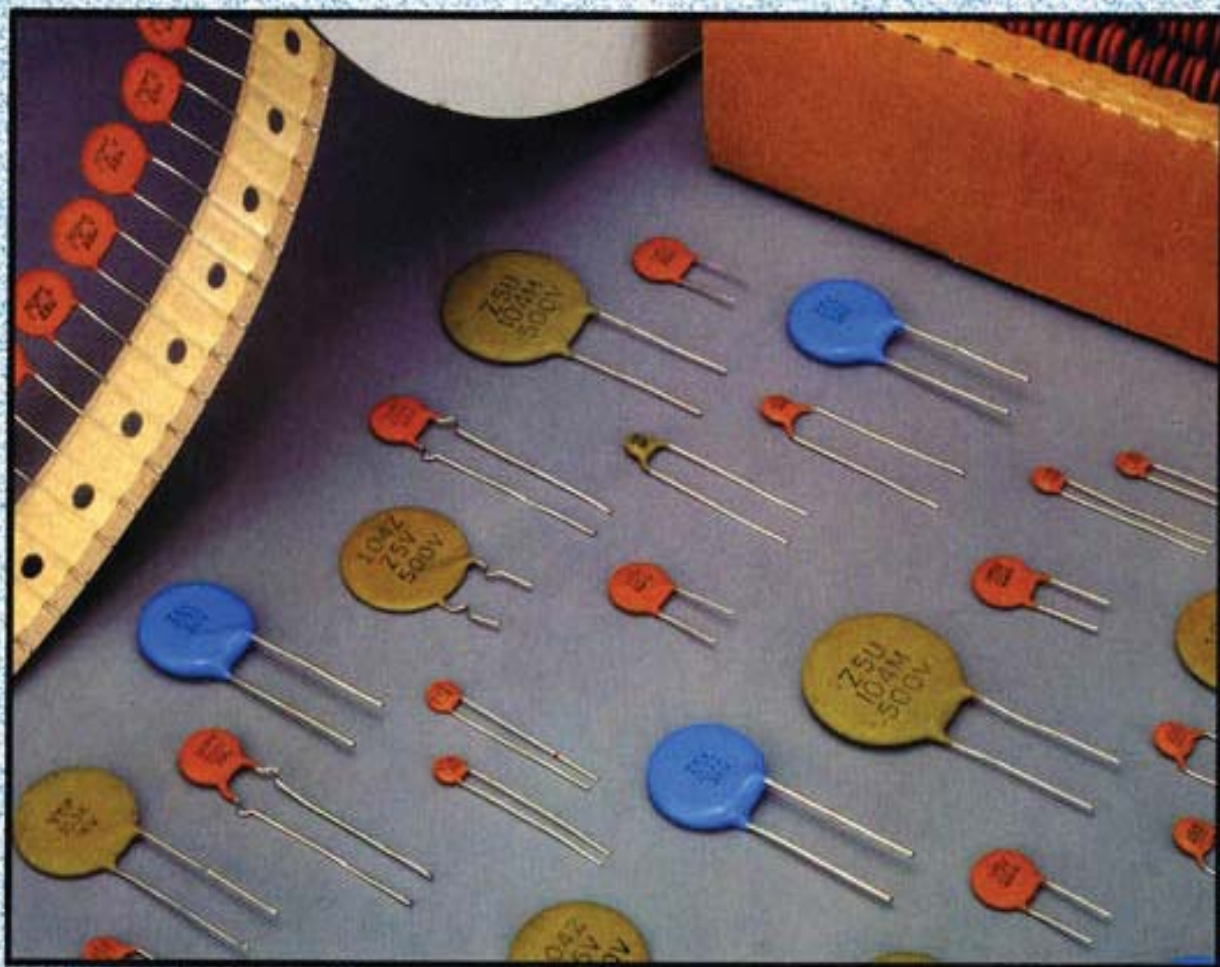


# CERAMIC DISC Capacitors



Since 1983

**昆貿電子股份有限公司**

**Queen Mao Electronic Co., Ltd.**

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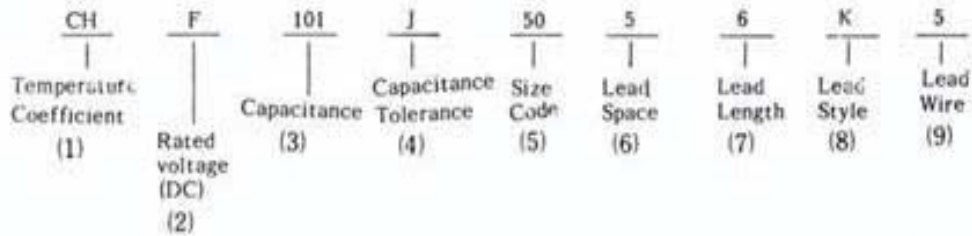
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# PART NUMBERING SYSTEM

Example:



## (1) Temperature coefficient (Ref. Fig.1)

Code	PPM/°C	T.C.	EIA Code	Color	Symbol
CH	0±60	NP0	C0H	Black	C
HH	-30±60	N33	S1H	Brown	H
LH	-80±60	N75	U1H	Red	L
PH	-150±60	N150	P2H	Orange	P
RH	-220±60	N220	R2H	Yellow	R
SH	-330±60	N330	S2H	Green	S
TH	-470±60	N470	T2H	Blue	T
UJ	-750±120	N750	U2J	Violet	U
SL	+350 ~ -1,000			-	-

## (2) Rated voltage (D. C.)

Code	Voltage	Code	Voltage
F	50V	K	250V
H	100V	L	500V
		N	1000V
P	2000V	R	3000V

## (3) Rated capacitance

Code	Cap.(PF)	Code	Cap.(PF)
1R0	1PF	390	39PF
2R2	2.2PF	470	47PF
3R0	3PF	560	56PF
4R0	4PF	680	68PF
5R0	5PF	820	82PF
6R0	6PF	101	100PF
7R0	7PF	121	120PF
8R0	8PF	151	150PF
9R0	9PF	181	180PF
100	10PF	221	220PF
120	12PF	271	270PF
150	15PF	331	330PF
180	18PF	391	390PF
220	22PF	471	470PF
270	27PF	561	560PF
330	33PF	681	680PF

## (4) Tolerance on rated capacitance

Code	Tol.	Rated Cap. (PF)
C	±0.25PF	1, 2, 3, 4, 5
D	±0.5PF	6, 7, 8, 9
F	±1PF	6, 7, 8, 9, 10
J	±5%	From 10PF to 680PF
K	±10%	
M	±20%	

## (5) Size code

SIZE CODE	50	60	70	80	10	12
DIA(mm)	5m/m	6m/m	7m/m	8m/m	10m/m	12m/m

## (6) Lead spacing (S)

Code	2	5	6	0
Dimension (mm)	2.5±0.8	5.0±0.8	6.3±0.8	10±0.8

## (7) Lead length-(L)

-Per customer request.

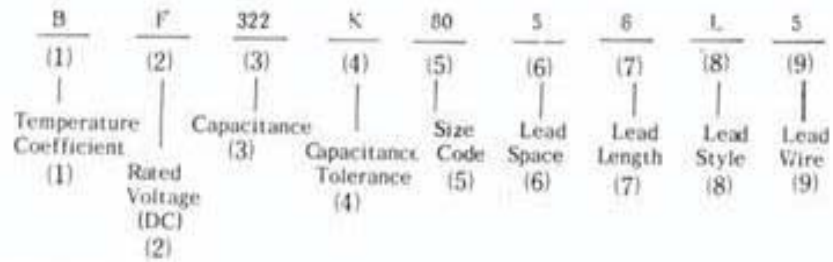
Code	5	6	..... 0	1
Dimension (mm)	5.0±1.0	6.0±1.0	.....10±1.0	25MIN

## (8) Lead Style-See page 3 .

## (9) Lead Wire(d)

Code	Dia. (φ mm)
5	0.5±0.05
6	0.6±0.05
8	0.8±0.05

Example:



(1) Temperature characteristic (Ref. Fig.2.)

Code	Temp. Range	Cap. Change	EIA Code	Cap. Change
B	-25°C +85°C	±10%	Y5P	±10%
D		+20% -30%	Y5T	+22% -33%
E	+10°C +85°C	+20% -55%	Z5U	+22% -56%
F		+30% -80%	Z5V	+22% -82%

(5) Size code

Size Code	50	60	70	80	.....10	12 .....
DIA (m/ta)	5 m/m	6 m/m	7 m/m	8 m/m	.....10 m/m	12 m/m.....

(2) Rated Voltage (D. C.)

Code	Voltage	Code	Voltage
F	50V	K	250V
H	100V	L	500V
		N	1000V
P	2000V	R	3000V

(6) Lead Spacing (S)

Code	2	5	6	8
Dimension (m/m)	2.5±0.8	5.0±0.8	6.3±0.8	10±0.8

(3) Rated Capacitance:

Code	Cap. (PF)	Code	Cap. (PF)
101	110 PF	821	820 PF
121	120 PF	102	1,000 PF
151	150 PF	152	1,500 PF
181	180 PF	222	2,200 PF
221	220 PF	332	3,300 PF
271	270 PF	472	4,700 PF
331	330 PF	562	5,600 PF
391	390 PF	103	10,000 PF
471	470 PF	223	22,000 PF
561	560 PF	473	47,000 PF
681	680 PF	104	100,000 PF

(7) Lead Length (L)

Code	5	6 .....	0	1
Dimension (m/m)	5.0±1.0	6.0±1.0 .....	10±1	25MIN

(8) Lead Style-See Page 3.

(9) Lead Wire (d)

Code	Dia. (φ mm)
5	0.5±0.05
6	0.6±0.05
8	0.8±0.05

(4) Tolerance on rated Temperature characteristic

Code	Tol.		Code	Tol.	
K	±10%	B	K	±10%	B
M	±20%	D	M	±20%	
Z	+80% -20%	E	Z	+80% -20%	E
		F	P	+100% -0	

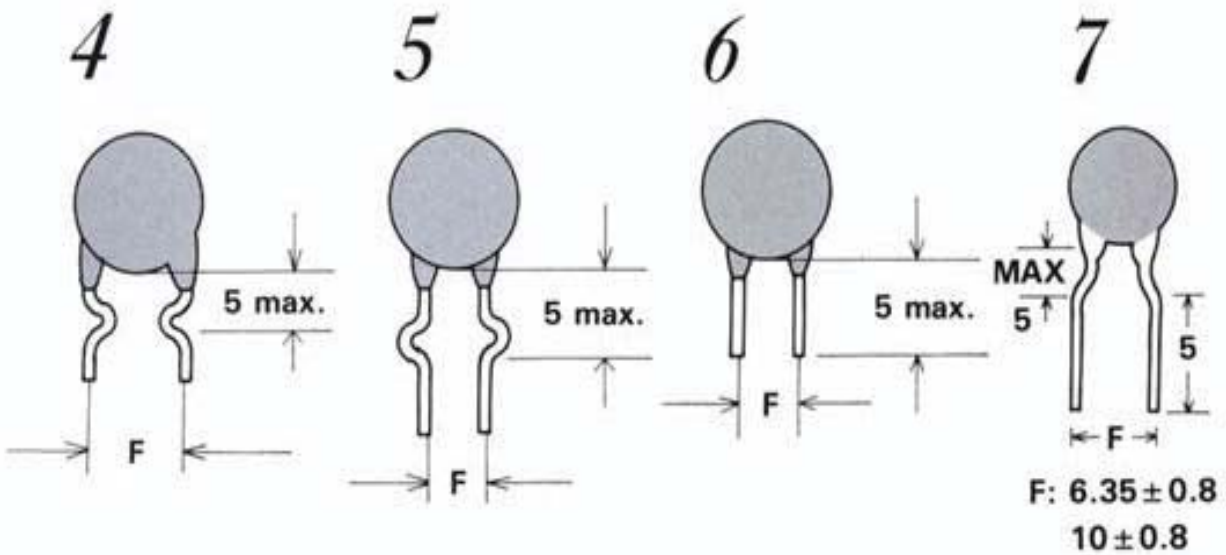
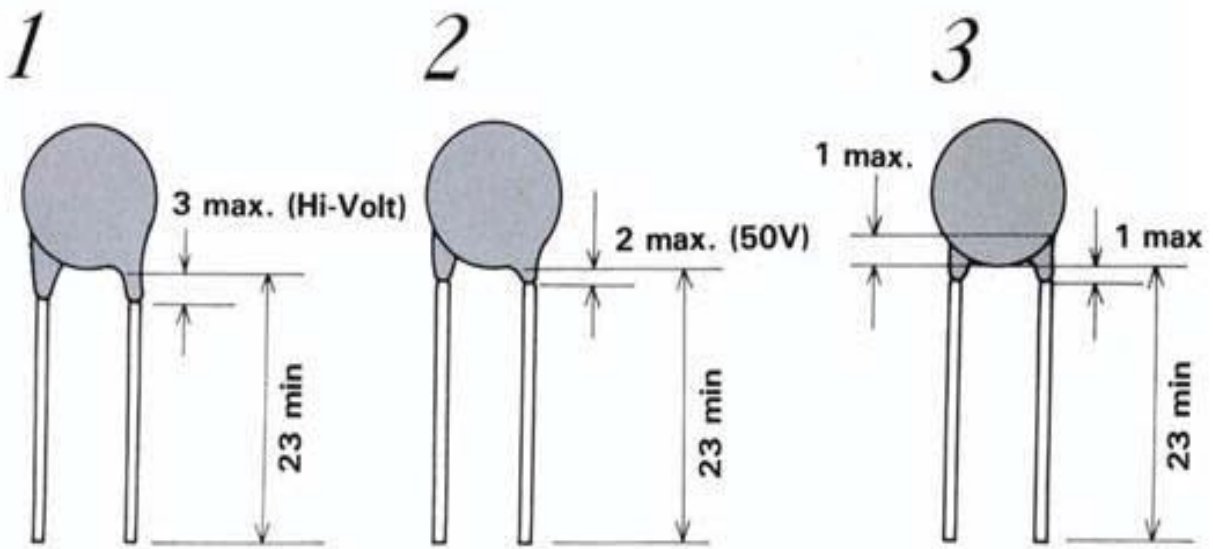


Fig (B)

Note: (A) In general:

- (1) if work voltage under 500 VDC and dimension below 6m/m, than  $F = 2.5\text{m/m}$
- (2) if work voltage under 500 VDC and dimension over 5m/m, than  $F = 5.0\text{m/m}$
- (3) if work voltage between 500 VDC and 2000 VDC, than  $F = 5\text{m/m}$
- (4) if work voltage over 3000 VDC, than  $F = 9.5\text{m/m}$

(B) Different lead space other than (A) are available



# TEMPERATURE COMPENSATING TYPE

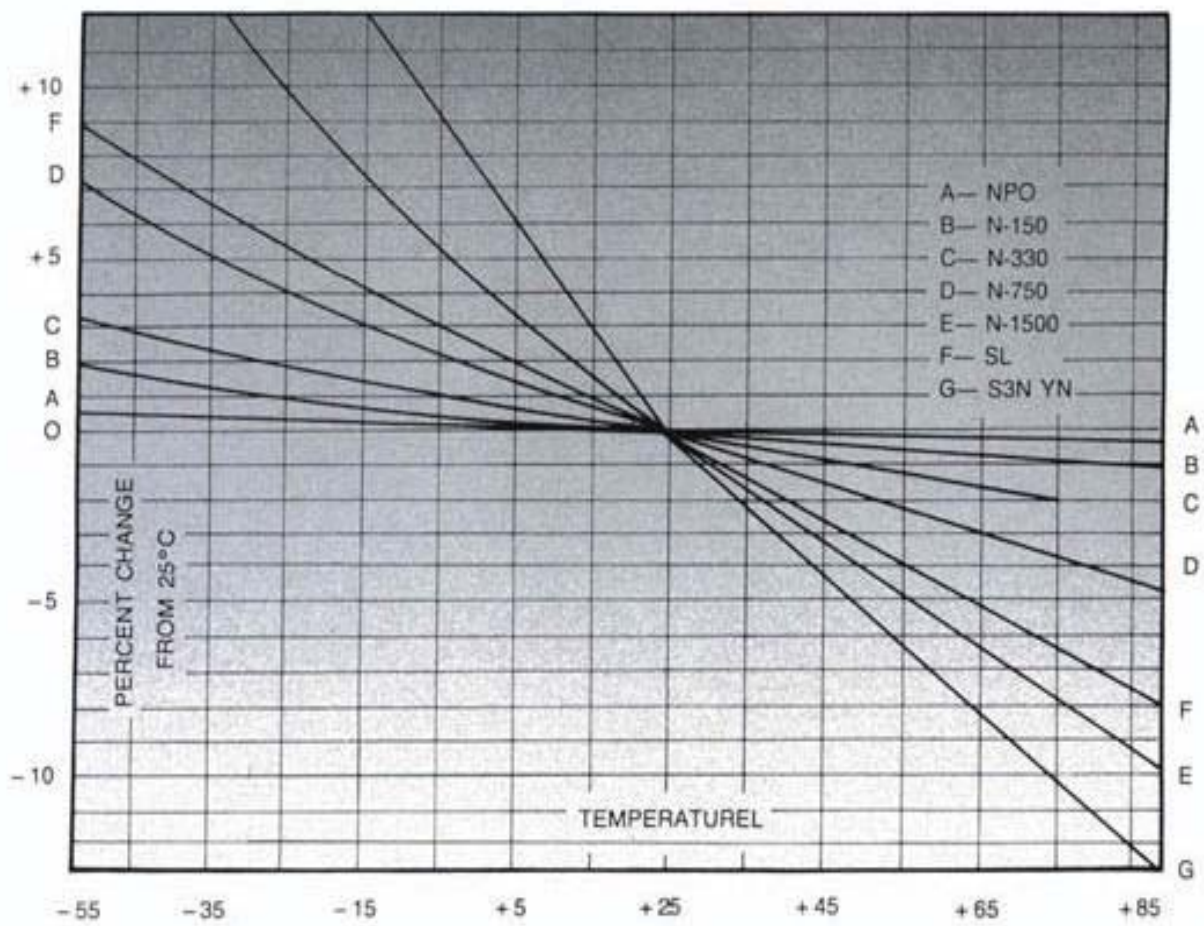
		NPO	N150	N470	N750	SL	N1500
OPERATION TEMPERATURE RANGE		-30° - +85°C	-30 - +85°C	-30 - +85°C	-30 - +85°C	-30 - +85°C	-30 - +85°C
CAPACITANCE RANGE		0.5 - 470PF	3 - 150PF	3 - 150PF	22 - 330PF	0.5 - 820PF	22 - 820PF
CAPACITANCE CHANGE OVER TEMP. RANGE		±1%	-1 - +2%	-2 - +3.5%	-5 - +7.5%	-6 - +9%	-10 - +20%
Q FACTOR (MIN 1MHZ)		1000 (C ≥ 30pF) 400 + 20C (C < 30pF)	1000 (C ≥ 30pF) 400 + 20C (C < 30pF)	1000 (C ≥ 30pF) 400 + 20C (C < 30pF)	1000 (C ≥ 30pF) 400 + 20C (C < 30pF)	1000 (C ≥ 30pF) 400 + 20C (C < 30pF)	500 (C ≥ 30pF) 200 + 10C (C < 30pF)
INSULATION RESISTANCE		MINIMUM 10,000 MEGOHMS					
TEMPERATURE COEFFICIENT		0 ± 60PPM	N150 ± 60PPM	N470 ± 60PPM	N750 ± 120PPM	N330 ± 500PPM	N1500 ± 250PPM
WORKING VOLTAGE RANGE		12VDC to 1KVDC					
TEST VOLTAGE RANGE		2.5 TIMES WORKING VOLTAGE					
LOAD LIFE TEST 85°C 1000HRS	CAP CHANG	±3%	±5%	±8%	±15%	±30%	±50%
	Q FACTOR (MIN)	SHALL CONFORM INITIAL REQUIREMENTS PER ABOVE					
	L.R. (MIN)	10,000 MD					

## CAPACITANCE RANGE AND SIZE CHARTS mm/pt

Dia (MAX)	NPO			N150-N470			N750			SL		
	50WVDC	500WVDC	1KVWVDC	50WVDC	500WVDC	1KVWVDC	50WVDC	500WVDC	1KVWVDC	50WVDC	500WVDC	1KVWVDC
5φ	0.5-47	0.5-33	0.5-27	3-25	3-18	3-12	22-47	22-39	22-25	50-180	22-82	27-68
6φ	48-82	34-50	28-39	26-36	19-24	13-18	48-82	40-50	26-35	181-220	83-120	69-100
7φ	83-120	51-72	40-50	37-50	25-36	19-25	83-120	51-68	36-56	221-330	121-200	101-180
8φ	121-180	73-100	51-68	51-68	37-50	26-33	121-180	69-100	57-82	331-470	201-250	181-220
9φ	181-220	101-130	69-100	69-120	51-62	34-50	181-220	101-130	83-100	471-680	251-330	221-300
10φ	221-270	131-150	101-130	121-150	63-75	51-63	221-270	131-151	101-130	681-820	331-390	301-330
12φ	271-330	151-250	131-200	151-220	76-120	64-80	271-330	152-250	131-200		391-680	331-560
13φ					121-150	81-120						

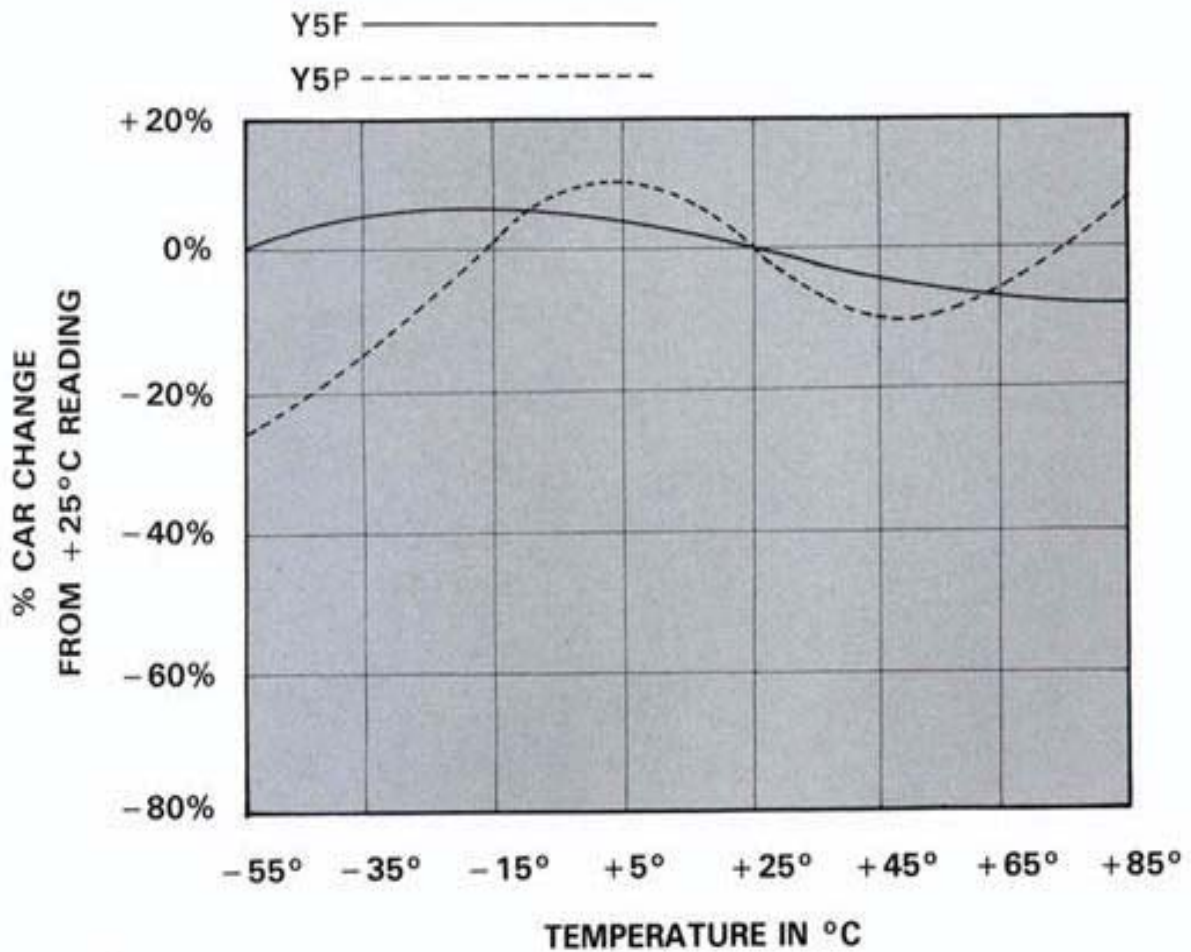
\* Available size for taping: under 12mm

\* If working voltage over 1KV also available



# HIGH K(DIELECTRIC CONST ANT) TYPE

		Y5F	Y5P	Z5U	Z5V
OPERATING TEMPERATURE RANGE		-30 - +85°C	-30 - +85°C	-10 - +85°C	-10 - +85°C
CAPACITANCE RANGE		100PF - 0.01uF	100PF - 0.01uF	1000PF - 0.1uF	2000PF - 0.1uF
CAPACITANCE CHANGE OVER TEMP. RANGE		± 7.5%	± 10%	-56% - +22%	-82% - +22%
DISSIPATION FACTOR (MAX @ 1KHZ)		2.5%	2.5%	2.5%	5%
INSULATION RESISTANCE		MINIMUM 10,000 MEGOHMS			
LOAD LIFE TEST 85°C 1000 HRS	CAP CHANG	± 10%	± 10%	± 20%	± 30%
	D.F (MAX)	4%	4%	7.5%	7.5%
	I, R (MIN)	1000 M			

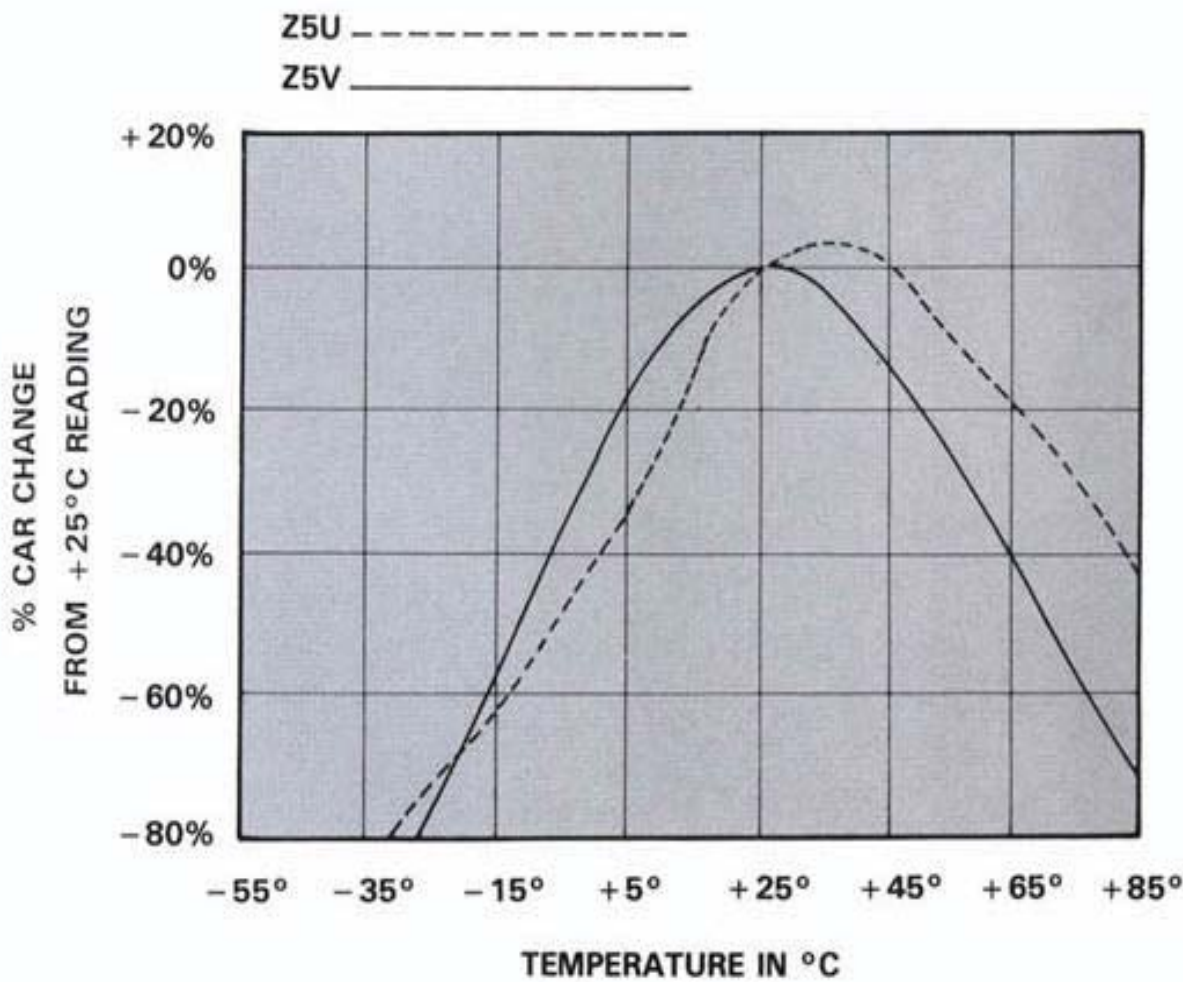




CAPACITANCE RANGE AND SIZE CHARTS mm/pF

DIA (MAX)	Y5F/Y5P			Z5U			Z5V		
	50V	500V	1KV	50V	500V	1KV	50V	500V	1KV
5φ	100-2000	100-680	100-470	2000-5600	1000-1800	1000-1200	2200-10000	1000-3000	1000-1500
6φ	2001-3300	681-1000	471-1000	5601-8200	1801-3300	1201-2200	10001-20000	3001-5000	1501-3000
7φ	3301-5000	1001-1500	1001-1200	8201-12000	3301-5000	2201-3300	20001-22000	5001-6800	3001-4700
8φ	5001-6800	1501-2500	1201-1500	12000-15000	5001-6800	3301-5000	22001-33000	6801-10000	4701-5600
9φ	6801-8200	2501-3300	1501-2200	15001-20000	6801-10000	5001-6800	33001-40000	10001-15000	5601-8200
10φ	8201-10000	3301-4700	2201-3000	20001-22000	10001-12000	6801-10000	40001-47000	15001-20000	8201-10000
12φ	10001-15000	4701-6800	3001-4700		12001-18000	10001-12000	47001-56000	20001-30000	10001-15000
14φ	15001-2000	6801-10000	4701-6800		18001-22000	12001-15000	56001-68000	30001-40000	15001-20000
16φ		10001-12000	6801-8200		22001-33000	15001-20000		4001-50000	20001-3000
18φ		12001-15000	8201-10000		33001-47000	20001-30000			30001-40000
20φ					47001-56000	30001-40000			40001-50000
22φ					56001-68000	40001-47000			
25φ					68001-100000	47001-50000			

\* Available size for taping: under 12m/m  
 \* If working voltage over 1KV also available





# S.C (SEMICONDUCTING) TYPE

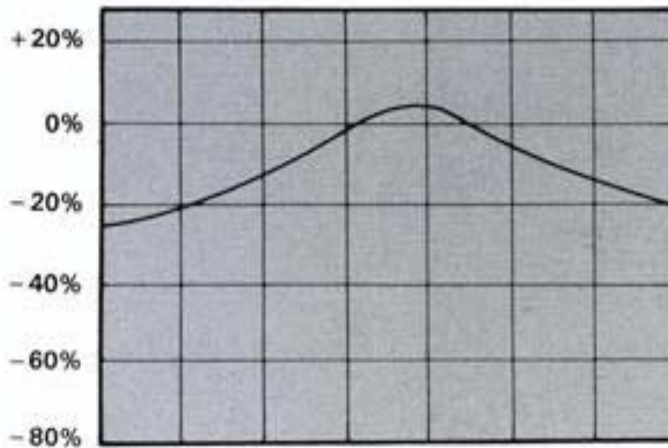
	Y5R	Y5S	Y5T	Y5V
OPERATING TEMPERATURE RANGE	-30 + 85°C			
DISSIPATION FACTOR	AT 3 WVDC MAX. 5%, ABOVE 3 WVDC MAX. 8%			
CAPACITANCE CHANGE OVER TEMP. RANGE (MAX.)	± 20%	± 22%	+22% - -33%	+ 20% - - 82%
INSULATION RESISTANCE	3 WVDC/.004 MΩ, 10 - 12 WVDC/.04 MΩ, 16 WVDC/1 MΩ			
MEASURED CONDITION	1 KHz 50mVrms, 25°C ± 2°C			
TEST VOLTAGE	1.25 TIMES WORKING VOHAGE FOR ONE SECOND			

CAD (uF)	Y5R				Y5S				Y5T				Y5V							
	12V		16V		25V		50V		12V		16V		12V		16V		25V		50V	
	M	Z	M	Z	M	Z	M	Z	M	Z	M	Z	M	Z	M	Z	M	Z	M	Z
.01	5φ	5φ	5φ	5φ	5φ	5φ	6φ	6φ	4φ	4φ	4φ	4φ								
.022	6φ	6φ	6φ	6φ	6φ	6φ	6φ	7φ	4φ	4φ	4φ	4φ							6φ	6φ
.033	7φ	7φ	7φ	7φ	7φ	7φ	8φ	8φ	5φ	5φ	5φ	5φ					6φ	6φ	6φ	6φ
.047	7φ	7φ	7φ	7φ	7φ	7φ	8φ	8φ	6φ	6φ	6φ	6φ	5φ	5φ	5φ	5φ	6φ	6φ	7φ	7φ
.068	8φ	8φ	8φ	8φ	8φ	8φ	12φ	12φ	7φ	7φ	7φ	7φ	6φ	6φ	6φ	6φ	6φ	6φ	8φ	8φ
.1	9φ	9φ	9φ	9φ	9φ	9φ	16φ	16φ	7φ	7φ	7φ	7φ	5φ	5φ	5φ	5φ	7φ	7φ	8φ	8φ
.22									10φ	10φ	10φ	10φ	10φ	10φ	10φ	10φ	11φ	11φ		

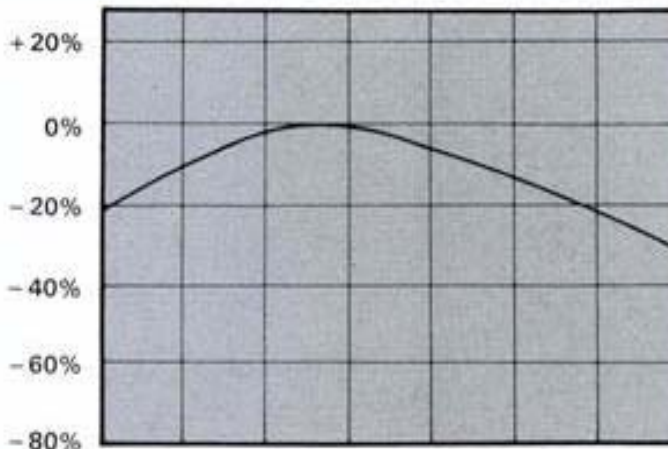
\* Available size for taping: under 12m/m.

PERCENT OF CAPACITANCE CHANGE

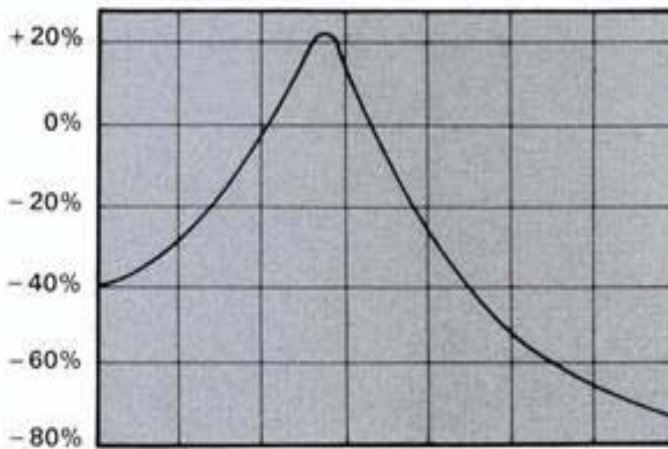
PERCENT CAPACITANCE CHANGE



Y5R Y5S



Y5T

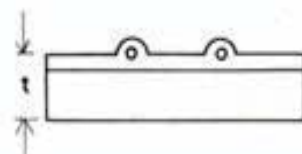
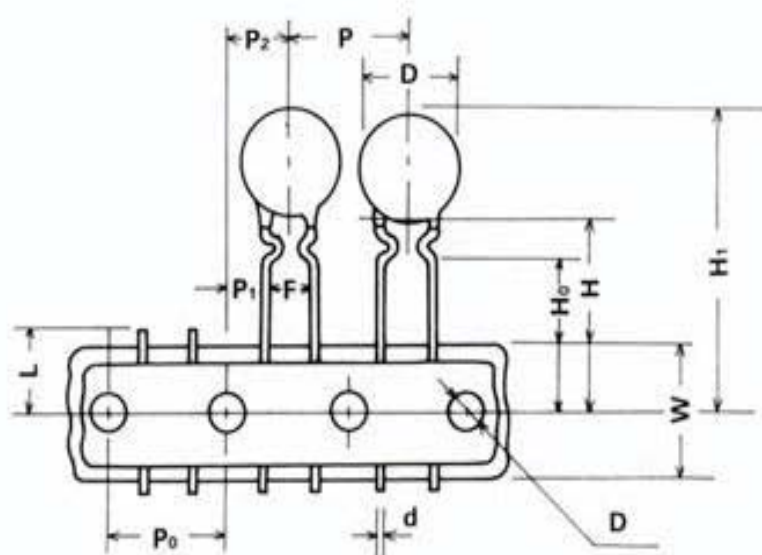
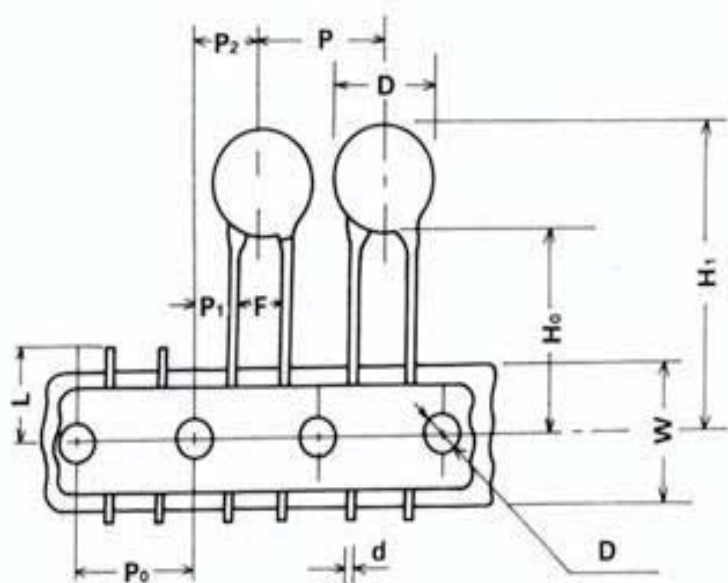


Y5V

-40°C -20°C 0°C 20°C 40°C 60°C 80°C 100°C

TEMPERTATURE (°C)





Symbol	D	d	P	$P_0$	$P_1$	$P_2$	F	H	$H_0$	$H_1$	$D_0$	W	L	t	$\Delta h$
VALUE	MAX 11.0	0.6	12.7	12.7	3.85	6.35	5.0 6.35	20.0	16.0	MAX 32.25	4.0	18.0	MAX 11.00	0.7	0
TOLERANCE	-	+0.06 -0.05	$\pm 1.0$	$\pm 0.2$	$\pm 0.7$	$\pm 1.0$	0.8 -0.2	+1.5 -1.0	$\pm 0.5$	-	$\pm 0.2$	$\pm 0.5$	-	$\pm 0.2$	$\pm 2.0$