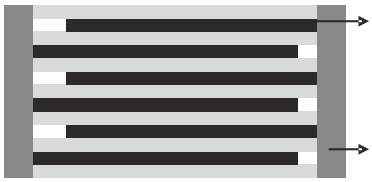
DCL-50

Highlights

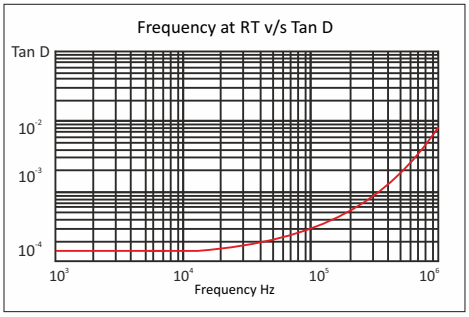
- Self-Inductance as low as 30nH
- ESR as low as 0.5 mΩ
- Low profile
- High thermal conductivity
- Life expectancy as high as 100 Khrs
- Axial stud terminals
- Flame retardant UL94 - V0, ROHS compliant

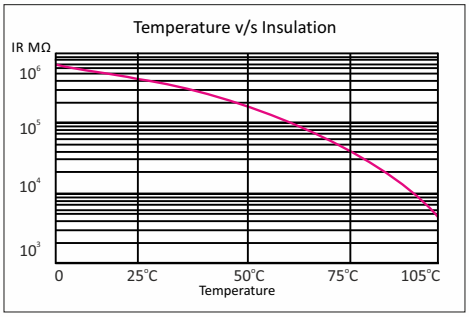
Construction

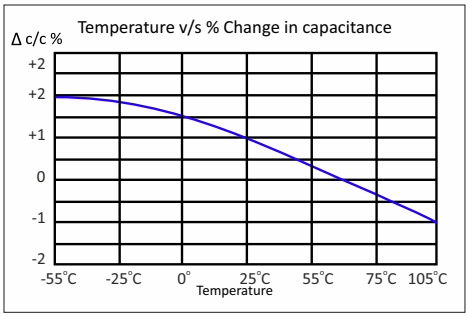


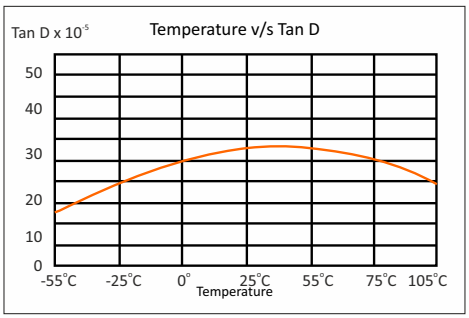
Applications

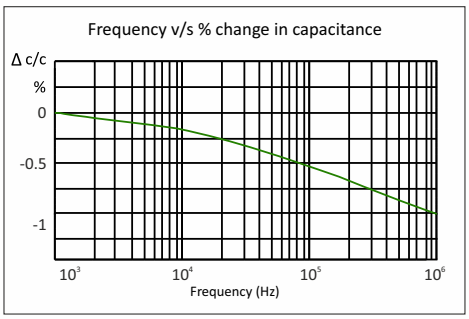
- DC filtering
- Wind power inverters
- Solar power inverters
- Induction heaters
- Electric vehicle inverters
- Motor drives











DCL-50

Technical Specifications

Physical Characteristics

▪ Electrode material	Metallized polypropylene film
▪ Winding construction	Polypropylene film, metallized polypropylene film
▪ Enclosure	UL 94-V0 Polyester tape wrap and epoxy filled
▪ Terminals	Nickel plated brass

Electrical Characteristics

▪ Capacitance range	20 µF to 265µF
▪ Capacity tolerance	±5%(J), ±10%(K)
▪ Rated voltage VDC	700, 800, 900, 1000, 1200, 1400, 1600, 1800
▪ Test voltage between terminals	1.3 x rated voltage VDC for 60 seconds (not to be repeated)
▪ Test voltage terminal to case	3KVAC at 50Hz for 60 seconds
▪ Dissipation factor (Tan d)	≤0.0015 at 100Hz and 25°C
▪ Temperature range	-55°C to +105°C
▪ Insulation resistance MΩ x µF	≥5,000 S at 25°C (S = MΩ x µF)
▪ Reference Standard	IEC 61071 and IEC 60068

Marking on Capacitors

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

- The Company name in words ALCON
- The capacitor grade viz DCL-50
- The capacitance value MFD
- The rated voltage VDC
- The max current Arms
- Capacity tolerance and manufacturing code
- Part number on non-standard capacitors

DCL-50

Standard Capacitors Values

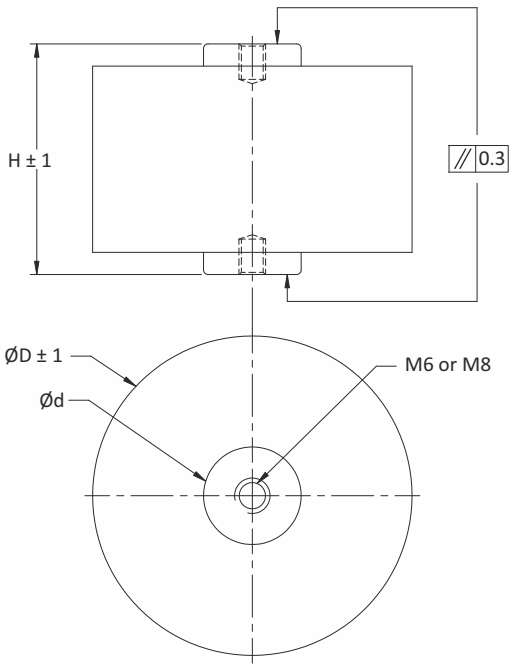
Rated voltage VDC	Nominal Capacitance MFD at 1 KHz	Case size ϕ x Lmm	Case Code	Typical ESR mΩ at Fr* KHz	Fr* KHz	Rise in core temperature per watt dissipated °C	Ripple current rating Irms at 10 KHz to 100KHz					Ordering Code
							25°C	45°C	65°C	85°C	105°C	
700	90	85 x 51	Y2	0.65	156	14.2	60	52	44	30	7	SD000900700AP0Y2_ _ _ _K01
	145	85 x 63	Y5	0.75	105	12.3	64	55	46	32	8	SD001450700AP0Y5_ _ _ _K01
	200	85 x 76	Y6	0.95	71	10.8	58	50	42	29	7	SD002000700AP0Y6_ _ _ _K01
	265	85 x 91	Y7	1.65	61	8.9	51	45	37	26	6	SD002650700AP0Y7_ _ _ _K01
900	85	85 x 51	Y2	0.58	168	14.2	56	48	39	27	5	SD000850900AP0Y2_ _ _ _K01
	120	85 x 63	Y5	0.78	98	12.3	62	54	47	34	8	SD001200900AP0Y5_ _ _ _K01
	160	85 x 76	Y6	0.97	73	10.8	57	51	43	30	9	SD001600900AP0Y6_ _ _ _K01
	200	85 x 91	Y7	1.70	69	8.9	50	43	35	25	5	SD002000900AP0Y7_ _ _ _K01
1000	55	85 x 51	Y2	0.80	176	14.2	57	49	41	25	7	SD000551000AP0Y2_ _ _ _K01
	70	85 x 51	Y2	1.00	182	14.2	58	50	42	29	7	SD000701000AP0Y2_ _ _ _K01
	100	85 x 63	Y5	0.80	136	12.3	59	51	43	30	7	SD001001000AP0Y5_ _ _ _K01
	130	85 x 76	Y6	1.18	91	10.8	52	45	37	27	6	SD001301000AP0Y6_ _ _ _K01
	150	85 x 91	Y7	2.21	75	8.9	46	40	33	23	5	SD001501000AP0Y7_ _ _ _K01
1200	60	85 x 51	Y2	1.05	254	14.2	48	41	35	25	6	SD000601200AP0Y2_ _ _ _K01
	80	85 x 63	Y5	1.19	179	12.3	49	43	35	25	6	SD000801200AP0Y5_ _ _ _K01
	110	85 x 76	Y6	1.46	116	10.8	46	40	33	23	5	SD001101200AP0Y6_ _ _ _K01
	122	85 x 91	Y7	2.80	96	8.9	38	33	27	19	5	SD001221200AP0Y7_ _ _ _K01
1400	30	85 x 51	Y2	1.28	294	14.2	42	37	30	21	5	SD000301400AP0Y2_ _ _ _K01
	45	85 x 63	Y5	1.47	218	12.3	43	37	31	22	5	SD000451400AP0Y5_ _ _ _K01
	60	85 x 76	Y6	1.87	143	10.8	41	35	29	21	5	SD000601400AP0Y6_ _ _ _K01
	75	85 x 91	Y7	3.81	124	8.9	35	30	25	18	4	SD000751400AP0Y7_ _ _ _K01
1600	28	85 x 51	Y2	1.48	352	14.2	41	36	30	21	5	SD000281600AP0Y2_ _ _ _K01
	40	85 x 63	Y5	1.71	260	12.3	41	36	30	21	5	SD000401600AP0Y5_ _ _ _K01
	50	85 x 76	Y6	2.18	171	10.8	39	34	28	20	5	SD000501600AP0Y6_ _ _ _K01
	60	85 x 91	Y7	4.56	151	8.9	32	28	23	16	4	SD000601600AP0Y7_ _ _ _K01
1800	20	85 x 51	Y2	1.69	460	14.2	38	33	27	19	5	SD000201800AP0Y2_ _ _ _K01
	28	85 x 63	Y5	1.86	336	12.3	39	33	28	20	5	SD000281800AP0Y5_ _ _ _K01
	40	85 x 76	Y6	2.81	226	10.8	33	29	24	17	4	SD000401800AP0Y6_ _ _ _K01
	46	85 x 91	Y7	5.63	185	8.9	29	25	21	15	3	SD000461800AP0Y7_ _ _ _K01

Custom designed capacitors are available on request

* Fr =Typical resonant frequency (Tol.±30%)

DCL-50

Capacitor Drawing and Terminal Styles



Terminal Style : STD

Tightening torque 6Nm max.

Dimensions in mm

DCL-50

Life Expectancy

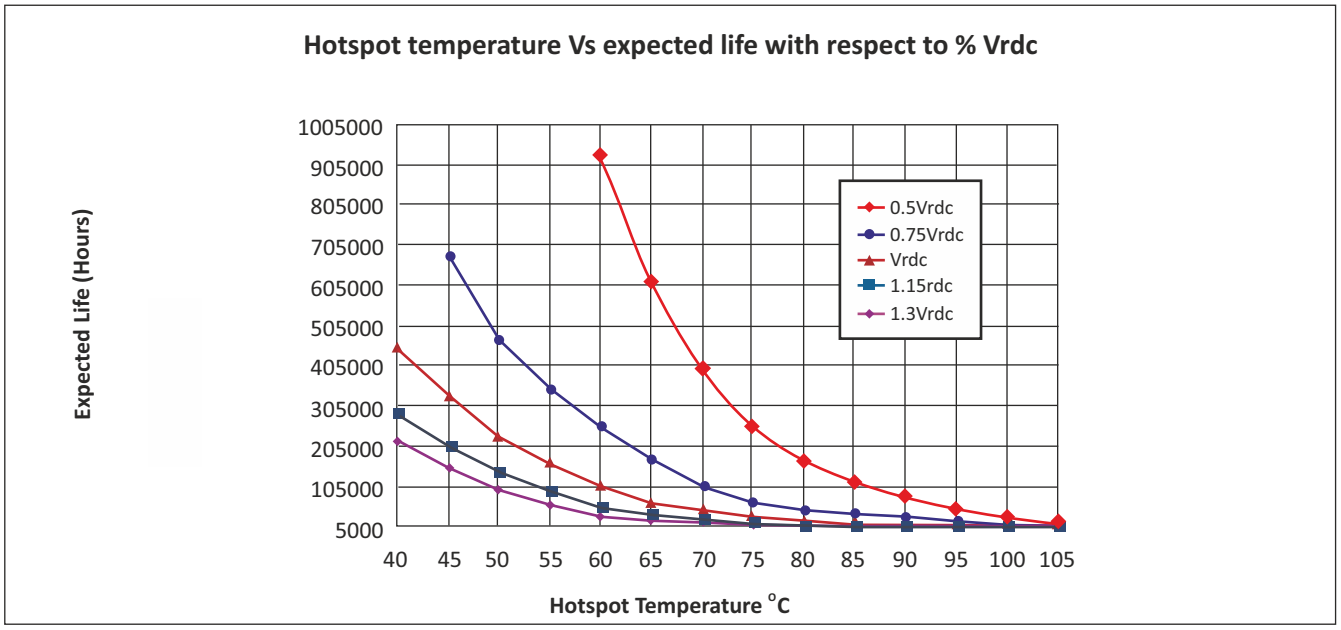
Table 1

Can size D x H	Rth °C/Watt
85 x 51	14.2°C
85 x 63	12.3°C
85 x 76	10.8°C
85 x 91	8.9°C

Steps to calculate Hotspot Temperature

- Locate the capacitor and the ESR from the electrical specifications
- Dissipated heat = ($Irms^2$ x ESR)
- Get the value from table 1 for Rth (°C/watt)
- Calculate internal temperature rise = ($Irms^2$ x ESR) x Rth (°C/watt)
- Hotspot temperature of capacitor = T Ambient + ($Irms^2$ x ESR) x Rth (°C/watt)
- From the graph given below expected life can be obtained
- Ensure that the voltage and current specification are not exceeded

Example: If 120 MFD/900 VDC is being used at 50 Arms in a 45°C Ambient; then ESR from the table (on page 4) = 0.00078Ω and the case size is Ø85 x 51mm
The dissipated wattage = 50 x 50 x 0.00078Ω = 1.95 watts
Temperature rise = 1.95 x 12.3°C/Watt = 23.98°C say 24
The hotspot core temperature inside the capacitor = 45°C (Ambient) + 24 (Rise) = **69 say 70°C**
From the graph below: If the capacitor is being used at 75% of Vrdc then the expected life will be approx 105,000 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