	20.8	1.76	310	6.3 x 11	.248 x .433
CESEM0J471	6.3	470	29.6	1.23	400	8 x 11.5	.315 x .453
CESEM0J102	6.3	1,000	63	0.580	580	10 x 12.5	.394 x .492
CESEM0J222	6.3	2,200	139	0.294	890	13 x 20	.512 x .787
CESEM0J332	6.3	3,300	208	0.206	1,020	13 x 20	.512 x .787
CESEM0J472	6.3	4,700	296	0.152	1,170	16 x 25	.630 x .984
CESEM0J682	6.3	6,800	428	0.115	1,290	16 x 25	.630 x .984
CESEM0J103	6.3	10,000	630	0.0879	1,450	16 x 31.5	.630 x 1.24
CESEM0J153	6.3	15,000	945	0.0696	1,700	18 x 35.5	.709 x 1.40
CESEM1A220	10	22	3	22.6	54	5 x 11	.197 x .433
CESEM1A330	10	33	3.3	15.1	68	5 x 11	.197 x .433
CESEM1A470	10	47	4.7	10.6	83	5 x 11	.197 x .433
CESEM1A680	10	68	6.8	7.31	110	5 x 11	.197 x .433
CESEM1A101	10	100	10	4.97	150	5 x 11	.197 x .433
CESEM1A221	10	220	22	2.26	250	6.3 x 11	.248 x .433
CESEM1A331	10	330	33	1.51	330	8 x 11.5	.315 x .453
CESEM1A471A	10	470	47	1.06	410	8 x 11.5	.315 x .453
CESEM1A102B	10	1,000	100	0.497	650	10 x 16	.394 x .630
CESEM1A222B	10	2,200	220	0.256	920	13 x 20	.512 x .787
CESEM1A332	10	3,300	330	0.181	1,100	13 x 25	.512 x .984
CESEM1A472	10	4,700	470	0.134	1,200	16 x 25	.630 x .984
CESEM1A682	10	6,800	680	0.102	1,400	16 x 31.5	.630 x 1.24
CESEM1A103	10	10,000	1,000	0.0796	1,600	18 x 35.5	.709 x 1.40
CESEM1C100	16	10	3	41.4	40	5 x 11	.197 x .433
CESEM1C150	16	15	3	27.6	53	5 x 11	.197 x .433
CESEM1C220	16	22	3.5	18.8	75	5 x 11	.197 x .433
CESEM1C330	16	33	5.3	12.6	100	5 x 11	.197 x .433
CESEM1C470	16	47	7.5	8.82	130	5 x 11	.197 x .433
CESEM1C101	16	100	16	4.14	200	6.3 x 11	.248 x .433
CESEM1C221	16	220	35.2	1.88	330	8 x 11.5	.315 x .453
CESEM1C331A	16	330	52.8	1.26	405	8 x 11.5	.315 x .453
CESEM1C471A	16	470	75.2	0.882	500	10 x 12.5	.394 x .492
CESEM1C102	16	1,000	160	0.414	750	10 x 20	.394 x .787
CESEM1C222A	16	2,200	352	0.219	1,000	13 x 25	.512 x .984
CESEM1C332	16	3,300	528	0.156	1,200	16 x 25	.630 x .984
CESEM1C472	16	4,700	752	0.116	1,360	16 x 31.5	.630 x 1.24
CESEM1C682	16	6,800	1,088	0.0902	1,600	18 x 35.5	.709 x 1.40

Part No	W.V. (DC)	Cap (μF) @120Hz. 20°C	Max. Leakage (μA)@20°C	Max ESR(Ω) @120Hz. 20°C	Max. Ripple (mA) @120Hz. 85°C	Nominal Case Size	
						DxL (mm)	DxL (inches)
CESEM1E100	25	10	3	33.2	45	5 x 11	.197 x .433
CESEM1E150	25	15	3.8	22.1	60	5 x 11	.197 x .433
CESEM1E220	25	22	5.5	15.1	80	5 x 11	.197 x .433
CESEM1E330	25	33	8.3	10.0	110	5 x 11	.197 x .433
CESEM1E470	25	47	11.8	7.05	140	5 x 11	.197 x .433
CESEM1E101	25	100	25	3.32	210	6.3 x 11	.248 x .433
CESEM1E221A	25	220	55	1.51	350	8 x 11.5	.315 x .453
CESEM1E331	25	330	82.5	1.00	440	10 x 12.5	.394 x .492
CESEM1E471	25	470	118	0.705	520	10 x 16	.394 x .630
CESEM1E102	25	1,000	250	0.332	850	13 x 20	.512 x .787
CESEM1E222	25	2,200	550	0.181	1,200	16 x 25	.630 x .984
CESEM1E332	25	3,300	825	0.131	1,300	16 x 31.5	.630 x 1.24
CESEM1E472	25	4,700	1,175	0.0988	1,500	18 x 31.5	.709 x 1.24
CESEM1V3R3	35	3.3	3	75.4	22	5 x 11	.197 x .433
CESEM1V4R7	35	4.7	3	52.9	35	5 x 11	.197 x .433
CESEM1V6R8	35	6.8	3	36.6	46	5 x 11	.197 x .433
CESEM1V100	35	10	3.5	24.9	61	5 x 11	.197 x .433
CESEM1V150	35	15	5.3	16.6	75	5 x 11	.197 x .433
CESEM1V220	35	22	7.7	11.3	95	5 x 11	.197 x .433
CESEM1V330	35	33	11.6	7.54	120	5 x 11	.197 x .433
CESEM1V470	35	47	16.5	5.29	150	6.3 x 11	.248 x .433
CESEM1V101	35	100	35	2.49	230	8 x 11.5	.315 x .453
CESEM1V221	35	220	77	1.13	380	10 x 12.5	.394 x .492
CESEM1V331	35	330	116	0.754	460	10 x 16	.394 x .630
CESEM1V471	35	470	165	0.529	620	10 x 20	.394 x .787
CESEM1V102	35	1,000	350	0.249	1,000	13 x 25	.512 x .984
CESEM1V222	35	2,200	770	0.143	1,250	16 x 31.5	.630 x 1.24
CESEM1V332	35	3,300	1,155	0.105	1,400	18 x 35.5	.709 x 1.40
CESEM1HR10	50	0.1	3	1,989	4	5 x 11	.197 x .433
CESEM1HR15	50	0.15	3	1,326	5	5 x 11	.197 x .433
CESEM1HR22	50	0.22	3	904	6	5 x 11	.197 x .433
CESEM1HR33	50	0.33	3	603	7	5 x 11	.197 x .433
CESEM1HR47	50	0.47	3	423	9	5 x 11	.197 x .433
CESEM1HR68	50	0.68	3	293	12	5 x 11	.197 x .433
CESEM1H010	50	1	3	199	15	5 x 11	.197 x .433
CESEM1H1R5	50	1.5	3	133	18	5 x 11	.197 x .433
CESEM1H2R2	50	2.2	3	90.4	21	5 x 11	.197 x .433
CESEM1H3R3	50	3.3	3	60.3	30	5 x 11	.197 x .433
CESEM1H4R7	50	4.7	3	42.3	35	5 x 11	.197 x .433
CESEM1H6R8	50	6.8	3.4	29.3	47	5 x 11	.197 x .433
CESEM1H100	50	10	5	19.9	61	5 x 11	.197 x .433
CESEM1H150	50	15	7.5	13.3	77	5 x 11	.197 x .433
CESEM1H220	50	22	11	9.04	100	5 x 11	.197 x .433
CESEM1H330	50	33	16.5	6.03	130	6.3 x 11	.248 x .433
CESEM1H470	50	47	23.5	4.23	160	6.3 x 11	.248 x .433
CESEM1H101A	50	100	50	1.99	260	8 x 11.5	.315 x .453
CESEM1H221	50	220	110	0.904	430	10 x 16	.394 x .630
CESEM1H331	50	330	165	0.603	540	10 x 20	.394 x .787
CESEM1H471	50	470	235	0.423	650	13 x 20	.512 x .787
CESEM1H102	50	1,000	500	0.199	1,050	16 x 25	.630 x .984
CESEM1H222	50	2,200	1,100	0.121	1,300	18 x 35.5	.709 x 1.40
CESEM1J4R7	63	4.7	3	35.3	35	5 x 11	.197 x .433
CESEM1J6R8	63	6.8	4.3	24.4	56	5 x 11	.197 x .433
CESEM1J100	63	10	6.3	16.6	70	5 x 11	.197 x .433
CESEM1J220	63	22	13.9	7.54	110	6.3 x 11	.248 x .433
CESEM1J330	63	33	20.8	5.02	140	6.3 x 11	.248 x .433
CESEM1J470	63	47	29.6	3.53	170	8 x 11.5	.315 x .453
CESEM1J101	63	100	63	1.66	280	10 x 12.5	.394 x .492
CESEM1J221	63	220	139	0.754	460	10 x 20	.394 x .787
CESEM1J331	63	330	208	0.502	580	13 x 20	.512 x .787
CESEM1J471	63	470	296	0.353	750	13 x 25	.512 x .984
CESEM1J102	63	1,000	630	0.166	1,100	16 x 31.5	.630 x 1.24

Part No.	W.V. (DC)	Cap. ( $\mu$ F) @ 120Hz, 20°C	Max. Leakage ( $\mu$ A) @ 20°C	Max. ESR( $\Omega$ ) @ 120Hz, 20°C	Max. Ripple (mA) @ 120Hz, 85°C	Nominal Case Size	
						DxL (mm)	DxL (inches)
CESEM2AR47	100	0.47	3	353	9	5 x 11	.197 x .433
CESEM2AR68	100	0.68	3	244	12	5 x 11	.197 x .433
CESEM2A010	100	1	3	166	17	5 x 11	.197 x .433
CESEM2A1R5	100	1.5	3	111	21	5 x 11	.197 x .433
CESEM2A2R2	100	2.2	3	75.4	27	5 x 11	.197 x .433
CESEM2A3R3	100	3.3	3.3	50.2	44	5 x 11	.197 x .433
CESEM2A4R7	100	4.7	4.7	35.3	50	5 x 11	.197 x .433
CESEM2A100	100	10	10	16.6	80	6.3 x 11	.248 x .433
CESEM2A220	100	22	22	7.54	130	8 x 11.5	.315 x .453
CESEM2A330	100	33	33	5.02	160	10 x 12.5	.394 x .492
CESEM2A470	100	47	47	3.53	210	10 x 16	.394 x .630
CESEM2A101	100	100	100	1.66	380	13 x 20	.512 x .787
CESEM2A221	100	220	220	0.754	600	16 x 25	.630 x .984
CESEM2A331	100	330	330	0.502	720	16 x 25	.630 x .984
CESEM2A471	100	470	470	0.353	900	16 x 31.5	.630 x 1.24
CESEM2C3R3A	160	3.3	8.3	100	45	8 x 11.5	.315 x .453
CESEM2C4R7A	160	4.7	10.5	70.5	55	8 x 11.5	.315 x .453
CESEM2C100	160	10	19	33.2	71	10 x 16	.394 x .630
CESEM2C220	160	22	38.2	15.1	140	10 x 20	.394 x .787
CESEM2C330	160	33	55.8	10.0	175	13 x 20	.512 x .787
CESEM2C470	160	47	78.2	7.05	235	13 x 25	.512 x .984
CESEM2C101	160	100	163	3.32	400	16 x 25	.630 x .984
CESEM2C221	160	220	355	1.51	510	18 x 35.5	.709 x 1.40
CESEM2D010B	200	1	5	332	17	8 x 11.5	.315 x .453
CESEM2D1R5A	200	1.5	6	221	22	8 x 11.5	.315 x .453
CESEM2D2R2B	200	2.2	7.4	151	30	8 x 11.5	.315 x .453
CESEM2D3R3A	200	3.3	9.6	100	45	8 x 11.5	.315 x .453
CESEM2D4R7B	200	4.7	12.4	70.5	55	8 x 11.5	.315 x .453
CESEM2D100	200	10	23	33.2	83	10 x 16	.394 x .630
CESEM2D220	200	22	47	15.1	142	10 x 20	.394 x .787
CESEM2D330	200	33	69	10.0	180	13 x 20	.512 x .787
CESEM2D470	200	47	97	7.05	240	13 x 25	.512 x .984
CESEM2D101	200	100	203	3.32	420	16 x 31.5	.630 x 1.24
CESEM2E2R2B	250	2.2	8.5	151	32	8 x 11.5	.315 x .453
CESEM2E3R3B	250	3.3	11.3	100	47	8 x 11.5	.315 x .453
CESEM2E4R7	250	4.7	14.8	70.5	56	10 x 16	.394 x .630
CESEM2E100	250	10	28	33.2	88	10 x 20	.394 x .787
CESEM2E220	250	22	58	15.1	148	13 x 20	.512 x .787
CESEM2E330	250	33	85.5	10.0	188	13 x 25	.512 x .984
CESEM2E470	250	47	121	7.05	260	16 x 25	.630 x .984
CESEM2E101	250	100	253	3.32	440	16 x 35.5	.630 x 1.40

• **Technical Data**

Temperature Characteristics  
 ● - ● 10V - 100 $\mu$ F  
 x - x 35V - 3,300 $\mu$ F  
 Δ - Δ 100V - 47 $\mu$ F



Life Characteristics

- - ● 10V - 100 $\mu$ F
- × - × 35V - 3,300 $\mu$ F
- △ - △ 100V - 47 $\mu$ F

