
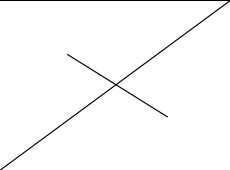


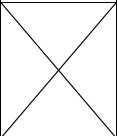



# REQUEST FOR APPROVAL

CUSTOMER	
PRODUCT	CERAMIC CAPACITOR (DISC TYPE)
MODEL	DC HIGH VOLTAGE PRODUCT(1~3KV)
CONTENTS	PRODUCT SPECIFICATION HAZARD MATERIAL ANALYSIS RESULT TAPING SPECIFICATION

DRAFT	REVIEW	DECISION
		
05.12.10	/	05.12.10

NETRON TECH CO., LTD.

Document No.	SEC - 2	<b>CERAMIC CAPACITOR SPECIFICATION (DISC TYPE)</b>	Draft	Review	Decision
Making Date	2005.12.10.				
Rev. Date(No.)	-				
Written by	N.Y. PARK		12/10	/	12/10

CUSTOMER :  
PRODUCT : CERAMIC CAPACITOR (DISC TYPE)  
MODEL : DC HIGH VOLTAGE PRODUCT (1~3KV)

CONTENT

1. PRODUCT SPECIFICATION ----- 1~4 PAGE  
2. PRODUCT LIST ----- 7 PAGE  
3. TAPING SPECIFICATION ----- 8~9 PAGE



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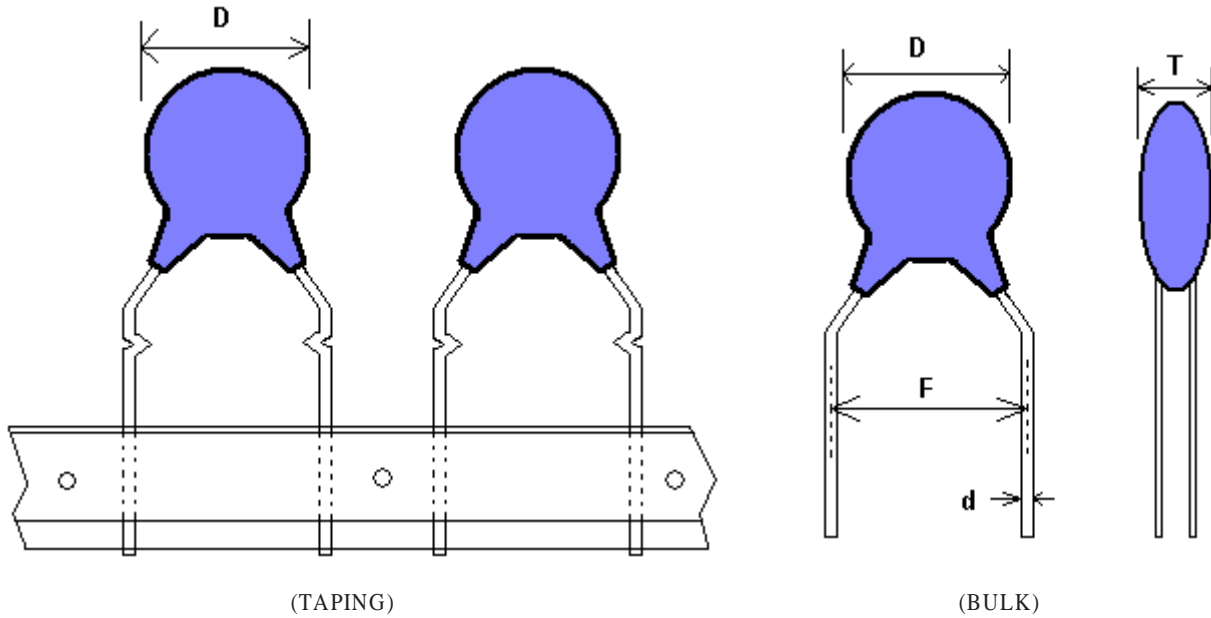
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1. SCOPE

: THIS SPECIFICATION IS APPLIED TO THE CERAMIC CAPACITOR USED IN BY PASS AND COUPLING CIRCUITS OF ELECTRONIC EQUIPMENT.

OPERATING TEMPERATURE IS -25 ~ +85

2. PRODUCT SHAPE



3. PART NUMBER

: HC   YB   3A   102   K   DT(F05)  
 1)      2)      3)      4)      5)      6)

- 1) HIGH VOLTAGE PRODUCT(COMMON CODE)
- 2) TEMPERATURE CHARACTERISTICS
- 3) RATED VOLTAGE
- 4) NOMINAL CAPACITANCE
- 5) CAPACITANCE TOLERANCE
- 6) SHAPE CODE

2) TEMPERATURE CHARACTERISTICS	
CODE	CAPACITANCE CHANGE or TEMPERATURE COEFFICIENT
SL	-1000 ~ +350PPM/
YB	±10%
YE	+20 ~ -55%
FZ	+30 ~ -80%

3) RATED VOLTAGE	
3A	1KV-D.C
3D	2KV-D.C
3F	3KV-D.C

4) NOMINAL CAPACITANCE			
330	33 pF	102	1000 pF
101	100 pF	103	10000 pF

5) CAP. TOLERANCE	
K, M	±10%, ±20%
Z, P	-20~+80%, 0~+100%

6) SHAPE CODE	
DB	BULK
DT	TAPING

4. MODEL SPECIFICATION

: REFER TO PAGE 6.

5. INSTRUMENT

- 1) CAPACITANCE AND DISSIPATION FACTOR : LCR METER(HP 4278A)
- 2) INSULATION RESISTANCE : HIGH RESISTANCE METER(HP 4339B)
- 3) VOLTAGE PROOF : WITHSTANDING VOLTAGE TESTER(KIKUSUI TOS-5101)

6. ELECTRICAL TEST

- 1) NOMINAL CAPACITANCE  
: THE CAPACITANCE SHALL BE WITHIN SPECIFIED TOLERANCE WHEN MEASURED AT 20 WITH  $1 \pm 0.2\text{kHz}$  AND AC  $1\sim 5\text{V(r.m.s)}$ .  
(IN CASE "SL" :  $1 \pm 0.2\text{MHz}$  AND AC  $1\sim 5\text{V(r.m.s)}$ )
- 2) DISSIPATION FACTOR (Q , D.F)  
: THE DISSIPATION FACTOR MUST SATISFY TABLE-1 WHEN MEASURED AT 20 WITH  $1 \pm 0.2\text{kHz}$  AND AC  $1\sim 5\text{V(r.m.s)}$ .  
(IN CASE "SL" :  $1 \pm 0.2\text{MHz}$  AND AC  $1\sim 5\text{V(r.m.s)}$ )

(TABLE 1)

SL	Q $400 + 20 \times C$ (C < 30 pF) Q 1,000 (C $\geq$ 30 pF)      C : NOMINAL CAPACITANCE
YB, YE	D.F 2.5%
FZ	D.F 5.0%

3) INSULATION RESISTANCE (I.R)

: THE INSULATION RESISTANCE MUST SATISFY TABLE-2 WHEN MEASURED WITH DC500  $\pm$ 50V WITHIN 60  $\pm$ 5S OF CHARGING.

(TABLE 2)

SL	I.R 10,000 M $\Omega$
YB , YE , FZ	I.R 10,000 M $\Omega$

4) VOLTAGE PROOF

: THE CAPACITOR SHALL NOT BE DAMAGE WHEN DC VOLTAGE OF 200% OF THE RATED VOLTAGE ARE APPLIED BETWEEN THE LEAD WIRES FOR 1 TO 5S.  
(CHARGE/DISCHARGE CURRENT 10mA)

5) TEMPERATURE CHARACTERISTICS

: THE CAPACITANCE MEASUREMENT SHALL BE MADE AT EACH STEP SPECIFIED IN TABLE-3 AT A SUFFICIENT NUMBER OF INTERMEDIATE TEMPERATURES BETWEEN STEP 2 AND 4.  
CAPACITANCE CHANGE FROM THE VALUE OF STEP 3 SHALL NOT EXCEED THE LIMIT SPECIFIED.

PRE-TREATMENT(YB, YE, FZ) : CAPACITOR SHALL BE STORED AT  $85 \pm 2$  FOR 1H, THEN PLACED AT ROOM CONDITION FOR  $24 \pm 2\text{H}$  BEFORE INITIAL MEASUREMENT.  
(ROOM CONDITION :  $15\sim 35$  , RELATIVE HUMIDITY =  $45\sim 75\%$ )

(TABLE 3)

CHARACTER	1 ~ 5 STEP TEMPERATURE RANGE( )	CAPACITANCE CHANGE
SL		+350 ~ -1,000 PPM/
YB	(1STEP) $+20 \pm 2$ , (2STEP) $-25 \pm 3$ , (3STEP) $+20 \pm 2$ ,	WITHIN $\pm 10\%$
YE	(4STEP) $+85 \pm 2$ , (5STEP) $+20 \pm 2$	WITHIN $+20 \sim -55\%$
FZ		WITHIN $+30 \sim -80\%$

6) HUMIDITY(UNDER STEADY STATE)

: SET THE CAPACITOR FOR 500(+24/-0)H AT 40 ±2 IN 90 TO 95% RELATIVE HUMIDITY. AND THEN CAPACITOR MUST SATISFY TABLE-4.

PRE-TREATMENT : CAPACITOR SHALL BE STORED AT 85 ±2 FOR 1H, THEN PLACED AT ROOM CONDITION FOR 24 ±2H BEFORE INITIAL MEASUREMENT.

POST-TREATMENT : CAPACITOR SHALL BE STORED FOR 1~2H AT ROOM CONDITION. (ROOM CONDITION : 15~35 , RELATIVE HUMIDITY = 45~75%)

(TABLE 4)

APPEARANCE	NO MARKED DEFECT
CAPACITANCE CHANGE	SL : WITHIN ±5%, YB : WITHIN ±10%, YE : WITHIN ±20%, FZ : WITHIN ±30%
DISSIPATION FACTOR(D.F)	SL : $Q \geq 275 + (5/2) \times C$ (C < 30 pF) Q 350 (C 30 pF) D.F 5.0% (YB , YE) , D.F 7.5% (FZ)
INSULATION RESISTANCE(I.R)	SL, YB , YE , FZ : I.R 1,000 MΩ

7) HUMIDITY LOADING

: APPLY THE RATED VOLTAGE FOR 500(+24/-0)H AT 40 ±2 IN 90 TO 95% RELATIVE HUMIDITY. AND THEN CAPACITOR MUST SATISFY TABLE-5.

(CHARGE/DISCHARGE CURRENT 50mA)

PRE-TREATMENT(SL, YB, YE, FZ) : CAPACITOR SHALL BE STORED AT 85 ±2 FOR 1H, THEN PLACED AT ROOM CONDITION FOR 24 ±2H BEFORE INITIAL MEASUREMENT.

POST-TREATMENT(SL) : CAPACITOR SHALL BE STORED FOR 1~2H AT ROOM CONDITION.

POST-TREATMENT(YB, YE, FZ) : CAPACITOR SHALL BE STORED AT 85 ±2 FOR 1H, THEN PLACED AT ROOM CONDITION FOR 24 ±2H BEFORE INITIAL MEASUREMENT.

(ROOM CONDITION : 15~35 , RELATIVE HUMIDITY = 45~75%)

(TABLE 5)

APPEARANCE	NO MARKED DEFECT
CAPACITANCE CHANGE	SL : WITHIN ±5%, YB : WITHIN ±10%, YE : WITHIN ±20%, FZ : WITHIN ±30%
DISSIPATION FACTOR(D.F)	SL : $Q \geq 275 + (5/2) \times C$ (C < 30 pF) Q 350 (C 30 pF) D.F 5.0% (YB , YE) , D.F 7.5% (FZ)
INSULATION RESISTANCE(I.R)	SL : I.R 1,000 MΩ YB , YE , FZ : I.R 500 MΩ

8) LIFE

: APPLY A DC VOLTAGE OF 200% OF THE RATED VOLTAGE FOR 1000(+48/-0)H AT 85 ±2 . AND THEN CAPACITOR MUST SATISFY TABLE-6.

(RATED HUMIDITY : 50% MAX. , CHARGE/DISCHARGE CURRENT 50mA)

PRE-TREATMENT(SL, YB, YE, FZ) : CAPACITOR SHALL BE STORED AT 85 ±2 FOR 1H, THEN PLACED AT ROOM CONDITION FOR 24 ±2H BEFORE INITIAL MEASUREMENT.

POST-TREATMENT(SL) : CAPACITOR SHALL BE STORED FOR 1~2H AT ROOM CONDITION.

POST-TREATMENT(YB, YE, FZ) : CAPACITOR SHALL BE STORED AT 85 ±2 FOR 1H, THEN PLACED AT ROOM CONDITION FOR 24 ±2H BEFORE INITIAL MEASUREMENT.

(ROOM CONDITION : 15~35 , RELATIVE HUMIDITY = 45~75%)

(TABLE 6)

APPEARANCE	NO MARKED DEFECT
CAPACITANCE CHANGE	SL : WITHIN ±3%, YB : WITHIN ±10%, YE : WITHIN ±20%, FZ : WITHIN ±30%
DISSIPATION FACTOR(D.F)	SL : $Q \geq 275 + (5/2) \times C$ (C < 30 pF) Q 350 (C 30 pF) D.F 4.0% (B , E) , D.F 7.5% (F)
INSULATION RESISTANCE(I.R)	SL, YB, YE, FZ : I.R 2,000 MΩ

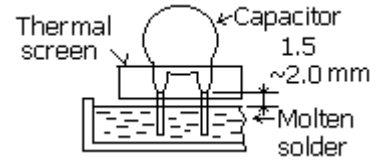
9) SOLDERING EFFECT

: THE LEADWIRE SHALL BE IMMERSSED INTO THE MELTED SOLDER OF  $350 \pm 10$  (NOMINAL BODY DIAMETER  $5\text{mm}$  AND UNDER  $270 \pm 5$  ) UP TO ABOUT  $1.5 \sim 2.0\text{mm}$  FROM THE MAIN BODY FOR  $3.5 \pm 0.5\text{S}$ .(NOMINAL BODY DIAMETER  $5\text{mm}$  AND UNDER  $5 \pm 0.5\text{S}$ .) CAPACITOR MUST SATISFY TABLE-7.

PRE-TREATMENT : CAPACITOR SHALL BE STORED AT  $85 \pm 2$  FOR 1H, THEN PLACED AT ROOM CONDITION FOR  $24 \pm 2\text{H}$  BEFORE INITIAL MEASUREMENT.

POST-TREATMENT : CAPACITOR SHALL BE STORED FOR 1 TO 2 H AT ROOM CONDITION.

(ROOM CONDITION :  $15 \sim 35$  , RELATIVE HUMIDITY =  $45 \sim 75\%$  )



(TABLE 7)

APPEARANCE	NO MARKED DEFECT
CAPACITANCE CHANGE	SL : WITHIN $\pm 2.5\%$ , B : WITHIN $\pm 5\%$ , E : WITHIN $\pm 15\%$ , F : WITHIN $\pm 20\%$
VOLTAGE PROOF	PASS THE ITEM 6.4.

7. MARKING

1) TEMPERATURE CHARACTERISTICS

: MARK BY USING CAPITAL(B).  
(BUT, "SL" CHARACTERISTICS : OMIT)

2) NOMINAL CAPACITANCE

: SIGNIFICANT FIGURE (IN CASE  $C < 100\text{pF}$ ),  
THREE DIGIT. (IN CASE  $C \geq 100\text{pF}$ )

3) CAPACITANCE TOLERANCE

: MARK BY USING CAPITAL(K).

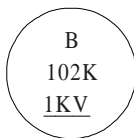
4) RATED VOLTAGE

: MARK RATED VOLTAGE(1KV)

5) MANUFACTURING DATE

: OMIT.

EXAMPLE : YB3A102K



PRODUUCT LIST

NRT CODE	SEC CODE	CAPACITANCE (pF)	RATED VOLTAGE	DIMENSION (max.)		SHAPE
				D	T	
HCYB3A221KDT	2201-000012	220	1KV	5.5	3.5	In Kink Taping
HCYB3A331KDT	2201-000014	330	1KV	5.5	3.5	In Kink Taping
HCYB3A152KDT	2201-000108	1500	1KV	7.5	3.5	In Kink Taping
HCYB3A101KDT	2201-000129	100	1KV	7.0	3.5	In Kink Taping
HCYB3D101KDTE05	2201-000131	100	2KV	6.5	4.0	In Kink Taping
HCYE3D103ZDT	2201-000154	10000	2KV	13.5	4.0	In Kink Taping
HCYB3A121KDT	2201-000210	120	1KV	5.5	3.5	In Kink Taping
HCYB3D151KDTE05	2201-000229	150	2KV	6.0	4.0	In Kink Taping
HCYB3A102KDT	2201-000285	1000	1KV	7.0	3.5	In Kink Taping
HCYB3D102KDT	2201-000288	1000	2KV	9.5	4.0	In Kink Taping
HCYB3D222KDT	2201-000322	2200	2KV	11.0	4.0	In Kink Taping
HCYB3D272KDT	2201-000341	2700	2KV	13.5	4.0	In Kink Taping
HCYB3D271KDT	2201-000406	270	2KV	6.5	4.0	In Kink Taping
HCYB3D331KDT	2201-000467	330	2KV	6.5	4.0	In Kink Taping
HCYB3A471KDT	2201-000551	470	1KV	5.5	3.5	In Kink Taping
HCYB3D681KDT	2201-000639	680	2KV	9.5	4.0	In Kink Taping
HCFZ3F472MDTF07	2201-000723	4700	3KV	13.5	5.0	Out Kink Taping
HCYB3A681KDT	2201-000732	680	1KV	7.0	3.5	In Kink Taping
HCYB3A271KDT	2201-000767	270	1KV	5.5	3.5	In Kink Taping
HCFZ3F103ZDT	2201-000969	10000	3KV	14.5	5.0	Out Kink Taping
HCYB3D102KDT	2201-000983	1000	2KV	9.5	4.0	In Kink Taping
HCYB3D681KDT	2201-000984	680	2KV	9.5	4.0	In Kink Taping
HCYB3D561KDT	2201-000991	560	2KV	8.0	4.0	In Kink Taping
HCYB3D471KDT	2201-002028	470	2KV	6.5	4.0	In Kink Taping
HCYB3D821KDT	2201-002041	820	2KV	9.5	4.0	In Kink Taping
HCSL3A680KDT	2201-002076	68	1KV	5.5	3.5	In Kink Taping
HCYB3A182KDT	2201-002110	1800	1KV	7.5	3.5	In Kink Taping
HCYB3A821KDT	2201-002116	820	1KV	7.0	3.5	In Kink Taping
HCYE3F472MDBB10	2201-002117	4700	3KV	13.5	5.0	Out Kink Bulk

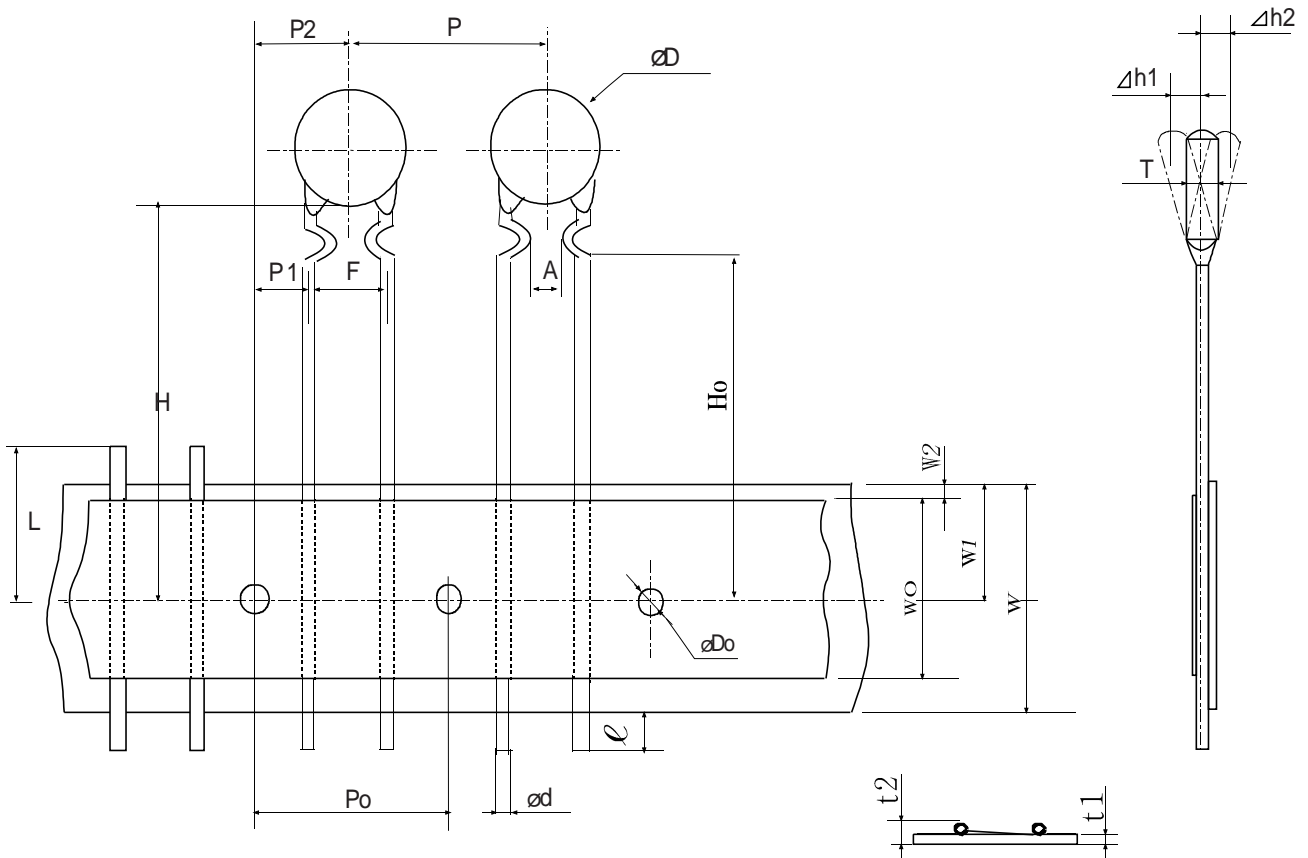
HAZARD MATERIAL ANALYSIS RESULT

MODEL	PRODUCT ANALYSIS RESULT	Cd (PPM)	Pb (PPM)	Hg (PPM)	Cr6+ (PPM)	PBBs (PPM)	PBDEs (PPM)	EXAMPLE
HCYB3A221KDT	OK	<5	<100	<100	<100	<100	<100	
HCYB3A331KDT								
HCYB3A152KDT								
HCYB3A101KDT								
HCYB3D101KDTE05								
HCYE3D103ZDT								
HCYB3A121KDT								
HCYB3D151KDTE05								
HCYB3A102KDT								
HCYB3D102KDT								
HCYB3D222KDT								
HCYB3D272KDT								
HCYB3D271KDT								
HCYB3D331KDT								
HCYB3A471KDT								
HCYB3D681KDT								
HCYE3F472MDTF07								
HCYB3A681KDT								
HCYB3A271KDT								
HCFZ3F103ZDT								
HCYB3D102KDT								
HCYB3D681KDT								
HCYB3D561KDT								
HCYB3D471KDT								
HCYB3D821KDT								
HCSL3A680KDT								
HCYB3A182KDT								
HCYB3A821KDT								
HCYE3F472MDBB10								



TAPING SPECIFICATION  
: DC HIGH VOLTAGE PRODUCT (1~3KV)

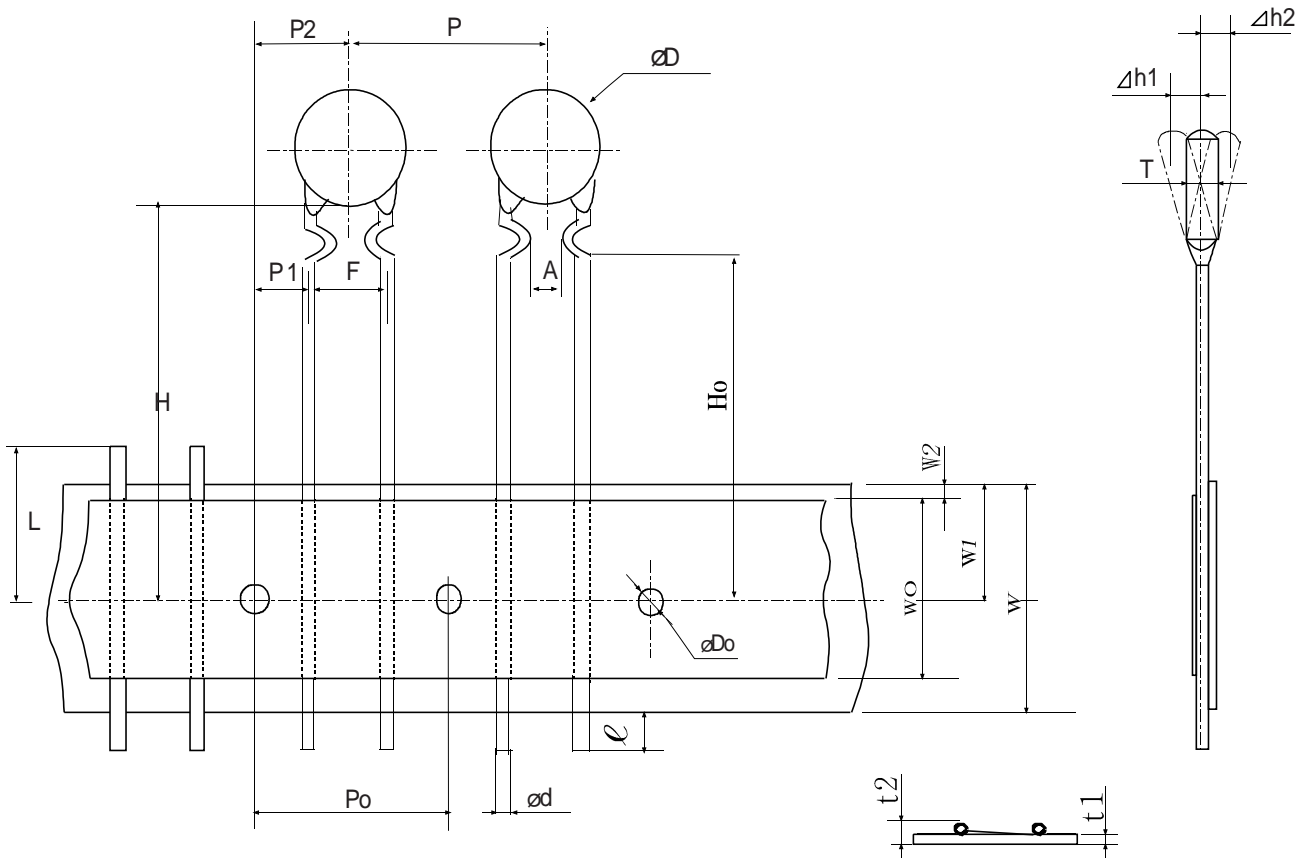
LEAD PITCH : 5.0mm



Symbol	Dimension	Tolerance	Symbol	Dimension	Tolerance
P	12.7	$\pm 1.0$	W2	3.0 Max.	-
Po	12.7	$\pm 0.3$	H	20.0	-1.0 ~ +1.5
P1	3.85	$\pm 0.7$	A	2.2 Max	-
P2	6.35	$\pm 1.3$	Ho	16.0	-0.0 ~ +0.5
ød	0.5 ~ 0.6	$\pm 0.05$	l	2.0 Max.	-
h1, h2	2.0 Max.	-	øD	3.5 ~ 11.5	-
F	5.0	-0.2 ~ +0.8	øDo	4.0	$\pm 0.3$
W	18	-0.5 ~ +1.0	t1	0.6	$\pm 0.2$
Wo	6 Min.	-	t2	1.6 Max.	-
W1	9.0	-0.5 ~ +0.75	L	11 Max.	-

TAPING SPECIFICATION  
: DC HIGH VOLTAGE PRODUCT (1~3KV)

LEAD PITCH : 7.5mm



Symbol	Dimension	Tolerance	Symbol	Dimension	Tolerance
P	15.0	± 1.0	W2	3.0 Max.	-
Po	15.0	± 0.3	H	20.0	-1.0 ~ +1.5
P1	3.75	± 0.7	A	4.5 Min.	-
P2	7.5	± 1.3	Ho	16.0	± 0.5
∅d	0.6 ~ 0.7	± 0.05	l	2.0 Max.	-
h1, h2	2.0 Max.	-	∅D	14.5 Max.	-
F	7.5	± 0.5	∅Do	4.0	± 0.3
W	18.0	-0.5 ~ +1.0	t1	0.6	± 0.2
Wo	10.0 Min.	-	t2	1.6 Max.	-
W1	9.0	± 0.5	L	11 Max.	-