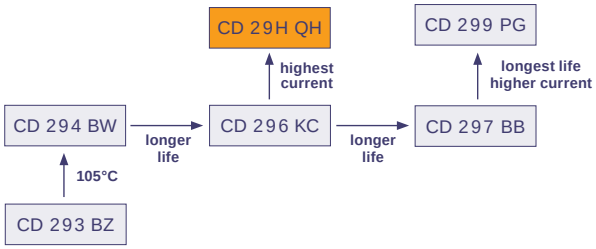
CD 29H QH Series

5000h at 105°C

- Long Useful Life
- Highest Ripple Current
- Miniaturized
- Industrial Power Supplies and Inverters





Item	Characteristics
Operating Temperature Range (°C)	-40 ~ +105
Voltage Range (V)	160 ~ 450
Capacitance Range (µF)	47 ~ 2200
Capacitance Tolerance (20°C, 120Hz)	± 20%
Leakage Current (µA)	After 5 minutes at 20°C application of rated voltage, leakage current is not more than 0,01CV or 1,5mA, whichever is smaller 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 / 0,12
Stability at Low Temperature (Impedance Ratio at 120Hz)	Rated Voltage (V): 160 ~ 450 $Z_{-40°C} / Z_{+20°C}$: 4

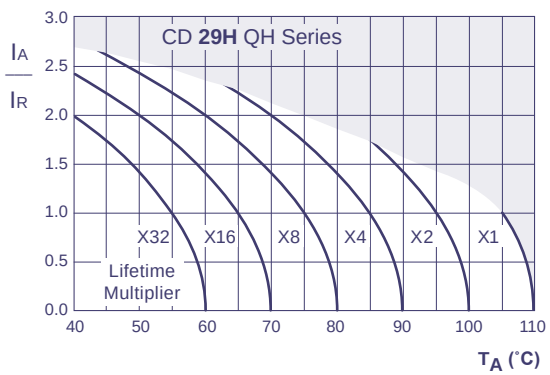
	Useful Life		Load Life	Endurance Test	Shelf Life
Lifetime	5000h	>100000h	3000h	3000h	1000h
Leakage Current	Not more than specified value		Not more than specified value	Not more than specified value	Not more than specified value
Capacity Change	Within ± 30% of initial value		Within ± 20% of initial value	Within ± 20% of initial value	Within ± 20% of initial value
Dissipation Factor	Not more than 300% of specified value		Not more than 200% of specified value	Not more than 130% 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	50°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	0,87	1,00	1,15	1,35	1,40

Lifetime Diagram



I_A = actual ripple current at 120Hz, I_R = rated ripple current at 120Hz, 105°C
Multiplier of Useful Life as a function of ambient temperature and ripple current load

Snap-In

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Ratings for CD **29H** QH Series

V_{DC} (Surge Voltage) Code	Rated Capa-citance	Max ESR 20°C, 120Hz	Typ ESR 20°C, 120Hz	Max Ripple Current 105°C, 120Hz	Size Ø D x L
(V)	(µF)	(mΩ)	(mΩ)	(Arms)	(mm)
160 (200) 2C	330	603	355	1,50	22 x 25
	390	511	306	1,60	25 x 25
	470	424	245	1,80	22 x 35
	560	356	210	2,10	22 x 35
		356	210	2,20	25 x 30
		356	210	2,10	30 x 25
	680	293	175	2,60	22 x 40
		293	175	2,50	25 x 35
	820	243	145	2,80	22 x 50
		243	145	2,70	25 x 40
		243	145	2,90	30 x 30
		243	145	2,80	35 x 25
	1000	199	119	3,30	25 x 45
		199	119	3,40	30 x 35
		199	119	3,30	35 x 30
	1200	166	99	3,70	25 x 50
		166	99	3,80	30 x 40
		166	99	3,60	35 x 35
	1500	133	79	4,40	30 x 45
		133	79	4,30	35 x 40
	1800	111	73	4,40	35 x 45
	2200	91	58	5,90	35 x 50
200 (250) 2D	220	905	550	1,10	22 x 25
	270	737	460	1,17	22 x 25
	330	603	370	1,40	22 x 30
		603	370	1,40	25 x 25
	390	511	310	1,45	22 x 30
	470	424	260	1,55	22 x 35
		424	260	1,55	25 x 30
		424	260	1,60	30 x 25
	560	356	220	1,65	22 x 45
		356	220	1,65	25 x 35
	680	293	180	1,68	22 x 50
		293	180	1,92	25 x 40
		293	180	1,92	30 x 30
		293	180	2,20	35 x 25
	820	243	150	2,20	25 x 45
		243	150	2,20	30 x 35
		243	150	2,40	35 x 30
	1000	199	120	2,40	30 x 40
		199	120	2,40	35 x 35
	1200	166	100	2,75	30 x 45
		166	100	2,75	35 x 40
	1500	133	80	3,45	35 x 40
	1800	111	68	4,00	35 x 45
	2200	91	56	4,50	35 x 50
250 (300) 2E	180	1106	620	1,00	22 x 25
	220	905	570	1,20	22 x 30
		905	570	1,20	25 x 25
	270	737	470	1,25	22 x 35
	330	603	380	1,30	22 x 40
		603	380	1,35	25 x 30
		603	380	1,35	30 x 25
	390	511	325	1,40	22 x 45
		511	325	1,45	25 x 35
	470	424	268	1,65	22 x 50
		424	268	1,65	30 x 30
		424	268	1,65	35 x 25
	560	356	225	1,85	25 x 45
		356	225	1,85	30 x 35
		356	225	1,85	35 x 30
	680	293	185	2,20	25 x 50
		293	185	2,20	30 x 40
	820	243	153	2,50	30 x 45
		243	153	2,50	30 x 50
	1000	199	125	2,90	30 x 50
		199	125	2,90	35 x 40
	1200	166	105	3,30	35 x 45
	1500	133	85	3,80	35 x 50

V_{DC} (Surge Voltage) Code	Rated Capa-citance	Max ESR 20°C, 120Hz	Typ ESR 20°C, 120Hz	Max Ripple Current 105°C, 120Hz	Size Ø D x L
(V)	(µF)	(mΩ)	(mΩ)	(Arms)	(mm)
350 (400) 2V	68	2926	1280	0,70	22 x 25
	100	1990	1060	0,87	22 x 30
		1990	1060	0,87	25 x 25
	120	1658	880	0,90	22 x 35
	150	1327	700	0,98	22 x 40
		1327	700	1,02	25 x 30
		1327	700	1,02	30 x 25
	180	1106	580	1,11	22 x 45
		1106	580	1,11	25 x 35
		1106	580	1,12	30 x 30
	220	905	480	1,16	22 x 50
		905	480	1,20	25 x 40
		905	480	1,20	35 x 25
	270	737	390	1,26	25 x 50
		737	390	1,31	30 x 35
		737	390	1,26	35 x 30
	330	603	320	1,45	30 x 45
		603	320	1,45	35 x 35
	390	511	270	1,58	30 x 50
		511	270	1,58	35 x 40
	470	424	225	1,69	35 x 45
	560	356	190	1,89	35 x 50
400 (450) 2G	47	3387	1835	0,40	22 x 25
	68	2341	1260	0,48	22 x 25
	82	1941	1050	0,57	22 x 30
		1941	1050	0,56	25 x 25
	100	1592	860	0,65	22 x 35
		1592	860	0,65	25 x 25
	120	1327	718	0,71	22 x 35
		1327	718	0,71	25 x 30
		1327	718	0,71	30 x 25
	150	1062	575	0,85	22 x 40
		1062	575	0,85	25 x 35
		1062	575	0,85	30 x 25
	180	885	479	1,00	22 x 50
		885	479	1,00	25 x 40
		885	479	1,00	30 x 30
		885	479	1,00	35 x 25
	220	724	292	1,20	25 x 45
		724	292	1,20	30 x 35
		724	292	1,20	35 x 30
	270	590	319	1,35	25 x 50
		590	319	1,35	30 x 40
		590	319	1,35	35 x 30
	330	483	260	1,60	30 x 45
		483	260	1,60	35 x 35
	390	409	220	1,80	30 x 50
		409	220	1,80	35 x 40
	470	339	183	2,10	35 x 45
	560	285	154	2,30	35 x 50
450 (500) 2W	56	2843	1360	0,50	22 x 25
	68	2341	1170	0,60	22 x 30
	82	1941	970	0,65	22 x 35
	100	1592	790	0,72	22 x 35
		1592	790	0,72	25 x 30
		1592	790	0,72	30 x 25
	120	1327	660	0,80	22 x 45
		1327	660	0,80	25 x 35
	150	1062	530	0,95	22 x 50
		1062	530	0,95	25 x 40
		1062	530	0,95	30 x 30
		1062	530	0,95	35 x 25
	180	885	440	1,05	25 x 45
		885	440	1,05	30 x 35
	220	724	360	1,30	25 x 50
		724	360	1,30	30 x 40
		724	360	1,30	35 x 30
	270	590	295	1,50	30 x 45
		590	295	1,50	35 x 35
	330	483	240	1,90	30 x 50
		483	240	1,90	35 x 40
	390	409	205	1,90	35 x 45
	470	339	170	2,20	35 x 50

Custom products are available on request.

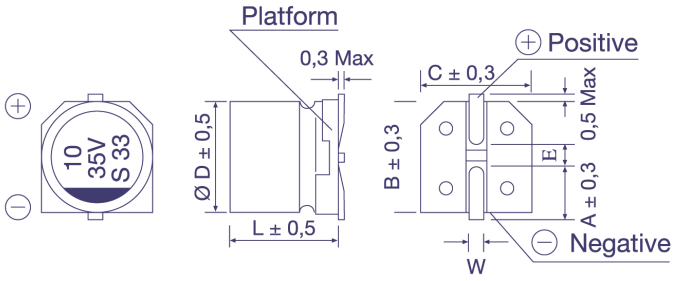
Part Number System

Order Code SMD, Radial, Snap-In

EC	R	1C	PT	101	M	FF	25	0611	JExxxxx
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	For coding please refer to the pages of ratings	CD VS = BS	0,47 = R47	±20% = M	SMD:		4x7 = 0407	
	Radial = R		CD VH = VH	1,0 = 010	±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)	12,5mm = 12		
			CD 287 = GC						
			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						
			CD 299 = PG			**preferred**			
			CD 29D = HR						
			CD 29H = QH						
			CD 29L = QL						
			HCP = CP						
			HPM = PM						
			HVC = VC						

Technical Specification SMD Type

Dimensions

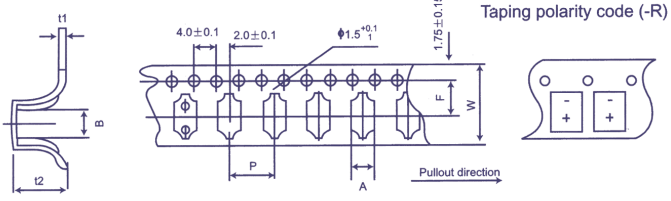


Ø D x L	4 x 5,4	5 x 5,4	6,3 x 5,4	6,3 x 7,7	8 x 10,5	8 x 11,8	10 x 10,5	10 x 12,7
A	1,8	2,1	2,4	2,5	2,9	2,9	3,2	3,2
B	4,3	5,3	6,6	6,6	8,3	8,4	10,3	10,4
C	4,3	5,3	6,6	6,6	8,3	8,4	10,3	10,4
E	1,0	1,3	2,2	2,2	3,1	3,1	4,5	4,5
L	5,4	5,4	5,4	7,7	10,5	11,8	10,5	12,7
W	0,5 - 0,8				0,7 - 1,1			

in mm

Taping Dimensions

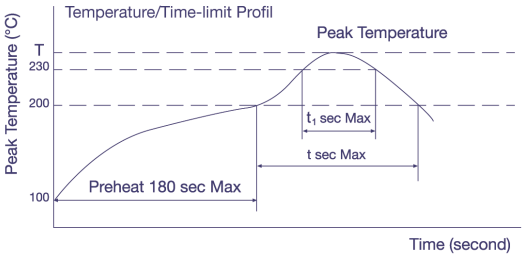
Unit:mm



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)



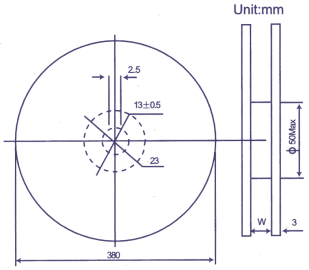
Allowable Range of Peak Temperature

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

Unit:mm

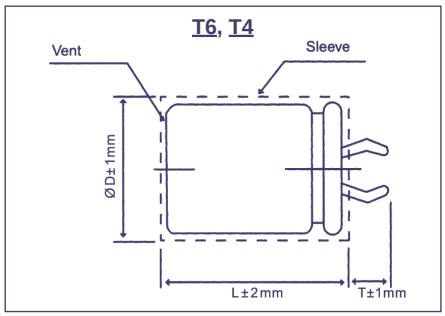


For more details or Soldering Profiles of Radials or Polymer-Capacitors please contact our local Sales Offices.

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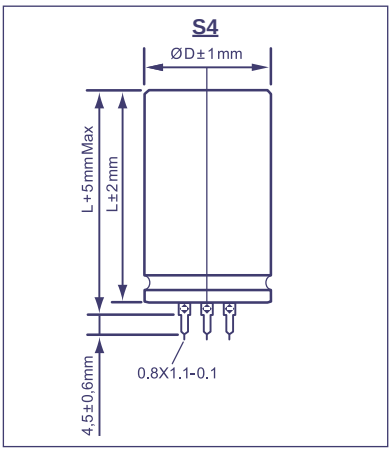
Technical Specification Snap-In Type

Pin Type: Snap-In
Order Code: T6, T4

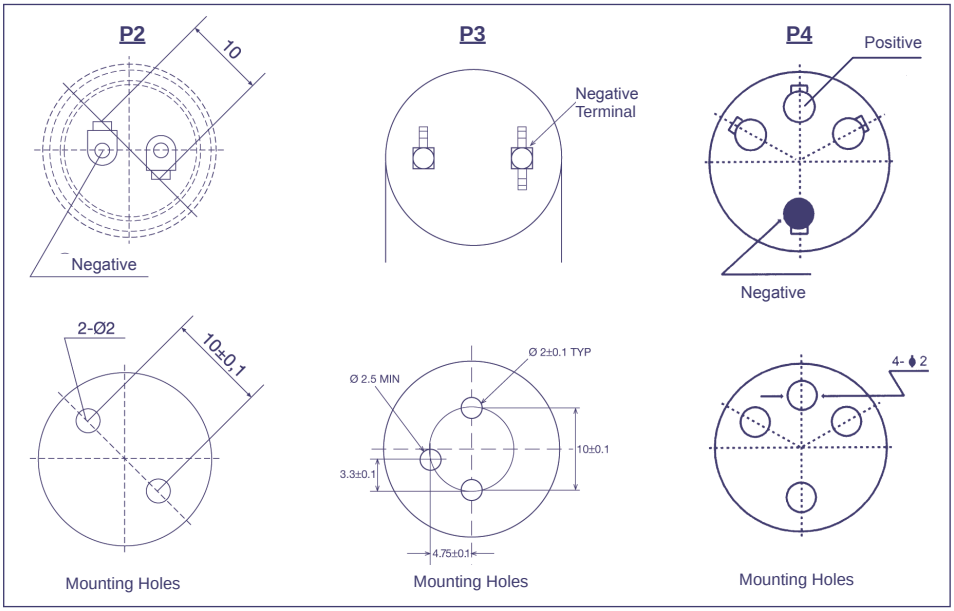


Terminal	T6	T4
Pin Length T	6,3	4,0

Pin Type: Soldering
Order Code: S4

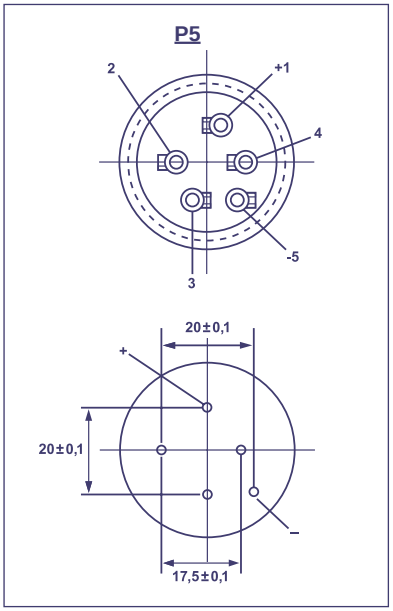


Snap-In Terminal
Order Code: P2, P3, P4



P3 only T4 Terminal

Soldering Terminal
Order Code: P5



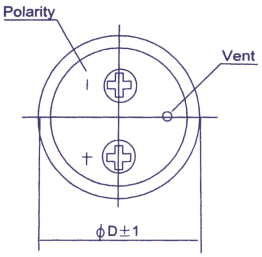
Order Code Screw Type

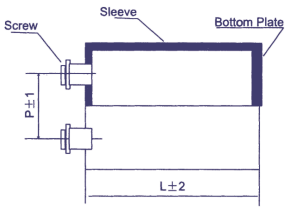
EC	G	1C	BP	101	M	B	E	160	A361	JExxxxx
Technology	Terminal Type	Rated Voltage Code	Series Code	Capacitance Code	Capacitance Tolerance	Mounting	Diameter	Length	For Terminal Code see tables below	for Specials only
EC = Electrolytic Capacitor	Screw = G	For coding please refer to the pages of ratings	CD 135 = BP	100 = 101	±20% = M	Bolt = B	36 = A	53 = 053		
			CD 136 = PK	1000 = 102	±10% = K	No double sleeve = N	40 = B	65 = 065		
			CD 137 = PX	10000 = 103	+30 / -10% = Q	2 stoppers bracket + double sleeve* = I	51 = C	96 = 096		
			CD 138 = PC		+20 / -0% = R	3 stoppers bracket + double sleeve* = Y	64 = D	100 = 100		
			CD 139 = BL		+50 / -10% = T	No bracket, but double sleeve* = D	77 = E	115 = 115		
					preferred	* Double sleeve for diameter ≥ 51 only	90 = F	236 = 236		
							101 = G			

Technical Specification Screw Type

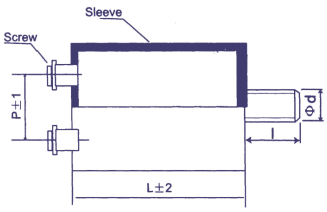
Dimensions

Standard Housing
Order Code: I, Y, D, N





Bolt Housing
Order Code: B



Ø D	Ø d	l
Ø 36	M8	12
≥ Ø 51	M12	16

in mm

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