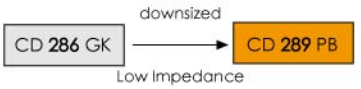
CD 289 PB Series

2000h at 105℃

- Downsized
- low Impedance
- Suited for switching power supplies

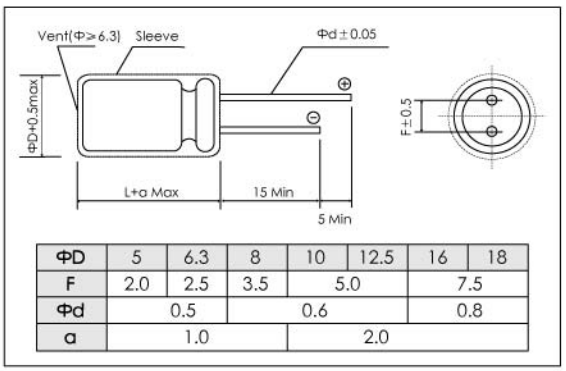




Items	Characteristics
Operating Temperature Range (℃)	-55 ~ +105
Voltage Range (V)	6.3 ~ 50
Capacitance Range (μF)	22 ~ 18000
Capacitance Tolerance (20℃, 120Hz)	± 20%
Leakage Current (μA)	After 2 minutes at 20℃ application of rated voltage, leakage current is not more than 0.02CV or 3, whichever is greater. C: Nominal Capacitance (μF) V: Rated Voltage (V)
Dissipation Factor (20℃, 120Hz)	WV (V): 6.3 / 10 / 16 / 25 / 35 / 50 Tan δ (max): 0.22 / 0.19 / 0.16 / 0.14 / 0.12 / 0.10 When nominal capacitance is over 1000μF tan δ shall be added 0.02 to the listed value with increase of every 1000μF
Characteristics of Low Temperature	Impedance at -10℃, 100kHz < 200% of initial specified value at 20℃, 100kHz (Impedance ratio at 100kHz)

	Useful Life		Load Life	Endurance Test	Shelf Life
Lifetime	Φ ⩽ 8 : 2000h Φ > 8 : 4000h	Φ ⩾ 8 : 180000h	Φ ⩽ 8 : 1000h Φ > 8 : 2000h	Φ ⩽ 8 : 1500h Φ > 8 : 3000h	1000h
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 200% of specified value	Not more than 200% of specified value
Condition: Applied Voltage Applied Current Applied Temperature Failure Rate Level	U_R I_R 105℃ ⩽ 1% Failure Rate	U_R 1.4 x I_R 40℃ ⩽ 1% Failure Rate	U_R I_R 105℃ guaranteed	U_R I_R = 0 105℃	U_R = 0 I_R = 0 105℃ After test: U_R to be applied for 30min >24h before measurement

Dimensions mm



ΦD	5	6.3	8	10	12.5	16	18
F	2.0	2.5	3.5	5.0		7.5	
Φd	0.5		0.6			0.8	
a	1.0		2.0				

Frequency Coefficient

Frequency / Cap (μF)	120Hz	1kHz	10kHz	⩾100kHz
22 ~ 180	0.40	0.75	0.90	1.00
220 ~ 560	0.50	0.85	0.94	1.00
680 ~ 1800	0.60	0.87	0.95	1.00
2200 ~ 3900	0.75	0.90	0.95	1.00
4700 ~ 18000	0.85	0.95	0.98	1.00

Temperature Coefficient

Temperature(℃)	+70	+85	+105
Coefficient	2.0	1.7	1.0

MINIATURE

Assistance needed? Please contact JIANGHAI EUROPE GmbH +49 (0)2151 652088-72 or info@jianghai-europe.com

Ratings for CD 289 PB Series

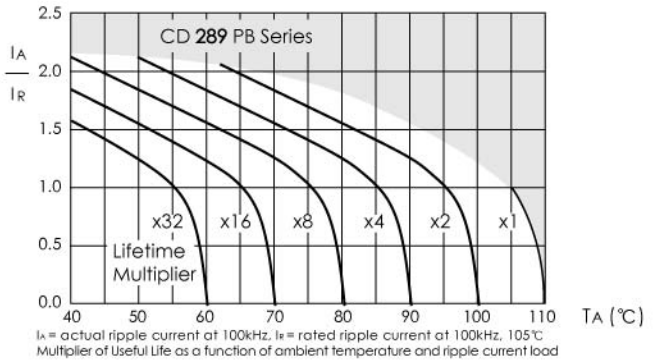
Ur (Surge Voltage) Code	Rated Capa-citance	Max ESR 20℃, 120Hz	Max Imp 20℃, 100kHz	Max Imp -10℃, 100kHz	Rated Ripple Current 105℃, 100kHz	Size Φ D x L	P/N
(V)	(μF)	(Ω)	(Ω)	(Ω)	(mArms)	(mm)	-
6.3 (7.2) 0J	150	1.946	0.5	1.0	175	5×11.5	ECR0JPB151M□□050011
	330	0.885	0.25	0.50	290	6.3×11.5	ECR0JPB331M□□063011
	470	0.621	0.18	0.36	400	6.3×15	ECR0JPB471M□□063015
	680	0.429	0.12	0.24	555	8×11.5	ECR0JPB681M□□080011
	820	0.356	0.090	0.18	760	10×12.5	ECR0JPB821M□□100012
	1000	0.292	0.090	0.18	730	8×16	ECR0JPB102M□□080016
	1200	0.243	0.080	0.16	810	8×20	ECR0JPB122M□□080020
		0.243	0.068	0.136	1050	10×16	ECR0JPB122M□□100016
	1500	0.195	0.052	0.104	1220	10×20	ECR0JPB152M□□100020
	2200	0.145	0.045	0.090	1440	10×25	ECR0JPB222M□□100025
	2700	0.118	0.037	0.074	1690	10×30	ECR0JPB272M□□100030
	3300	0.105	0.038	0.076	1660	12.5×20	ECR0JPB332M□□125020
	3900	0.088	0.030	0.060	1950	12.5×25	ECR0JPB392M□□125025
	4700	0.079	0.025	0.050	2310	12.5×30	ECR0JPB472M□□125030
	5600	0.071	0.022	0.044	2510	12.5×35	ECR0JPB562M□□125035
		0.071	0.029	0.058	2210	16×20	ECR0JPB562M□□160020
	6800	0.062	0.017	0.034	2870	12.5×40	ECR0JPB682M□□125040
		0.062	0.022	0.044	2560	16×25	ECR0JPB682M□□160025
		0.062	0.028	0.056	2490	18×20	ECR0JPB682M□□180020
	8200	0.058	0.019	0.038	3010	16×31.5	ECR0JPB822M□□160031
	10000	0.053	0.017	0.034	3150	16×35.5	ECR0JPB103M□□160035
		0.053	0.020	0.040	2740	18×25	ECR0JPB103M□□180025
	12000	0.049	0.015	0.030	3710	16×40	ECR0JPB123M□□160040
		0.049	0.018	0.036	3330	18×31.5	ECR0JPB123M□□180031
	15000	0.044	0.016	0.032	3680	18×35.5	ECR0JPB153M□□180035
	18000	0.041	0.015	0.030	3800	18×40	ECR0JPB183M□□180040
10 (13) 1A	100	2.521	0.5	1.0	175	5×11.5	ECR1APB101M□□050011
	220	1.146	0.25	0.50	290	6.3×11.5	ECR1APB221M□□063011
	330	0.764	0.18	0.36	400	6.3×15	ECR1APB331M□□063015
	470	0.536	0.12	0.24	555	8×11.5	ECR1APB471M□□080011
	680	0.371	0.090	0.18	730	8×16	ECR1APB681M□□080016
		0.371	0.090	0.18	760	10×12.5	ECR1APB681M□□100012
	1000	0.252	0.080	0.16	810	8×20	ECR1APB102M□□080020
		0.252	0.068	0.136	1050	10×16	ECR1APB102M□□100016
	1200	0.210	0.052	0.104	1220	10×20	ECR1APB122M□□100020
	1500	0.168	0.045	0.090	1440	10×25	ECR1APB152M□□100025
	1800	0.140	0.037	0.074	1690	10×30	ECR1APB182M□□100030
	2200	0.127	0.038	0.076	1660	12.5×20	ECR1APB222M□□125020
	3300	0.092	0.030	0.060	1950	12.5×25	ECR1APB332M□□125025
	3900	0.078	0.025	0.050	2310	12.5×30	ECR1APB392M□□125030
		0.078	0.029	0.058	2210	16×20	ECR1APB392M□□160020
	4700	0.071	0.022	0.044	2510	12.5×35	ECR1APB472M□□125035
	5600	0.064	0.017	0.034	2870	12.5×40	ECR1APB562M□□125040
		0.064	0.022	0.044	2560	16×25	ECR1APB562M□□160025
		0.064	0.028	0.056	2490	18×20	ECR1APB562M□□180020
	6800	0.057	0.019	0.038	3010	16×31.5	ECR1APB682M□□160031
		0.057	0.020	0.040	2740	18×25	ECR1APB682M□□180025
	8200	0.053	0.017	0.034	3150	16×35.5	ECR1APB822M□□160035
		0.053	0.018	0.036	3330	18×31.5	ECR1APB822M□□180031
	10000	0.049	0.015	0.030	3710	16×40	ECR1APB103M□□160040
		0.049	0.016	0.032	3680	18×35.5	ECR1APB103M□□180035
	12000	0.045	0.015	0.030	3800	18×40	ECR1APB123M□□180040

Ur (Surge Voltage) Code	Rated Capa-citance	Max ESR 20℃, 120Hz	Max Imp 20℃, 100kHz	Max Imp -10℃, 100kHz	Rated Ripple Current 105℃, 100kHz	Size Φ D x L	P/N
(V)	(μF)	(Ω)	(Ω)	(Ω)	(mArms)	(mm)	-
16 (20) 1C	47	4.517	0.5	1.0	175	5×11.5	ECR1CPB470M□□050011
	100	2.123	0.25	0.50	290	6.3×11.5	ECR1CPB101M□□063011
	220	0.965	0.18	0.36	400	6.3×15	ECR1CPB221M□□063015
	330	0.643	0.12	0.24	555	8×11.5	ECR1CPB331M□□080011
	470	0.452	0.090	0.18	730	8×16	ECR1CPB471M□□080016
		0.452	0.090	0.18	760	10×12.5	ECR1CPB471M□□100012
	560	0.379	0.080	0.16	810	8×20	ECR1CPB561M□□080020
	680	0.312	0.068	0.136	1050	10×16	ECR1CPB681M□□100016
	1000	0.212	0.052	0.104	1220	10×20	ECR1CPB102M□□100020
	1200	0.177	0.045	0.090	1440	10×25	ECR1CPB122M□□100025
	1500	0.142	0.037	0.074	1690	10×30	ECR1CPB152M□□100030
		0.142	0.038	0.076	1660	12.5×20	ECR1CPB152M□□125020
	2200	0.109	0.030	0.060	1950	12.5×25	ECR1CPB222M□□125025
	2700	0.088	0.025	0.050	2310	12.5×30	ECR1CPB272M□□125030
		0.088	0.029	0.058	2210	16×20	ECR1CPB272M□□160020
	3300	0.080	0.022	0.044	2510	12.5×35	ECR1CPB332M□□125035
	3900	0.068	0.017	0.034	2870	12.5×40	ECR1CPB392M□□125040
		0.068	0.022	0.044	2560	16×25	ECR1CPB392M□□160025
		0.068	0.028	0.056	2490	18×20	ECR1CPB392M□□180020
	4700	0.062	0.019	0.038	3010	16×31.5	ECR1CPB472M□□160031
		0.062	0.020	0.040	2740	18×25	ECR1CPB472M□□180025
	5600	0.057	0.017	0.034	3150	16×35.5	ECR1CPB562M□□160035
		0.057	0.018	0.036	3330	18×31.5	ECR1CPB562M□□180031
	6800	0.051	0.015	0.030	3710	16×40	ECR1CPB682M□□160040
	8200	0.049	0.016	0.032	3680	18×35.5	ECR1CPB822M□□180035
	10000	0.045	0.015	0.030	3800	18×40	ECR1CPB103M□□180040
25 (32) 1E	47	3.953	0.5	1.0	175	5×11.5	ECR1EPB470M□□050011
	100	1.858	0.25	0.50	290	6.3×11.5	ECR1EPB101M□□063011
	150	1.238	0.18	0.36	400	6.3×15	ECR1EPB151M□□063015
	220	0.844	0.12	0.24	555	8×11.5	ECR1EPB221M□□080011
	330	0.563	0.090	0.18	730	8×16	ECR1EPB331M□□080016
		0.563	0.090	0.18	760	10×12.5	ECR1EPB331M□□100012
	390	0.476	0.080	0.16	810	8×20	ECR1EPB391M□□080020
	470	0.395	0.068	0.136	1050	10×16	ECR1EPB471M□□100016
	680	0.273	0.052	0.104	1220	10×20	ECR1EPB681M□□100020
	820	0.227	0.045	0.090	1440	10×25	ECR1EPB821M□□100025
	1000	0.186	0.037	0.074	1690	10×30	ECR1EPB102M□□100030
		0.186	0.038	0.076	1660	12.5×20	ECR1EPB102M□□125020
	1500	0.124	0.030	0.060	1950	12.5×25	ECR1EPB152M□□125025
	1800	0.103	0.025	0.050	2310	12.5×30	ECR1EPB182M□□125030
		0.103	0.029	0.058	2210	16×20	ECR1EPB182M□□160020
	2200	0.097	0.022	0.044	2510	12.5×35	ECR1EPB222M□□125035
		0.097	0.028	0.056	2490	18×20	ECR1EPB222M□□180020
	2700	0.079	0.017	0.034	2870	12.5×40	ECR1EPB272M□□125040
		0.079	0.022	0.044	2560	16×25	ECR1EPB272M□□160025
	3300	0.072	0.019	0.038	3010	16×31.5	ECR1EPB332M□□160031
		0.072	0.020	0.040	2740	18×25	ECR1EPB332M□□180025
	3900	0.061	0.017	0.034	3150	16×35.5	ECR1EPB392M□□160035
		0.061	0.018	0.036	3330	18×31.5	ECR1EPB392M□□180031
	4700	0.056	0.015	0.030	3710	16×40	ECR1EPB472M□□160040
		0.056	0.016	0.032	3680	18×35.5	ECR1EPB472M□□180035
	5600	0.052	0.015	0.030	3800	18×40	ECR1EPB562M□□180040

Ratings for CD 289 PB Series

U_R (Surge Voltage) Code	Rated Capacitance	Max ESR 20℃, 120Hz	Max Imp 20℃, 100kHz	Max Imp -10℃, 100kHz	Rated Ripple Current 105℃, 100kHz	Size Φ D x L	P/N
(V)	(μF)	(Ω)	(Ω)	(Ω)	(mArms)	(mm)	-
35 (44) 1V	33	4.825	0.5	1.0	175	5×11.5	ECR1VPB330M□□050011
	56	2.843	0.25	0.50	290	6.3×11.5	ECR1VPB560M□□063011
	100	1.592	0.18	0.36	400	6.3×15	ECR1VPB101M□□063015
	150	1.062	0.12	0.24	555	8×11.5	ECR1VPB151M□□080011
	220	0.724	0.090	0.18	730	8×16	ECR1VPB221M□□080016
		0.724	0.090	0.18	760	10×12.5	ECR1VPB221M□□100012
	270	0.590	0.080	0.16	810	8×20	ECR1VPB271M□□080020
	330	0.483	0.068	0.136	1050	10×16	ECR1VPB331M□□100016
	470	0.339	0.052	0.104	1220	10×20	ECR1VPB471M□□100020
	560	0.284	0.045	0.090	1440	10×25	ECR1VPB561M□□100025
	680	0.234	0.037	0.074	1690	10×30	ECR1VPB681M□□100030
		0.234	0.038	0.076	1660	12.5×20	ECR1VPB681M□□125020
	1000	0.159	0.030	0.060	1950	12.5×25	ECR1VPB102M□□125025
	1200	0.133	0.025	0.050	2310	12.5×30	ECR1VPB122M□□125030
		0.133	0.029	0.058	2210	16×20	ECR1VPB122M□□160020
	1500	0.106	0.022	0.044	2510	12.5×35	ECR1VPB152M□□125035
	1800	0.088	0.017	0.034	2870	12.5×40	ECR1VPB182M□□125040
		0.088	0.022	0.044	2560	16×25	ECR1VPB182M□□160025
		0.088	0.028	0.056	2490	18×20	ECR1VPB182M□□180020
	2200	0.084	0.019	0.038	3010	16×31.5	ECR1VPB222M□□160031
		0.084	0.020	0.040	2740	18×25	ECR1VPB222M□□180025
	2700	0.069	0.014	0.034	3150	16×35.5	ECR1VPB272M□□160035
		0.069	0.018	0.036	3330	18×31.5	ECR1VPB272M□□180031
	3300	0.064	0.015	0.030	3710	16×40	ECR1VPB332M□□160040
		0.064	0.016	0.032	3680	18×35.5	ECR1VPB332M□□180035
	3900	0.054	0.015	0.030	3800	18×40	ECR1VPB392M□□180040
50 (63) 1H	22	6.032	0.90	1.8	155	5×11.5	ECR1HPB220M□□050011
	47	2.823	0.45	0.90	260	6.3×11.5	ECR1HPB470M□□063011
	68	1.951	0.31	0.62	360	6.3×15	ECR1HPB680M□□063015
	100	1.327	0.22	0.44	485	8×11.5	ECR1HPB101M□□080011
	120	1.106	0.16	0.32	635	8×16	ECR1HPB121M□□080016
		1.106	0.16	0.32	620	10×12.5	ECR1HPB121M□□100012
	180	0.737	0.12	0.24	730	8×20	ECR1HPB181M□□080020
		0.737	0.13	0.26	850	10×16	ECR1HPB181M□□100016
	220	0.603	0.088	0.18	1010	10×20	ECR1HPB221M□□100020
	330	0.402	0.073	0.15	1250	10×25	ECR1HPB331M□□100025
	390	0.340	0.054	0.11	1500	10×30	ECR1HPB391M□□100030
		0.340	0.059	0.12	1480	12.5×20	ECR1HPB391M□□125020
	560	0.237	0.044	0.088	1840	12.5×25	ECR1HPB561M□□125025
	680	0.195	0.039	0.078	2220	12.5×30	ECR1HPB681M□□125030
		0.195	0.048	0.096	1840	16×20	ECR1HPB681M□□160020
	820	0.162	0.033	0.066	2290	12.5×35	ECR1HPB821M□□125035
		0.162	0.042	0.084	1980	18×20	ECR1HPB821M□□180020
	1000	0.133	0.029	0.058	2500	12.5×40	ECR1HPB102M□□125040
		0.133	0.034	0.068	2240	16×25	ECR1HPB102M□□160025
	1200	0.111	0.028	0.056	2700	16×30	ECR1HPB122M□□160030
		0.111	0.029	0.058	2610	18×25	ECR1HPB122M□□180025
	1500	0.088	0.025	0.050	2800	16×35.5	ECR1HPB152M□□160035
	1800	0.074	0.021	0.042	3200	16×40	ECR1HPB182M□□160040
		0.074	0.025	0.050	3000	18×31.5	ECR1HPB182M□□180031
	2200	0.072	0.023	0.046	3100	18×35.5	ECR1HPB222M□□180035
	2700	0.059	0.020	0.040	3400	18×40	ECR1HPB272M□□180040

Customer products are available on request.



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

Typical Curves

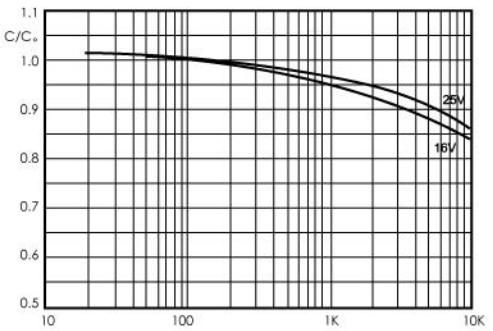


Fig.1 Typical multiplier of capacitance as a function of frequency
C_0 =capacitance at 20℃,100Hz

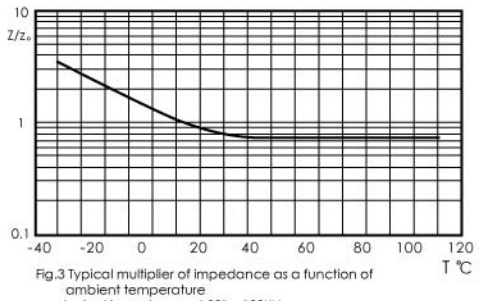


Fig.3 Typical multiplier of impedance as a function of ambient temperature
Z_0 =typical impedance at 20℃, 100KHz

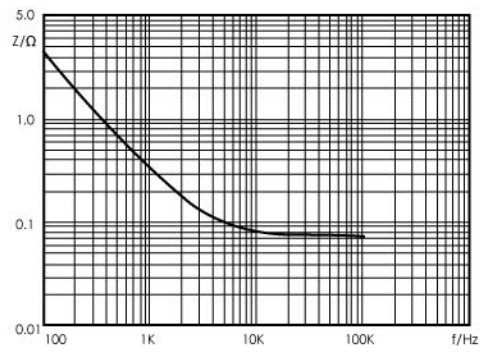


Fig.4 Typical impedance as a function of frequency

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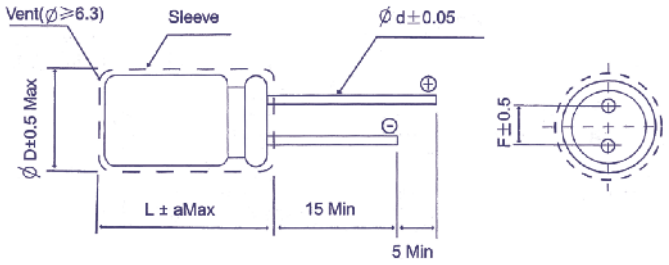
Part Number System

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

Technical Specification **Radial Type**

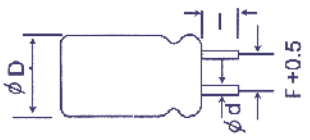
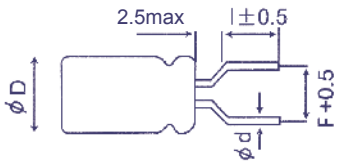
Dimensions for loose, long-lead type (bulk)
Order Code: LL



L	L ≤ 7					L ≥ 11									
Ø 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
Ø d	0,4	0,45				0,5		0,6			0,8		1,0		
a_{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		
					
Code	CB	**CC**	CD	CE	CF
l	5,0 ± 0,5	**4,5 ± 0,5**	4,0 ± 0,5	3,5 ± 0,5	3,0 ± 0,5

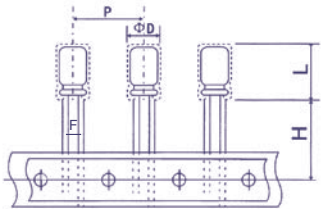
preferred in mm

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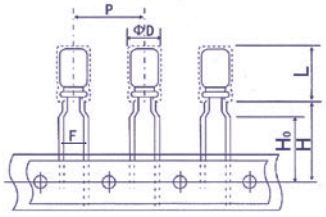
Dimensions for Ammopack taping
Order Code: FF (FD)

Code	Case Range		Dimensions				Form
	Ø D	L (max)	H ± 0,75	Ho ± 0,5	F +0,8 -0,2	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	-			A
	12,5	27	18,5	-		15,0	
FD	12,5	27	18,5	-		25,4	C
FF	16	27	18,5	-	7,5	30,0	

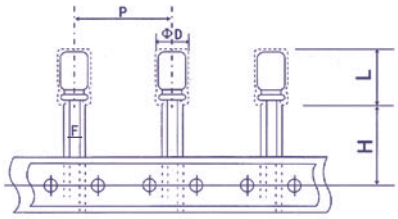
Form A



Form B



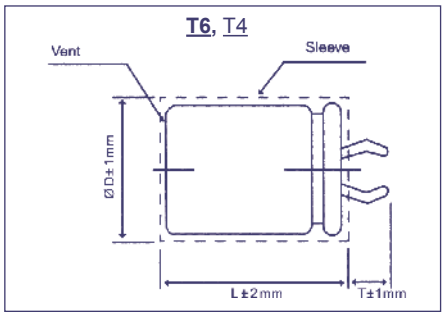
Form C



in mm

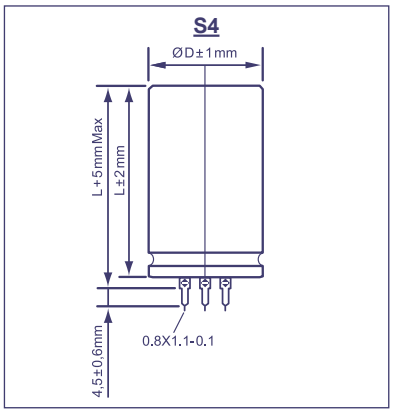
Technical Specification **Snap-In Type**

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

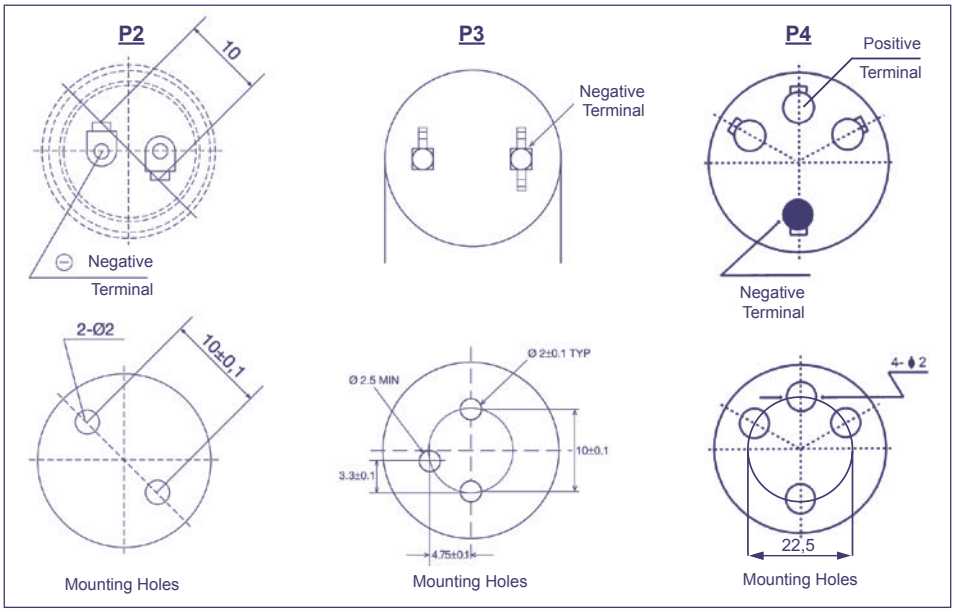


Terminal	T6	T4
Pin Length	6,3	4,0
	preferred	

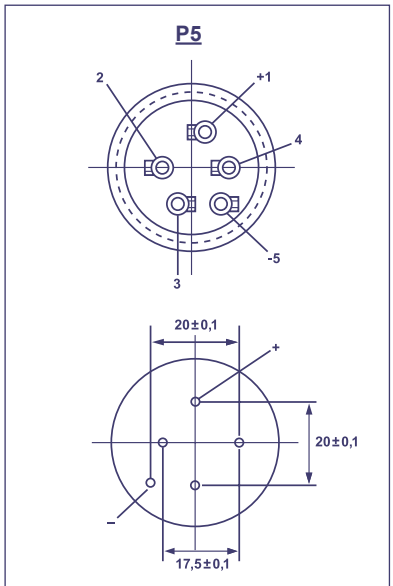
Pin Type: Soldering Order Code: S4



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