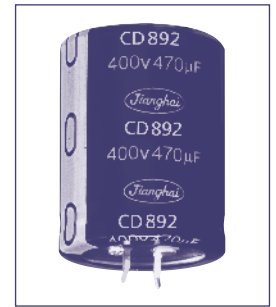
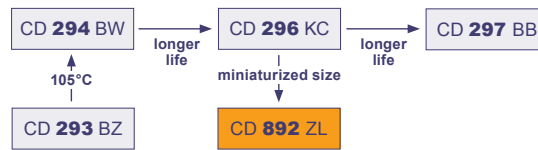


5000h at 105°C

- Long Life at High Temperature
- High Ripple Current
- Professional Power Supplies
- Miniaturized



Item	Characteristics		
Operating Temperature Range (°C)	-25 ~ +105		
Voltage Range (V)	400 ~ 450		
Capacitance Range (µF)	47 ~ 1500		
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)	<b>Rated Voltage (V)</b>	<b>400</b>	<b>420</b> <b>450</b>
	Tan δ (max)	0,15	0,20
Stability at Low Temperature (Impedance Ratio at 120Hz)	<b>Rated Voltage (V)</b>	<b>400 ~ 450</b>	
	Z <sub>-25°C</sub> / Z <sub>+20°C</sub>	4	

	Useful Life		Load Life	Endurance Test	Shelf Life
	Lifetime	<b>5000h</b>	>200000h	3000h	4000h
Leakage Current	Not more than specified value		Not more than specified value	Not more than specified value	Not more than specified value
Capacitance 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:	U <sub>R</sub>	U <sub>R</sub>	U <sub>R</sub>	U <sub>R</sub>	U <sub>R</sub> = 0
Applied Voltage	I <sub>R</sub>	1,4 x I <sub>R</sub>	I <sub>R</sub>	I <sub>R</sub> = 0	I <sub>R</sub> = 0
Applied Current	105°C	40°C	105°C	105°C	105°C
Applied Temperature	≤ 1%	≤ 1%	0%, guaranteed	IEC 60384	0%
Outlier Percentage	After test: U <sub>R</sub> to be applied for 30min >24h before measurement				

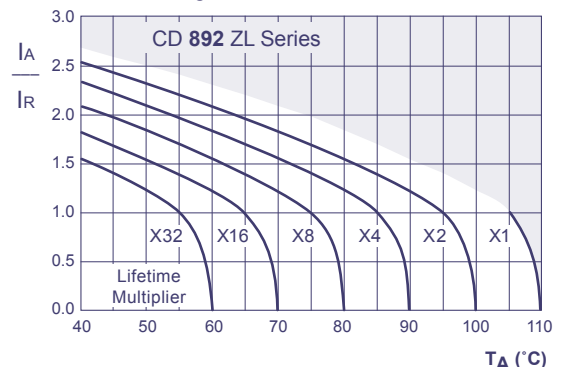
## Multiplier for Ripple Current

Frequency Coefficient

Frequency	50Hz	120Hz	1kHz	10kHz	100kHz
Coefficient	0,80	1,00	1,14	1,14	1,20

## Multiplier for Lifetime

Lifetime Diagram



I<sub>A</sub> = actual ripple current at 120Hz, I<sub>R</sub> = rated ripple current at 120Hz, 105°C  
Multiplier of Useful Life as a function of ambient temperature and ripple current load

U <sub>R,DC</sub> (Surge Voltage) Code	Rated Capacitance	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)	(mArms)	(mm)
400 (450) 2G	47	4233	2350	390	22 x 20
	82	2426	1340	560	22 x 25
	100	1989	1035	580	22 x 30
	150	1326	690	730	25 x 30
	180	1105	575	820	25 x 35
	220	904	471	860	30 x 30
	330	603	314	1110	25 x 50
		603	314	1110	30 x 40
		603	314	1100	35 x 30
	390	510	266	1150	30 x 45
		510	266	1260	35 x 35
	470	424	221	1310	30 x 50
		424	221	1180	35 x 35
		424	221	1300	35 x 40
		424	221	1650	40 x 40
	560	356	185	1750	35 x 45
	680	293	153	2000	30 x 80
		293	153	2300	35 x 70
		293	153	2000	35 x 50
		293	153	2150	40 x 40
1000	199	130	3300	35 x 100	
	199	130	3800	40 x 80	
	199	130	3500	40 x 70	
1200	166	108	4200	40 x 80	
	166	108	3700	40 x 75	
1500	133	90	4250	40 x 100	
420 (470) 2X	120	2210	1100	710	25 x 30
	150	1769	690	720	22 x 40
		1769	690	720	35 x 30
	180	1474	575	810	25 x 30
	220	1206	471	850	25 x 45
	270	982	500	1100	25 x 50
	330	700	350	1200	30 x 45
		700	350	1200	35 x 35
	390	680	340	1300	30 x 50
	470	424	221	1600	30 x 55
680	390	195	1800	35 x 60	
450 (500) 2W	47	5644	2890	350	20 x 25
		5644	2890	420	22 x 25
	100	2653	1327	640	22 x 35
		2653	1327	600	22 x 30
		2653	1327	800	25 x 30
	180	1474	737	870	25 x 40
		1474	737	860	30 x 30
	220	1206	603	940	25 x 45
		1206	603	950	30 x 35
		1206	603	900	30 x 30
	330	804	402	1050	25 x 55
		804	402	1100	30 x 45
	390	680	341	1310	35 x 40
	470	565	286	1400	35 x 40
		565	286	1500	40 x 40
	560	474	241	2100	35 x 60
	680	390	200	2400	35 x 70
	820	323	165	2700	35 x 70
		323	165	2800	40 x 70
		323	165	3000	45 x 45
1000	265	135	3300	40 x 100	
	265	135	3100	40 x 80	
1200	221	115	3500	40 x 90	
1500	177	100	3800	40 x 100	

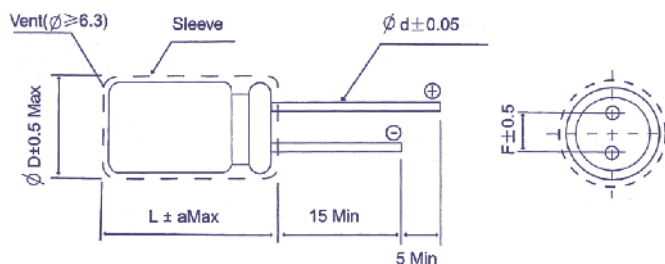
## Order Code **SMD, Radial, Snap-In**

EC	R	1C	PT	101	M	FF	25	0611	JExxxx	
Technology	Terminal Type	Rated Voltage Code	Series Code	Capacitance Code (in $\mu\text{F}$ )	Capacitance Tolerance	Lead Form	Terminal/Pitch Size	Size $\varnothing D \times L$	for Specials only	
EC = Electrolytic Capacitor	SMD = V	2,5V = 0E	CD <b>110</b> = PT	0,47 = R47	<b><math>\pm 20\%</math></b> = M	SMD:		4x7 = 0407		
	Radial = R	4V = 0G	CD <b>11GL</b> = GL	1,0 = 010	$\pm 10\%$ = K	<b>Taped</b> = FF	Terminal = T2	5x11,5 = 0511		
PC = Polymer Capacitor	Snap-In = S	6,3V = 0J	CD <b>261</b> = LK	2,2 = 2R2	+20 / -0% = R	Radial:		6,3x11,5 = 0611		
		10V = 1A	CD <b>261X</b> = QX	10 = 100	+20 / -10% = V	<b>Taped</b> = FF	2,0mm = 20	35x80 = 3580		
		16V = 1C	CD <b>262</b> = QM	100 = 101	+30 / -10% = Q	<b>Long Lead</b> = LL	2,5mm = 25	45x100 = 45100		
		20V = 1D	CD <b>263</b> = BK	1000 = 102	+50 / -10% = T	Cut 5,0mm = CB	3,5mm = 35			
		25V = 1E	CD <b>269</b> = PH	10000 = 103		<b>Cut 4,5mm</b> = CC	5,0mm = 50			
		35V = 1V	CD <b>269L</b> = HL			Cut 4,0mm = CD	7,5mm = 75			
		40V = 1G	CD <b>281</b> = LL			Cut 3,5mm = CE	10,0mm = 10			
		50V = 1H	CD <b>281L</b> = LH			Cut 3,0mm = CF	12,5mm = 12			
		63V = 1J	CD <b>287</b> = GC			on request: alternative lead forms (Keyed Polarity, axial, 90° - angle, others)				
		80V = 1K	CD <b>28L</b> = QL			<b>Snap-In:</b>				
		100V = 2A	CD <b>293</b> = BZ			4,0mm Pin Length = T4	2 Pin = P2			
		160V = 2C	CD <b>294</b> = BW			<b>6,3mm Pin Length = T6</b>	3 Pin = P3			
		180V = 2K	CD <b>295</b> = BC			Soldering Pin = S4	4 Pin = P4			
		200V = 2D	CD <b>296</b> = KC			on request: alternative pin types				
		250V = 2E	CD <b>297</b> = BB			5 Pin = P5				
		315V = 2F	CD <b>299</b> = PG							
		350V = 2V	CD <b>29D</b> = HR							
		385V = 2J	CD <b>29H</b> = QH							
		400V = 2G	CD <b>29L</b> = QL							
		415V = 2P	CD <b>891</b> = ZJ							
		420V = 2X	CD <b>892</b> = ZL							
		450V = 2W	CD <b>895</b> = ZK							
		500V = 2H								
		550V = 2Y								
			Polymer on request							

## Technical Specification **Radial Type**

Dimensions for loose, long-lead type (bulk)

Order Code: LL



L	L ≤ 7					L ≥ 11									
$\varnothing D$	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	15,0	17,5	20,0
$\varnothing d$	0,4	0,45				0,5	0,6			0,8	1,0				
$a_{\text{Max}}$	1,0					2,0									

For diameter 20 pitch 7,5 on request.

in mm

Dimensions for loose, short cut leads (bulk)

Order Code: CC (CB, CD, CE, CF)

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

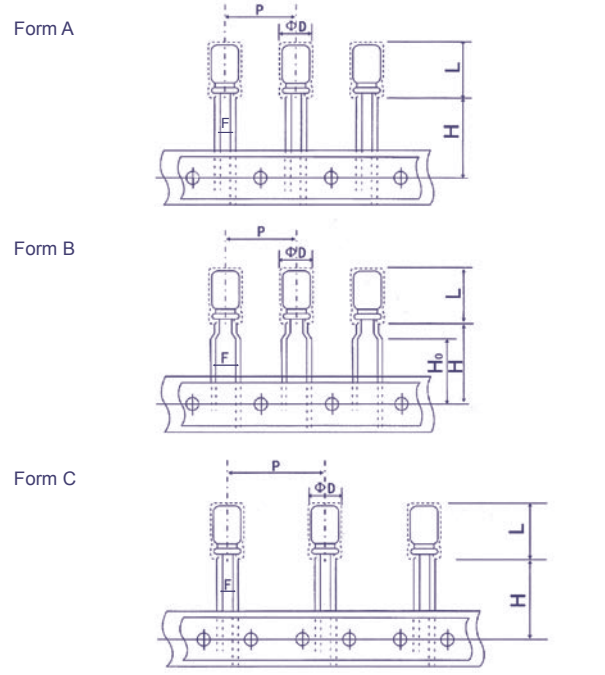
preferred

in mm

## Dimensions for Ammopack taping

Order Code: FF (FD)

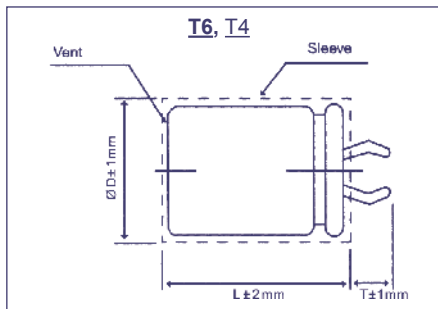
Code	Case Range		Dimensions				Form
	Ø D	L (max)	H ± 0,75	Ho ± 0,5	F <sup>+0,8</sup> <sub>-0,2</sub>	P ± 0,1	
FF	4 ~ 5	13	18,5	-	2,5	12,7	B
	6,3	13	18,5	-	2,5	12,7	A
	8	13	18,5	-	3,5	12,7	
	4 ~ 8	7	17,5	16	5,0	12,7	B
	5 ~ 6,3	13	18,5				
	8	22	20,0				
	10	22	18,5				-
12,5	27	18,5	-	25,4	C		
FD	12,5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



in mm

## Technical Specification Snap-In Type

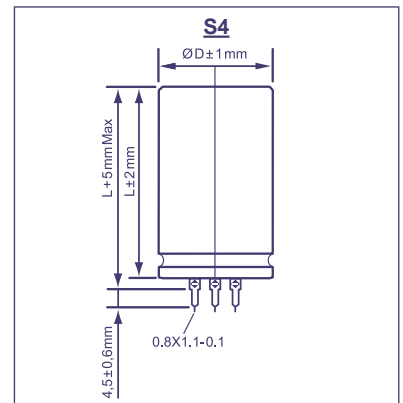
Pin Type: Snap-In Order Code: T6, T4



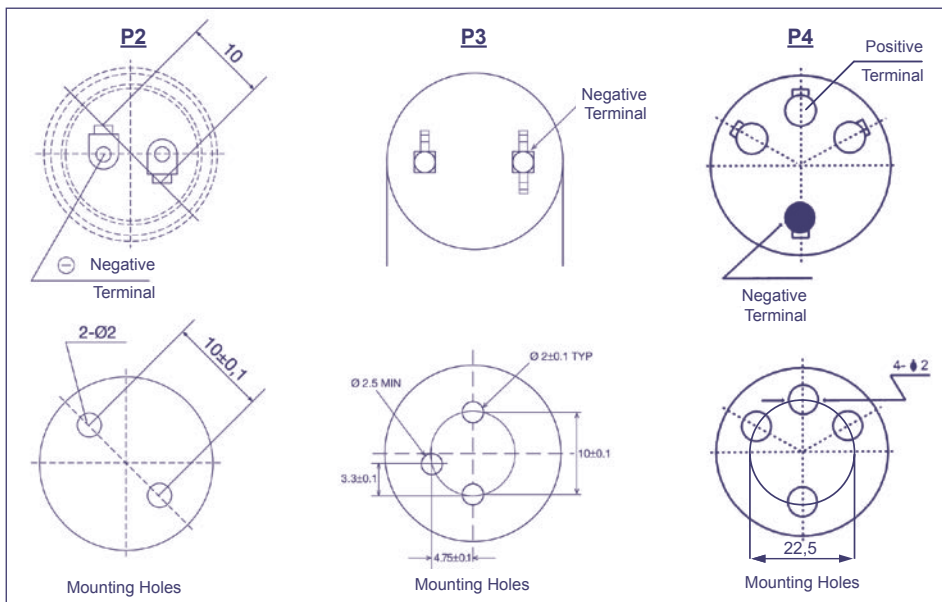
Terminal	T6	T4
Pin Length	6,3	4,0

**preferred**

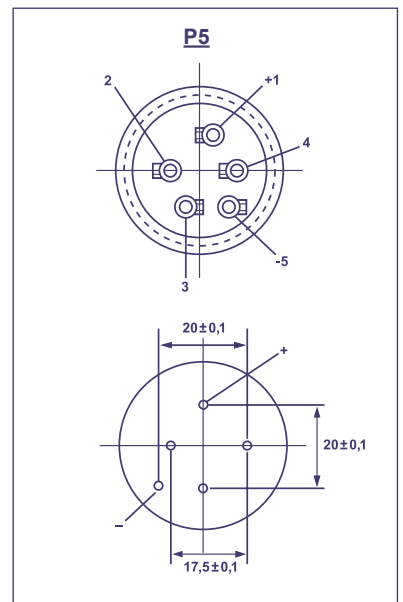
Pin Type: Soldering Order Code: S4



Snap-In Terminal Order Code: P2, P3, P4 and Mounting Holes (Top view)



Soldering Terminal Order Code: P5



P3 only as T4 Terminal available, P4 for Ø D ≥ 30mm, P5 for Ø D ≥ 40mm