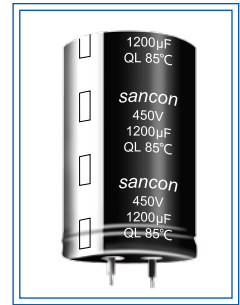


# QL (CD29L)

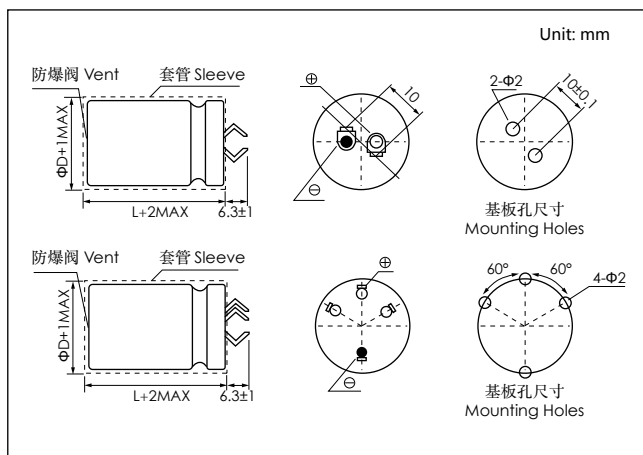
- 大尺寸。Larger size components.
- 长寿命，85°C 5000 小时。Long useful life, 85°C 5000 hrs.
- 耐高纹波电流。High ripple current.
- 适用于工业电源。Industrial power supplies.



## 主要技术性能 Specifications

项目 Item	特性 Performance Characteristics																						
工作温度范围 Operating Temperature Range	-40~+85°C	-25~+85°C																					
额定电压范围 Rated Voltage Range	16~400V	450~500V																					
标称容量范围 Nominal Capacitance Range	390~120000µF																						
标称容量允许偏差 Capacitance Tolerance	±20%(120Hz, +20°C)																						
漏电流 Leakage Current	I ≤ 0.01CV 或 1.5mA (5分钟) 取较小值 (after 5 minutes, Whichever is smaller)																						
损耗角正切值 (tgδ) Dissipation Factor (+20°C, 120Hz)	<table border="1"> <tr> <td>U<sub>R</sub>(V)</td> <td>16</td> <td>25</td> <td>35</td> <td>50</td> <td>63-100</td> <td>160-250</td> <td>350-450</td> <td>500</td> </tr> <tr> <td>tgδ</td> <td>0.60</td> <td>0.50</td> <td>0.40</td> <td>0.30</td> <td>0.20</td> <td colspan="3">0.15</td> </tr> </table>		U <sub>R</sub> (V)	16	25	35	50	63-100	160-250	350-450	500	tgδ	0.60	0.50	0.40	0.30	0.20	0.15					
U <sub>R</sub> (V)	16	25	35	50	63-100	160-250	350-450	500															
tgδ	0.60	0.50	0.40	0.30	0.20	0.15																	
温度特性 Temperature Characteristics (Impedance ratio at 120Hz)	<table border="1"> <tr> <td>U<sub>R</sub>(V)</td> <td>16-35</td> <td>50~100</td> <td>160~200</td> <td>250~400</td> <td>450</td> <td>500</td> </tr> <tr> <td>Z -25°C /+20°C</td> <td>4</td> <td colspan="2">3</td> <td colspan="3">4</td> </tr> <tr> <td>Z -40°C /+20°C</td> <td>15</td> <td>10</td> <td>6</td> <td>8</td> <td colspan="2">-</td> </tr> </table>		U <sub>R</sub> (V)	16-35	50~100	160~200	250~400	450	500	Z -25°C /+20°C	4	3		4			Z -40°C /+20°C	15	10	6	8	-	
U <sub>R</sub> (V)	16-35	50~100	160~200	250~400	450	500																	
Z -25°C /+20°C	4	3		4																			
Z -40°C /+20°C	15	10	6	8	-																		
耐久性 Load Life	+85°C施加带额定纹波电流的额定电压 5000 小时，恢复 24 小时后： After applying rated voltage with specified ripple current for 5000 hours at +85°C and then resumed 24hours: 电容量变化率 Capacitance change : ±20% 初始测量值以内 ±20% of the initial measured value 漏 电 流 Leakage current : ≤ 初始规定值 the initial specified value 损耗角正切值 Dissipation factor : ≤ 2 倍初始规定值 200% of the initial specified value																						
高温贮存 Shelf Life	+85°C，1000 小时贮存后，加额定工作电压处理 30 分钟，恢复 24 小时后： After storage for 1000 hours at +85°C, U <sub>R</sub> to be applied for 30 minutes and then resumed 24hours: 电容量变化率 Capacitance change : ±20% 初始测量值以内 ±20% of the initial measured value 漏 电 流 Leakage current : ≤ 初始规定值 the initial specified value 损耗角正切值 Dissipation factor : ≤ 2 倍初始规定值 200% of the initial specified value																						

## 外形图及尺寸 Diagram of Dimensions



## 纹波电流修正系数 Multiplier for Ripple Current

频率系数 Frequency coefficient						
U(V)	Frequency (Hz)	50/60	120	1K	10K	100K
≤ 50	≤ 50	0.95	1.00	1.10	1.15	1.15
	63~100	0.90	1.00	1.16	1.30	1.33
	≥ 160	0.85	1.00	1.20	1.35	1.40
温度系数 Temperature coefficient						
U(V)	Temperature (°C)	+40	+55	+70	+85	
<160	<160	2.1	1.8	1.5	1.0	
	≥ 160	1.7	1.5	1.3	1.0	

额定值标准 *Standard Size*

Rated Voltage (V <sub>dc</sub> )	Surge Voltage (V <sub>dc</sub> )	Rated Capacitance (μF)	Max ESR 20°C 120Hz (mΩ)	Type ESR 20°C 120Hz (mΩ)	Rated ripple current 85°C 120Hz (Arms)	Size ΦD×L (mm)
16 1C	20	56000	14	10	10.4	30 X 45
			14	10	9.8	40 X 40
		68000	12	8	10.8	35 X 50
			12	8	11.5	40 X 50
		82000	10	7	11.8	35 X 60
			10	7	11.8	40 X 50
		100000	8	6	13.2	35 X 80
			8	6	13.5	40 X 60
120000	7	5	15.3	35 X 105		
	7	5	14.8	40 X 80		
25 1E	32	33000	20	14	8.1	35 X 40
			20	14	8.7	40 X 40
		39000	17	12	9.0	35 X 45
			17	12	9.6	40 X 40
		47000	14	10	9.6	35 X 50
			12	8	10.3	35 X 60
		56000	12	8	10.8	40 X 50
			10	7	11.3	35 X 80
68000	10	7	11.8	40 X 60		
	8	6	13.5	40 X 80		
35 1V	44	27000	20	14	8.2	35 X 45
			20	14	8.0	40 X 40
		33000	16	11	8.7	35 X 50
			14	10	10.3	35 X 60
		39000	14	10	9.6	40 X 50
			11	8	11.4	35 X 80
		47000	11	8	10.8	40 X 60
			10	7	12.1	40 X 70
56000	8	6	14.2	40 X 80		
	8	6	14.2	40 X 80		
50 1H	63	15000	27	19	7.7	35 X 40
			27	19	8.1	40 X 40
		18000	22	16	8.3	35 X 45
			22	16	8.3	40 X 40
		22000	18	13	9.1	35 X 50
			18	13	9.4	40 X 50
		27000	15	10	11.2	35 X 80
			15	10	10.8	40 X 60
33000	12	8	13.4	35 X 80		
	12	8	13.4	40 X 70		
39000	10	7	16.8	40 X 80		
	10	7	16.8	40 X 80		
63 1J	79	12000	22	16	8.7	35 X 50
			22	16	8.6	40 X 40
		15000	18	12	10.2	35 X 70
			18	12	9.5	40 X 50
		18000	15	10	11.2	35 X 80
			15	10	10.7	40 X 60
		27000	10	7	12.7	40 X 80
			10	7	12.7	40 X 80
80 1K	100	8200	32	23	6.9	35×50
		10000	27	19	8.7	35×60
		12000	22	16	9.7	35×70
			22	16	9.0	40×50
		15000	18	12	10.5	35×80
			18	12	10.2	40×60
18000	15	10	12.3	40×80		

## 额定值标准 Standard Size

Rated Voltage (V <sub>dc</sub> )	Surge Voltage (V <sub>dc</sub> )	Rated Capacitance (μF)	Max ESR 20°C 120Hz (mΩ)	Type ESR 20°C 120HZ (mΩ)	Rated ripple current 85°C 120Hz (Arms)	Size ΦD×L (mm)
100 2A	125	5600	47	33	7.0	35×45
			47	33	7.4	40×40
		6800	39	27	8.0	35×50
			39	27	8.9	40×50
		8200	32	23	9.6	35×70
			32	23	9.6	40×60
		10000	27	19	10.4	35×80
			27	19	10.2	40×60
12000	22	16	12.3	40×80		
160 2C	200	2200	91	63	4.9	35×45
		2700	74	52	5.3	35×50
		3300	60	42	5.5	35×70
			60	42	5.5	40×60
		3900	51	36	5.9	35×80
		4700	42	30	7.3	40×80
200 2D	250	1500	133	93	4.3	35×40
		1800	111	77	4.7	35×45
		2200	91	63	5.4	35×50
			91	63	5.4	40×40
		2700	74	52	5.9	35×60
			74	52	5.9	40×50
		3300	60	42	6.5	35×80
			60	42	6.5	40×60
		3900	51	36	7.0	40×80
		4700	42	30	9.2	40×90
250 2E	300	1000	199	139	3.7	35×40
		1200	166	116	3.8	35×45
		1500	133	93	4.4	35×50
			133	93	4.5	40×40
		1800	111	77	5.0	35×70
			111	77	5.0	40×50
		2200	91	63	5.4	35×70
		2700	74	52	6.9	40×80
350 2V	400	680	293	205	3.6	35×45
			293	205	3.6	40×40
		820	243	170	4.5	35×60
			243	170	4.3	40×50
		1000	199	139	5.2	35×70
			199	139	4.9	40×60
		1200	166	116	5.5	35×80
			166	116	5.6	40×70
		1500	133	93	6.5	40×80
			133	93	6.2	45×70
		1800	111	77	7.9	40×100
			111	77	7.1	45×70
2200	91	63	8.7	40×100		

额定值标准 *Standard Size*

Rated Voltage (V <sub>dc</sub> )	Surge Voltage (V <sub>dc</sub> )	Rated Capacitance (μF)	Max ESR 20°C 120Hz (mΩ)	Type ESR 20°C 120Hz (mΩ)	Rated ripple current 85°C 120Hz (Arms)	Size ΦD×L (mm)
400 2G	450	560	355	249	3.2	35×50
			355	249	2.8	40×40
		680	293	205	3.7	35×60
			293	205	3.8	40×60
		820	243	170	4.2	35×60
			243	170	4.1	40×50
		1000	199	139	4.9	35×70
			199	139	4.8	40×60
			199	139	4.6	45×50
		1200	166	116	5.8	35×80
			166	116	5.5	40×60
		1500	133	93	6.9	40×90
			133	93	6.6	45×70
			133	93	6.8	45×80
		1800	111	77	7.9	40×100
			111	77	7.3	45×80
450 2W	500	470	424	296	3.0	35×50
			424	296	3.0	40×40
		560	355	249	3.1	35×50
			355	249	3.3	35×60
			355	249	3.4	40×50
		680	293	205	3.5	35×60
			293	205	3.8	35×70
		820	243	170	4.6	35×80
			243	170	4.4	40×60
		1000	199	139	5.7	35×80
			199	139	5.2	40×60
		1200	166	116	5.9	40×70
			166	116	6.2	45×70
		1500	133	93	7.3	40×100
			133	93	7.0	45×80
		1800	111	77	7.9	45×100
500 2H	550	390	510	357	1.9	35×50
		470	424	296	2.3	35×60
		560	355	249	2.5	35×60
			355	249	2.7	40×60
		680	293	205	3.1	35×80
			293	205	2.8	40×70
		820	243	170	3.4	35×90
			243	170	3.3	40×70
		1000	199	139	3.9	40×80
			199	139	3.9	45×70
		1200	166	116	4.3	40×90
		1500	133	93	4.8	40×100

可根据客户需要定制产品 Customer products are available on request.