

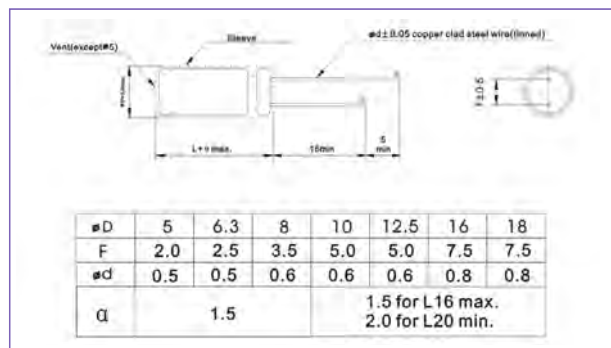
KLH Miniature Aluminum Electrolytic Capacitors

105°C Use, High-Reliability, Low Impedance Capacitors, Series KLH.

The capacitor of this Series achieves high reliability under the environmental loading prevailing in a piece of equipment on which it is mounted
Guarantees 5000 hours at 105°C (Φ5 to 6.3: 2000hours; Φ8: 3000 hours)

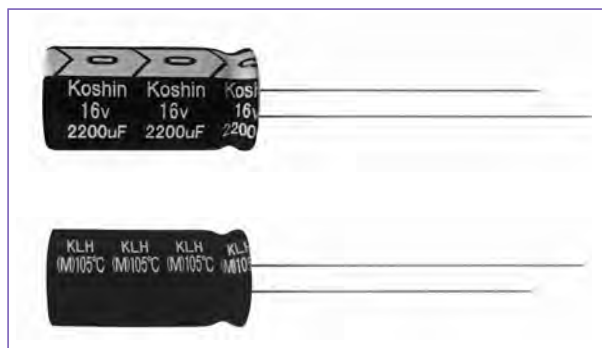
Outline Drawing

Unit: mm



Photo

ROSH



Marking color: black print on yellow sleeve

Specifications

No.	Item	Performance													
1	Temperature range (°C)	-40 to +105(6.3V~100V)						-25 to +105 (160V~500V)							
2	Leakage current (μA)	Less than 0.01CV or 3 whichever is larger (after two minutes)						Less than 0.03CV whichever is large (after two minutes)							
		C: Rated Capacitance (μF). V: Rated voltage (V) 20°C													
3	Capacitance tolerance (%)	±20 (20°C, 120Hz)													
4	Tangent of the loss angle (Tan δ)	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160	200-250	350-400	450-500	20°C 120Hz
		Tan δ (max)	0.22	0.19	0.16	0.14	0.12	0.10	0.09	0.08	0.15	0.15	0.15	0.15	
		0.02 is added to every 1000 μF increase over 1000 μF													
5	Low temperature characteristics	Rated voltage (V)	6.3	10	16	25	35	50	63	100	160	200-250	350-400	450-500	120Hz
		Impedance ratio (max)	$Z_{(-25°C)}/Z_{(+20°C)}$	4	3	3	2	2	2	2	2	2	2	5	
		$Z_{(-40°C)}/Z_{(+20°C)}$	8	6	4	4	4	3	3	3	3	6	6	-	
6	Endurance (105°C) (Applied ripple current)	Test time	F Φ5 to Φ6.3: 2000hours, Φ8: 3000 hours, D ≥ Φ10: 5000hours												
		Leakage current	The initial specified value or less												
		Percentage of capacitance change	Within ±20% of initial value												
		Tangent of the loss angle	200% or less of the initial specified value												
7	Shelf life(105°C)	Test time	1000hours												
		Leakage current	The initial specified value or less												
		Percentage of capacitance change	Within ±20% of initial value												
		Tangent of the loss angle	200% or less of the initial specified value												
8	Applicable standards	JIS-C-5102 and JIS-C-5141													

Coefficient of Frequency for Ripple Current

Capacitance (μF)	Frequency (Hz)				
	50・60	120	1K	10K	100K
CAP ≤ 10	0.47	0.59	0.85	0.97	1.00
10 < CAP ≤ 100	0.52	0.65	0.89	0.97	1.00
100 < CAP ≤ 1000	0.58	0.72	0.90	0.98	1.00
1000 < CAP	0.63	0.78	0.91	0.98	1.00

Coefficient of Temperature for Ripple Current

Temperature(°C)	45	60	85	95	105
Coefficient	2.10	1.90	1.65	1.25	1.00

KLH Miniature Aluminum Electrolytic Capacitors

Dimension: Φ DXL(mm)

Ripple Current: mA/rms at 100KHz, 105°C

DIMENSION & PERMISSIBLE RIPPLE CURRENT

V.DC Contents μ F	6.3V			10V			16V		
	Φ D×L	Impedance Ω /100KHz 20°C	Ripple Current (mA/rms, 105°C)	Φ D×L	Impedance Ω /100KHz 20°C	Ripple Current (mA/rms, 105°C)	Φ D×L	Impedance Ω /100KHz 20°C	Ripple Current (mA/rms, 105°C)
10							5X11	4.000	37
22				5X11	2.700	56	5X11	2.000	70
33				5X11	2.200	58	5X11	1.260	130
47				5X11	1.200	120	5X11	0.520	190
100	5X11	1.100	185	6.3X11	0.480	205	6.3X11	0.310	260
220	6.3X11	0.700	300	6.3X11	0.280	330	8X11.5	0.210	455
330	8X11.5	0.390	390	8X11.5	0.150	445	8X11.5	0.120	550
470	8X11.5	0.350	415	8X11.5	0.115	555	10X12.5	0.095	722
1000	10X12.5	0.300	700	10X16	0.072	1010	10X25	0.050	1180
2200				10X25	0.052	1450	10X25	0.050	1750
	10X25	0.060	1400	12.5X25	0.041	1690	12.5X25	0.035	1950
3300	12.5X25	0.050	1425	12.5X30	0.029	1980	16X25	0.028	2340
4700	12.5X30	0.025	1950	16X31.5	0.031	2100	16X31.5	0.024	2650

Low Impedance Type

V.DC Contents μ F	25V			35V			50V		
	Φ D×L	Impedance Ω /100KHz 20°C	Ripple Current (mA/rms, 105°C)	Φ D×L	Impedance Ω /100KHz 20°C	Ripple Current (mA/rms, 105°C)	Φ D×L	Impedance Ω /100KHz 20°C	Ripple Current (mA/rms, 105°C)
0.47							5X11	6.300	15
1							5X11	4.000	25
2.2							5X11	2.800	33
3.3							5X11	2.400	45
4.7							5X11	2.400	58
10	5X11	2.100	56	5X11	2.800	70	5X11	1.800	100
22	5X11	1.800	120	5X11	1.500	130	5X11	1.000	135
33	5X11	1.200	150	5X11	1.300	175	6.3X11	0.800	230
47	5X11	0.500	220	6.3X11	0.800	250	6.3X11	0.500	285
100	6.3X11	0.280	300	8X11.5	0.190	380	8X11.5	0.180	475
220	8X11.5	0.125	550	10X12.5	0.098	720	10X20	0.080	900
330	10X12.5	0.082	720	10X16	0.065	995	10X25	0.068	1050
470	10X16	0.065	1040	12.5X25	0.050	1150	12.5X20	0.055	1490
1000	12.5X25	0.039	1530	12.5X30	0.031	1950	16X31.5	0.036	2130
2200	16X25	0.028	2405	16X31.5	0.025	2650	18X35.5	0.025	2900
3300	16X31.5	0.020	3050						
4700	18X35.5	0.017	3490						

KLH Miniature Aluminum Electrolytic Capacitors

Dimension: $\Phi \times \text{DXL}(\text{mm})$

Ripple Current: mA/rms at 100KHz, 105°C

DIMENSION & PERMISSIBLE RIPPLE CURRENT

V,DC Contents μF	63V			100V		
	$\Phi \times \text{L}$	Impedance $\Omega / 100\text{KHz}$ 20°C	Ripple Current (mA/rms, 105°C)	$\Phi \times \text{L}$	Impedance $\Omega / 100\text{KHz}$ 20°C	Ripple Current (mA/rms, 105°C)
0.47	5X11	6.300	16	5X11	20.00	20
1	5X11	4.000	27	5X11	9.500	30
2.2	5X11	2.800	38	5X11	6.500	42
3.3	5X11	2.400	48	5X11	4.500	55
4.7	5X11	2.400	62	5X11	2.400	72
10	5X11	1.900	105	6.3X11	2.400	130
22	6.3X11	0.850	245	8X11.5	1.800	220
33	6.3X11	0.610	265	10X12.5	0.680	320
47	8X11.5	0.560	351	10X16	0.460	420
100	10X16	0.240	610	12.5X20	0.370	560
220	10X25	0.110	1020	16X25	0.180	880
330	12.5X20	0.070	1160	16X31.5	0.100	1440
470	16X25	0.050	2000	16X35.5	0.090	1790
1000	16X35.5	0.032	2450	18X40	0.076	2500

V,DC Contents μF	160V			200V			250V		
	$\Phi \times \text{L}$	Impedance $\Omega / 100\text{KHz}$ 20°C	Ripple Current (mA/rms, 105°C)	$\Phi \times \text{L}$	Impedance $\Omega / 100\text{KHz}$ 20°C	Ripple Current (mA/rms, 105°C)	$\Phi \times \text{L}$	Impedance $\Omega / 100\text{KHz}$ 20°C	Ripple Current (mA/rms, 105°C)
0.47	6.3X11	9.950	35	6.3X11	9.155	35	6.3X11	8.950	30
1	6.3X11	8.050	50	6.3X11	7.850	50	6.3X11	6.750	50
2.2	6.3X11	5.815	75	6.3X11	5.320	75	8X11.5	5.100	85
3.3	8X11.5	4.570	110	8X11.5	4.510	130	10X12.5	4.180	120
4.7	8X11.5	4.360	130	10X12.5	4.220	155	10X16	3.580	165
6.8	10X16	3.61	160	10X16	3.250	170	10X16	2.750	180
10	10X16	3.050	250	10X16	2.750	250	10X20	2.160	220
22	10X16	1.870	300	10X20	1.585	320	12.5X20	1.375	340
33	10X20	1.215	380	12.5X20	1.050	440	12.5X25	0.960	460
47	12.5X25	1.020	600	12.5X20	0.525	500	12.5X25	0.455	550
68	12.5X25	0.560	660	12.5X25	0.415	660	16X25	0.390	730
100	12.5X25	0.510	850	16X25	0.200	850	16X31.5	0.285	990
150	16X25	0.275	1210	16X31.5	0.185	1210	18X31.5	0.240	1300
220	16X31.5	0.200	1470	18X35.5	0.150	1630	18X40	0.215	1730
330	18X35.5	0.175	2000						

KLH Miniature Aluminum Electrolytic Capacitors

Dimension: $\Phi \times D \times L$ (mm)

Ripple Current: mA/rms at 100KHz, 105°C

DIMENSION & PERMISSIBLE RIPPLE CURRENT

V,DC Contents μF	350V			400V			450V		
	$\Phi \times D \times L$	Impedance $\Omega / 100KHz$ 20°C	Ripple Current (mA/rms, 105°C)	$\Phi \times D \times L$	Impedance $\Omega / 100KHz$ 20°C	Ripple Current (mA/rms, 105°C)	$\Phi \times D \times L$	Impedance $\Omega / 100KHz$ 20°C	Ripple Current (mA/rms, 105°C)
0.47	6.3x11	8.82	36	6.3x11	33	26	6.3x11	34	28
1	6.3x11	7.90	50	6.3x11	16.5	36	6.3x11	18	38
2.2	8x11.5	6.35	75	8x11.5	13	65			
	10x12.5	4.025	85	10x12.5	13	76	10x12.5	14	80
3.3	10x12.5	3.85	100	8x11.5	12	86			
	10x16	3.580	120				10x16	9.680	130
4.7	10x12.5	3.12	130	10x12.5	4.980	130			
	10x16	2.950	150				10x20	5.075	190
6.8	10x16	2.43	170	10x16	7.5	160	10x20	4.750	200
10	10x20	1.455	190	10x20	3.350	183	12.5x20	4.580	277
22	12.5x20	1.320	310	12.5x20	2.875	314	12.5x25	2.835	510
33	12.5x25	0.860	420	12.5x25	1.280	422	16x25	2.420	620
47	16x25	0.625	560	16x25	0.925	560	18x31.5	1.670	790
68	16x31.5	0.580	750	16x31.5	0.850	750	18x35.5	0.852	990
100	16x31.5	0.530	1010	18x31.5	0.575	1010	18x40	0.740	1050

Low Impedance Type

V,DC Contents μF	500V		
	$\Phi \times D \times L$	Impedance $\Omega / 100KHz$ 20°C	Ripple Current (mA/rms, 105°C)
2.2	8x11.5	10.0	85
3.3	10x12.5	8.00	140
4.7	10x16	6.00	180
10	10x20	4.00	190
22	12.5x25	3.50	310
33	16x25	3.00	420
47	18x31.5	2.50	560