



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

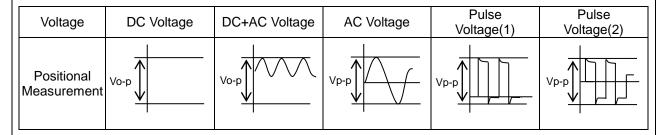
Product specifications in this catalog are as of Dec. 2017, and are subject to change or obsolescence without notice.

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

\triangle 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 $\phi 0.1$ mm 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 -

voltage sine wave

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 $^{\circ}$ 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.

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.

⚠ 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.

EGD08E

1. Application

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

Type KY is Safety Standard Certified capacitors of Class X1,Y2.

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	1283280	
VDE	IEC60384-14, EN60384-14	40006273	
BSI	EN60065 (8.8,14.2), IEC60384-14, EN60384-14	KM37901	
SEMKO		1612608	X1:250 Y2:250
DEMKO	15000004.44	D-05317	12.250
FIMKO	IEC60384-14, EN60384-14	FI 29603	
NEMKO	LN00304-14	P16221234	
ESTI		15.0076	
NSW	IEC60384-14, AS3250	6824	
CQC	GB/T6346.14	CQC06001017447	

^{*}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

(-25 ~ +125°C is certified in safety certificates except UL and VDE.)

2-2. Part number configuration

ex.) <u>DE2</u>	E3	_KY_	472	M	A2	B	M01F
Product	Temperature	Type	Capacitance	Capacitance	Lead	Packing	Individual
code	characteristic	name		tolerance	code	style code	specification

• Product code

DE2 denotes class X1,Y2.

•Temperature characteristic

Code	Temperature characteristic
1X	SL
В3	В
E3	E
F3	F

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

Type name

This denotes safety certified type name Type KY.

• Capacitance

The first two digits denote significant figures; the last digit denotes the multiplier of 10 in pF. ex.) In case of 472.

$$47 \times 10^2 = 4700 pF$$

• Capacitance tolerance

Please refer to [Part number list].

• Lead code

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	Code	Lead	style					
	A*	Vertical crimp long type	Vertical crimp long type					
	B*	Vertical crime short type	Lead Length: 5mm					
	J*	Vertical crimp short type	Lead Length: 3.5mm					
	N*	Vertical crimp taping type						

^{*} 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							
M01F	Dielectric strength between lead wires: AC2000V(r.m.s.)	► Simplicity marking► Halogen Free						
M02F	Dielectric strength between lead wires: AC2600V(r.m.s.)	Br ≤ 900ppm, CI ≤ 900ppm Br + CI ≤ 1500ppm CP wire						

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

3. Marking

Nominal capacitance : Actual value(under 100pF)

3 digit system(100pF and over)

Capacitance tolerance : Code
Type name : KY
Rated voltage mark : 250~
Class code : X1Y2
Halogen Free mark : HF

Manufacturing year : Letter code(The last digit of A.D. year.)

Manufacturing month : Code

 Feb./Mar. → 2
 Aug./Sep. → 8

 Apr./May → 4
 Oct./Nov. → O

 Jun./Jul. → 6
 Dec./Jan. → D

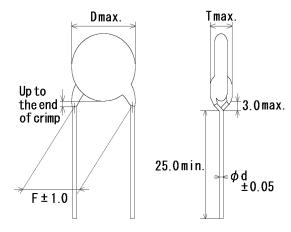
Company name code : (Made in Thailand)

(Example)

472M KY250∼ X1Y2 IF 5D (№15

4. Part number list

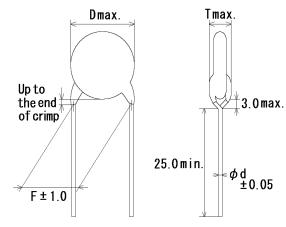
Vertical crimp long type (Lead code: A*)



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

	United States of the Control of the									111111
T.C.	Cap.	cap. Cap. pF) tol.	Customer Part Number	Murata Part Number	Din	nensi	Lead	(111/		
1.0.	(pF)		Customer Fait Number	Wurata Fait Number	D	Т	F	d	code	(pcs)
SL	10	±5%		DE21XKY100JA2BM01F	8.0	5.0	5.0	0.6	A2	250
SL	15	±5%		DE21XKY150JA2BM01F	8.0	5.0	5.0	0.6	A2	250
SL	22	$\pm 5\%$		DE21XKY220JA2BM01F	8.0	5.0	5.0	0.6	A2	250
SL	33	±5%		DE21XKY330JA2BM01F	8.0	5.0	5.0	0.6	A2	250
SL	47	±5%		DE21XKY470JA2BM01F	8.0	5.0	5.0	0.6	A2	250
SL	68	±5%		DE21XKY680JA2BM01F	8.0	5.0	5.0	0.6	A2	250
В	100	±10%		DE2B3KY101KA2BM01F	7.0	5.0	5.0	0.6	A2	500
В	150	±10%		DE2B3KY151KA2BM01F	7.0	5.0	5.0	0.6	A2	500
В	220	±10%		DE2B3KY221KA2BM01F	7.0	5.0	5.0	0.6	A2	500
В	330	±10%		DE2B3KY331KA2BM01F	7.0	5.0	5.0	0.6	A2	500
В	470	±10%		DE2B3KY471KA2BM01F	7.0	5.0	5.0	0.6	A2	500
В	680	±10%		DE2B3KY681KA2BM01F	8.0	5.0	5.0	0.6	A2	250
Е	1000	±20%		DE2E3KY102MA2BM01F	7.0	5.0	5.0	0.6	A2	500
Е	1500	±20%		DE2E3KY152MA2BM01F	7.0	5.0	5.0	0.6	A2	500
Е	2200	±20%		DE2E3KY222MA2BM01F	8.0	5.0	5.0	0.6	A2	250
Е	3300	±20%		DE2E3KY332MA2BM01F	9.0	5.0	5.0	0.6	A2	250
Е	4700	±20%		DE2E3KY472MA2BM01F	10.0	5.0	5.0	0.6	A2	250

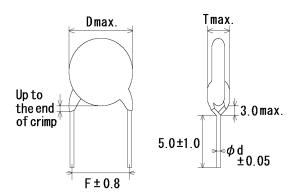
·Vertical crimp long type (Lead code:A*)



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

									Office.	111111
T.C.	Cap.		· I Chsiomer Pan Number I	Murata Part Number	Din	nensi	Lead	Pack qty.		
1.0.	(pF)	tol.	Odstomer Fait Number	Murata Fart Number	D	Т	F	d	code	(pcs)
SL	10	$\pm 5\%$		DE21XKY100JA3BM02F	8.0	5.0	7.5	0.6	А3	250
SL	15	$\pm 5\%$		DE21XKY150JA3BM02F	8.0	5.0	7.5	0.6	А3	250
SL	22	±5%		DE21XKY220JA3BM02F	8.0	5.0	7.5	0.6	А3	250
SL	33	±5%		DE21XKY330JA3BM02F	8.0	5.0	7.5	0.6	А3	250
SL	47	$\pm 5\%$		DE21XKY470JA3BM02F	8.0	5.0	7.5	0.6	А3	250
SL	68	±5%		DE21XKY680JA3BM02F	8.0	5.0	7.5	0.6	А3	250
В	100	±10%		DE2B3KY101KA3BM02F	7.0	5.0	7.5	0.6	А3	250
В	150	±10%		DE2B3KY151KA3BM02F	7.0	5.0	7.5	0.6	А3	250
В	220	±10%		DE2B3KY221KA3BM02F	7.0	5.0	7.5	0.6	А3	250
В	330	±10%		DE2B3KY331KA3BM02F	7.0	5.0	7.5	0.6	А3	250
В	470	±10%		DE2B3KY471KA3BM02F	7.0	5.0	7.5	0.6	А3	250
В	680	±10%		DE2B3KY681KA3BM02F	8.0	5.0	7.5	0.6	А3	250
Е	1000	$\pm 20\%$		DE2E3KY102MA3BM02F	7.0	5.0	7.5	0.6	А3	250
Е	1500	$\pm 20\%$		DE2E3KY152MA3BM02F	7.0	5.0	7.5	0.6	А3	250
Е	2200	$\pm 20\%$		DE2E3KY222MA3BM02F	8.0	5.0	7.5	0.6	А3	250
Е	3300	$\pm 20\%$		DE2E3KY332MA3BM02F	9.0	5.0	7.5	0.6	А3	250
Е	4700	$\pm 20\%$		DE2E3KY472MA3BM02F	10.0	5.0	7.5	0.6	А3	250
F	10000	$\pm 20\%$		DE2F3KY103MA3BM02F	14.0	5.0	7.5	0.6	А3	200

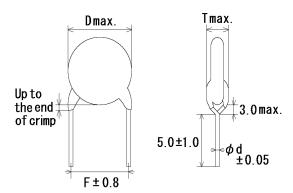
Vertical crimp short type (Lead code:B*)



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

									OTIIL.	
T.C.	Сар.	Cap. tol.	Customer Part Number	Murata Part Number	Dimension (mm)				Lead	Pack
1.0.	(pF)		Customer Fait Number	Murata Fart Number	D	Т	F	d	code	qty. (pcs)
SL	10	±5%		DE21XKY100JB2BM01F	8.0	5.0	5.0	0.6	B2	500
SL	15	$\pm 5\%$		DE21XKY150JB2BM01F	8.0	5.0	5.0	0.6	B2	500
SL	22	$\pm 5\%$		DE21XKY220JB2BM01F	8.0	5.0	5.0	0.6	B2	500
SL	33	$\pm 5\%$		DE21XKY330JB2BM01F	8.0	5.0	5.0	0.6	B2	500
SL	47	±5%		DE21XKY470JB2BM01F	8.0	5.0	5.0	0.6	B2	500
SL	68	±5%		DE21XKY680JB2BM01F	8.0	5.0	5.0	0.6	B2	500
В	100	±10%		DE2B3KY101KB2BM01F	7.0	5.0	5.0	0.6	B2	500
В	150	±10%		DE2B3KY151KB2BM01F	7.0	5.0	5.0	0.6	B2	500
В	220	±10%		DE2B3KY221KB2BM01F	7.0	5.0	5.0	0.6	B2	500
В	330	±10%		DE2B3KY331KB2BM01F	7.0	5.0	5.0	0.6	B2	500
В	470	±10%		DE2B3KY471KB2BM01F	7.0	5.0	5.0	0.6	B2	500
В	680	±10%		DE2B3KY681KB2BM01F	8.0	5.0	5.0	0.6	B2	500
Е	1000	±20%		DE2E3KY102MB2BM01F	7.0	5.0	5.0	0.6	B2	500
Е	1500	±20%		DE2E3KY152MB2BM01F	7.0	5.0	5.0	0.6	B2	500
Е	2200	±20%		DE2E3KY222MB2BM01F	8.0	5.0	5.0	0.6	B2	500
Е	3300	±20%		DE2E3KY332MB2BM01F	9.0	5.0	5.0	0.6	B2	500
Е	4700	±20%		DE2E3KY472MB2BM01F	10.0	5.0	5.0	0.6	B2	500

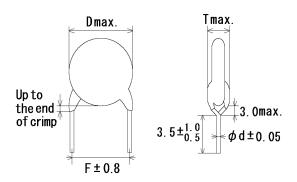
Vertical crimp short type (Lead code:B*)



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

	Uni									
T.C.	Cap.	Сар.	Customer Part Number	Murata Part Number	Din	Dimension (mm)				Pack qty.
1.0.	(pF)	tol.	Oustomer Fait Number	Warata Fart Number	D	Т	F	d	code	(pcs)
SL	10	±5%		DE21XKY100JB3BM02F	8.0	5.0	7.5	0.6	В3	500
SL	15	±5%		DE21XKY150JB3BM02F	8.0	5.0	7.5	0.6	В3	500
SL	22	±5%		DE21XKY220JB3BM02F	8.0	5.0	7.5	0.6	В3	500
SL	33	±5%		DE21XKY330JB3BM02F	8.0	5.0	7.5	0.6	В3	500
SL	47	±5%		DE21XKY470JB3BM02F	8.0	5.0	7.5	0.6	В3	500
SL	68	±5%		DE21XKY680JB3BM02F	8.0	5.0	7.5	0.6	В3	500
В	100	±10%		DE2B3KY101KB3BM02F	7.0	5.0	7.5	0.6	В3	500
В	150	±10%		DE2B3KY151KB3BM02F	7.0	5.0	7.5	0.6	В3	500
В	220	±10%		DE2B3KY221KB3BM02F	7.0	5.0	7.5	0.6	В3	500
В	330	±10%		DE2B3KY331KB3BM02F	7.0	5.0	7.5	0.6	В3	500
В	470	\pm 10%		DE2B3KY471KB3BM02F	7.0	5.0	7.5	0.6	В3	500
В	680	\pm 10%		DE2B3KY681KB3BM02F	8.0	5.0	7.5	0.6	В3	500
Е	1000	±20%		DE2E3KY102MB3BM02F	7.0	5.0	7.5	0.6	В3	500
Е	1500	±20%		DE2E3KY152MB3BM02F	7.0	5.0	7.5	0.6	В3	500
Е	2200	±20%		DE2E3KY222MB3BM02F	8.0	5.0	7.5	0.6	В3	500
Е	3300	±20%		DE2E3KY332MB3BM02F	9.0	5.0	7.5	0.6	В3	500
Е	4700	±20%		DE2E3KY472MB3BM02F	10.0	5.0	7.5	0.6	В3	500
F	10000	±20%		DE2F3KY103MB3BM02F	14.0	5.0	7.5	0.6	В3	250

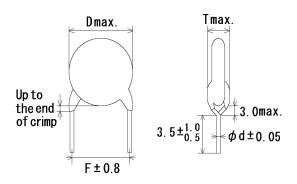
·Vertical crimp short type
(Lead code:J*)



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

OIIII									UIIIL .	111111
T.C.	Сар.			Murata Part Number	Dimension (mm)				Lead	(111)/
1.0.	(pF)		Customer Fait Number	Widiala Fait Number	D	Т	F	d	code	(pcs)
SL	10	±5%		DE21XKY100JJ2BM01F	8.0	5.0	5.0	0.6	J2	500
SL	15	±5%		DE21XKY150JJ2BM01F	8.0	5.0	5.0	0.6	J2	500
SL	22	$\pm 5\%$		DE21XKY220JJ2BM01F	8.0	5.0	5.0	0.6	J2	500
SL	33	±5%		DE21XKY330JJ2BM01F	8.0	5.0	5.0	0.6	J2	500
SL	47	±5%		DE21XKY470JJ2BM01F	8.0	5.0	5.0	0.6	J2	500
SL	68	±5%		DE21XKY680JJ2BM01F	8.0	5.0	5.0	0.6	J2	500
В	100	±10%		DE2B3KY101KJ2BM01F	7.0	5.0	5.0	0.6	J2	500
В	150	±10%		DE2B3KY151KJ2BM01F	7.0	5.0	5.0	0.6	J2	500
В	220	±10%		DE2B3KY221KJ2BM01F	7.0	5.0	5.0	0.6	J2	500
В	330	±10%		DE2B3KY331KJ2BM01F	7.0	5.0	5.0	0.6	J2	500
В	470	±10%		DE2B3KY471KJ2BM01F	7.0	5.0	5.0	0.6	J2	500
В	680	±10%		DE2B3KY681KJ2BM01F	8.0	5.0	5.0	0.6	J2	500
Е	1000	±20%		DE2E3KY102MJ2BM01F	7.0	5.0	5.0	0.6	J2	500
Е	1500	±20%		DE2E3KY152MJ2BM01F	7.0	5.0	5.0	0.6	J2	500
Е	2200	±20%		DE2E3KY222MJ2BM01F	8.0	5.0	5.0	0.6	J2	500
Е	3300	±20%		DE2E3KY332MJ2BM01F	9.0	5.0	5.0	0.6	J2	500
Е	4700	±20%		DE2E3KY472MJ2BM01F	10.0	5.0	5.0	0.6	J2	500

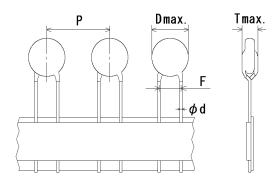
·Vertical crimp short type
(Lead code:J*)



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

									Unit:	mm
Τ.Ο	Cap.	o. Cap.	Overteen an Deat November	Mounts Don't November	Dimension (mm)				Lead	Pack
T.C.	(pF)	toİ.	Customer Part Number	Murata Part Number	D	Т	F	d		qty. (pcs)
SL	10	±5%		DE21XKY100JJ3BM02F	8.0	5.0	7.5	0.6	J3	500
SL	15	±5%		DE21XKY150JJ3BM02F	8.0	5.0	7.5	0.6	J3	500
SL	22	±5%		DE21XKY220JJ3BM02F	8.0	5.0	7.5	0.6	J3	500
SL	33	±5%		DE21XKY330JJ3BM02F	8.0	5.0	7.5	0.6	J3	500
SL	47	±5%		DE21XKY470JJ3BM02F	8.0	5.0	7.5	0.6	J3	500
SL	68	±5%		DE21XKY680JJ3BM02F	8.0	5.0	7.5	0.6	J3	500
В	100	±10%		DE2B3KY101KJ3BM02F	7.0	5.0	7.5	0.6	J3	500
В	150	±10%		DE2B3KY151KJ3BM02F	7.0	5.0	7.5	0.6	J3	500
В	220	±10%		DE2B3KY221KJ3BM02F	7.0	5.0	7.5	0.6	J3	500
В	330	±10%		DE2B3KY331KJ3BM02F	7.0	5.0	7.5	0.6	J3	500
В	470	±10%		DE2B3KY471KJ3BM02F	7.0	5.0	7.5	0.6	J3	500
В	680	±10%		DE2B3KY681KJ3BM02F	8.0	5.0	7.5	0.6	J3	500
Е	1000	±20%		DE2E3KY102MJ3BM02F	7.0	5.0	7.5	0.6	J3	500
Е	1500	±20%		DE2E3KY152MJ3BM02F	7.0	5.0	7.5	0.6	J3	500
Е	2200	±20%		DE2E3KY222MJ3BM02F	8.0	5.0	7.5	0.6	J3	500
Е	3300	±20%		DE2E3KY332MJ3BM02F	9.0	5.0	7.5	0.6	J3	500
Е	4700	±20%		DE2E3KY472MJ3BM02F	10.0	5.0	7.5	0.6	J3	500
F	10000	±20%		DE2F3KY103MJ3BM02F	14.0	5.0	7.5	0.6	J3	250

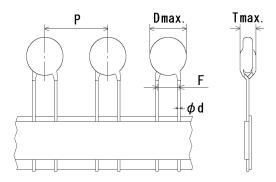
Vartical crimp taping type (Lead code:N*)



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.

										Unit :	mm
T.C.	Сар.	Сар.	Customer Part Number	Murata Part Number	Dimension (mm)				Lead	Pack	
1.0.	(pF)	tol.	Customer Fait Number	Wulata Fait Nullibel	D	Т	F	d	Р	code	qty. (pcs)
SL	10	±5%		DE21XKY100JN2AM01F	8.0	5.0	5.0	0.6	12.7	N2	1000
SL	15	±5%		DE21XKY150JN2AM01F	8.0	5.0	5.0	0.6	12.7	N2	1000
SL	22	±5%		DE21XKY220JN2AM01F	8.0	5.0	5.0	0.6	12.7	N2	1000
SL	33	±5%		DE21XKY330JN2AM01F	8.0	5.0	5.0	0.6	12.7	N2	1000
SL	47	±5%		DE21XKY470JN2AM01F	8.0	5.0	5.0	0.6	12.7	N2	1000
SL	68	±5%		DE21XKY680JN2AM01F	8.0	5.0	5.0	0.6	12.7	N2	1000
В	100	±10%		DE2B3KY101KN2AM01F	7.0	5.0	5.0	0.6	12.7	N2	1000
В	150	±10%		DE2B3KY151KN2AM01F	7.0	5.0	5.0	0.6	12.7	N2	1000
В	220	±10%		DE2B3KY221KN2AM01F	7.0	5.0	5.0	0.6	12.7	N2	1000
В	330	±10%		DE2B3KY331KN2AM01F	7.0	5.0	5.0	0.6	12.7	N2	1000
В	470	±10%		DE2B3KY471KN2AM01F	7.0	5.0	5.0	0.6	12.7	N2	1000
В	680	±10%		DE2B3KY681KN2AM01F	8.0	5.0	5.0	0.6	12.7	N2	1000
Е	1000	±20%		DE2E3KY102MN2AM01F	7.0	5.0	5.0	0.6	12.7	N2	1000
Е	1500	±20%		DE2E3KY152MN2AM01F	7.0	5.0	5.0	0.6	12.7	N2	1000
Е	2200	±20%		DE2E3KY222MN2AM01F	8.0	5.0	5.0	0.6	12.7	N2	1000
Е	3300	±20%		DE2E3KY332MN2AM01F	9.0	5.0	5.0	0.6	12.7	N2	1000
Е	4700	±20%		DE2E3KY472MN2AM01F	10.0	5.0	5.0	0.6	12.7	N2	1000

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.

I Init · mm

										Unit :	mm
TC	T.C. Cap. Cap		Customer Part Number	Murata Part Number	Dimension (mm)				Lead	Pack	
1.0.	(pF)	tol.	Customer Fait Number	Wullata Fait Nullibel	D	Т	F	d	Р	code	qty. (pcs)
SL	10	±5%		DE21XKY100JN3AM02F	8.0	5.0	7.5	0.6	15.0	N3	900
SL	15	$\pm 5\%$		DE21XKY150JN3AM02F	8.0	5.0	7.5	0.6	15.0	N3	900
SL	22	±5%		DE21XKY220JN3AM02F	8.0	5.0	7.5	0.6	15.0	N3	900
SL	33	±5%		DE21XKY330JN3AM02F	8.0	5.0	7.5	0.6	15.0	N3	900
SL	47	±5%		DE21XKY470JN3AM02F	8.0	5.0	7.5	0.6	15.0	N3	900
SL	68	±5%		DE21XKY680JN3AM02F	8.0	5.0	7.5	0.6	15.0	N3	900
В	100	±10%		DE2B3KY101KN3AM02F	7.0	5.0	7.5	0.6	15.0	N3	900
В	150	±10%		DE2B3KY151KN3AM02F	7.0	5.0	7.5	0.6	15.0	N3	900
В	220	±10%		DE2B3KY221KN3AM02F	7.0	5.0	7.5	0.6	15.0	N3	900
В	330	±10%		DE2B3KY331KN3AM02F	7.0	5.0	7.5	0.6	15.0	N3	900
В	470	±10%		DE2B3KY471KN3AM02F	7.0	5.0	7.5	0.6	15.0	N3	900
В	680	±10%		DE2B3KY681KN3AM02F	8.0	5.0	7.5	0.6	15.0	N3	900
Е	1000	±20%		DE2E3KY102MN3AM02F	7.0	5.0	7.5	0.6	15.0	N3	900
Е	1500	±20%		DE2E3KY152MN3AM02F	7.0	5.0	7.5	0.6	15.0	N3	900
Е	2200	±20%		DE2E3KY222MN3AM02F	8.0	5.0	7.5	0.6	15.0	N3	900
Е	3300	±20%		DE2E3KY332MN3AM02F	9.0	5.0	7.5	0.6	15.0	N3	900
Е	4700	±20%		DE2E3KY472MN3AM02F	10.0	5.0	7.5	0.6	15.0	N3	900
F	10000	±20%		DE2F3KY103MN3AM02F	14.0	5.0	7.5	0.6	15.0	N3	900

No.		est methods Item	Qr		Test method						
1	Appearance an		Specification No marked defect on appearance form and dimensions. Please refer to [Part number list].			The capacitor should be inspected by naked eyes for visible evidence of defect. Dimensions should be measured with slide					
2	Marking				calipers.	tor obould	l ha inanaa	atod by no	kad ayaa		
3	Dielectric strength	electric Between lead No failure.				The capacitor should not be damaged when AC2000V(r.m.s.) [in case of individual specifica: M01] or AC2600V(r.m.s.) [in case of individual specification:M02] <50/60Hz> is applied between					
Body insulation			No failure.			the lead wires for 60 s. First, the terminals of the capacitor should be connected together. Then, a metal foil should be closely wrapped around the body of the capacitor to the distance of about 3 to 4mm from each terminal. Then, the capacitor should be inserted into a container filled with metal balls of about 1mm diameter. Finally, AC2600V (r.m.s.)<50/60Hz> is applied for 60 s between the capacitor lead wires and metal balls.					
4 Insulation Resistance (I.R.)			10000MΩ mir	1.		The insulation resistance should be measured with DC500 \pm 50V within 60 \pm 5 s of charging. The voltage should be applied to the capacitor through a resistor of 1M Ω .				ng.	
5	Capacitance		Within specifi	ed tolerance.		The capacitance should be measured at 20°C w 1±0.1kHz(Char. SL: 1±0.1MHz) and AC5V(r.m.s max					
6	Q	(2.5)	1000m		nder) a	The dissipation factor and Q should be me					
	Dissipation Fac	ctor (D.F.)	Char. B, E : 2.5% max. Char. F : 5.0% max.								
7	Temperature ch	Char. SL: +350 to -1000 ppm/°C (Temp. range: +20 to +85°C) Char. B: Within ±10 % Char. E: Within +20/-55% Char. F: Within +30/-80% (Temp. range: -25 to +85°C)			The capacitance measurement should be made a each step specified in Table.				e made at		
				Step	1	2	3	4	5		
			Temp.(°C) 20±2			-25±2	20±2	85±2	20±2		

*2 "C" expres	sses nominal	capacitance	value(pF)
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			Reference only	— · · · · ·
No.	Item	1	Specification	Test method
8	Active flammability		The cheese-cloth should not be on fire.	The capacitors should be individually wrapped in at least one but more than two complete layers of cheese-cloth. The capacitor should be subjected to 20 discharges. The interval between successive discharges should be 5 s. The UAc should be maintained for 2min after the last discharge. $ \begin{array}{ccccccccccccccccccccccccccccccccccc$
				SkV time
9	Robustness of terminations	Tensile Bending	Lead wire should not cut off. Capacitor should not be broken.	Fix the body of capacitor, apply a tensile weight gradually to each lead wire in the radial direction of capacitor up to 10N and keep it for 10 ± 1 s. 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 about 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 in the opposite direction.
10	Vibration resistance	Appearance Capacitance Q D.F.	No marked defect. Within the specified tolerance. Char. SL: 400+20C*2min.(30pF under) 1000min. (30pF min.) Char. B, E: 2.5% max.	The capacitor should be firmly soldered to the supporting lead wire and vibration which is 10 to 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 lead	ls	Char. F : 5.0% max. Lead wire should be soldered with uniformly coated on the axial direction over 3/4 of the circumferential direction.	3 mutually perpendicular directions. The lead wire of a capacitor should be dipped into a ethanol solution of 25wt% rosin and then into molten solder for 2±0.5 s. In both cases the depth of 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) 235±5°C H63 Eutectic Solder
*2 "C	expresses nominal o	capacitance valu	e(pF)	

No. Item Specification Test method 12 Soldering effect (Non-preheat) Appearance No marked defect. Solder temperature: $350\pm10^{\circ}$ C or $260\pm5^{\circ}$ C Immersion time : 3.5 ± 0.5 s (In case of $260\pm5^{\circ}$ C : 10 ± 1 s Immersion is up to about 1.5 to 2.0mm from the root of lead wires.
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$
I.R. 1000M Ω min. The depth of immersion is up to about Dielectric strength Per item 3 1.5 to 2.0mm from the root of lead wires.
Dielectric Per item 3 1.5 to 2.0mm from the root of lead wires.
strength
- A
insulating ()
1.5
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
to 2 h at *1room condition.
Soldering effect Appearance No marked defect. First the capacitor should be stored at 120+0/-5°0
(On-preheat) Capacitance Within ±10% for 60+0/-5 s.
changeThen, as in figure, the lead wires should beI.R.1000MΩ min.immersed solder of 260+0/-5°C up to 1.5 to 2.0m
I.R. 1000M Ω min. Immersed solder of 260+0/-5°C up to 1.5 to 2.0m from the root of terminal for 7.5+0/-1 s.
strength
Thermal Capacitor
insulating
1.5 to 2.0mm
FU-11 solder
Pre-treatment : Capacitor should be stored at
85±2°C for 1 h, then placed at
*1 room condition for 24±2 h
before initial measurements.
Post-treatment: Capacitor should be stored for a
2 h at *¹room condition.
14 Flame test The capacitor flame discontinue The capacitor should be subjected to applied
as follows. flame for 15 s. and then removed for 15 s until 5
cycle.
Cycle Time
1 to 4 30 s max.
5 60 s max.
Gas Burner
15 Passive flammability The burning time should not be The capacitor under test should be held in the fla
exceeded the time 30 s. in the position which best promotes burning.
The tissue paper should not Time of exposure to flame is for 30 s.
ignite. Length of flame : 12±1mm
Gas burner : Length 35mm min.
Inside Dia. 0.5±0.1n
Outside Dia. 0.9mm n
Outside Dia. 0.9mm n Gas : Butane gas Purity 95% min.
Outside Dia. 0.9mm n
Outside Dia. 0.9mm m Gas : Butane gas Purity 95% min. ↓ ☐ ← Capacitor
Outside Dia. 0.9mm n Gas : Butane gas Purity 95% min. About 8mm Gas burner Flame 200+5mm
Outside Dia. 0.9mm n Gas : Butane gas Purity 95% min. About 8mm
Outside Dia. 0.9mm n Gas : Butane gas Purity 95% min. About 8mm Gas burner Flame 200±5mm
Outside Dia. 0.9mm n Gas : Butane gas Purity 95% min. About 8mm Gas burner Flame 200+5mm
Outside Dia. 0.9mm n Gas : Butane gas Purity 95% min. About 8mm Gas burner Flame 200±5mm
Outside Dia. 0.9mm m Gas : Butane gas Purity 95% min. About 8mm Gas burner Flame 200±5mm Tissue

No. Item Appearance No. marked defect. Specification				Treference offig	
Capacitance Char. St. : Within :15% Char. E. F.: Within :15% Char. F. : 7.5% max. I.R. 3000Ma min. Dielectric strength Napparanea Char. St. : Within :10% Char. E. F.: Solv max. Char. F. : 7.5% max. I.R. 3000M0 min. Dielectric strength Per item 3 18 Life Capacitance Char. St. Within :20% Char. E. F.: Solv max. Char. F. : 7.5%	No.	Iten	n	Specification	Test method
Capacitance Char. St. : Within :15% Char. E. F.: Within :15% Char. F. : 7.5% max. I.R. 3000Ma min. Dielectric strength Napparanea Char. St. : Within :10% Char. E. F.: Solv max. Char. F. : 7.5% max. I.R. 3000M0 min. Dielectric strength Per item 3 18 Life Capacitance Char. St. Within :20% Char. E. F.: Solv max. Char. F. : 7.5%	16	Humidity	Appearance	No marked defect.	Set the capacitor for 500+12 h at 40+2°C in 90 to
State Char. B. : Within ±10% Char. B. : So No. max. Char. B. : Within ±10% Char. B. : So No. max. Char. B. : Within ±10% Char. B. : So No. max. Char. B. :		,			
Char. E. F.: Within ±15%. Q. Char. S. I.: 275-9/20-7min, (30pF min.) D.F. Char. B. E.: 5.0% max. LR. 3000M0 min. Dielectric change Char. E.: Within ±15%. Char. B. E.: 5.0% max. LR. 3000M1 min. Dielectric strength Thuridity loading Char. E.: Within ±10%. Char. B. E.: Within ±20%. Dielectric strength The rem 3 18 Life Appearance No marked defect. Capacitance change I.R. 3000M2 min. Dielectric strength The rem 3 18 Life Appearance No marked defect. Capacitance change on the strength Per tem 3 19 Temperature and immersion cycle Appearance Char. E.: Within ±20%. Char. E. E.:			•		95 % relative numbrily.
Char. Si. 275+92/C*min.(30pF under) 350min. (30pF min.)		state)	change	Char. B: Within ±10%	
Char. Si. 275+92/C*min.(30pF under) 350min. (30pF min.)				Char. F. F : Within +15%	Post-treatment: Capacitor should be stored for 1
275-542C*min (30pF under) 30min. 30pF min.) D.F. Char. B. F.: 50% max. I.R. 3000M2 min. Dielectric Per term 3 Strength			0		to 2 h at *1 room condition.
D.F. Chat. B. E. 5.0 % max. Dielectric strength in the characteristic strength in the charact			Q		
D.F. Char. B. E. S. 9% max. Char. F. 3000MΩ min. Dielectric Per tem 3 strength 17 Humidity loading Appearance No marked defect. Capacitance charge. Char. E. F. Within ±10% Char. E. F. 9% max. I.R. 3000MΩ min. D.F. Char. B. E. 5.0% max. I.R. 3000MΩ min. Dielectric Strength 18 Life Appearance No marked defect. Capacitance change I.R. 3000MΩ min. Dielectric Strength 18 Life Appearance No marked defect. Capacitance change I.R. 3000MΩ min. Dielectric Strength 19 Temperature and immersion cycle 19 Temperature and immersion cycle Char. E. F. Within ±10% Char. E. F. Within ±1					
Char F : 7.5% max.				350min. (30pF min.)	
Char F : 7.5% max.			D.F.	Char. B. E: 5.0% max.	
I.R. 3000Mc min. Dielectric Per term 3					
Delectric strength Appearance No marked defect. Char R S L Within 15% Char R S L S Delectric Solution (30pF min.) D.F. Char R S L S Delectric Solution (30pF min.) D.F. Char R S L S Delectric Solution (30pF min.) Delectric Strength B Life Life Life Appearance Capacitance Change c			I D		
Strength					
Appearance No marked defect. Apply the rated voltage for \$500.12 h at 4012°C in 90 to \$95% relative humidity. Post-treatment: Capacitor should be stored for 1 to 2 h at "from condition."			Dielectric	Per item 3	
Appearance No marked defect. Apply the rated voltage for \$500.12 h at 4012°C in 90 to \$95% relative humidity. Post-treatment: Capacitor should be stored for 1 to 2 h at "from condition."			strenath		
Capacitance Chars St. Within ±15%. Q Char E, F. Within ±15%. Q Char E, F. Within ±15%. Q Char E, F. Within ±15%. D.F. Char B, E ± 5.0% max. L.R. 3000MC min. Dielectric Per item 3 strength I.R. 3000MC min. Dielectric Strength Per item 3 The expacitors are spliced in a circulating air oven for a period of 1000 h. The ear in the oven is maintained at a temperature of 125 ±20 ±0. Gr. and relative humidity. Shared for 1 to 2 h at "froom condition. The ear in the oven is maintained at a temperature of 125 ±20 ±0. Gr. and relative humidity of 50% max. The ear in the oven is maintained at a temperature of 125 ±20 ±0. Gr. and relative humidity of 50% max. The ear in the oven is maintained at a temperature of 125 ±20 ±0. Gr. and relative humidity of 50% max. The ear in the oven is maintained at a temperature of 125 ±20 ±0. Gr. and relative humidity of 50% max. The ear in the oven is maintained at a temperature of 125 ±20 ±0. Gr. and relative humidity of 50% max. The ear in the oven is maintained at a temperature of 125 ±20 ±0. Gr. and relative humidity of 50% max. The ear in the oven is maintained at a temperature of 125 ±20 ±0. Gr. and relative humidity of 50% max. The ear in the oven is maintained at a temperature of 125 ±20 ±0. Gr. and relative humidity of 50% max. The ear in the oven is maintained at a temperature of 125 ±20 ±0. Gr. and relative humidity of 50% max. The ear in the oven is maintained at a temperature of 125 ±0.0 Gr. and relative humidity of 50% max. The ear in the oven is maintained at a temperature of 125 ±0.0 Gr. and relative humidity. The ear in the oven is maintained at a temperature of 125 ±0.0 Gr. and relative humidity. The ear in the oven is maintained at a temperature of 125 ±0.0 Gr. and relative humidity. The ear in the oven is maintained at a temperature of 125 ±0.0 Gr. and relative humidity. The ear in the oven is maintained at a temperature of 125 ±0.0 Gr. and relative humidity. The ear in the oven is maintained at a temperature of 125 ±0.0 Gr. and relative humidity. The ear in the o	17	Humidity loading		No marked defect	Apply the rated voltage for 500±12 h at 40±2°C in
Char. B. Within ±10% Char. E. F. Within ±15% Char. St. C	l ''	Trainially loading	_ ' '		
Char. E. F. Within ±15% Char. St. : 275+5/2/C**min (30pF under) 30mm. D.F. Char. B. E. 5.0% max. L.R. 3000Mb2 min. Dielectric strength					90 to 95% relative numberly.
Capearance Char. St. 1			change	Char. B: Within ±10%	
Capearance Char. St. 1				Char. E. F: Within +15%	Post-treatment: Capacitor should be stored for 1
275-52/2C**min (30pF under) 350min. D.F. Char, B., E. 15, 69% max. Char, F. 17, 59% max. I.R. 3000MM2 min. Dielectric strength I.R. 3000MM2 min. Dielectric strength I.R. 3000MM2 min. 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 is maintained at a temperature of 125-52/0 °C, and relative hundridy of 59% max. Throughout the test, the capacitors are subjected to a AC425V/ms. s)-65006V/ms. s)-65000 for 10 period of 1000 h. The air in the oven is maintained at a temperature of 125-52/0 °C, and relative hundry of 59% max. Throughout the test, the capacitors are subjected to a AC425V/ms. s)-65006V/ms.			0		
D.F. Char. B.E. : 50% max. Char. F. : 7.5% max. L.R. 3000MM2 min. Delectric strength 18 Life			Q		
D.F. Char. B. E. 5.0% max. Char. F. 7.7.5% max. I.R. 3000MΩ min. Dielectric strength Life Appearance within ±20% change I.R. 3000MΩ min. 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 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-2 alternating voltage capacitors are applied to life test. 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-2 alternating voltage of mains frequency, exceptors are subjected to a AC425V(r.m.s.), ±50/60Hz-2 alternating voltage of mains frequency, exceptors are subjected to a AC425V(r.m.s.), ±50/60Hz-2 alternating voltage of mains frequency, exceptors are subjected to a AC425V(r.m.s.), ±50/60Hz-2 alternating voltage of mains frequency, exceptors are subjected to a AC425V(r.m.s.), ±50/60Hz-2 alternating voltage of mains frequency, exceptors are subjected to a AC425V(r.m.s.), ±50/60Hz-2 alternating voltage of mains frequency, exceptors 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 consecution of 50% max. Post-treatment: Capacitor should be subjected to a AC425V(r.m.s.) and aC425V(r.m.s.					
Char. F : 7.5% max.				350min. (30pF min.)	
I.R.			D.F.	Char. B, E: 5.0% max.	
LR 3000MΩ min.				Char. F : 7.5% max.	
Dielectric strength			I R		1
Strength Strength Appearance No marked defect. Impulse voltage Each individual capacitor should be subjected to a 5kV impulses for three times. Then the capacitors are applied to life test.	1				
Temperature and immersion cycle Appearance Change Char. E. Char. St. : Within ±20% Char. E. F. : Within ±30% Char. E. : T. S. & max. Char. F. : T. C. & max.				Per item 3	
Capacitance change I.R. 3000MΩ min.			strength		
Capacitance change I.R. 3000MΩ min.	18	Life	Appearance	No marked defect.	Impulse voltage
Change I.R.				Within +20%	Each individual capacitor should be subjected to
1.R. 3000MΩ min. Dielectric strength Per item 3 Capacitors are applied to life test. Dielectric strength Per item 3 Capacitors are placed in a circulating air oven for a period of 1000 h. 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+27-0°C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.a. And relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.a. And relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.a. And relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.a. And relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425V(r.a. And relative humidity of 50% max. Capacitance Char. S. I. Within ±5% Char. B. I. Within ±5% Char. B. I. Within ±5% Char. B. I. Within ±5% Char. Char. E. I. Within ±5% Char. B. I. Within ±5% Char. Char. E. I. Within ±5% Char. B. I. Withi			'		
Dielectric strength Per item 3 Front time (ft) = 1.2 μs=1.671				3000MO min	
Strength					capacitors are applied to ine teet.
Time to half-value (Tz) = 50 μs Time to half value (Tz) = 50 μs				Per item 3	Funding (T4) 40 up 407T
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 AC422-0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC452-(m.s.)-c50/60Hz> alternating voltage of mains frequency, except that once each hord on 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 *1room condition. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. **Char. B. F. Within ±10% Char. F. F. 5.0% max. I.R. Dielectric strength **Dielectric strength** Per item 3 **Cycle time : 5 cycle **Immersion cycle** **Immersion cycle** 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+2-2-0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC4500V(r.m.s.) for 0.1 s. Post-treatment: Capacitor should be stored at 3 + 125+34-0 30 min 3 + 125			strength		1 100
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 AC425/(f.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 *1room condition. 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 AC425/(f.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 at to 2 h at *1room condition. The capacitors are placed in a circulating air oven for a period for 100 for a period for 1000 h. The air in the oven is maintained at a temperature of 125+2/-0 °C, and relative humidity of 50% max. Throughout he test, the capacitors are subjected to a AC425/(f.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 subjected to 5 temperature cycles. The capacitors are placed in 1 activation to a AC425/(f.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 subjected to 5 temperature cycles. The capacitors are placed in the capacitor are placed in the voltage is increased to AC1000V(r.m.s.) for 0.1 s. Post-treatment: Capacitor should be subjected to 5 temperature cycles. The capacitors are placed in a circulation to a AC425/(f.m.s.)-≤50/60H2 for 0.1 s. The capacitors are placed in a circulation and capacity oldes except that the voltage is increased to AC1000V(r.m.s.)					1 Time to half-value (12) = 50μ s
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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 AC425/0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425/0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425/0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425/0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to a AC425/0 °C, and relative humidity of 50% max. Throughout the test, the capacitors are subjected to 1 to 2 h at "room condition. The capacitor should be stored for 1 to 2 h at "room condition. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. Char. B.: Within ±20% Char. B.: Within ±20% Char. B.: Stow max. Char. F.: 7.5% max. LR. 3000MC min. Dielectric strength Dielectric strength Per item 3 Cycle time: 5 cycle consecutively in the safety of the subject of the subject of to 5 temperature cycles. Throughout the test, the capacitors should be stored at 85±2°C for 1 h, then placed at "room condition for 24±2 h. Post-treatment: Capacitor should be stored to 85±2°C for 1 h, then placed at "room condition be stored to 85±2°C for 1 h, then placed at "room condition be stored to 85±2°C for 1 h, then placed at "room condition be stored to 85±2°C for 1 h, then placed at "room condition be stored to 85±2°C for 1 h, then placed at "room condition be stored to 85±2°C for 1 h, then placed at "room condition be stored to 85±2°C for 1 h, then placed at "room condition be stored to 85±2°C for 1 h, then placed at "room condition be stored to 85±2°C for 1 h, then placed at "room condition be stored for 85±2°C for 1 h, then placed at "room condition for 24±2 h. Post-treatment: Capacitor should be stored for 85±2°C for 1 h, then placed at "r					
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Temperature and immersion cycle Appearance No marked defect. Capacitance change Char. St. : Within ±5% change Char. B : Within ±10% Char. B : Within ±10% Char. B : Within ±10% Char. B : T.7.5% max. Char. F : 7.5% max. Char. F : 7.5% max. L.R. 3000MΩ min. Dielectric strength Per item 3 Salt water Question					
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.) For 0.1 s. 19 Temperature and immersion cycle 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.) 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. **Char. B. : Within ±10%					
Temperature and immersion cycle Appearance Capacitance change Char. St. : Within ±5% Char. E. F. Within ±20% Char. St. : Stophic. (30pF min.)					for a period of 1000 h.
Temperature and immersion cycle Appearance Capacitance change Char. St. : Within ±5% Char. E. F. Within ±20% Char. St. : Stophic. (30pF min.)					The air in the oven is maintained at a temperature
Throughout the test, the capacitors are subjected to a AC425V(r.m.s.)-≤0/60Hz> 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 to 2 h at "froom condition. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycle change Char. St.: Within ±5% Char. B.: Within ±10% Char. E, F: Within ±20% Q Char. St.: 275+5/2C*²min.(30pF under) 350min. (30pF min.) D.F. Char. B, E: 5.0% max. Char. F: 7.5% max. I.R. 3000MΩ min. Dielectric strength Per item 3 Throughout the test, the capacitors 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. The capacitor should be subjected to 5 temperature cycles, then consecutively to 2 immersion cycles. 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 24±2 h at "froom condition.					
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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 *1room condition. Appearance No marked defect. Capacitance change Char. SL : Within ±5% Char. B. i : Within ±10% Char. E. F: Within ±20% Char. SL : Within ±20% Char. SL : Within ±20% Char. B. F: Sommax. D.F. Char. B. E: 5.0% max. Char. F: 7.5% max. I.R. 3000MΩ min. Dielectric strength Dielectric strength Per item 3 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 to to 2 th at *1room condition. The capacitor should be stored to 5 temperature cycles, then consecutively to 2 immersion cycles. **CTemperature cycles, then consecutively to 2 immersion cycles. **Step Temperature(°C) Time Immersion water 1 + 465+5/-0 15 min Salt water 2 0±3 15 min					
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Post-treatment : Capacitor should be stored for 1 to 2 h at *1room condition.					
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Temperature and immersion cycle Appearance Capacitance Capacitance Char. SL : Within ±5% Char. B. : Within ±20% Char. SL : Char. SL					
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Q				Char. E, F: Within ±20%	-Temperature cyclos
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D.F. Char. B, E : 5.0% max. Char. F : 7.5% max. I.R. 3000MΩ min. Dielectric strength Per item 3	1				1 -40+0/-3 30 min
$ \begin{array}{ c c c c c }\hline \text{Char. F} & \text{C. 16.1. B, E. 3.078 filax.} \\ \hline \text{L.R.} & 3000\text{M}\Omega\text{ min.} \\ \hline \text{Dielectric} \\ \text{strength} \end{array} \begin{array}{ c c c c c }\hline \text{Room temp.} & 300\text{ min.} \\ \hline \text{A Room temp.} & 300\text{ min.} \\ \hline \text{Cycle time : 5 cycle} \\ \hline \text{Step} & \text{Temperature(°C)} & \text{Time} & \text{Immersion} \\ \hline \text{Water} \\ \hline \text{Clean} \\ \text{water} \\ \hline \text{2} & 0\pm3 & 15\text{ min} & \text{Salt} \\ \text{water} \\ \hline \text{Cycle time : 2 cycle} \\ \hline \text{Pre-treatment : Capacitor should be stored at } \\ \hline \text{Room temp.} & 300\text{ min.} \\ \hline \text{Cycle time : 5 cycle} \\ \hline \text{Step} & \text{Temperature(°C)} & \text{Time} & \text{Immersion} \\ \hline \text{Water} \\ \hline \text{Cycle time : 2 cycle} \\ \hline \text{Pre-treatment : Capacitor should be stored at } \\ \hline \text{Room temp.} & 300\text{ min.} \\ \hline \text{Cycle time : 5 cycle} \\ \hline \text{Pre-treatment : Capacitor should be stored at } \\ \hline \text{Room temp.} & 300\text{ min.} \\ \hline \text{Cycle time : 5 cycle} \\ \hline \text{Cycle time : 2 cycle} \\ \hline \text{Pre-treatment : Capacitor should be stored at } \\ \hline \text{Room temp.} & 300\text{ min.} \\ \hline \text{Cycle time : 2 cycle} \\ \hline \text{Cycle time : 3 cycle } \\ \hline \text{Cycle time : 2 cycle} \\ \hline \text{Cycle time : 3 cycle } \\ \hline \text{Cycle time : 4 cycle } \\ \hline \text{Cycle time : 4 cycle } \\ \hline \text{Cycle time : 5 cycle } \\ \hline \text{Cycle time : 5 cycle } \\ \hline \text{Cycle time : 4 cycle } \\ \hline \text$	1		<u> </u>		
LR. 3000MΩ min. A Room temp. 3 min	1		D.F.		3 ±125±3/-0 30 min
Dielectric strength Per item 3 Cycle time : 5 cycle	1			Char. F : 7.5% max.	
Dielectric strength Per item 3 Cycle time : 5 cycle Step Temperature(°C) Time Immersion water	1		I.R.	3000M $Ω$ min.	4 Koom temp. 3 min
strength Step Temperature(°C) Time Immersion water 1	1		Dielectric		Cycle time : 5 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 cycle 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±2 h at *1 room condition.					
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Step Temperature(°C) Time water	1				Immorcion
1 +65+5/-0 15 min Clean water 2 0±3 15 min Salt water Cycle time : 2 cycle 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±2 h at *1'room condition.	1				LISTED I TEMPERATUREC'UL TIME I
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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 24±2 h at *1room condition.					water
Cycle time : 2 cycle 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 24±2 h at *1room condition.					11 2 1
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 24±2 h at *1room condition.					water
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 24±2 h at *1room condition.					· · · · · · · · · · · · · · · · · · ·
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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 24±2 h at *¹room condition.					Pre-treatment: Capacitor should be stored at
*¹room condition for 24±2 h. Post-treatment: Capacitor should be stored for 24±2 h at *¹room condition.					· ·
Post-treatment : Capacitor should be stored for 24±2 h at *1 room condition.	1				
24±2 h at *1room condition.	1				
*1 "room condition" Temperature: 15 to 35°C. Relative humidity: 45 to 75%. Atmospheric pressure: 86 to 106kPa			1		24±2 h at *1room condition.
	*1 "ro	om condition" Tempe	erature: 15 to 35°	C, Relative humidity: 45 to 75%. Atmos	pheric pressure: 86 to 106kPa

 $^{^{\}star 1}$ "room condition" Temperature: 15 to 35°C, Relative humidity: 45 to 75%, Atmospheric pressure: 86 to 106kPa $^{\star 2}$ "C" expresses nominal capacitance value(pF)

6. Packing specification

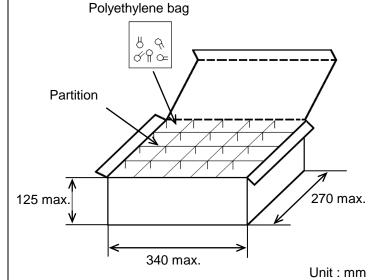
•Bulk type (Packing style code : B)

*1 *2
The number of packing = Packing quantity × n

The size of packing case and packing way

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

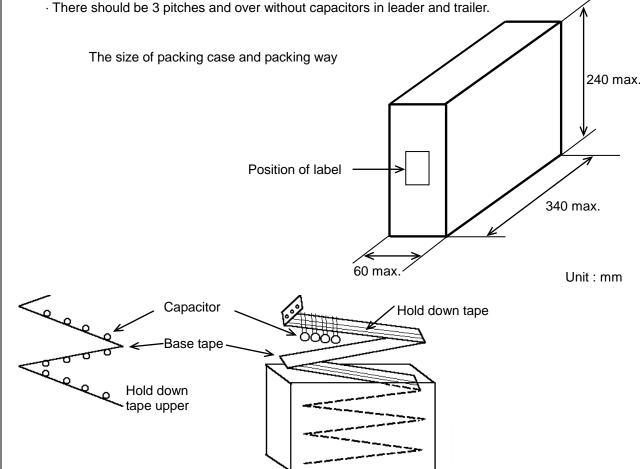




Note)

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

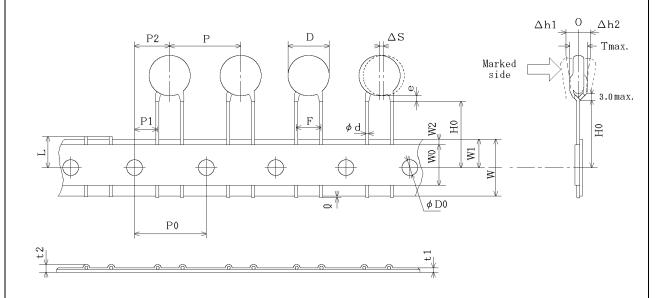
- •Ammo pack taping type (Packing style code : A)
 - · The tape with capacitors is packed zigzag into a case.
 - \cdot When body of the capacitor is piled on other body under it.



7. Taping specification

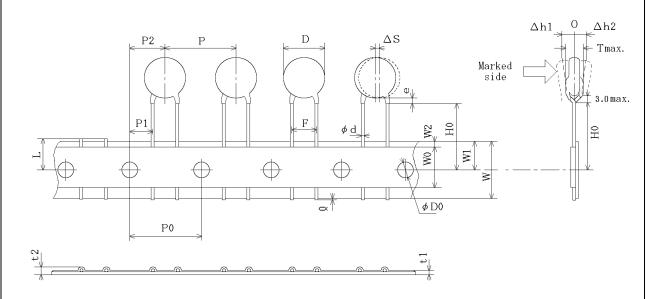
7-1. Dimension of capacitors on tape

Vertical crimp taping type < Lead code : N2 > Pitch of component 12.7mm / Lead spacing 5.0mm



Item	Code	Dimensions	Remarks
Pitch of component	Р	12.7±1.0	
Pitch of sprocket hole	P0	12.7±0.3	
Lead spacing	F	$5.0\pm_{0.2}^{0.8}$	
Length from hole center to component center	P2	6.35±1.3	
Length from hole center to lead	P1	3.85±0.7	Deviation of progress direction
Body diameter	D	Please refer to [P	art number list].
Deviation along tape, left or right	ΔS	0±1.0	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 bottom planes	H0	18.0± ^{2.0} ₀	
Protrusion length	Q	+0.5~-1.0	
Diameter of sprocket hole	φ D 0	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	1.0 max.	
Deviation across tape, rear	∆h2		
Portion to cut in case of defect	L	11.0± _{1.0}	
Hold down tape width	W0	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 [P	art number list].

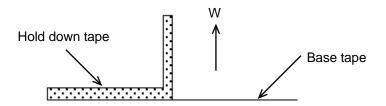
Vertical crimp taping type < Lead code : N3 > Pitch of component 15.0mm / Lead spacing 7.5mm



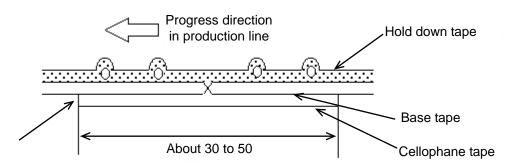
Item	Code	Dimensions	Remarks
Pitch of component	Р	15.0±2.0	
Pitch of sprocket hole	P0	15.0±0.3	
Lead spacing	F	7.5±1.0	
Length from hole center to component center	P2	7.5±1.5	Deviation of management discotion
Length from hole center to lead	P1	3.75±1.0	Deviation of progress direction
Body diameter	D	Please refer to [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 bottom planes	H0	18.0± ^{2.0} ₀	
Protrusion length	Q	+0.5~-1.0	
Diameter of sprocket hole	φ D 0	4.0±0.1	
Lead diameter	φd	0.60±0.05	
Total tape thickness	t1	0.6±0.3	The continuous hall decome to a shiple and
Total thickness, tape and lead wire	t2	1.5 max.	They include hold down tape thickness.
Deviation across tape, front	∆h1	2.0	
Deviation across tape, rear	∆h2	2.0 max.	
Portion to cut in case of defect	L	11.0± _{1.0}	
Hold down tape width	W0	11.5 min.	
Hold down tape position	W2	1.5±1.5	
Coating extension on lead	е	Up to the end of	crimp
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.



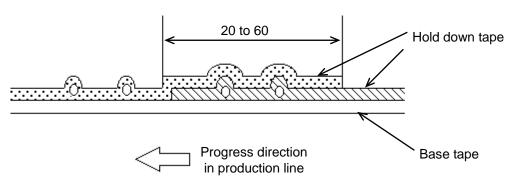
- 2) Splicing of tape
 - a) When base tape is spliced
 - •Base tape should be spliced by cellophane tape. (Total tape thickness should be less than 1.05mm.)



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