

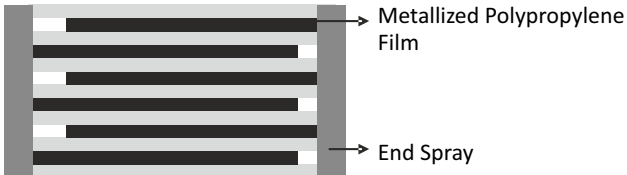
## DCL-23



### Highlights

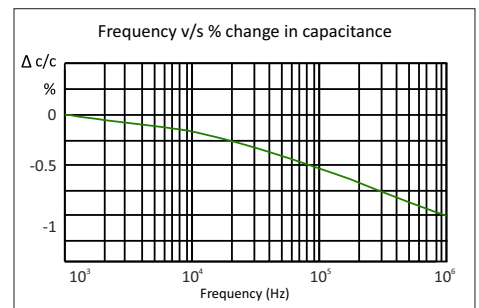
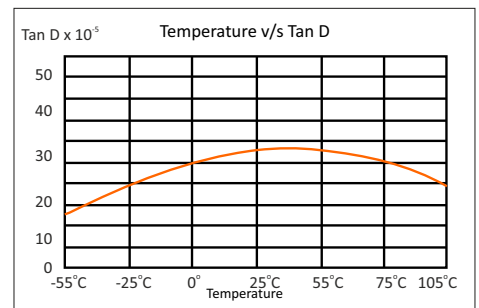
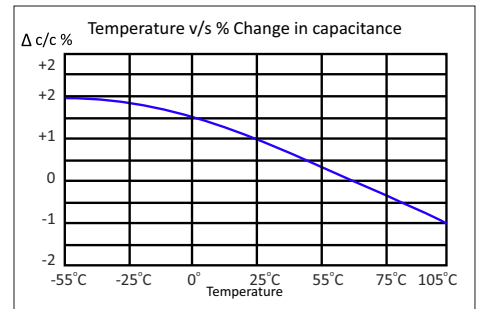
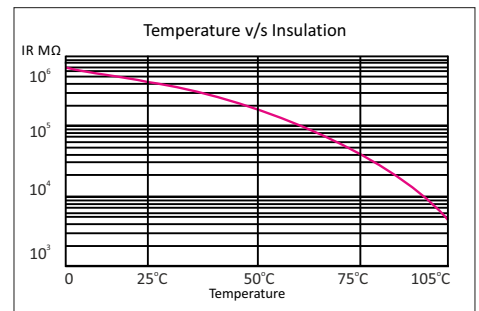
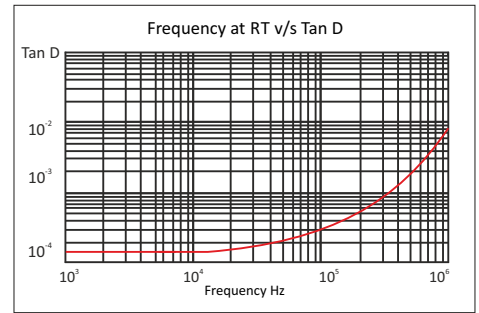
- Self-Inductance as low as 11nH
- ESR as low as 0.5 mΩ
- Low profile
- High thermal conductivity
- Life expectancy as high as 100 Khrs
- Integrated mounting flanges
- Flame retardant UL94 - V0, ROHS compliant

### 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 $\mu$ F to 265 $\mu$ F
▪ Capacitance Tolerance	$\pm 5\%$ (J), $\pm 10\%$ (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 ( $\tan\delta$ )	$\leq 0.0015$ AT 100 Hz and 25°C
▪ Temperature range	-40°C to +105°C
▪ Insulation Resistance $M\Omega \times \mu$ F	$\geq 5,000S$ @ 25°C ( $S = M\Omega \times \mu$ F)
▪ 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

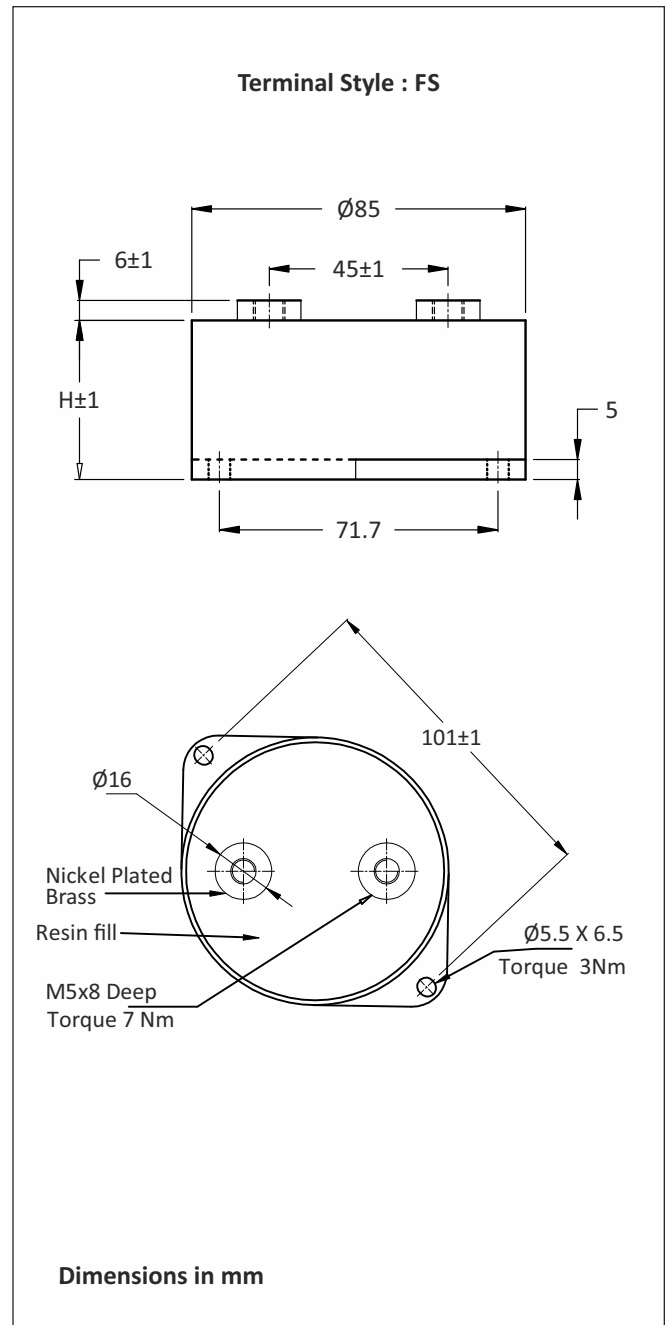
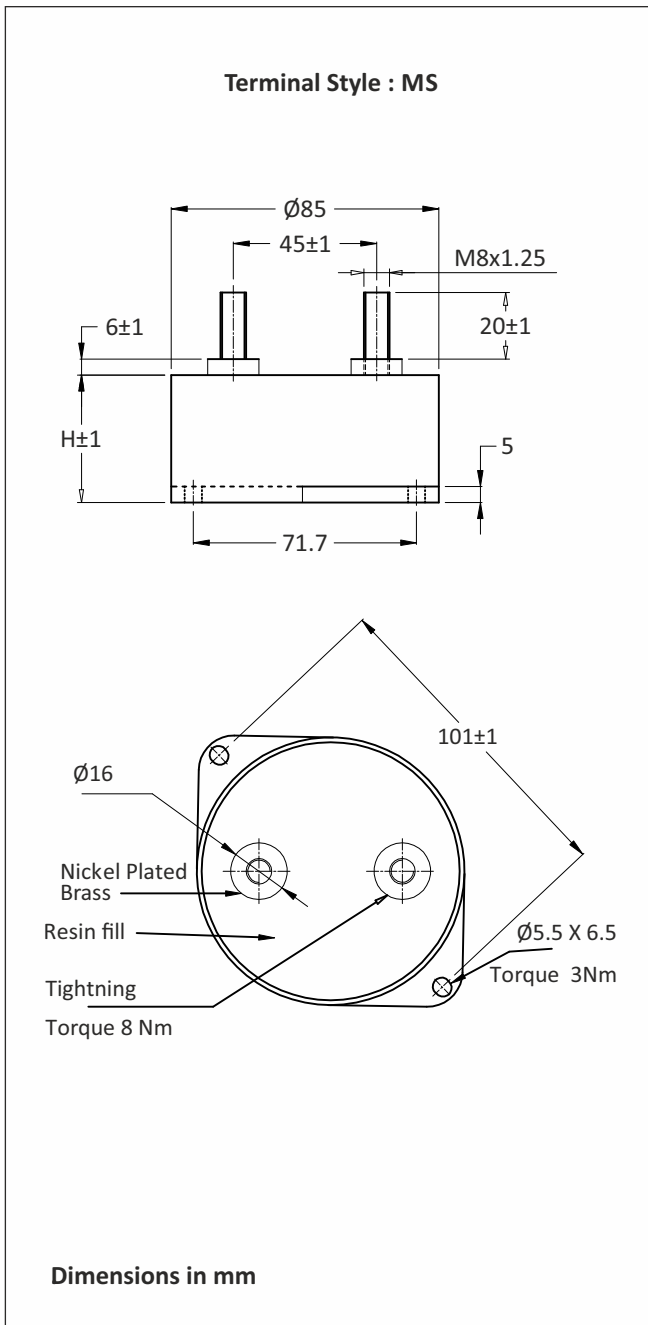
Rated voltage VDC	Nominal Capacitance MFD at 1 KHz	Case size $\phi \times L$ mm	Case Code	Typical ESR m $\Omega$ at Fr* KHz	Fr** KHz	Rise in core temperature per watt dissipated $^{\circ}$ C	Ripple current rating Irms at 10 KHz to 100KHz				Ordering Code
							25 $^{\circ}$ C	45 $^{\circ}$ C	65 $^{\circ}$ C	85 $^{\circ}$ 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



## DCL-23

### Life Expectancy

#### Steps to calculate Hotspot Temperature

- 1 Locate the capacitor and the ESR from the electrical specifications
- 2 Dissipated heat =  $(I_{rms}^2 \times ESR)$
- 3 Get the value from table 1 for Rth (°C/Watt)
- 4 Calculate the internal temperature rise =  $(I_{rms}^2 \times ESR) \times Rth$  (°C/Watt)
- 5 Hotspot temperature of capacitor = T ambient +  $(I_{rms}^2 \times ESR) \times Rth$  (°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 =  $93 \times 93 \times 0.00065 = 5.62$  watt

Temperature rise =  $5.62 \times 8.8$  (°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.

