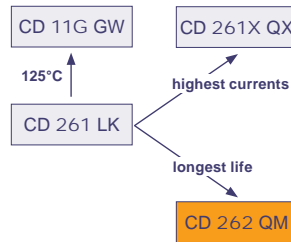




12000 - 14000h at 105°C

- Longest Lifetime for High Voltage
- High Ripple Current
- Down sized
- Lighting, Electronic Ballast, Power Supplies



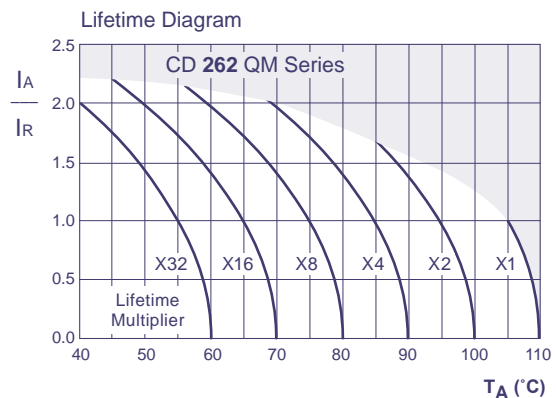
Item	Characteristics						
Operating Temperature Range (°C)	-25 ~ +105						
Voltage Range (V)	160 ~ 450						
Capacitance Range (µF)	6,8 ~ 220						
Capacitance Tolerance (20°C, 120Hz)	± 20%						
Leakage Current (µA)	After 1 minute at 20°C application of rated voltage, leakage current is not more than 0,04CV + 100. C: Nominal Capacitance (µF) V: Rated Voltage (V)						
Dissipation Factor (20°C, 120Hz)	Rated Voltage (V)	160	200	250	350	400	450
	Tan δ (max)	0,15				0,20	
Stability at Low Temperature (Impedance Ratio at 120Hz)	Rated Voltage (V)	160	200	250	350	400	450
	Z _{-25°C} / Z _{+20°C}	3				6	

	Useful Life		Load Life	Endurance Test	Shelf Life
Lifetime	∅ = 10 : 12 000h ∅ ≥ 12 : 14 000h	>100 000h	∅ = 10 : 10 000h ∅ ≥ 12 : 12 000h	∅ = 10 : 8 000h ∅ ≥ 12 : 10 000h	1 000h
Leakage Current	Not more than specified value		Not more than specified value	Not more than specified value	Not more than specified value
Capacity Change	Within ± 50% of initial value		Within ± 30% of initial value	Within ± 20% of initial value	Within ± 20% of initial value
Dissipation Factor	Not more than 500% of specified value		Not more than 300% of specified value	Not more than 200% of specified value	Not more than 200% of specified value
Condition:					
Applied Voltage	U _R	U _R	U _R	U _R	U _R = 0
Applied Current	I _R	1,4 x I _R	I _R	I _R = 0	I _R = 0
Applied Temperature	105°C	60°C	105°C	105°C	105°C
Failure Rate Level	≤ 1% Failure Rate	≤ 1% Failure Rate	guaranteed		After test: U _R to be applied for 30min >24h before measurement

Multiplier for Ripple Current

Frequency Coefficient

Frequency	50Hz	120Hz	1kHz	10kHz	100kHz
Coefficient	0,30	0,50	0,80	0,90	1,00



I_A = actual ripple current at 100kHz, I_R = rated ripple current at 100kHz, 105°C
Multiplier of Useful Life as a function of ambient temperature and ripple current load

Radial

Ratings for CD 262 QM Series

V _{DC} (Surge Voltage) Code	Rated Capacitance	Max ESR 20°C, 100Hz	Typ ESR 20°C, 100Hz	Max Ripple Current 105°C, 100kHz	Size Ø D x L
(V)	(µF)	(Ω)	(Ω)	(mA _{rms})	(mm)
160 (200) 2C	10	23,9	8,0	250	10 x 16
	22	10,9	3,6	500	10 x 20
	33	7,2	2,5	500	10 x 20
	47	5,1	1,7	660	12,5 x 20
	68	3,5	1,2	760	12,5 x 25
		3,5	1,2	760	16 x 20
	100	2,4	0,80	1 120	16 x 25
		2,4	0,80	1 120	18 x 20
	150	1,6	0,50	1 360	16 x 31,5
		1,6	0,50	1 360	18 x 25
220	1,1	0,35	1 400	16 x 31,5	
	1,1	0,35	1 400	18 x 25	
200 (250) 2D	10	23,9	8,0	250	10 x 16
	22	10,9	3,6	500	10 x 20
	33	7,2	2,4	600	12,5 x 20
	47	5,1	1,7	660	12,5 x 20
	68	3,5	1,2	760	12,5 x 25
		3,5	1,2	760	16 x 20
	100	2,4	0,80	1 120	16 x 25
		2,4	0,80	1 120	18 x 20
	150	1,6	0,50	1 360	16 x 31,5
		1,6	0,50	1 360	18 x 25
220	1,1	0,35	1 700	18 x 31,5	
250 (300) 2E	10	23,9	8,0	280	10 x 20
	22	10,9	3,5	600	12,5 x 20
	33	7,2	2,5	600	12,5 x 20
	47	5,1	1,7	720	12,5 x 25
		5,1	1,7	720	16 x 20
	68	3,5	1,2	920	16 x 25
		3,5	1,2	920	18 x 20
	100	2,4	0,80	1 200	16 x 31,5
2,4		0,80	1 200	18 x 25	
150	1,6	0,50	1 500	18 x 31,5	
350 (400) 2V	6,8	46,9	16,0	220	10 x 16
	10	31,8	11,0	280	10 x 20
	22	14,5	5,0	350	12,5 x 20
	33	9,7	3,5	500	16 x 20
	47	6,8	2,3	660	16 x 25
		6,8	2,3	660	18 x 20
	68	4,7	1,6	850	16 x 31,5
		4,7	1,6	850	18 x 25

V _{DC} (Surge Voltage) Code	Rated Capacitance	Max ESR 20°C, 100Hz	Typ ESR 20°C, 100Hz	Max Ripple Current 105°C, 100kHz	Size Ø D x L
(V)	(µF)	(Ω)	(Ω)	(mA _{rms})	(mm)
400 (450) 2G	6,8	46,8	16,0	220	10 x 16
	10	31,8	11,0	280	10 x 20
	22	14,5	5,0	430	12,5 x 25
		14,5	5,0	430	16 x 20
	33	9,7	3,5	640	16 x 25
		9,7	3,5	640	18 x 20
	47	6,8	2,3	840	16 x 31,5
		6,8	2,3	840	18 x 25
	68	4,7	1,6	1 000	18 x 31,5
	450 (500) 2W	6,8	46,8	16,0	150
10		31,8	11,0	320	12,5 x 20
22		14,5	5,0	560	16 x 25
		14,5	5,0	560	18 x 20
33		9,7	3,5	700	16 x 31,5
		9,7	3,5	700	18 x 25
47		6,8	2,3	880	18 x 31,5
68		4,7	1,6	1 130	18 x 35,5

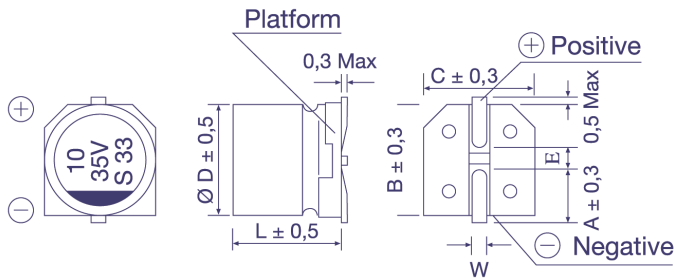
Custom products are available on request.

Order Code SMD, Radial, Snap-In

EC	R	1C	PT	101	M	FF	25	0611	JE xxxxx
Technology	Terminal Type	Rated Voltage Code	Series Code	Capacitance Code (in μF)	Capacitance Tolerance	Lead Form	Terminal/Pitch Size	Dimension	for Specials only
EC = Electrolytic Capacitor	SMD = V Radial = R	For coding please refer to the pages of ratings	CD VS = BS	0,47 = R47	$\pm 20\%$ = M	SMD:		4x7 = 0407	
			CD VH = VH	1,0 = 010	$\pm 10\%$ = K	Taped = FF	Terminal = T2	5x11,5 = 0511	
PC = Polymer Capacitor	Snap-In = S		CD VZ = VZ	2,2 = 2R2	+30 / -10% = Q	Radial:		6,3x11,5 = 0611	
			CD 261 = LK	100 = 101	+50 / -10% = T	Long Lead = LL	2,0mm = 20	35x80 = 3580	
			CD 261X = QX	1000 = 102		Cut 5,0mm = CB	2,5mm = 25	45x100 = 45100	
			CD 262 = QM	10000 = 103		Cut 4,5mm = CC	3,5mm = 35		
			CD 263 = BK			Cut 4,0mm = CD	5,0mm = 50		
			CD 269 = PH			Cut 3,5mm = CE	7,5mm = 75		
			CD 281 = LL			Cut 3,0mm = CF	10,0mm = 10		
			CD 284 = XY			on request: alternative lead forms (axial, 90° - angle, others)			
			CD 287 = GC				12,5mm = 12		
			CD 28L = QL			Snap-In:			
			CD 293 = BZ			4,0mm Pin Length = T4	2 Pin = P2		
			CD 294 = BW			6,3mm Pin Length = T6	3 Pin = P3		
			CD 295 = BC			Soldering Pin = S4	4 Pin = P4		
			CD 296 = KC				5 Pin = P5		
			CD 297 = BB			preferred			
			CD 299 = PG						
			CD 29D = HR						
			CD 29H = QH						
			CD 29L = QL						
			HCP = CP						
			HPM = PM						
			HVC = VC						

Technical Specification SMD Type

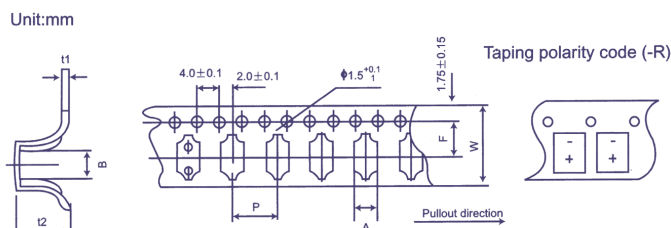
Dimensions



Ø D x L	4x5,4	5x5,4	6,3x5,4	6,3x7,7	8x10,5	8x11,8	10x10,5	10x12,7
A	1,8	2,1	2,4	2,5	2,9	2,9	3,2	3,2
B	4,3	5,3	6,6	6,6	8,3	8,4	10,3	10,4
C	4,3	5,3	6,6	6,6	8,3	8,4	10,3	10,4
E	1,0	1,3	2,2	2,2	3,1	3,1	4,5	4,5
L	5,4	5,4	5,4	7,7	10,5	11,8	10,5	12,7
W	0,5 - 0,8			0,7 - 1,1				

in mm

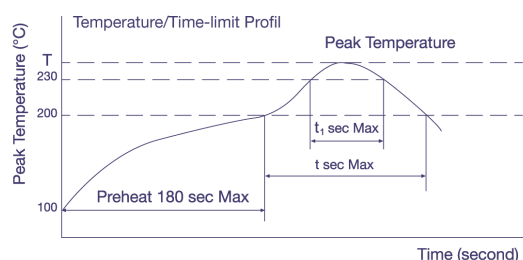
Taping Dimensions



Size (DxL)	w ± 0,3	A ± 0,2	B ± 0,2	P ± 0,1	t2 ± 0,2	F ± 0,1	t1 ± 0,1
4 x 5,4	12,0	5,0	5,0	8,0	5,8	5,5	0,4
5 x 5,4	12,0	6,0	6,0	12,0	5,8	5,5	0,4
6,3 x 5,4	16,0	7,0	7,0	12,0	5,8	7,5	0,4
6,3 x 7,7	16,0	7,0	7,0	12,0	8,4	7,5	0,4
8 x 10,5	24,0	8,7	8,7	16,0	11,0	11,5	0,5
8 x 11,8	24,0	8,7	8,7	16,0	12,3	11,5	0,5
10 x 10,5	24,0	10,7	10,7	16,0	11,0	11,5	0,5
10 x 12,7	24,0	10,7	10,7	16,0	14,0	11,5	0,5

in mm

Soldering Profile (Aluminium Electrolytic Capacitors)

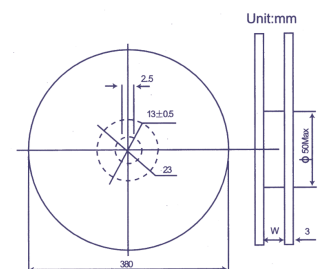


Allowable Range of Peak Temperature

Size	T (°C)	t (second)	t ₁ (second)
Ø 4 ~ 6,3	250	90	40
Ø 8 x 10,5	240	90	30
Ø 10 x 10,5	235	60	30

Diameter	w	D
4; 5	14 ± 1	50 ± 1
6,3	18 ± 1	50 ± 1
8; 10	25 ± 1	50 ± 1
Polymer	25 ± 1	80 ± 1

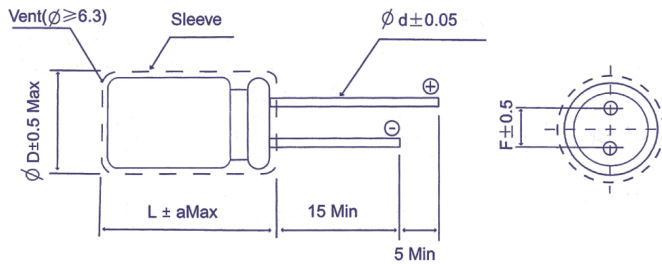
in mm



For more details or Soldering Profiles of Radials or Polymer-Capacitors please contact our local Sales Offices.

Technical Specification Radial Type

Dimensions for loose, long-lead type, (bulk)
Order Code: LL



L	L ≤ 7						L ≥ 11								
	3	4	5	6,3	8	5	6,3	8	10	12,5	16	18	20	22	25
∅ D	3	4	5	6,3	8	5	6,3	8	10	12,5	16	18	20	22	25
F	1	1,5	2,0	2,5	3,5	2,0	2,5	3,5	5,0		7,5		10,0		12,5
∅ d	0,4	0,45				0,5		0,6		0,8		1,0			
a _{Max}	1,0						2,0								

in mm

Dimensions for Ammopack taping
Order Code: FF (FD)

Code	Case Range		Dimensions				Form	Ammopack
	∅ D	L (max)	H ± 0,75	Ho ± 0,5	F ± 0,5	P ± 0,1		
FF	4 ~ 6	13	18,5	-	2,5	12,7	A	
	8	13	18,5	-	3,5	12,7		
	4 ~ 8	7	17,5	16	5	12,7	B	
	5 ~ 6,3	13	18,5					
	8	22	20,0					
	FD	10	22	18,5	-	15,0	A	
12,5		27	18,5	-				
FD	12,5	27	18,5	-	25,4	C		
FF	16 ~ 18	27	18,5	-	7,5	30,0	C	

in mm

Dimensions for loose, short cut leads, (bulk)
Order Code: CC (CB,CD,CE,CF)

Straight Lead						Bended Lead	
Code	CB	CC	CD	CE	CF		
I	5,0 ± 0,5	4,5 ± 0,5	4,0 ± 0,5	3,5 ± 0,5	3,0 ± 0,5		

preferred

in mm