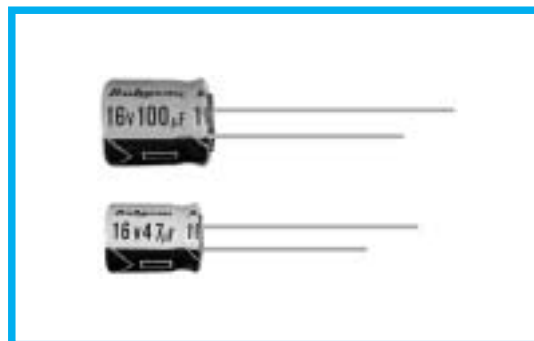


TWL SERIES
Low Leakage Current
◆FEATURES

- RoHS compliance.


◆SPECIFICATIONS

Items	Characteristics																																		
Category Temperature Range	-40~+85℃																																		
Rated Voltage Range	6.3~50V.DC																																		
Capacitance Tolerance	±20% (20℃, 120Hz)																																		
Leakage Current(MAX)	I=0.002CV or 0.4 μA whichever is greater. (After 2 minutes application of rated voltage) I=Leakage Current(μA) C=Rated Capacitance(μF) V=Rated Voltage(V)																																		
Dissipation Factor(MAX) (tan δ)	〈L=7〉<table><tr><td>Rated Voltage (V)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><td>tan δ</td><td>0.24</td><td>0.20</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td></tr></table>(20℃, 120Hz) 〈L≥11〉<table><tr><td>Rated Voltage (V)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><td>tan δ</td><td>0.22</td><td>0.19</td><td>0.16</td><td>0.14</td><td>0.12</td><td>0.10</td></tr></table>(20℃, 120Hz) When rated capacitance is over 1000 μF, tan δ shall be added 0.02 to the listed value with increase of every 1000 μF.							Rated Voltage (V)	6.3	10	16	25	35	50	tan δ	0.24	0.20	0.16	0.14	0.12	0.10	Rated Voltage (V)	6.3	10	16	25	35	50	tan δ	0.22	0.19	0.16	0.14	0.12	0.10
Rated Voltage (V)	6.3	10	16	25	35	50																													
tan δ	0.24	0.20	0.16	0.14	0.12	0.10																													
Rated Voltage (V)	6.3	10	16	25	35	50																													
tan δ	0.22	0.19	0.16	0.14	0.12	0.10																													
Endurance	After life test with rated ripple current at conditions stated in the table below, the capacitors shall meet the following requirements. <table><tr><td>Capacitance Change</td><td colspan="3">Within ±25% of the initial value.</td><td>Case Size</td><td colspan="2">Life Time (hrs)</td></tr><tr><td>Dissipation Factor</td><td colspan="3">Not more than 200% of the specified value.</td><td>L=7</td><td colspan="2">1000</td></tr><tr><td>Leakage Current</td><td colspan="3">Not more than the specified value.</td><td>L≥11</td><td colspan="2">2000</td></tr></table>							Capacitance Change	Within ±25% of the initial value.			Case Size	Life Time (hrs)		Dissipation Factor	Not more than 200% of the specified value.			L=7	1000		Leakage Current	Not more than the specified value.			L≥11	2000								
Capacitance Change	Within ±25% of the initial value.			Case Size	Life Time (hrs)																														
Dissipation Factor	Not more than 200% of the specified value.			L=7	1000																														
Leakage Current	Not more than the specified value.			L≥11	2000																														
Low Temperature Stability Impedance Ratio(MAX)	<table><tr><td>Rated Voltage (V)</td><td>6.3</td><td>10</td><td>16</td><td>25</td><td>35</td><td>50</td></tr><tr><td>Z(-25℃)/Z(20℃)</td><td>4</td><td>3</td><td>2</td><td>2</td><td>2</td><td>2</td></tr><tr><td>Z(-40℃)/Z(20℃)</td><td>8</td><td>6</td><td>6</td><td>4</td><td>4</td><td>3</td></tr></table> (120Hz)							Rated Voltage (V)	6.3	10	16	25	35	50	Z(-25℃)/Z(20℃)	4	3	2	2	2	2	Z(-40℃)/Z(20℃)	8	6	6	4	4	3							
Rated Voltage (V)	6.3	10	16	25	35	50																													
Z(-25℃)/Z(20℃)	4	3	2	2	2	2																													
Z(-40℃)/Z(20℃)	8	6	6	4	4	3																													

◆MULTIPLIER FOR RIPPLE CURRENT

Frequency coefficient

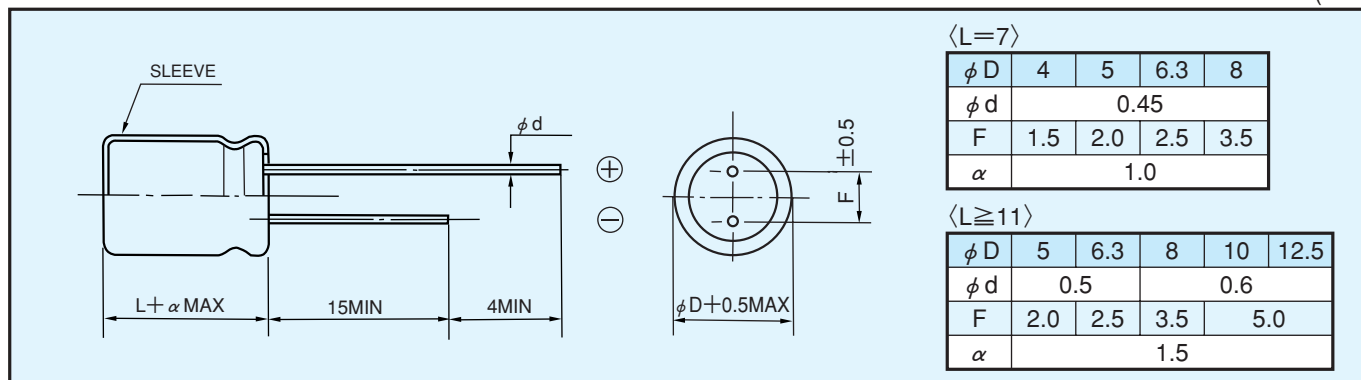
Frequency (Hz)		60(50)	120	500	1k	10k≤
Coefficient	0.1~1 μF	0.50	1.00	1.20	1.30	1.50
	2.2~4.7 μF	0.65	1.00	1.20	1.30	1.50
	10~47 μF	0.80	1.00	1.20	1.30	1.50
	100~1000 μF	0.80	1.00	1.10	1.15	1.20
	2200 μF	0.80	1.00	1.05	1.10	1.15

◆PART NUMBER

Rated Voltage	TWL Series	Rated Capacitance	Capacitance Tolerance	Option	Lead Forming	D×L Case Size

◆ DIMENSIONS

(mm)


◆ STANDARD SIZE, RATED RIPPLE CURRENT

Size $\phi D \times L (\text{mm})$, Ripple Current (mA r.m.s./85°C, 120Hz)

WV(V.DC) Cap(μF)	6.3 (0J)		10 (1A)		16 (1C)		25 (1E)		35 (1V)		50 (1H)	
	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple	Size	Ripple
0.1											4×7	1.0
											5×11	1.1
0.22											4×7	2.3
											5×11	2.5
0.33											4×7	3.5
											5×11	4.0
0.47											4×7	5.0
											5×11	7.0
1											4×7	10
											5×11	13
2.2											4×7	16
											5×11	23
3.3											4×7	19
											5×11	35
4.7							4×7	21	4×7	22	5×7	29
							5×11	30	5×11	35	5×11	41
10					4×7	28	5×7	33	5×7	32	6.3×7	44
					5×11	40	5×11	50	5×11	55	5×11	60
22	4×7	34	5×7	38	5×7	44	6.3×7	55	6.3×7	60	8×7	65
	5×11	48	5×11	55	5×11	70	5×11	87	5×11	95	6.3×11	110
33	5×7	42	5×7	47	6.3×7	62	6.3×7	65	8×7	73	6.3×11	140
	5×11	55	5×11	74	5×11	90	5×11	110	6.3×11	120		
47	5×7	50	6.3×7	66	6.3×7	73	8×7	80	6.3×11	145	8×11.5	190
	5×11	79	5×11	90	5×11	120	6.3×11	130				
100	6.3×7	87	8×7	99	8×7	110	8×11.5	210	8×11.5	250	10×12.5	300
	5×11	100	6.3×11	150	6.3×11	185						
220	8×7	133	8×11.5	280	8×11.5	310	10×12.5	370	10×16	420	10×20	490
	6.3×11	220										
330	8×11.5	310	8×11.5	360	10×12.5	410	10×16	480	10×20	540	12.5×20	680
470	8×11.5	400	10×12.5	460	10×16	530	10×20	600	12.5×20	730		
1000	10×16	660	10×20	760	12.5×20	900	12.5×25	1000				
2200	12.5×20	1050	12.5×25	1200								