

# Reference Specification

Type KX
Safety Standard Certified Lead Type Disc Ceramic Capacitors for General Purpose

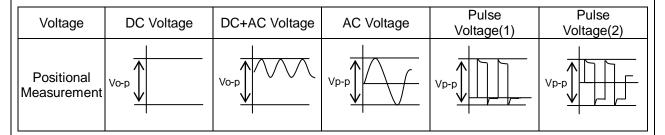
Product specifications in this catalog are as of Jun. 2019, and are subject to change or obsolescence without notice.

Please consult the approval sheet before ordering. Please read rating and Cautions first.

## **⚠** CAUTION

#### 1. OPERATING VOLTAGE

When DC-rated capacitors are to be used in AC or ripple current circuits, be sure to maintain the Vp-p value of the applied voltage or the Vo-p which contains DC bias within the rated voltage range. When the voltage is started to apply to the circuit or it is stopped applying, the irregular voltage may be generated for a transit period because of resonance or switching. Be sure to use a capacitor within rated voltage containing these irregular voltage.



#### 2. OPERATING TEMPERATURE AND SELF-GENERATED HEAT

Keep the surface temperature of a capacitor below the upper limit of its rated operating temperature range. Be sure to take into account the heat generated by the capacitor itself.

When the capacitor is used in a high-frequency current, pulse current or the like, it may have the self-generated heat due to dielectric-loss. Applied voltage should be the load such as self-generated heat is within 20 °C on the condition of atmosphere temperature 25 °C. When measuring, use a thermocouple of small thermal capacity-K of  $\phi$ 0.1mm and be in the condition where capacitor is not affected by radiant heat of other components and wind of surroundings. Excessive heat may lead to deterioration of the capacitor's characteristics and reliability.(Never attempt to perform measurement with the cooling fan running. Otherwise, accurate measurement cannot be ensured.)

#### 3. TEST CONDITION FOR WITHSTANDING VOLTAGE

## (1) TEST EQUIPMENT

Test equipment for AC withstanding voltage should be used with the performance of the wave similar to 50/60 Hz sine wave.

If the distorted sine wave or over load exceeding the specified voltage value is applied, the defective may be caused.

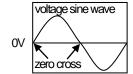
#### (2) VOLTAGE APPLIED METHOD

When the withstanding voltage is applied, capacitor's lead or terminal should be firmly connected to the out-put of the withstanding voltage test equipment, and then the voltage should be raised from near zero to the test voltage.

If the test voltage without the raise from near zero voltage would be applied directly to capacitor, test voltage should be applied with the \*zero cross. At the end of the test time, the test voltage should be reduced to near zero, and then capacitor's lead or terminal should be taken off the out-put of the withstanding voltage test equipment.

If the test voltage without the raise from near zero voltage would be applied directly to capacitor, the surge voltage may arise, and therefore, the defective may be caused.

\*ZERO CROSS is the point where voltage sine wave pass 0V. - See the right figure -



#### 4. FAIL-SAFE

When capacitor would be broken, failure may result in a short circuit. Be sure to provide an appropriate fail-safe function like a fuse on your product if failure would follow an electric shock, fire or fume.

#### 5. VIBRATION AND IMPACT

Do not expose a capacitor or its leads to excessive shock or vibration during use.

#### 6. SOLDERING

When soldering this product to a PCB/PWB, do not exceed the solder heat resistance specification of the capacitor. Subjecting this product to excessive heating could melt the internal junction solder and may result in thermal shocks that can crack the ceramic element.

When soldering capacitor with a soldering iron, it should be performed in following conditions.

Temperature of iron-tip: 400 °C max. Soldering iron wattage: 50W max. Soldering time: 3.5s max.

#### 7. BONDING, RESIN MOLDING AND COATING

In case of bonding, molding or coating this product, verify that these processes do not affect the quality of capacitor by testing the performance of the bonded, molded or coated product in the intended equipment.

In case of the amount of applications, dryness / hardening conditions of adhesives and molding resins containing organic solvents (ethyl acetate, methyl ethyl ketone, toluene, etc.) are unsuitable, the outer coating resin of a capacitor is damaged by the organic solvents and it may result, worst case, in a short circuit.

The variation in thickness of adhesive, molding resin or coating may cause a outer coating resin cracking and/or ceramic element cracking of a capacitor in a temperature cycling.

#### 8. TREATMENT AFTER BONDING, RESIN MOLDING AND COATING

When the outer coating is hot (over 100 °C) after soldering, it becomes soft and fragile. So please be careful not to give it mechanical stress.

Failure to follow the above cautions may result, worst case, in a short circuit and cause fuming or partial dispersion when the product is used.

#### 9. OPERATING AND STORAGE ENVIRONMENT

The insulating coating of capacitors does not form a perfect seal; therefore, do not use or store capacitors in a corrosive atmosphere, especially where chloride gas, sulfide gas, acid, alkali, salt or the like are present. And avoid exposure to moisture. Before cleaning, bonding, or molding this product, verify that these processes do not affect product quality by testing the performance of a cleaned, bonded or molded product in the intended equipment. Store the capacitors where the temperature and relative humidity do not exceed -10 to 40 °C and 15 to 85%.

Use capacitors within 6 months after delivered. Check the solderability after 6 months or more.

#### 10. LIMITATION OF APPLICATIONS

Please contact us before using our products for the applications listed below which require especially high reliability for the prevention of defects which might directly cause damage to the third party's life, body or property.

- 1. Aircraft equipment
- 2. Aerospace equipment
- 3. Undersea equipment
- 4. Power plant control equipment
- 5. Medical equipment
- 6. Transportation equipment (vehicles, trains, ships, etc.)
- 7. Traffic signal equipment
- 8. Disaster prevention / crime prevention equipment
- 9. Data-processing equipment exerting influence on public
- 10. Application of similar complexity and/or reliability requirements to the applications listed in the above.

EGD08E

#### NOTICE

#### 1. CLEANING (ULTRASONIC CLEANING)

To perform ultrasonic cleaning, observe the following conditions.

Rinse bath capacity: Output of 20 watts per liter or less.

Rinsing time: 5 min maximum.

Do not vibrate the PCB/PWB directly.

Excessive ultrasonic cleaning may lead to fatigue destruction of the lead wires.

#### 2. CAPACITANCE CHANGE OF CAPACITORS

· Class 1 capacitors

Capacitance might change a little depending on a surrounding temperature or an applied voltage. Please contact us if you use for the strict time constant circuit.

· Class 2 and 3 capacitors

Class 2 and 3 capacitors like temperature characteristic B, E and F have an aging characteristic, whereby the capacitor continually decreases its capacitance slightly if the capacitor leaves for a long time. Moreover, capacitance might change greatly depending on a surrounding temperature or an applied voltage. So, it is not likely to be able to use for the time constant circuit.

Please contact us if you need a detail information.

#### 3. PERFORMANCE CHECK BY EQUIPMENT

Before using a capacitor, check that there is no problem in the equipment's performance and the specifications.

Generally speaking, CLASS 2 ceramic capacitors have voltage dependence characteristics and temperature dependence characteristics in capacitance. So, the capacitance value may change depending on the operating condition in a equipment. Therefore, be sure to confirm the apparatus performance of receiving influence in a capacitance value change of a capacitor, such as leakage current and noise suppression characteristic.

Moreover, check the surge-proof ability of a capacitor in the equipment, if needed, because the surge voltage may exceed specific value by the inductance of the circuit.

# $\triangle$ note

- 1.Please make sure that your product has been evaluated in view of your specifications with our product being mounted to your product.
- 2. You are requested not to use our product deviating from this specification.

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#### 1. Application

This specification is applied to Safety Standard Certified Lead Type Disc Ceramic Capacitors Type KX used for General Electric equipment.

Type KX is Safety Standard Certified capacitors of Class X1,Y1.

Do not use these products in any automotive power train or safety equipment including battery chargers for electric vehicles and plug-in hybrids.

Approval standard and certified number

	Standard number	*Certified number	AC Rated volt. V(r.m.s.)
UL	UL60384-14	E37921	
CSA	CSA E60384-14	1343810	
VDE	IEC60384-14, EN60384-14	40002831	
BSI	EN60065 (8.8,14.2), IEC60384-14, EN60384-14	KM 37901	
SEMKO		1612604	X1:440
DEMKO	JE000004.44	D-05321	Y1:250
FIMKO	IEC60384-14, EN60384-14	FI 29602	11.230
NEMKO	L100304-14	P16221232	
ESTI		18.0079	
IMQ	EN60384-14	V4069	
CQC	GB/T6346.14	CQC04001011643	
KTC	K60384-14	HU03008-4003, HU03008-4004	

<sup>\*</sup>Above Certified number may be changed on account of the revision of standards and the renewal of certification.

## 2. Rating

2-1. Operating temperature range

-40 ~ +125°C

2-2. Part number configuration

ex.) <u>DE1</u> Product 1X ΚX 680 Α4 Temperature Type Capacitance Capacitance Lead Packing Individual characteristic code name tolerance code style code specification

• Product code

DE1 denotes X1,Y1 class.

• Temperature characteristic

Code	Temperature characteristic
1X	SL

Please confirm detailed specification on [ Specification and test methods ].

• Type name

This denotes safety certified type name Type KX.

<sup>&</sup>lt;The rated voltage of this product is AC250V(r.m.s).>

## Capacitance

The first two digits denote significant figures; the last digit denotes the multiplier of 10 in pF. ex.) In case of 680.

$$68 \times 10^0 = 68 pF$$

#### • Capacitance tolerance

Please refer to [ Part number list ].

#### • Lead code

_	oao					
ſ	Code	Lead style				
Ī	A*	Vertical crimp long type				
Ī	B*	Vartical arima abort tuno	Lead Length: 5mm			
Ī	J*	Vertical crimp short type Lead Length: 3.5				
	N*	Vertical crimp taping type				

<sup>\*</sup> Please refer to [ Part number list ]

#### • Packing style code

Code	Packing type
В	Bulk type
Α	Ammo pack taping type

## • Individual specification

In case part number cannot be identified without 'individual specification', it is added at the end of part number.

Code	Specification
C05F	<ul> <li>Halogen free         (Br ≤ 900ppm, Cl ≤ 900ppm)         Br + Cl ≤ 1500ppm</li> <li>CP wire</li> </ul>

Note) Murata part numbers might be changed depending on lead code or any other changes. Therefore, please specify only the type name(KX) and capacitance of products in the parts list when it is required for applying safety standard of electric equipment.

3. Marking

<Right side> <Reverse side>

: KX Type name Rated voltage mark: X1 440~

Y1 250~ Nominal capacitance : Actual value

CQC Approval mark (CQC) Capacitance tolerance : Code

Company name code : (Made in Tailand) KTC Approval mark: [6]

Manufacturing year : Letter code

(The last digit of A.D. year.)

Manufacturing month : Code

> Feb./Mar. → 2 Aug./Sep. → 8 Oct./Nov. → O Apr./May  $\rightarrow$  4 Jun./Jul.  $\rightarrow$  6 Dec./Jan. → D

7 **UL** Approval mark

CSA Approval mark

VDE Approval mark

: BSI BSI Approval mark

**(S)** SEMKO Approval mark

**DEMKO** Approval mark

: **(F)** FIMKO Approval mark

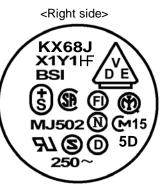
NEMKO Approval mark

╚ ESTI Approval mark IMQ Approval mark **(H)** 

Class code : X1Y1

: **F** Halogen free mark

Rated voltage mark : 250~ (Example)

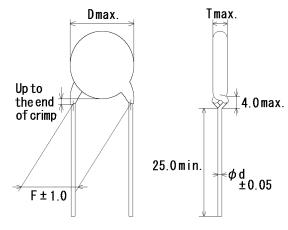


1 440~ 250~ C

<Reverse side>

## 4. Part number list

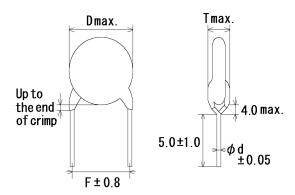
Vertical crimp long type (Lead code: A\*)



Note) The mark '\*' of lead code differ from lead spacing(F) and lead diameter(d).
Please see the following list about details.

									Ornic .	
T.C.	Сар.	Сар.	Customer Part Number	Murata Part Number		nensio	Lead	Pack		
1.0.	(pF)	tol.	Customer Fait Number	oustomer Fait Number   Murata Fait Number	D	Т	F	d		qty. (pcs)
SL	10	±5%		DE11XKX100JA4BC05F	9.0	8.0	10.0	0.6	A4	250
SL	15	±5%		DE11XKX150JA4BC05F	9.0	8.0	10.0	0.6	A4	250
SL	22	±5%		DE11XKX220JA4BC05F	9.0	8.0	10.0	0.6	A4	250
SL	33	±5%		DE11XKX330JA4BC05F	9.0	8.0	10.0	0.6	A4	250
SL	47	±5%		DE11XKX470JA4BC05F	9.0	8.0	10.0	0.6	A4	250
SL	68	±5%		DE11XKX680JA4BC05F	9.0	8.0	10.0	0.6	A4	250

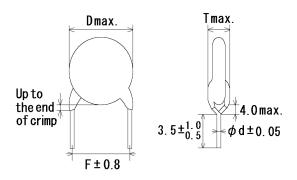
Vertical crimp short type (Lead code:B\*)



Note) The mark '\*' of lead code differ from lead spacing(F) and lead diameter(d).
Please see the following list about details.

									Offic.	111111
T.C.	T.C. Cap. Cap. Customer Port Number		Customer Part Number	Murata Part Number	Din	nensi	Lead	Pack		
1.0.	(pF)	tol.	Gustomer Fart Number	Dei Widiala Fait Numbei	D	Т	F	d	code	qty. (pcs)
SL	10	$\pm$ 5%		DE11XKX100JB4BC05F	9.0	8.0	10.0	0.6	B4	500
SL	15	±5%		DE11XKX150JB4BC05F	9.0	8.0	10.0	0.6	B4	500
SL	22	±5%		DE11XKX220JB4BC05F	9.0	8.0	10.0	0.6	B4	500
SL	33	±5%		DE11XKX330JB4BC05F	9.0	8.0	10.0	0.6	B4	500
SL	47	±5%		DE11XKX470JB4BC05F	9.0	8.0	10.0	0.6	B4	500
SL	68	±5%		DE11XKX680JB4BC05F	9.0	8.0	10.0	0.6	B4	500

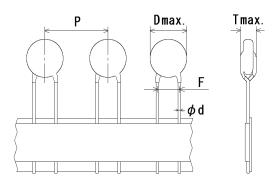
·Vertical crimp short type
(Lead code:J\*)



Note) The mark '\*' of lead code differ from lead spacing(F) and lead diameter(d).
Please see the following list about details.

T.C.	Cap.	Сар.	Customer Part Number	Number Murata Part Number	Dir	nensi	m)	Lead	Pack	
1.0.	(pF)	tol.	D	Т	F	d	code	qty. (pcs)		
SL	10	±5%		DE11XKX100JJ4BC05F	9.0	8.0	10.0	0.6	J4	500
SL	15	±5%		DE11XKX150JJ4BC05F	9.0	8.0	10.0	0.6	J4	500
SL	22	$\pm 5\%$		DE11XKX220JJ4BC05F	9.0	8.0	10.0	0.6	J4	500
SL	33	$\pm 5\%$		DE11XKX330JJ4BC05F	9.0	8.0	10.0	0.6	J4	500
SL	47	±5%		DE11XKX470JJ4BC05F	9.0	8.0	10.0	0.6	J4	500
SL	68	±5%		DE11XKX680JJ4BC05F	9.0	8.0	10.0	0.6	J4	500

·Vartical crimp taping type (Lead code:N\*)



Note) The mark '\*' of lead code differ from lead spacing(F), lead diameter(d) and pitch of component(P). Please see the following list or taping specification about details.

										Office.	
T.C.	Cap.	Cap.	Customer Part Number	Murata Part Number		Dimension (mm)					Pack
1.0.	I (DE) I TOL I	D	Т	F	d	Р	code	qty. (pcs)			
SL	10	±5%		DE11XKX100JN4AC05F	9.0	8.0	10.0	0.6	25.4	N4	500
SL	15	±5%		DE11XKX150JN4AC05F	9.0	8.0	10.0	0.6	25.4	N4	500
SL	22	±5%		DE11XKX220JN4AC05F	9.0	8.0	10.0	0.6	25.4	N4	500
SL	33	±5%		DE11XKX330JN4AC05F	9.0	8.0	10.0	0.6	25.4	N4	500
SL	47	±5%		DE11XKX470JN4AC05F	9.0	8.0	10.0	0.6	25.4	N4	500
SL	68	±5%		DE11XKX680JN4AC05F	9.0	8.0	10.0	0.6	25.4	N4	500

				eterence on	· )					
	pecification and				1					
No.	Iter			cification	-	Test method				
1	Appearance and di	mensions	No marked defe	ect on appearance		The capacitor should be inspected by naked eyes for visible evidence of defect.				
				isions. [Part number list]		Dimensions should be measured with slide calipers.				
2	Marking		To be easily leg			The capacitor should be inspected by naked eyes.				
3	Dielectric	Between lead	No failure.			he capacitor sh				
ŭ	strength	wires	Tto fallaro.			C4000V(r.m.s.				
	· ·					ead wires for 60				
		Body	No failure.			irst, the termina		apacitor sh	ould be	
		insulation				onnected togeth			V	
						hen, a metal foi		9	Ø	
						losely wrapped ne body of the c		Metal &	<b>^</b>	
						the distance o		foil 📈	About 3 to 6 mm	
						bout 3 to 6mm		0000	XXXX ○ ○ ○ XXXX ○ ○ ○ Metal	
						om each termin		0000000	oooooo balls	
						hen, the capaci				
						ontainer filled w	ith metal b	alls of abou	ut 1mm	
						iameter. inally, AC4000\	/ (rm c )-!	50/60Hz> id	e applied for	
						0 s between the				
						alls.	o capacitoi	1000 111100	and motal	
4	Insulation Resistan	ice (I.R.)	10000MΩ min.			he insulation re	sistance s	hould be m	easured with	
	,					C500±50V with				
						he voltage shou		ied to the c	apacitor	
-	Conceitor		\\/ithin ====:":	d talaran		rough a resisto			ot 2000it-	
5	Capacitance		Within specifie	u tolerance.		he capacitance			at ∠0°C With	
6	Q		400+20C* <sup>2</sup> min	(30nF under)		1±0.1MHz and AC5V(r.m.s.) max  The Q should be measured at 20°C with 1±0.1MHz				
U	l d		1000min.	(30pF min.)	and AC5V(r.m.			1 at 20 C W	itti i±0. iivii iz	
7	Temperature chara	cteristic	+350 to -1000	<u> </u>	The capacitance measurement should be made		d be made at			
	·		(Temp. range:			each step specified in Table.				
			_							
				Step	1	2	3	4	5	
				Temp.(°C)	20±2 -25±2 20±2 85±2		20±2			
8	Active flammability		The cheese-clo	oth should not be	Т	The capacitors should be individually wrapped in			wranned in at	
O	7 toti vo Harrinability		on fire.	an onoula not bo		east one but mo				
						heese-cloth. Th				
						20 discharges				
						ischarges shou				
					111	naintained for 2	min arter tr	ie iast disc	narge.	
						S1 F	→ <del>- 1</del> + <del>- 1</del>	<u> </u>	<u>R</u>	
						$\sim \mathbb{M}^{1/2} \phi \circ 1$	ı <u>∔</u> c₂∔ c:	₃	Ct ≠ ≠ Ut	
						Tr S2 UAC	L3 L4			
								. 후 다		
								Ч,	) Sciloscope	
					С	:1,2 : 1μF±1	0%, C3:	0.033μF±5	% 10kV	
					L	1 to L4 : 1.5mH	I±20% 16A	Rod core	choke	
					R			μF±5% 10l		
					_			Rated volta	age	
					F		itor under t Rated 10A	ರರಿ		
					lυ	,	e applied to	Ct Ct		
						Ux	POG K	-		
							<b>不</b> 1			
							5kV			
								$\nearrow \bigcirc$		
							1			
								1	time	
			•		1					
"C"	expresses nominal c	apacitance value(r	oF)							
	•		•							

			Reference only	
No.	Item	T	Specification	Test method
9	Robustness of terminations	Tensile	Lead wire should not cut off. Capacitor should not be broken.	Fix the body of capacitor, a tensile weight gradually to each lead wire in the radial direction of capacitor up to 10N and keep it for 10±1 s.
		Bending		With the termination in its normal position, the capacitor is held by its body in such a manner that
				the axis of the termination is vertical; a mass applying a force of 5N is then suspended from the
				end of the termination.  The body of the capacitor is then inclined, within a period of 2 to 3 s, through an angle of
				approximately 90° in the vertical plane and then returned to its initial position over the same period
				of time; this operation constitutes one bend.  One bend immediately followed by a second bend
10	Vibration	Appearance	No marked defect.	in the opposite direction.  The capacitor should be firmly soldered to the
	resistance	Capacitance	Within the specified tolerance.	supporting lead wire and vibration which is 10 to
		Q	400+20C*2min.(30pF under) 1000min. (30pF min.)	55Hz in the vibration frequency range,1.5mm in total amplitude, and about 1min in the rate of
				vibration change from 10Hz to 55Hz and back to 10Hz is applied for a total of 6 h; 2 h each in
11	Solderability of leads		Lead wire should be soldered	3 mutually perpendicular directions.
'''	Soluerability of leads		With uniformly coated on the	The lead wire of a capacitor should be dipped into a ethanol solution of 25wt% rosin and then into
			axial direction over 3/4 of the	molten solder for 2±0.5 s. In both cases the depth of
			circumferential direction.	dipping is up to about 1.5 to 2.0mm from the root of lead wires.
				Temp. of solder: 245±5°C Lead Free Solder (Sn-3Ag-0.5Cu)
40	Outstand and Wast		No seed addition	235±5°C H63 Eutectic Solder
12	Soldering effect (Non-preheat)	Appearance Capacitance	No marked defect. Within ±10%	Solder temperature: 350±10°C or 260±5°C  Immersion time : 3.5±0.5 s
		change I.R.	1000MΩ min.	(In case of 260±5°C: 10±1 s) The depth of immersion is up to about
		Dielectric strength	Per item 3	1.5 to 2.0mm from the root of lead wires.
		Strongth		Thermal insulating
				to 2.0mm
				Pre-treatment: Capacitor should be stored at 85±2°C for 1 h, then placed at *1room condition for 24±2 h
				Post-treatment: Capacitor should be stored for 1 to 2 h at *1 room condition.
13	Soldering effect	Appearance	No marked defect.	First the capacitor should be stored at 120+0/-5°C
	(On-preheat)	Capacitance	Within ±10%	for 60+0/-5 s.
		change	4.000140	Then, as in figure, the lead wires should be
		I.R.	1000MΩ min.	immersed solder of 260+0/-5°C up to 1.5 to 2.0mm from the root of terminal for 7.5+0/-1 s.
		Dielectric strength	Per item 3	Thermal
				insulating 1.5 to 2.0mm
				Molten solder
				Pre-treatment: Capacitor should be stored at 85±2°C for 1 h, then placed at *1room condition for 24±2 h before initial measurements.
				Post-treatment: Capacitor should be stored for 1 to 2 h at *1room condition.
*1 "roc *2 "C"	om condition" Tempera expresses nominal ca	ature: 15 to 35°C,	Relative humidity: 45 to 75%, Atmosp	oheric pressure: 86 to 106kPa

\*2 "C" expresses nominal capacitance value(pF)

			Reference only	
No.	Item	1	Specification	Test method
14	Flame test		The capacitor flame discontinue as follows.  Cycle Time 1 to 4 30 s max. 5 60 s max.	The capacitor should be subjected to applied flame for 15 s. and then removed for 15 s until 5 cycle.  Capacitor Flame  Gas Burner
15	Passive flammability		The burning time should not be exceeded the time 30 s. The tissue paper should not ignite.	The capacitor under test should be held in the flame in the position which best promotes burning.  Time of exposure to flame is for 30 s.  Length of flame: 12±1mm  Gas burner: Length 35mm min. Inside Dia. 0.5±0.1mm Outside Dia. 0.9mm max.  Gas: Butane gas Purity 95% min.  About 8mm  Gas burner  About 10mm thick board
16	Humidity (Under steady state)	Appearance Capacitance change Q I.R. Dielectric strength	No marked defect. Within $\pm 5\%$ 275+5/2C*2min.(30pF under) 350min. (30pF min.) 3 000M $\Omega$ min. Per item 3	Set the capacitor for 500±12 h at 40±2°C in 90 to 95% relative humidity.  Post-treatment: Capacitor should be stored for 1 to 2 h at *1 room condition.
17	Humidity loading	Appearance Capacitance change Q I.R. Dielectric strength	No marked defect.  Within ±5%  275+5/2C* <sup>2</sup> min.(30pF under) 350min. (30pF min.) 3000MΩ min.  Per item 3  Relative humidity: 45 to 75%. Atmost	Apply the rated voltage for 500±12 h at 40±2°C in 90 to 95% relative humidity.  Post-treatment: Capacitor should be stored for 1 to 2 h at *1room condition.

<sup>\*1 &</sup>quot;room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa \*2 "C" expresses nominal capacitance value(pF)

Appearance   No marked defect.   Impulse voltage   Each individual capacitor should be subjected to a 8KV impulses for three times. Then the capacitors are applied to life test.   Pertime 13   Pertime 13   Pertime 13   Pertime 13   Pertime 14   Pertime 15   Pertime 15   Pertime 15   Pertime 16   Pertime 17   Pert	Appearance   Appearance   Capacitance change   I.R.   3000M\(Dielectric strength)   Per item 3   Fort ime (T) = 1.7\(J_B = 1.5\)Time to hardward (2) = 60\(J_B = 1.6\)				Specification				Test m	nethod		
Capacitance   Change   I.R.   3000MΩ min.	Capacitance change		Lite			Im	npulse	voltage		.5100		
LR   3000MΩ min.	Per item 3   Set   Imperature and immersion cycle   Image:   Appearance   Appearance   Appearance   Capacitance		-			——  ;;;	ach in	dividual (	capacitor sh	ould be s	ubjected to a	
R   Dielectric   Dreiectric   Strength   Per item 3   Per item 3   Per item 3   The capacitors are placed in a circulating air oven for a period of 1000 h. The air in the oven is maintained at a temperature of 125±2/° Cc, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425/(rm.s). 5500/5/° Cc, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425/(rm.s). 5500/5/° Cc, and relative humidity of 50% max. Throughout the test, the capacitors as subjected to a AC425/(rm.s). 5500/5/° Cc, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425/(rm.s). 5500/5/° Cc, and relative humidity of 50% max. Throughout the test, the capacitors as subjected to a AC425/(rm.s). 5500/5/° Cc, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425/(rm.s). 5500/5/(rm.s).	R.   3000M2 min.   Dielectric strength   Per item 3   Front time (1) = 1.7 tr s=1.57T				**************************************							
Dielectric Strength  Per item 3  Dielectric Strength  Die	Dielectric strength  Per item 3  Dielectric strength  Per item 3  Dielectric strength  Per item 3  The capacitors are placed in a circulating air oven for a period of 1000 h. The air in the oven its maintained at a temperature of 125+27-0°C, and relative humidity 650% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)+50/60Hz- alternating voltage of mains frequency except that once each hour the voltage is increased to AC1000V(r.m.s.) for 0.  Post-treatment: Capacitor should be stored for 12 h at "froom condition."  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. Annage  Appearance  No marked defect.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. The capacitor should be stored at 85±2°C for 1 h, then placed at 1 +465+5/-0 15 min water cycle time: 2  Pre-treatment: Capacitor should be stored at 85±2°C for 1 h, then placed at 1 then placed				2000MO min					o. 111011 ll	ic supuditors	
strength    Strength	Strength						e app	iieu to iii	e iesi.			
The capacitors are placed in a circulating air oven for a period of 1000 h.  The air in the oven is maintained at a temperature of 125+2/-0 °C, and relative humidity of 50% max.  Throughout the test, the capacitors are subjected to a AC425V(r.m.s.) <50/60Hz-a laternating voltage of mains frequency, except that once each hour the voltage is increased to AC1000V(r.m.s.) for 0.1 s Post-treatment: Capacitor should be stored for 1 to 2 h at "froom condition.  Post-treatment: Capacitor should be stored for 1 to 2 h at "froom condition.  The capacitors are placed in a circulating air oven for a period of 1000 h, The post-treatment is mutative of 125+2/-0 °C, and relative humidity of 50% max.  Throughout the test, the capacitors are subjected to 5 temperature of 12 h at "froom condition.  The capacitors should be stored for 1 to 2 h at "froom condition.  The capacitors should be stored for 1 to 2 h at "froom condition.  The capacitor should be stored and a stored for 1 to 2 h at "froom condition.  The capacitor should be stored for 1 to 2 h at "froom condition.  The capacitor should be stored for 1 to 2 h at "froom condition.  The capacitor should be stored for 1 to 2 h at "froom condition.  The capacitor should be stored for 1 to 2 h at "froom condition.  The capacitor should be stored for 1 to 2 h at "froom condition.  The capacitor should be stored for 1 to 2 h at "froom condition.  The capacitor should be stored for 4 to 2 h at "froom condition.	The capacitors are placed in a circulating air oven for a period of 1 000 h.  The air in the oven is maintained at a temperature of 125+2/-0°C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)-c50/60Hz-alternating voltage of mains frequency, except that once each hour the voltage is increasing voltage of mains frequency, except that once each hour the voltage is increasing voltage of mains frequency, except that once each hour the voltage is increasing voltage of mains frequency, except that once each hour the voltage is increasing voltage is voltage is voltage is voltage is increasing voltage is voltage is voltage is increasing voltage is voltage in				Per item 3			. (%)	-		4.7 4.CTT	
The capacitors are placed in a circulating air oven for a period of 1000 h.  The air in the oven is maintained at a temperature of 125±2-0°C, and relative humidity of 50% max.  Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)-c50/60Hz> alternating voltage of mains frequency, except that once each hour the voltage is increased to AC100V(r.m.s.) for 0.1 s  Post-treatment: Capacitor should be studied.  2 post-treatment: Capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  Appearance Within ±5% change  Q 275+5/2C²²min.(30pF under) 350min. (30pF min.)  I.R. 3000MΩ min.  I.R. 3000MΩ min.  Dielectric strength  Per item 3  The capacitor should be subjected to 5 temperature cycles.  **Temperature cycle**  **Temperature cycle**  Step Temperature(°C) Time Immersion cycle immersion cycle immersion cycle*  **Immersion cycle**  Step Temperature(°C) Time Immersion water 1 +65+5/-0 15 min water 2 0±3 15 min Salt water  Cycle time: 5 cy  **Immersion cycle**  **Temperature cycle**  Step Temperature(°C) Time Immersion water 1 +65+5/-0 15 min water 2 0±3 15 min Salt water	The capacitors are placed in a circulating air oven for a period of 1000 h.  The air in the oven is maintained at a temperature of 125±2½°0°C, and relative humidity of 50% marked to a AC425V(.m.s.)-50/60H2-satemating volumity of the test, the capacitors are subjected to a AC425V(.m.s.)-50/60H2-satemating volumity of 50% marked of 125±2½°0°C, and relative humidity of 100 humidity o			strength			10 9	₿₩	`	. ,		
The capacitors are placed in a circulating air oven for a period of 1 000 h.  The air in the oven is maintained at a temperature of 125+22-0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)+50/60Hz-2 alternating voltage of mains frequency each hour the voltage is increased to AC1000V(r.m.s.) for 0.1 stores of 1 to 2 h at *1room condition.  Post-treatment: Capacitor should be stored for 1 to 2 h at *1room condition.  Post-treatment: Capacitor should be stored for 1 to 2 h at *1room condition.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  *Temperature cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  *Temperature cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  *Temperature cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  *Temperature cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  *Temperature cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  *Temperature cycles.  The capacitor should be stored for 1 to 2 consecutively to 2 immersion cycles.  The capacitor should be stored at 85±2°C for 1 h, then placed at *1 commercial consecutively to 2 immersion cycles.  The capacitor should be stored for 4 to 2 consecutively to 2 immersion cycles.  The capacitor should be stored at 85±2°C for 1 h, then placed at *1 commercial consecutively to 2 immersion cycles.  The capacitor should be stored for 4 to 2 consecutively to 2 immersion cycles.  The capacitor should be stored for 4 to 2 consecutively to 2 immersion cycles.  The capacitor should be stored for 4 to 2 consecutively to 2 immersion cycles.  The capacitor should be stored for 4 to 2 consecutively to 2 immersion cycles.  The capacitor should be stored	The capacitors are placed in a circulating air oven for a period of 1000 h.  The air in the oven is maintained at a temperature of 125+22-0°C, and relative humidity of 50% max. Throughout the text capacitors are subjected to a AC425V in the capacitors are subjected to a AC425V in the capacitors are subjected to a AC425V in the capacitor should be stored for 12 h at "froom condition.  Post-treatment: Capacitor should be stored for 12 h at "froom condition.  Appearance No marked defect. Capacitance change  Q 275+5/2C*2min.(30pF under) 350min. (30pF min.)  I.R. 3000M2 min.  Dielectric strength  Per item 3  The capacitor should be subjected to 5 femperature cycles.  The capacitor should be subjected to 5 femperature cycles.  The capacitor should be subjected to 5 femperature cycles.  Temperature cycles  Temperature cycles  Temperature cycles  Temperature cycles  Step Temperature("C) Time Immersion cycles water 1 +465+5/-0 15 min Cycle time: 2  Cycle time: 2  Pre-treatment: Capacitor should be stored at 85±2°C for 1 h, then placed at "froom condition for 24±2 h.  Post-treatment: Capacitor should be stored for 4 24 h at "froom condition. 4"room condition. 4"room condition. 5 the condition of 15 to 106kPa"						5	o—/  _		me to nali-val	$ue(12) = 50 \mu s$	
The capacitors are placed in a circulating air oven for a period of 1 000 h.  The air in the oven is maintained at a temperature of 125±2/9 °C, and relative humidity of 50% max.  Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)+50/60/12-alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 s  Post-treatment: Capacitor should be stored for 1 to 2 hat "froom condition.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  Step Temperature cycles.  Step Temperature(°C) Time  1 + 40+0/-3 30 min  2 Room temp. 3 min  Cycle time: 5 cycle time: 5 cycle time: 5 cycle time: 2 cycle time: 3 cycle t	The capacitors are placed in a circulating air oven for a period of 1000 h.  The air in the oven is maintained at a temperature of 125+22-0°C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)<80/OHZ-alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1000V(r.m.s.) for 0.  Post-treatment: Capacition should be stored for 12 h at *1room condition.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  **Temperature cycles**  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  **Temperature cycles**  Temperature cycles**  **Temperature cycles**  **Temperature cycles**  **Step Temperature(*C) Time Immersion cycles water 1 +65+5/-0 15 min Clean water 1 +65+5/-0 15 min Clean water 2 0±3 15 min Salit water 1 +65+5/-0 15 min Clean water 2 0±3 15 min Paced at 85±2°C for 1 h, then placed at **Iroom condition for 24±2 h.  **Pre-treatment: Capacitor should be stored at 85±2°C for 1 h, then placed at **Iroom condition for 24±2 h.  **Pre-treatment: Capacitor should be stored at 85±2°C for 1 h, then placed at **Iroom condition for 24±2 h.  **Pre-treatment: Capacitor should be stored for 4 24 h at **Iroom condition.**  Troom condition**  Temperature(**C) Time Immersion cycles*  **Temperature cycles*  **Temperature(**C) Time Immersion cycles*							/ II				
The capacitors are placed in a circulating air oven for a period of 1 000 h.  The air in the oven is maintained at a temperature of 125±2-0°C, and relative humidity of 50% max.  Throughout the test, the capacitors are subjected to a AC425V(ms.)±50/60Hz> alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1000V(r.m.s.) for 0.1 s  Post-treatment: Capacitor should be stored for 1 treatments of 2 hat "froom condition.  Post-treatment: Capacitor should be stored for 1 treatments of 2 hat "froom condition.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  Capacitance within ±5% of 30pF min.)  I.R. 3000MΩ min.  Dielectric strength  Per item 3  Temperature cycles  Step Temperature(°C) Time   Immersion cycles    Immersion cycle	The capacitors are placed in a circulating air oven for a period of 1 000 h.  The air in the oven is maintained at a temperature of 125+27-0°C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a ΛC425V(rm.s.)+50/60Hz- alternating voltage of mains frequency, except that once each hour the voltage is increased to ΛC4100V(rm.s.) for 0.  Post-treatment: Capacitor should be stored for 1 2 h at "1room condition.  The capacitor should be subjected to 5 temperature and immersion cycle  Q 275+5/2C*2*min.(30pF under) 350min. (30pF min.)  I.R. 3000MΩ min.  Dielectric strength  Per item 3  Temperature cycles  Step Temperature(*C) Time immersion cycles water in +65+5/-0 15 min Clean water in +65+5/-0 15 min C							4		t		
The capacitors are placed in a circulating air oven for a period of 1 000 h.  The air in the oven is maintained at a temperature of 125±2/0 °C, and relative humidity of 50% max Throughout the test, the capacitors are subjected to a AC425/L/m.s.)-50/60/12-alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 s  Post-treatment: Capacitor should be stored for 1 to 2 h at *1room condition.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  Appearance	The capacitors are placed in a circulating air oven for a period of 1000 h.  The air in the oven is maintained at a temperature of 125+2/-0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.) c50/60Hz- alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1000V(r.m.s.) for 0.  Post-treatment: Capacitor should be stored for 12 h at "1room condition.  Post-treatment: Capacitor should be stored for 12 h at "1room condition.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  Temperature cycles  Temperature cycl						<u>  T1                                   </u>					
for a period of 1 000 h. The air in the oven is maintained at a temperature of 125+22/0°C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to ta A AC425VL-36060H2-a laternating voltage of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of a 1 to 2 had 4 not 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains	for a period of 1 000 h. The air in the oven is maintained at a temperature of 125+2/-0°C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)-\$60/80H2-a alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.    Post-treatment: Capacitor should be stored for 1 2 h at 1*room condition.							T2	2			
for a period of 1 000 h. The air in the oven is maintained at a temperature of 125+22/0°C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to ta A AC425VL-36060H2-a laternating voltage of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of a 1 to 2 had 4 not 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 step of mains	for a period of 1 000 h. The air in the oven is maintained at a temperature of 125+2/-0°C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)-\$60/80H2-a alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.    Post-treatment: Capacitor should be stored for 1 2 h at 1*room condition.											
The air in the oven is maintained at a temperature of 125+2/-0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)-50/60Hz-> alternating voltage of mains freeze, except that once each hour the voltage is increased to AC1000V(r.m.s.) for 0.1 s  Post-treatment: Capacitor should be stored for 1 tr 2 h at *1room condition.  Post-treatment: Capacitor should be stored for 1 tr 2 h at *1room condition.  Post-treatment: Capacitor should be subjected to 5 temperature cycles within ±5% change  Q 275+5/2C*2min.(30pF under) 350min. (30pF min.)  I.R. 3000MΩ min.  Dielectric strength  Per item 3  Per item 3  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  **Temperature cycle>  **Tempera	The air in the oven is maintained at a temperature of 125+2/-0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)4 Appearance No marked defect. Capacitance change Q 275+5/2C*2min.(30pF under) 350min. (30pF min.) 1.R. 3000MΩ min. Dielectric strength Per item 3 Per item 3 Step Temperature(°C) Time Immersion cycles Step Temperature(°C) Time Qater (and the subjected to a AC4000V(r.m.s.) and min Cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 5 temperature cycles. The capacitor should be subjected to 6 temperature cycles. The capacitor should be subjected to 6 temperature cycles. The capacitor should be stored at 85±2°C for 1 h, then placed at "froom condition." Cycle time: 2 Pre-treatment: Capacitor should be stored for 4 25 h at "room condition." "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa					Th	The capacitors are placed in a circulating air oven					
of 125+22-0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)-50/60H2> alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1000V(r.m.s.) for 0.1 s  Post-treatment: Capacitor should be stored for 1 to 2 h at *froom condition.  Post-treatment: Capacitor should be stored for 1 to 2 h at *froom condition.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  **Temperature cycle**    Appearance	of 125+2/-0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.m.s.) <a appearance<="" condition.="" froom="" href="mailto:solid black bla&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;for&lt;/td&gt;&lt;td&gt;r a pe&lt;/td&gt;&lt;td&gt;riod of 1&lt;/td&gt;&lt;td&gt;000 h.&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;/tr&gt;&lt;tr&gt;&lt;td&gt;Throughout the test, the capacitors are subjected to a AC425V(r.m.s.) Femperature and immersion cycle 9 Temperature and immersion cycle Q 275+5/2C*2min.(30pF under) 350min. (30pF min.) I.R. 3000MΩ min. Dielectric strength Per item 3 Per item 3 Fer item 3 Cycle time: 5 cycle time: 2 cycle time: 5 cycle time: 5 cycle time: 2 cycle time: 3 cycle time: 4 cycle time: 5 cycle time:&lt;/td&gt;&lt;td&gt;Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)&lt;0/4000 continuous of the voltage is increased to AC1 000V(r.m.s.) for 0.  Post-treatment: Capacitor should be stored for 1 2 h at *1 room condition.  Appearance No marked defect. Capacitance change  Q 275+5/2C*2*min.(30pF under) 350min. (30pF min.)  I.R. 3000MΩ min.  Dielectric strength  Per item 3  Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)&lt;0/4 continuous of main and the voltage is increased to AC1 000V(r.m.s.) for 0.  Post-treatment: Capacitor should be stored for 4 2 h at *1 room condition.  Troom condition* Temperature: 15 to 35°C. Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;&lt;/td&gt;&lt;td&gt;Th&lt;/td&gt;&lt;td&gt;he air&lt;/td&gt;&lt;td&gt;in the ov&lt;/td&gt;&lt;td&gt;en is mainta&lt;/td&gt;&lt;td&gt;ained at a&lt;/td&gt;&lt;td&gt;temperature&lt;/td&gt;&lt;/tr&gt;&lt;tr&gt;&lt;td&gt;to a AC425V(r.m.s.)-\$60/60Hz&gt; alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 s.  Post-treatment: Capacitor should be stored for 1 to 2 h at *1 room condition.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  Appearance Capacitance change  Q 275+5/2C*2min.(30pF under) 350min.  I.R. 3000MΩ min.  Dielectric strength  Per item 3  Per item 3  The capacitor should be subjected to 5 temperature cycles.  **Temperature cycles**  **Step Temperature(°C) Time 1 memersion cycle time: 5 cycle time: 2 cycle time: 3 cycle time: 4 cycle time:&lt;/td&gt;&lt;td&gt;to a AC425V(r.m.s.)-50/60Hz&gt; alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.  Post-treatment: Capacitor should be stored for 1 2 h at " td=""><td></td><td></td><td></td><td></td><td>of</td><td>125+</td><td>2/-0 °C,</td><td>and relative</td><td>humidity</td><td>of 50% max</td></a>					of	125+	2/-0 °C,	and relative	humidity	of 50% max	
to a AC425V(r.m.s.)-\$60/60Hz> alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.1 s.  Post-treatment: Capacitor should be stored for 1 to 2 h at *1 room condition.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  Appearance Capacitance change  Q 275+5/2C*2min.(30pF under) 350min.  I.R. 3000MΩ min.  Dielectric strength  Per item 3  Per item 3  The capacitor should be subjected to 5 temperature cycles.  **Temperature cycles**  **Step Temperature(°C) Time 1 memersion cycle time: 5 cycle time: 2 cycle time: 3 cycle time: 4 cycle time:	to a AC425V(r.m.s.)-50/60Hz> alternating voltage of mains frequency, except that once each hour the voltage is increased to AC1 000V(r.m.s.) for 0.  Post-treatment: Capacitor should be stored for 1. 2 h at "froom condition.  Appearance					Tr						
Step   Temperature and immersion cycle   Pereitem 3   Pereitem 3   Pereitem 3   Pereitem 3   Pereitem 3   Pereitem 3   Pereitem 4   Pereitem 5   Pereitem 6   Pereitem 6   Pereitem 7   Pereitem 7   Pereitem 7   Pereitem 7   Pereitem 8   Pereitem 9	Step   Temperature and immersion cycle   Per item 3   Appearance   No marked defect.   Capacitor should be subjected to 5 temperature cycles.											
the voltage is increased to AC1 000V(r.m.s.) for 0.1 s  Post-treatment: Capacitor should be stored for 1 tr 2 h at *¹room condition.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  The capacitor should be stored for 1 to 4 to 40 to 4	the voltage is increased to AC1 000V(r.m.s.) for 0.  Post-treatment: Capacitor should be stored for 1 2 h at *"room condition.  Appearance No marked defect. Capacitance change Q 275+5/2C**2min.(30pF under) 350min. (30pF min.)  I.R. 3000M\(\Omega\$ min.)  Per item 3  Temperature cycles  The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles.  Temperature cycles  Temperature cycles  Step Temperature(°C) Time 1 mmersion cycle time: 5  Immersion cycles  Temperature(°C) Time 1 mmersion cycles  Temperature(°C) Time 1 mmersion cycles  Temperature(°C) Time 2 material time 3 min 4 material time 4 material time 3 min 4 material time											
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Temperature and immersion cycle   Appearance   No marked defect.   Capacitance change   Within ±5%   Capacitance change   Q   275+5/2C*2min.(30pF under)   350min.   (30pF min.)   1.R.   3000MΩ min.   2   Room temp.   3 min.   2   Room temp.   3 min.   2   Room temp.   3 min.   3 min.   3 min.   Cycle time : 5 cycle time : 5 cycle time : 2 cycle time : 3 min.   2 m	Temperature and immersion cycle   Appearance   No marked defect.   Within ±5%   Capacitance change   Q   275+5/2C*²min.(30pF under)   350min.   (30pF min.)   LR.   3000MΩ min.   Dielectric strength   Per item 3   Per item 3   Per item 3   Per item 3   Cycle ime : 5      Step   Temperature(°C)   Time							J			,	
Temperature and immersion cycle   Appearance   No marked defect.   Capacitance change   Within ±5%   Capacitance change   Q   275+5/2C*2min.(30pF under)   350min.   (30pF min.)   1.R.   3000MΩ min.   2   Room temp.   3 min.   2   Room temp.   3 min.   2   Room temp.   3 min.   3 min.   3 min.   Cycle time : 5 cycle time : 5 cycle time : 2 cycle time : 3 min.   2 m	Temperature and immersion cycle   Appearance   No marked defect.   Within ±5%   Capacitance change   Q   275+5/2C*²min.(30pF under)   350min.   (30pF min.)   LR.   3000MΩ min.   Dielectric strength   Per item 3   Per item 3   Per item 3   Per item 3   Cycle ime : 5      Step   Temperature(°C)   Time					Po	ost-tre	eatment :	Capacitor	should b	e stored for 1 t	
Temperature and immersion cycle   Appearance   Appearance   Within ±5%   Capacitance change   Q   275+5/2C*²min.(30pF under)   350min.   (30pF min.)   I.R.   3000MΩ min.   Per item 3   Per item 3   Temperature(°C)   Time   1   -40+0/-3   30 min   3   +125+3/-0   30 min   3   +125+3/-0   30 min   Cycle time: 5 cycle time: 5 cycle time: 2 cycle time: 3 min   Cycle time: 3 min   Cycle time: 5 cycle time: 2 cycle time: 3 min   Cycle time: 3 min   Cycle time: 5 cycle time: 4 cycle time: 5 cycle time: 5 cycle time: 5 cycle time: 5 cycle time: 2 cycle time: 5 cycle time: 5 cycle time: 2 cycle time: 4 cycle time: 5 cycle time: 6	Temperature and immersion cycle   Appearance   No marked defect.   Capacitance change   Q   275+5/2C*2min.(30pF under)   350min. (30pF min.)   I.R.   3000MΩ min.   Dielectric strength   Per item 3   Per item 3   Temperature(°C)   Time   Temper								2 h at *1ro	om condi	ion.	
immersion cycle   Capacitance change   Within ±5%   Capacitance change   Q   275+5/2C*²min.(30pF under) 350min. (30pF min.)     I.R.   3000MΩ min.   Dielectric strength   Per item 3   Per item 3   Cycle time : 5 cy	$ \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	9 1	Temperature and	Appearance	No marked defect.	Th	he car	oacitor sh				
Change   Q   275+5/2C*2min.(30pF under)   350min. (30pF min.)     I.R.   3000MΩ min.   Dielectric strength   Per item 3   Per item 3   Per item 3   Cycle time : 5 cy	Change   Q   275+5/2C*²min.(30pF under)   350min. (30pF min.)	-										
Q   275+5/2C*²min.(30pF under)   350min. (30pF min.)   I.R.   3000MΩ min.	Q   275+5/2C*²min.(30pF under)   350min. (30pF min.)		/			'	,				. ,	
Step   Temperature(°C)   Time   1	Step   Temperature(°C)   Time   1				275 15/20*2min (20n5 11ndon)	— -T	Tempe	erature c	ycle>			
I.R. 3000MΩ min.  Dielectric strength  Per item 3  Per item 3  1	I.R.   3000MΩ min.   2   Room temp.   3 min   3   +125+3/-0   30 min   4   Room temp.   3 min   3   +125+3/-0   30 min   4   Room temp.   3 min   Cycle time : 5			Q			·		-	ro(0C)	Time	
Dielectric strength  Per item 3  Per item 4  Per item 4  Per item 3  Per item 4  Per item 4  Per item 4  Per item 5  Per item	Dielectric strength  Per item 3  Per item 4  Per item 4  Per item 5  Per item 5  Per item 1  Per item 3  Per item 4  Per item 4  Per item 5  Per item 5  Per item 1  Per item 5  Per item 1  Per item 2  Per item 1  Per item 3  Per item 4  Per item 4  Per item 3  Per item 4  Per item 4  Per item 3  Per item 3  Per item 3  Per item 4  Per item 5  Per item 6  Per item			1.5			ŀ					
strength    3	strength    3			I.K.	3000MΩ min.							
A   Room temp.   3 min   Cycle time: 5 cy	4   Room temp.   3 min   Cycle time : 5			Dielectric	Per item 3							
Cycle time : 5 cy    Step   Temperature(°C)   Time   Immersion water     1	Cycle time : 5    Step   Temperature(°C)   Time   Immersion water			strength								
Immersion cycle>   Step Temperature(°C) Time Immersion water   1 +65+5/-0 15 min Clean water   2 0±3 15 min Salt water   Cycle time: 2 cy Pre-treatment: Capacitor should be stored at 85±2°C for 1 h, then placed at *1 room condition for 24±2 h. Post-treatment: Capacitor should be stored for 4 to 24 h at *1 room condition. "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	Immersion cycle>   Step Temperature(°C) Time Immersion water   1 +65+5/-0 15 min Clean water   2 0±3 15 min Salt water   Cycle time : 2   Pre-treatment : Capacitor should be stored at 85±2°C for 1 h, then placed at *1 room condition for 24±2 h.   Post-treatment : Capacitor should be stored for 24 h at *1 room condition.    Troom condition Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa							4	Room te	emp.	3 min	
Immersion cycle>   Step Temperature(°C) Time Immersion water   1 +65+5/-0 15 min Clean water   2 0±3 15 min Salt water   Cycle time: 2 cy Pre-treatment: Capacitor should be stored at 85±2°C for 1 h, then placed at *1 room condition for 24±2 h. Post-treatment: Capacitor should be stored for 4 to 24 h at *1 room condition. "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	Immersion cycle>   Step Temperature(°C) Time Immersion water   1 +65+5/-0 15 min Clean water   2 0±3 15 min Salt water   Cycle time : 2   Pre-treatment : Capacitor should be stored at 85±2°C for 1 h, then placed at *1 room condition for 24±2 h.   Post-treatment : Capacitor should be stored for 24 h at *1 room condition.    Troom condition Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa									C	vcle time · 5 cv	
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Step   Temperature(°C)   Time   water	Step Temperature(°C) Time water  1 +65+5/-0 15 min Clean water  2 0±3 15 min Salt water  Cycle time: 2  Pre-treatment: Capacitor should be stored at 85±2°C for 1 h, then placed at *1 room condition for 24±2 h.  Post-treatment: Capacitor should be stored for 4 24 h at *1 room condition.  "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa							l cion cyc	102		Immoroion	
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Toom condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	The state of the s											
2 0±3 15 min Salt water  Cycle time : 2 cy  Pre-treatment : Capacitor should be stored at 85±2°C for 1 h, then placed at *1 room condition for 24±2 h.  Post-treatment : Capacitor should be stored for 4 to 24 h at *1 room condition.  "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	2 0±3 15 min Salt water  Cycle time : 2  Pre-treatment : Capacitor should be stored at 85±2°C for 1 h, then placed at *1 room condition for 24±2 h.  Post-treatment : Capacitor should be stored for 4 24 h at *1 room condition.  "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa						1	+6	5+5/-0	15 min		
Pre-treatment : Capacitor should be stored at 85±2°C for 1 h, then placed at *1room condition for 24±2 h.  Post-treatment : Capacitor should be stored for 4 to 24 h at *1room condition.  Troom condition Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	Pre-treatment : Capacitor should be stored at 85±2°C for 1 h, then placed at *1 room condition for 24±2 h.  Post-treatment : Capacitor should be stored at *1 room condition for 24±2 h.  Post-treatment : Capacitor should be stored for 4 24 h at *1 room condition.  "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa					-						
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85±2°C for 1 h, then placed at *1room condition for 24±2 h.  Post-treatment: Capacitor should be stored for 4 to 24 h at *1room condition.  Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	85±2°C for 1 h, then placed at *1 room condition for 24±2 h.  Post-treatment: Capacitor should be stored for 4 24 h at *1 room condition.  "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa					р.			0	ما املیت مامی		
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Post-treatment: Capacitor should be stored for 4 to 24 h at *1 room condition.  "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	Post-treatment: Capacitor should be stored for 4 24 h at *1room condition.  "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa											
"room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	"room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa								1'room co	ondition fo	r 24±2 h.	
"room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	"room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa					_			0			
"room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	"room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa					Po	ost-tre	earment :	Capacitor	snould b	e stored for 4 t	
Troom condition. Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	"room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa	"		1 45 . 5===	Dalada ka 182 45 5 550 1						uition.	
	TO EXPRESSES HOMINAL CANACITANCE VALUEINE I	room	n condition" Tempera	ature: 15 to 35°C,	Relative numidity: 45 to 75%, At $-5$	mospheri	ic pre	ssure: 86	o to 106kPa			

## 6. Packing specification

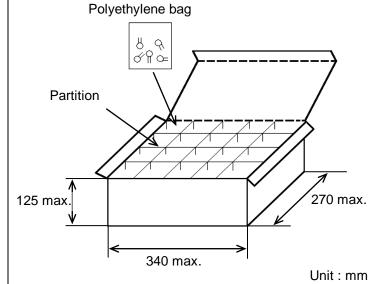
•Bulk type (Packing style code : B)

The size of packing case and packing way

 $\begin{array}{c} *1 \\ \text{The number of packing = } \operatorname{Packing quantity} \times \ n \end{array}$ 

\*1 : Please refer to [Part number list].

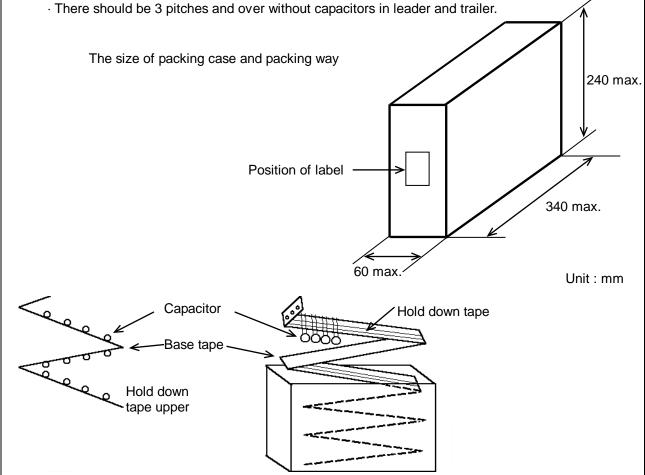
\*2 : Standard n = 20 (bag)



Note)

The outer package and the number of outer packing be changed by the order getting amount.

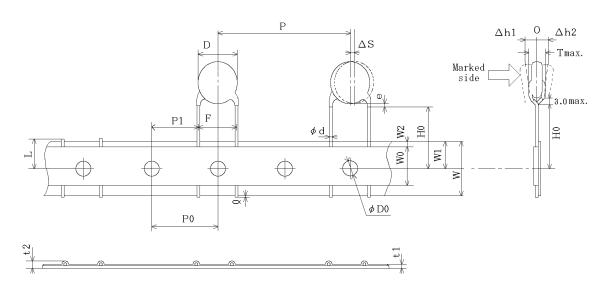
- •Ammo pack taping type (Packing style code : A)
  - · The tape with capacitors is packed zigzag into a case.
  - $\cdot$  When body of the capacitor is piled on other body under it.



# 7. Taping specification

# 7-1. Dimension of capacitors on tape

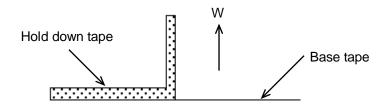
Vertical crimp taping type < Lead code : N4 > Pitch of component 25.4mm / Lead spacing 10.0mm



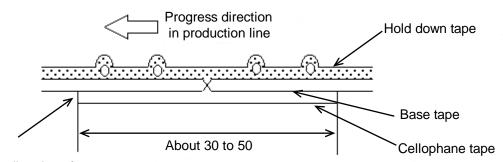
Item	Code	Dimensions	Remarks		
Pitch of component	Р	25.4±2.0			
Pitch of sprocket hole	P0	12.7±0.3			
Lead spacing	F	10.0±1.0			
Length from hole center to lead	P1	7.7±1.5			
Body diameter	D	Please refer to [ F	Part number list ].		
Deviation along tape, left or right	ΔS	0±2.0	They include deviation by lead bend .		
Carrier tape width	W	18.0±0.5			
Position of sprocket hole	W1	9.0±0.5	Deviation of tape width direction		
Lead distance between reference and	110	$18.0\pm_0^{2.0}$			
bottom planes	H0	18.0± <sub>0</sub>			
Protrusion length	Q	+0.5~-1.0			
Diameter of sprocket hole	φD0	4.0±0.1			
Lead diameter	φd	0.60±0.05			
Total tape thickness	t1	0.6±0.3			
Total thickness, tape and lead wire	t2	1.5 max.	They include hold down tape thickness.		
Deviation across tape, front	∆h1	0.0			
Deviation across tape, rear	∆h2	2.0 max.			
Portion to cut in case of defect	L	11.0± <sub>1.0</sub>			
Hold down tape width	WO	11.5 min.			
Hold down tape position	W2	1.5±1.5			
Coating extension on lead	е	Up to the end of o	rimp		
Body thickness	Т	Please refer to [ Part number list ].			

## 7-2. Splicing way of tape

1) Adhesive force of tape is over 3N at test condition as below.



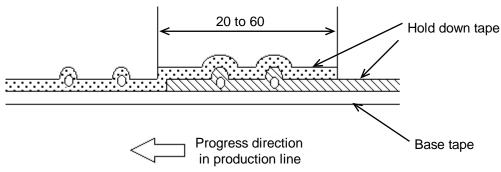
- 2) Splicing of tape
  - a) When base tape is spliced
    - •Base tape should be spliced by cellophane tape. (Total tape thickness should be less than 1.05mm.)



No lifting for the direction of progressing

Unit: mm

- b) When hold down tape is spliced
  - •Hold down tape should be spliced with overlapping. (Total tape thickness should be less than 1.05mm.)



- c) When both tape are spliced
  - •Base tape and hold down tape should be spliced with splicing tape.
- 3) Missing components
  - •There should be no consecutive missing of more than three components.
  - •The number of missing components should be not more than 0.5% of total components that should be present in a Ammo pack.

## EU RoHS and Halogen Free

This products of the following crresponds to EU RoHS and Halogen Free

## (1) RoHS

EU RoHs 2011/65/EC compliance

maximum concentration values tolerated by weight in homogeneous materials

- •1000 ppm maximum Lead
- •1000 ppm maximum Mercury
- •100 ppm maximum Cadmium
- •1000 ppm maximum Hexavalent chromium
- •1000 ppm maximum Polybrominated biphenyls (PBB)
- •1000 ppm maximum Polybrominated diphenyl ethers (PBDE)

# (2) Halogen-Free

The International Electrochemical Commission's (IEC) Definition of Halogen-Free (IEC 61249-2-21) compliance

- •900 ppm maximum chlorine
- •900 ppm maximum bromine
- •1500 ppm maximum total chlorine and bromine



Компания «ЭлектроПласт» предлагает заключение долгосрочных отношений при поставках импортных электронных компонентов на взаимовыгодных условиях!

#### Наши преимущества:

- Оперативные поставки широкого спектра электронных компонентов отечественного и импортного производства напрямую от производителей и с крупнейших мировых складов:
- Поставка более 17-ти миллионов наименований электронных компонентов;
- Поставка сложных, дефицитных, либо снятых с производства позиций;
- Оперативные сроки поставки под заказ (от 5 рабочих дней);
- Экспресс доставка в любую точку России;
- Техническая поддержка проекта, помощь в подборе аналогов, поставка прототипов;
- Система менеджмента качества сертифицирована по Международному стандарту ISO 9001:
- Лицензия ФСБ на осуществление работ с использованием сведений, составляющих государственную тайну;
- Поставка специализированных компонентов (Xilinx, Altera, Analog Devices, Intersil, Interpoint, Microsemi, Aeroflex, Peregrine, Syfer, Eurofarad, Texas Instrument, Miteq, Cobham, E2V, MA-COM, Hittite, Mini-Circuits, General Dynamics и др.);

Помимо этого, одним из направлений компании «ЭлектроПласт» является направление «Источники питания». Мы предлагаем Вам помощь Конструкторского отдела:

- Подбор оптимального решения, техническое обоснование при выборе компонента;
- Подбор аналогов;
- Консультации по применению компонента;
- Поставка образцов и прототипов;
- Техническая поддержка проекта;
- Защита от снятия компонента с производства.



#### Как с нами связаться

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