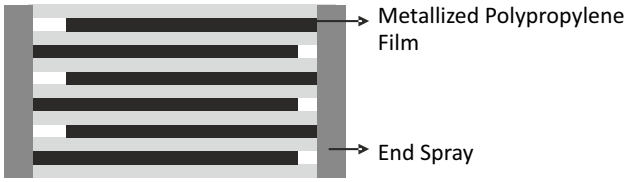
DCL-23

Highlights

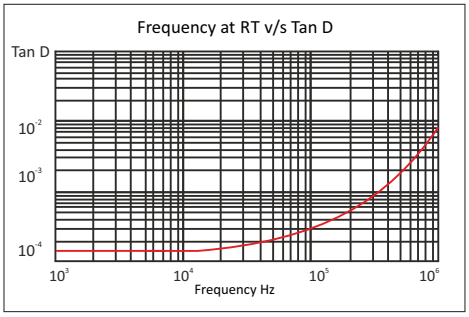
- Self-Inductance as low as 11nH
- ESR as low as 0.5 mΩ
- Low profile
- High thermal conductivity
- Life expectancy as high as 100 Khrs
- Integrated mounting flanges
- Flame retardant UL94 - V0, ROHS compliant

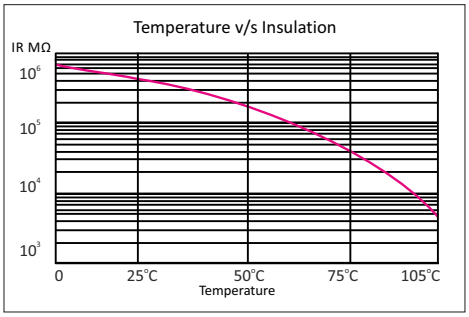
Construction

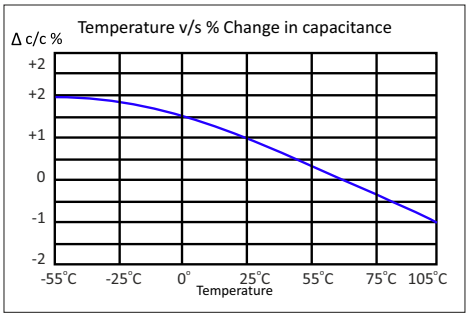


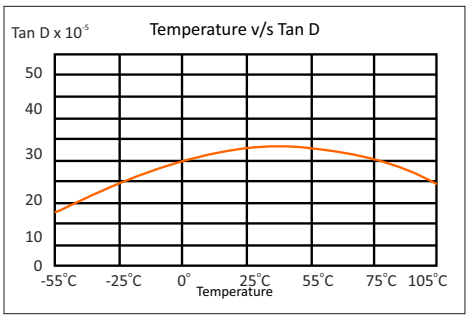
Applications

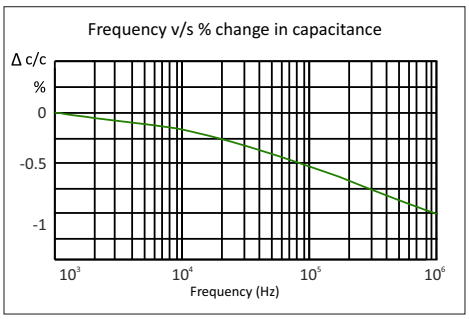
- DC filtering
- Wind power inverters
- Solar power inverters
- Induction heaters
- Electric vehicle inverters
- Motor drives











DCL-23

Technical Specifications

Physical Characteristics

▪ Electrode material	Metallized polypropylene film
▪ Winding construction	Polypropylene film, Metallized polypropylene film
▪ Enclosure	Preformed UL 94-V0 plastic case with thermosetting resin-fill
▪ Terminals	Nickel plated brass

Electrical Characteristics

▪ Capacitance range C_N	12 µF to 265µF
▪ Capacitance Tolerance	±5%(J), ±10%(K),
▪ Rated Voltage U_N	700,800,900,1000,1200,1400,1600,1800
▪ Dielectric strength between terminals (U_{T-T})	1.3 x rated voltage for 60 secs
▪ Test Voltage Terminal to case (U_{T-C})	Up to 3KVac at 50 Hz for 60sec
▪ Dissipation factor (Tanδ0)	≤0.0015 AT 100 Hz and 25°C
▪ Temperature range	-40°C to +105°C
▪ Insulation Resistance MΩ x µF	≥5,000S @ 25°C (S = MΩ x µF)
▪ Reference slandered	IEC 61071 and IEC 60068

Marking on Capacitors

Each capacitor will have the following information printed on it, sequentially:

- The Company's symbol followed by the words ALCON
- The capacitor grade viz DCL-23
- The capacitance value MFD
- The rated voltage VDC
- The max current Arms
- Capacity tolerance and manufacturing code
- Part number on non-standard capacitors

DCL-23

Standard Capacitors Values

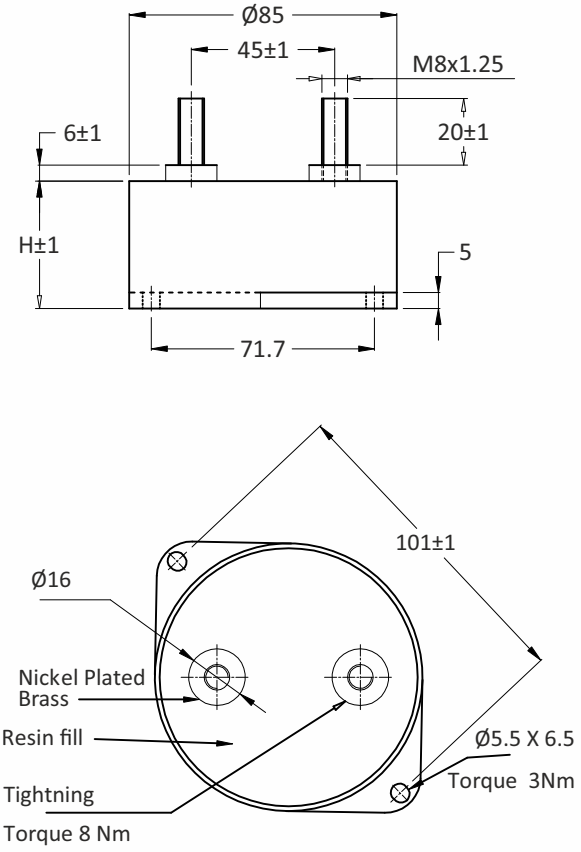
Rated voltage VDC	Nominal Capacitance MFD at 1 KHz	Case size ϕ x Lmm	Case Code	Typical ESR mΩ at Fr* KHz	Fr** KHz	Rise in core temperature per watt dissipated℃	Ripple current rating Irms at 10 KHz to 100KHz				Ordering Code
							25˚C	45˚C	65˚C	85˚C	
700	85	85 X 40	Y1	0.65	156	8.8	91	79	66	46	SD000850700AQ0Y1----K01
	100	85 x 51	Y2	0.75	105	6.8	96	83	69	49	SD001000700AQ0Y2----K01
	142	85 x 51	Y2	0.75	105	6.8	96	83	69	49	SD001420700AQ0Y2----K01
	205	84 x 64	Y3	0.95	71	4.5	87	75	63	44	SD002050700AQ0Y3----K01
	265	85 x 79	Y4	1.65	61	3.3	77	67	55	39	SD002650700AQ0Y4----K01
800	70	85 x 40	Y1	0.56	168	8.8	86	74	61	42	SD000700800AQ0Y1----K01
	88	85 x 40	Y1	0.65	156	8.8	91	79	66	46	SD000880800AQ0Y1----K01
	140	85 x 51	Y2	0.75	105	6.8	96	83	69	49	SD001400800AQ0Y2----K01
	200	85 x 64	Y3	0.95	71	4.5	87	75	63	44	SD002000800AQ0Y3----K01
	260	85 x 79	Y4	1.65	61	3.3	77	67	55	39	SD002600800AQ0Y4----K01
900	65	85 x 40	Y1	0.50	68	8.8	84	92	59	40	SD000650900AQ0Y1----K01
	100	85 x 51	Y2	0.78	98	8.8	93	81	71	51	SD001000900AQ0Y2----K01
	150	85 x 64	Y3	0.97	73	6.8	85	76	64	45	SD001500900AQ0Y3----K01
	200	85 x 79	Y4	1.70	69	4.5	75	65	53	37	SD002000900AQ0Y4----K01
1000	47	85 x 40	Y1	0.80	176	8.8	85	73	62	38	SD000471000AQ0Y1----K01
	52	85 x 40	Y1	1.00	182	8.8	87	75	63	44	SD000521000AQ0Y1----K01
	88	85 x 51	Y2	0.80	136	6.8	89	77	64	45	SD000881000AQ0Y2----K01
	120	85 x 64	Y3	1.18	91	4.5	78	68	56	40	SD001201000AQ0Y3----K01
	170	85 x 79	Y4	2.11	75	3.3	69	60	50	35	SD001701000AQ0Y4----K01
1200	38	85 x 40	Y1	1.05	254	8.8	72	62	52	37	SD000381200AQ0Y1----K01
	63	85 x 51	Y2	1.19	179	8.8	74	64	53	38	SD000631200AQ0Y2----K01
	88	85 x 64	Y3	1.46	116	6.8	69	60	50	35	SD000881200AQ0Y3----K01
	118	85 x 79	Y4	2.80	96	4.5	57	49	41	29	SD001181200AQ0Y4----K01
1400	20	85 x 40	Y1	1.28	294	8.8	63	55	45	32	SD000201400AQ0Y1----K01
	34	85 x 51	Y2	1.47	218	8.8	64	55	46	33	SD000341400AQ0Y2----K01
	48	85 x 64	Y3	1.87	143	6.8	61	53	44	31	SD000481400AQ0Y3----K01
	64	85 x 89	Y4	3.81	124	4.5	52	45	37	27	SD000641400AQ0Y4----K01
1600	18	85 x 40	Y1	1.48	352	8.8	62	54	45	32	SD000181600AQ0Y1----K01
	30	85 x 51	Y2	1.71	260	8.8	62	54	45	32	SD000301600AQ0Y2----K01
	42	85 x 64	Y3	2.18	171	6.8	59	51	42	30	SD000421600AQ0Y3----K01
	55	85 x 79	Y4	4.56	151	4.5	48	42	35	24	SD000551600AQ0Y4----K01
1800	12	85 x 40	Y1	1.69	460	8.8	57	49	41	29	SD000121800AQ0Y1----K01
	21	85 x 51	Y2	1.86	236	8.8	58	50	42	30	SD000211800AQ0Y2----K01
	30	85 x 64	Y3	2.81	226	6.8	50	42	36	26	SD000301800AQ0Y3----K01
	40	85 x 79	Y4	5.63	185	4.5	43	37	31	22	SD000401800AQ0Y4----K01

Custom designed capacitors are available on request
Fr** =Typical resonant frequency (Tol.±30%)

DCL-23

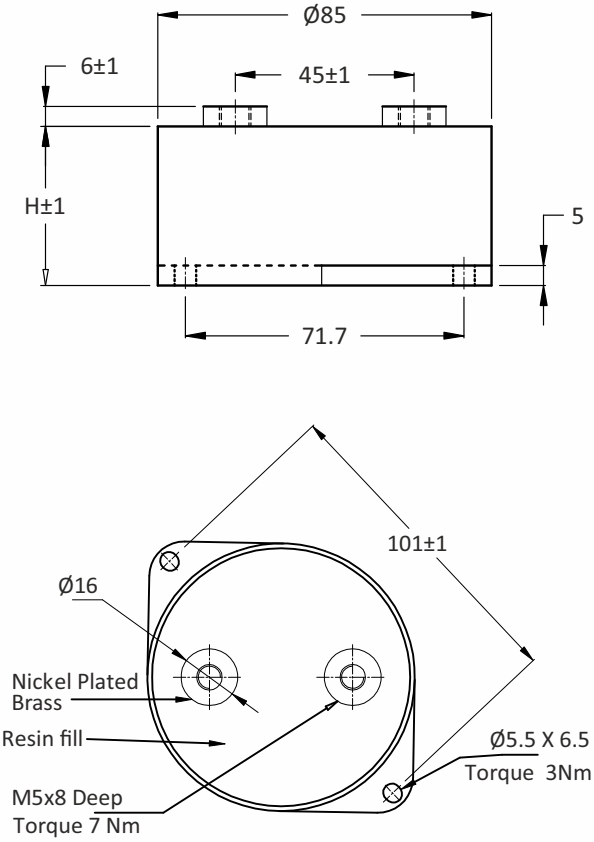
Capacitor Drawing and Terminal Styles

Terminal Style : MS



Dimensions in mm

Terminal Style : FS



Dimensions in mm

Life Expectancy

Steps to calculate Hotspot Temperature

1 Locate the capacitor and the ESR from the electrical specifications
2 Dissipated heat = (I_{rms}^2 x ESR)
3 Gat the value from table 1 for Rth (°C/Watt)
4 Calculate the internal temperature rise = (I_{rms}^2 x ESR) x Rth (°C/Watt)
5 Hotspot temperature of capacitor =T ambient +(I_{rms}^2 x ESR) x Rth (°C/Watt)
6 From the graph given below expected life can be calculated
7 Ensure that the voltage and current specification are not exceeded.

Can size D x H	Thermal resistance °C/Watt
85 x 40	8.8
85 x 51	6.8
85 x 64	4.5
85 x 79	3.3

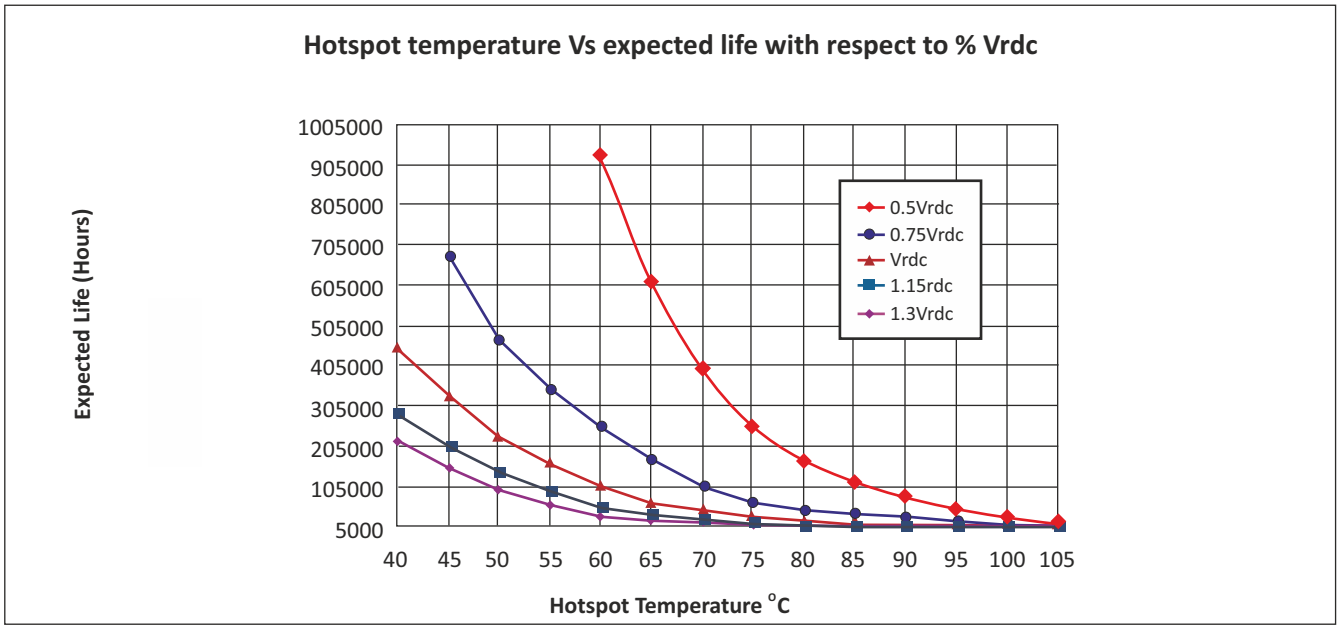
Example : If 85 MFD / 700 VDC is being used are 93 Arms in 45°C Ambient; then the ESR the table (on page 4) = 0.00065Ω and the case size is ϕ85 x 40 mm

The dissipated wattage=93 x 93 x 0.00065 =5.62 watt

Temperature rise = 5.62 x 8.8 (°C/Watt) =49.45°C

The hotspot core temperature inside the capacitor =45°C(Ambient)+ 49.45°C (Rise)=94.45 say 95°C

From the graph below: If the capacitor is being used at 75% of Vrdc then the expected life will be approx.480000 hours.



Part Number System

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23
1	**2**	**3 to 7**					**8 to 11**				**12-13**		**14-16**			**17-20**				**21**	**22-23**	

1 **Standard / Non-standard**

S - Standard

N - Non-standard

2 **Series**

A - Aluminium Electrolytic Capacitors

I - IGBT Snubber Capacitors

D - DC-Link Capacitors

P - Power Film Capacitors

3 to 7 **Capacitance Rating**

example : 04U70 - 4.7MFD
00118 - 118 MFD
00030 - 30 MFD
01080 - 1080 MFD
02350 - 2350 MFD

8to11 **Voltage Rating**

example : 0700 - 700 VDC/VRMS
1600 - 1600 VDC/VRMS
1000 - 1000 VDC/VRMS
0900 - 900 VDC/VRMS

12-13 **Grade**

example : AP - DCL- 50
AR - DCL- 41
AQ - DCL- 23
AO - DCL- 6
DC - DCL - 14

14-16 **Case code**

(Refer Standard Capacitor Values Table)

17-20 **Terminal Style**

(Refer Capacitor Drawing and Terminal Styles Page)

21 **Tolerance**

K : ± 10%
J : ± 5%
M : ± 20%

22-23 **By Default**

- 01

Cautions For Proper Use Of Film Capacitor

SAFETY INSTRUCTION

- Do not exceed the upper category temperature (UCT).
- Do not apply any mechanical stress to the capacitor terminals.
- Avoid any compressive, tensile or flexural stress.
- Do not move the capacitor after it has been assembled
- Do not exceed the specified torque limits during assembly.
- Avoid external energy inputs, such as fire or electricity.
- Avoid overload of the capacitors.
- Consult us if application is with severe temperature and humidity condition.
- There are no serviceable or repairable parts inside the capacitor. Opening the capacitor or any attempts to open or repair the capacitor will void the warranty and liability of ALCON

DISPOSAL

For disposal do either of the followings.

1. Incineration (at high temperature over 800°C) after piercing or crushing capacitor body.
2. Consignment to specialists of industrial waste. As per the compliance prescribed by the law.

Notes