muRata

Reference Specification

Leaded MLCC for Automotive with AEC-Q200 RCE Series

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

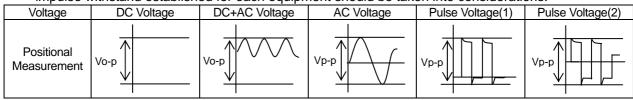
Please consult the approval sheet before ordering.Please read rating and Cautions first.

▲ 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.

When DC-rated capacitors are to be used in input circuits from commercial power source (AC filter), be sure to use Safety Recognized Capacitors because various regulations on withstand voltage or impulse withstand established for each equipment should be taken into considerations.



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 selfgenerated heat due to dielectric-loss. In case of Class 2 capacitors (Temp.Char. : X7R,X7S,X8L, etc.), applied voltage should be the load such as self-generated heat is within 20 °C on <u>the condition of</u> <u>atmosphere temperature 25 °C</u>. Please contact us if self-generated heat is occurred with Class 1 capacitors (Temp.Char. : C0G,U2J,X8G, etc.). When measuring, use a thermocouple of small thermal capacity-K of ϕ 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.

3. Fail-safe

Be sure to provide an appropriate fail-safe function on your product to prevent a second damage that may be caused by the abnormal function or the failure of our product.

4. 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 5 to 40 °C and 20 to 70%. Use capacitors within 6 months.

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.

7. BONDING AND RESIN MOLDING, RESIN COAT

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 a bonded or molded 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 or molding resin may cause a outer coating resin cracking and/or ceramic element cracking of a capacitor in a temperature cycling.

8. TREATMENT AFTER BONDING AND RESIN MOLDING, RESIN COAT

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. 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
- Undersea equipment
 Medical equipment
- 2. Aerospace equipment
- 4. Power plant control equipment
- 6. Transportation equipment (vehicles, trains, ships, etc.)8. Disaster prevention / crime prevention equipment
- 7. Traffic signal 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. Soldering and Mounting

Insertion of the Lead Wire

- When soldering, insert the lead wire into the PCB without mechanically stressing the lead wire.
- Insert the lead wire into the PCB with a distance appropriate to the lead space.

3. CAPACITANCE CHANGE OF CAPACITORS

• Class 2 capacitors (Temp.Char. : X7R,X7S,X8L, etc.)

Class 2 capacitors 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.

- 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.

1. Application

This specification is applied to Leaded MLCC RCE series in accordance with AEC-Q200 requirements used for Automotive Electronic equipment.

2. Rating

• Part number configuration

RCE Series	7U Tempera Characte	ature F	2E Rated oltage	102 Capacitance	J Capacitance tolerance	1 Dimensio code	on K1 Lead code	H03 Individual specification code	B Packing style code
• Temp	erature	characte	ristic		Can Change		to o do rd	Onerating	_
C	ode	Temp. Char.	Tem	p. Range	Cap. Change (Within%)	e 5	tandard Temp.	Operating Temp. Range	
7	υ	U2J	25	~125°C	750+/-120		25°C	-55~125°C	

• Rated voltage

Code	Rated voltage
2E	DC250V
2J	DC630V
ЗA	DC1000V

• Capacitance

The first two digits denote significant figures ; the last digit denotes the multiplier of 10 in pF. ex.) In case of 102.

 $10 \times 10^2 = 1000 \text{pF}$

Capacitance tolerance

Code	Capacitance Tolerance
J	+/-5%

• Dimension code

Code	Dimensions (LxW) mm max.
1	4.0 x 3.5
2	5.5 x 4.0
3	5.5 x 5.0
4	7.5 x 5.5
5	7.5 x 8.0
U	7.7 x 13.0

• Lead code

Code	Lead style	Lead spacing (mm)
B1	Straight type	5.0+/-0.8
E1	Straight taping type	5.0+0.6/-0.2
K1	Inside crimp type	5.0+/-0.8
M1	Inside crimp taping type	5.0+0.6/-0.2

Lead wire is solder coated CP wire.

- Individual specification code Murata's control code Please refer to [Part number list].
- Packing style code

<u>ae</u> g e.,	
Code	Packing style
А	Taping type of Ammo
В	Bulk type

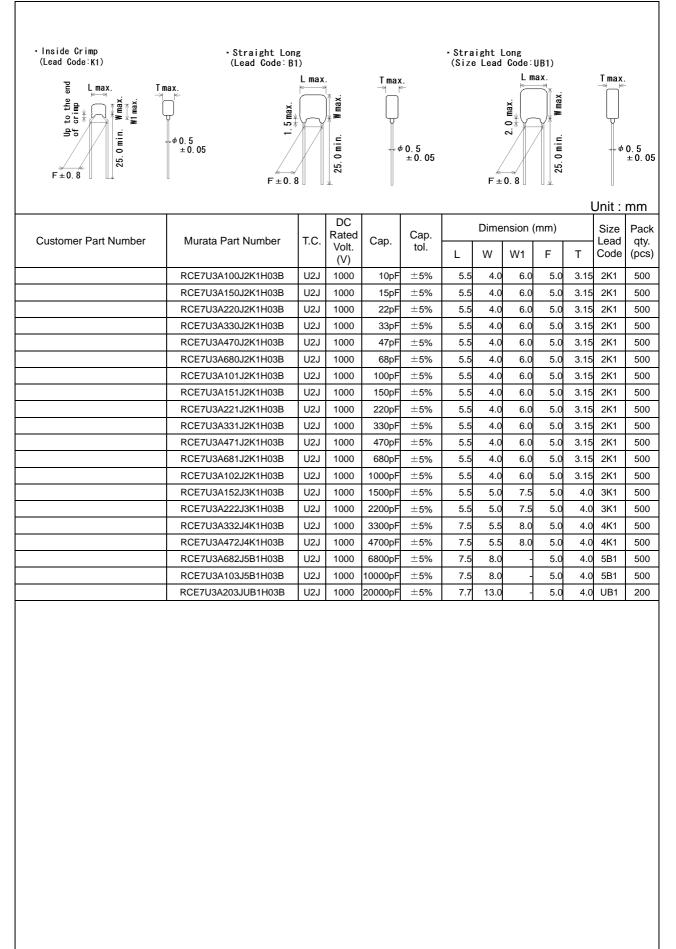
3. Marking

Temp. char.	: Letter code : U(U2J Char.)
Capacitance	: Actual numbers (Less than 100pF)
	3 digit numbers (100pF and over)
Capacitance tolerance	: Code
Rated voltage	: Letter code : 4 (DC250V only. Except dimension code : 1)
-	Letter code : 7 (DC630V only.)
	Letter code : A (DC1000V only.)
Company name code	: Abbreviation : 🕞 (Except dimension code : 1)

(M) (F xcept a ipa

(Ex.)			
Rated voltage Dimensions	DC250V	DC630V	DC1000V
1	U 102J		
2	(%)	G ⁴⁷² J7U	CM ¹⁰² JAU
3,4	G 473 J4U	(103 J7U	JAU
5,U		& 333 J7U	4 103 JAU

Part number list Inside Crimp (lead Code:K1)	• Straight Lon					• Stra						
(Lead Code∶K1)	(Lead Code: B	1) Lmax		Tmax	r	(Size	Lead	Code: Lm	UB1) nax.		Tmax.	
L ± 0.8 L ±	max.		25.0 min. W max.		0.5 ±0.05		k	2.0 max.	25.0 min. Wmax.		→ × ¢	0. € ±0
										ι	Jnit :	mr
			DC				Dime	nsion ((mm)		Size	P
Customer Part Number	Murata Part Number	T.C.	Rated Volt. (V)	Cap.	Cap. tol.	L	W	W1	F	т	Lead Code	с (р
	RCE7U2E101J1K1H03B	U2J	250	100pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E151J1K1H03B	U2J	250	150pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E221J1K1H03B	U2J	250	220pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E331J1K1H03B	U2J	250	330pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E471J1K1H03B	U2J	250	470pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E681J1K1H03B	U2J	250	680pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E102J1K1H03B	U2J	250	1000pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E152J1K1H03B	U2J	250	1500pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E222J1K1H03B	U2J	250	2200pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E332J1K1H03B	U2J	250	3300pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E472J1K1H03B	U2J	250	4700pF	±5%	4.0	3.5	5.0	5.0	3.15	1K1	5
	RCE7U2E682J2K1H03B	U2J	250	6800pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2E103J2K1H03B	U2J	250	10000pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J100J2K1H03B	U2J	630	10pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J150J2K1H03B	U2J	630	15pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J220J2K1H03B	U2J	630	22pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J330J2K1H03B	U2J	630	33pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J470J2K1H03B	U2J	630	47pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J680J2K1H03B	U2J	630	68pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J101J2K1H03B	U2J	630	100pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J151J2K1H03B	U2J	630	150pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J221J2K1H03B	U2J	630	220pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J331J2K1H03B	U2J	630	330pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J471J2K1H03B	U2J	630	470pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J681J2K1H03B	U2J	630	680pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J102J2K1H03B	U2J	630	1000pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J152J2K1H03B	U2J	630	1500pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J222J2K1H03B	U2J	630	2200pF		5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J332J2K1H03B	U2J	630	3300pF		5.5	4.0	6.0	5.0	3.15		5
	RCE7U2J472J2K1H03B	U2J	630	4700pF	±5%	5.5	4.0	6.0	5.0	3.15	2K1	5
	RCE7U2J682J3K1H03B	U2J	630	6800pF	±5%	5.5	5.0	7.5	5.0	4.0	3K1	5
	RCE7U2J103J3K1H03B	U2J	630	10000pF	±5%	5.5	5.0	7.5		4.0	3K1	5
	RCE7U2J153J4K1H03B	U2J	630	15000pF	±5%	7.5	5.5	8.0	5.0	4.0	4K1	5
	RCE7U2J223J4K1H03B	U2J	630	22000pF		7.5	5.5	8.0		4.0		5
	RCE7U2J333J5B1H03B	U2J	630	33000pF		7.5	8.0	-	5.0	4.0	5B1	5
	RCE7U2J473J5B1H03B	U2J	630	47000pF	±5%	7.5	8.0	-	5.0	4.0	5B1	5
	RCE7U2J943JUB1H03B	U2J	630	94000pF		7.7	13.0	_	5.0	4.0		2



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Customer Part Number	Murata Part Number	T.C.	Rated volt.	Cap.	Cap. tol.			menor		,		Lead	
			(V)			L	W	W1	F	Т	H/H0	Code (p	(pcs)
	RCE7U2E101J1M1H03A	U2J	250	100pF	±5%	4.0	3.5	5.0	5.0	3.15	16.0	1M1	2000
	RCE7U2E151J1M1H03A	U2J	250	150pF	\pm 5%	4.0	3.5	5.0	5.0	3.15	16.0	1M1	2000
	RCE7U2E221J1M1H03A	U2J	250	220pF	\pm 5%	4.0	3.5	5.0	5.0	3.15	16.0	1M1	2000
	RCE7U2E331J1M1H03A	U2J	250	330pF	\pm 5%	4.0	3.5	5.0	5.0	3.15	16.0	1M1	2000
	RCE7U2E471J1M1H03A	U2J	250	470pF	\pm 5%	4.0	3.5	5.0	5.0		16.0		2000
	RCE7U2E681J1M1H03A	U2J	250	680pF	±5%	4.0	3.5	5.0	5.0	3.15	16.0		2000
	RCE7U2E102J1M1H03A	U2J	250	1000pF	±5%	4.0	3.5	5.0	5.0		16.0		2000
	RCE7U2E152J1M1H03A	U2J	250	1500pF	±5%	4.0	3.5	5.0	5.0		16.0		2000
	RCE7U2E222J1M1H03A	U2J U2J	250	2200pF	±5%	4.0	3.5 3.5	5.0 5.0	5.0 5.0		16.0		2000
	RCE7U2E332J1M1H03A RCE7U2E472J1M1H03A	U2J	250 250	3300pF 4700pF	±5% ±5%	4.0 4.0	3.5 3.5	5.0 5.0	5.0		16.0 16.0		2000 2000
	RCE7U2E682J2M1H03A	U2J	250	4700pr	±5%	4.0 5.5	4.0	6.0	5.0	3.15	16.0		2000
	RCE7U2E103J2M1H03A	U2J	250	10000pF	±5%	5.5	4.0	6.0	5.0		16.0		2000
	RCE7U2J100J2M1H03A	U2J	630	10pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0		2000
	RCE7U2J150J2M1H03A	U2J	630	15pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	2000
	RCE7U2J220J2M1H03A	U2J	630	22pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	2000
	RCE7U2J330J2M1H03A	U2J	630	33pF	$\pm 5\%$	5.5	4.0	6.0	5.0	3.15	16.0	2M1	2000
	RCE7U2J470J2M1H03A	U2J	630	47pF	$\pm 5\%$	5.5	4.0	6.0	5.0	3.15	16.0	2M1	2000
	RCE7U2J680J2M1H03A	U2J	630	68pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	2000
	RCE7U2J101J2M1H03A	U2J	630	100pF	\pm 5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	2000
	RCE7U2J151J2M1H03A	U2J	630	150pF	\pm 5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	2000
	RCE7U2J221J2M1H03A	U2J	630	220pF	\pm 5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	2000
	RCE7U2J331J2M1H03A	U2J	630	330pF	\pm 5%	5.5	4.0	6.0					2000
	RCE7U2J471J2M1H03A	U2J	630	470pF	±5%	5.5	4.0	6.0					2000
	RCE7U2J681J2M1H03A	U2J	630	680pF	±5%	5.5	4.0	6.0					2000
	RCE7U2J102J2M1H03A	U2J	630	1000pF	±5%	5.5	4.0	6.0					2000
	RCE7U2J152J2M1H03A	U2J	630	1500pF	±5%	5.5	4.0	6.0					2000
	RCE7U2J222J2M1H03A	U2J	630	2200pF	±5%	5.5	4.0	6.0					2000
	RCE7U2J332J2M1H03A RCE7U2J472J2M1H03A	U2J U2J	630 630	3300pF 4700pF	±5% ±5%	5.5 5.5	4.0 4.0	6.0 6.0					2000 2000
	RCE7U2J682J3M1H03A	U2J	630	4700pF 6800pF	±5%	5.5	4.0 5.0	7.5	5.0		16.0		2000
	RCE7U2J103J3M1H03A	U2J	630	10000pF	±5%	5.5	5.0	7.5			16.0		2000
	RCE7U2J153J4M1H03A	U2J	630	15000pF	±5%	7.5	5.5	8.0					1500
	RCE7U2J223J4M1H03A	U2J	630	22000pF	±5%	7.5	5.5	8.0					1500
	RCE7U2J333J5E1H03A	U2J		33000pF	±5%	7.5	8.0	-	5.0				1500
	RCE7U2J473J5E1H03A	U2J	630	47000pF	±5%	7.5	8.0	-	5.0	4.0	17.5	5E1	1500
	RCE7U2J943JUE1H03A	U2J	630	94000pF	±5%	7.7	13.0	-	5.0	4.0	17.5	UE1	1500
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• Inside Crimp (Lead Code:N					nt Tapi Code∶E∗								
·	·									_			
	Lmax.	Tma	ax					Lmax	1	T ⇒	max. ⊱		
	$F^{\pm 0.6}_{0.2}$				H + + 0.5) - F±0:2		φ 0. 5 φ 0. 5 φ ± 0	. 05			
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Customer Part Number	Murata Part Number	T.C.	Rated volt.	Cap.	Cap. tol.	L	W	W1	F	т	H/H0	Lead Code	qty. (pcs
	RCE7U3A100J2M1H03A	U2J	(V) 1000	10pF	±5%	∟ 5.5	4.0	6.0	י 5.0		16.0	2M1	200
	RCE703A100J2M1H03A	U2J	1000	10pF	±5%	5.5 5.5	4.0 4.0	6.0 6.0	5.0 5.0		16.0	2M1	200
	RCE7U3A220J2M1H03A	U2J	1000	22pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	200
	RCE7U3A330J2M1H03A	U2J	1000	33pF	±5%	5.5	4.0	6.0	5.0		16.0	2M1	200
	RCE7U3A470J2M1H03A	U2J	1000	47pF	±5%	5.5	4.0	6.0	5.0			2M1	200
	RCE7U3A680J2M1H03A	U2J	1000	68pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	200
	RCE7U3A101J2M1H03A	U2J	1000	100pF	±5%	5.5	4.0	6.0	5.0		16.0	2M1	200
	RCE7U3A151J2M1H03A	U2J	1000	150pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	200
	RCE7U3A221J2M1H03A	U2J	1000	220pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	200
	RCE7U3A331J2M1H03A	U2J	1000	330pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	200
	RCE7U3A471J2M1H03A	U2J	1000	470pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	200
	RCE7U3A681J2M1H03A	U2J	1000	680pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	200
	RCE7U3A102J2M1H03A	U2J	1000	1000pF	±5%	5.5	4.0	6.0	5.0	3.15	16.0	2M1	200
	RCE7U3A152J3M1H03A	U2J	1000	1500pF	±5%	5.5	5.0	7.5	5.0	4.0	16.0	3M1	200
	RCE7U3A222J3M1H03A	U2J	1000	2200pF	±5%	5.5	5.0	7.5	5.0	4.0	16.0	3M1	200
	RCE7U3A332J4M1H03A	U2J	1000	3300pF	±5%	7.5	5.5	8.0	5.0	4.0	16.0	4M1	150
	RCE7U3A472J4M1H03A	U2J	1000	4700pF	±5%	7.5	5.5	8.0	5.0	4.0	16.0	4M1	150
	RCE7U3A682J5E1H03A	U2J	1000	6800pF	±5%	7.5	8.0	-	5.0	4.0	17.5	5E1	150
	RCE7U3A103J5E1H03A	U2J	1000	10000pF	±5%	7.5	8.0	-	5.0	4.0	17.5	5E1	150
	RCE7U3A203JUE1H03A	U2J	1000	20000pF	±5%	7.7	13.0	-	5.0	4.0	17.5	UE1	150

Reference only

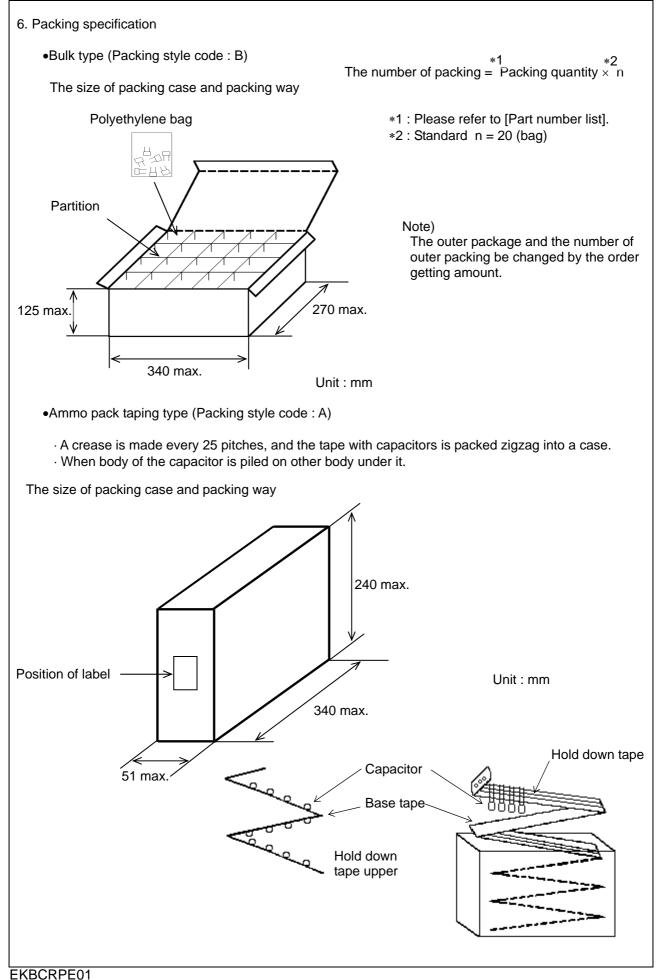
Electrical Test - 2 High properature Exposure (Storage) Appearance Change (Whinh: 43% or ±0.3pF Change (Whinhever is larger) Sit the capacitor for 1.000±12h at 150±3°C. Let sit for 24±2h 'room condition, then measure. 0 30pF ≤ C : 0.2 500+10C Change (Whinhever is smaller) For personne Capacitance (Whinhever is smaller) Perform the 1.000 cycles according to the four heat treatment isted in the following table. Let sit for 24±2 h at 'room condition, then measure. 3 Temperature Capacitance (Whinhever is smaller) Perform the 1.000 cycles according to the four heat treatment isted in the following table. Let sit for 24±2 h at 'room condition then measure. 3 Temperature Capacitance (VMinhever is larger) Perform the 1.000 cycles according to the four heat treatment isted in the following table. Let sit for 24±2 h at 'room condition then measure. 4 Molsture Capacitance (Whinhever is smaller) Appearance (Whinhever is smaller) No defects or abnormalities (Change (Whinhever is smaller) Temp. Temp. Temp. (C) 4 Appearance (Whinhever is smaller) Appearance (Whinhever is smaller) Apply the 24h heat (25 to 65°C) and humidity (80 to 98%) treatment shown below, 10 consecutive times. Let sit for 24±2h at 'room condition, then measure. 70 Sign f > C : 0.2 100+10C/3 C : Nominal Capacitance(pF) Temp. (Whichever is smaller) Temp. (C) Sign f = C : 0.2 100+10C/3 C : Nominal Capacitance(pF) 1 I.R. Si	Post-Stress Test Appearance Capacitance Change Q I.R. I.R. Capacitance Change Q I.R. I.R. Capacitance Change Q I.R. I.R.	No defects or abnormalities Within ±3% or ±0.3pF (Whichever is larger) 30pF ≤ C : Q ≥ 350 10pF ≤ C < 30pF : Q ≥ 275+5C/2 10pF > C : Q ≥ 200+10C C : Nominal Capacitance (pF) More than 1,000MΩ or 50 MΩ·μF (Whichever is smaller) No defects or abnormalities Within ±5% or ±0.5pF (Whichever is larger) 30pF ≤ C : Q ≥ 350 10pF ≤ C < 30pF : Q ≥ 275+5C/2 10pF > C : Q ≥ 200+10C C : Nominal Capacitance (pF) 1,000MΩ or 50MΩ·μF min. (Whichever is smaller) No defects or abnormalities Within ±5% or ± 0.5pF	Sit the capacitor for 1,000±12h at 150±3°C. Let sit for 24±2h *room condition, then measure. Perform the 1,000 cycles according to the four heat treatmer listed in the following table. Let sit for 24±2 h at *room condit then measure. Step 1 2 3 4 Temp. -55+0/-3 Room Time 15±3 1 15±3
Electrical Test - 1 Temperature (Storage) Appearance No defects or abnormalities (Storage) Sti the capacitor for 1,000:12h at 150:3°C. Let sit for 24:2h memory of the start of t	Test Appearance Capacitance Change Q I.R. I.R. Ure Appearance Capacitance Change Q I.R. I.R. I.R. Capacitance Change Q I.R. Capacitance Change Capacitance Capacitance Capacitance Capacitance Change	Within $\pm 3\%$ or $\pm 0.3pF$ (Whichever is larger) $30pF \le C : Q \ge 350$ $10pF \le C < 30pF : Q \ge 275+5C/2$ $10pF > C : Q \ge 200+10C$ C : Nominal Capacitance (pF) More than 1,000M\Omega or 50 M\Omega·µF (Whichever is smaller) No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$ (Whichever is larger) $30pF \le C : Q \ge 350$ $10pF \le C < 30pF : Q \ge 275+5C/2$ $10pF > C : Q \ge 200+10C$ C : Nominal Capacitance (pF) 1,000M\Omega or 50M\Omega·µF min. (Whichever is smaller) No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$	*room condition, then measure. Perform the 1,000 cycles according to the four heat treatment listed in the following table. Let sit for 24±2 h at *room condition then measure. Step 1 2 3 4 Temp. -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
2 High Temperature (Storage) Appearance Q No defects or abnormalities Change Q Stit the capacitor for 1,000+12h at 150:3°C. Let sit for 24±2h troom condition, then measure. 3 Temperature (Storage) Sop F ≤ C: 0,2 30; F : 0,2 250; 10; 0; 0; 0; 0; 0; 0; 0; 0; 0; 0; 0; 0; 0	Appearance Capacitance Change Q I.R. Ure Appearance Capacitance Change Q I.R. I.R. Example Capacitance Change	Within $\pm 3\%$ or $\pm 0.3pF$ (Whichever is larger) $30pF \le C : Q \ge 350$ $10pF \le C < 30pF : Q \ge 275+5C/2$ $10pF > C : Q \ge 200+10C$ C : Nominal Capacitance (pF) More than 1,000M\Omega or 50 M\Omega·µF (Whichever is smaller) No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$ (Whichever is larger) $30pF \le C : Q \ge 350$ $10pF \le C < 30pF : Q \ge 275+5C/2$ $10pF > C : Q \ge 200+10C$ C : Nominal Capacitance (pF) 1,000M\Omega or 50M\Omega·µF min. (Whichever is smaller) No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$	*room condition, then measure. Perform the 1,000 cycles according to the four heat treatment listed in the following table. Let sit for 24±2 h at *room condition then measure. Step 1 2 3 4 Temp. -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
Temperature (Storage) Change (Winichever is larger) room condition, then measure. 3 Temperature (Storage) Casactiance (wF) (Damage (Winichever is smaller) room condition, then measure. 3 Temperature (Storage) Internet that 1,000 cycles according to the four heat treatmer (Storage) 3 Temperature (Storage) No defects or abnormalities (Change (Winichever is smaller) Perform the 1,000 cycles according to the four heat treatmer (Storage) 3 Temperature (Storage) No defects or abnormalities (Change (Winichever is larger) Perform the 1,000 cycles according to the four heat treatmer (Storage) 4 Motsure (Change (Whichever is smaller) Appearance No defects or abnormalities (Whichever is smaller) Perform the 1,000 cycles according to the four heat treatmer (Storage) 4 Motsure (Change (Whichever is smaller) Appearance No defects or abnormalities (Whichever is smaller) Perform the 1,000 cycles according to the four heat treatmer (Storage) 5 Blased (Change (Winchever is smaller) Appearance No defects or abnormalities (Change (Whichever is smaller) Temperature (Change (Whichever is smaller) 5 Blased (Change (Whichever is smaller)) Apple treated value and DC1, 3h0, 2/0 (value) Apple treated value and DC1, 3h0, 2/0 (value) 6 Blased (Change (Whichever is larger)) C: Nominal Capacitance (pF)	ure Capacitance Change Q I.R. ure Appearance Capacitance Change Q I.R. I.R. Capacitance Change	Within $\pm 3\%$ or $\pm 0.3pF$ (Whichever is larger) $30pF \le C : Q \ge 350$ $10pF \le C < 30pF : Q \ge 275+5C/2$ $10pF > C : Q \ge 200+10C$ C : Nominal Capacitance (pF) More than 1,000M\Omega or 50 M\Omega·µF (Whichever is smaller) No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$ (Whichever is larger) $30pF \le C : Q \ge 350$ $10pF \le C < 30pF : Q \ge 275+5C/2$ $10pF > C : Q \ge 200+10C$ C : Nominal Capacitance (pF) 1,000M\Omega or 50M\Omega·µF min. (Whichever is smaller) No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$	*room condition, then measure. Perform the 1,000 cycles according to the four heat treatment listed in the following table. Let sit for 24±2 h at *room condition then measure. Step 1 2 3 4 Temp. -55+0/-3 Room Temp. 125+3/-0 Room Time 15±3 1 15±3 1 15±3 1
Exposure (Storage) Change Q (Whichever is larger) Q 300F ≤ C : Q ≥ 200 + 10C C : Nominal Capacitance (pF) I.R. (Whichever is smaller) Perform the 1.000 cycles according to the four heat treatmer (cycling) Capacitance (Whichever is smaller) Q 300F : C : Q ≥ 200+10C Q 300F : C : Q ≥ 300+10C Change (Whichever is smaller) Q 300F : C : Q ≥ 200+10C I.R. 1.000M2 or 50M2 µF min. (Whichever is smaller) 4 Moisture Capacitance (Within ±5% or ± 0.5pF Capacitance (Within ±5% or ± 0.5pF Capacitance (Within ±5% or ± 0.5pF C : Nominal Capacitance(pF) I.R. 500MQ or 25MQ µF min. (Whichever is smaller) Y Y Y Y Q 300F 5 C : Q ≥ 100+10C/3 Q 300F 5 C : Q ≥ 100+10C/3 Q S00MQ or 25MQ µF min. (Whichever is smaller)	Change Q I.R. I.R. Capacitance Change Q I.R. I.R. I.R.	$\begin{array}{l} (Whichever is larger)\\ 30pF \leq C: Q \geq 350\\ 10pF \leq C < 30pF: Q \geq 275+5C/2\\ 10pF > C: Q \geq 200+10C\\ \hline\\ C: Nominal Capacitance (pF)\\ More than 1,000M\Omega or 50 M\Omega \cdot \mu F\\ (Whichever is smaller)\\ No defects or abnormalities\\ \hline\\ Within \pm 5\% or \pm 0.5pF\\ (Whichever is larger)\\ 30pF \leq C: Q \geq 350\\ 10pF \leq C < 30pF: Q \geq 275+5C/2\\ 10pF > C: Q \geq 200+10C\\ \hline\\ C: Nominal Capacitance (pF)\\ 1,000M\Omega or 50M\Omega \cdot \mu F min.\\ (Whichever is smaller)\\ No defects or abnormalities\\ \hline\\ No defects or abnormalities\\ \hline\\ Within \pm 5\% or \pm 0.5pF\\ \hline\end{array}$	Isted in the following table. Let sit for 24±2 h at *room condit then measure. Step 1 2 3 4 Temp. (°C) -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
3 Temperature Cycling Appearance No defects or abnormalities Capacitance Within ±5% or ±0.5pF 3 Temperature Cycling Appearance No defects or abnormalities 4 Moisture Capacitance Within ±5% or ±0.5pF 4 Moisture Capacitance Within ±5% or ±0.5pF 6 Biased Humidity 5 Biased Humidity 7 Appearance No defects or abnormalities Capacitance Within ±5% or ±0.5pF 7 Nome that the following table. Let sit for 24±2 h at "room conditions then measure. 4 Moisture Capacitance Within ±5% or ±0.5pF 1 I.R. 4 Moisture Capacitance Within ±5% or ±0.5pF 1 I.R. 6 Appearance No defects or abnormalities 1 I.R. 6 Appearance No defects or abnormalities 1 I.R. 1 I.R. 1 Noticever is smaller) 5 Biased Humidity 2 Appearance No defects or abnormalities 1 I.R. 1 I.R. 0 300F < C : 2 : 2000	I.R. ure Appearance Capacitance Change Q I.R. I.R. Appearance Capacitance Capacitance Capacitance	$\begin{array}{l} 10 \text{pF} \leq C < 30 \text{pF} : Q \geq 275 + 5C/2 \\ 10 \text{pF} > C : Q \geq 200 + 10C \\ \hline \\ \hline C : Nominal Capacitance (pF) \\ \hline \\ More than 1,000 M\Omega or 50 M\Omega \cdot \mu F \\ (Whichever is smaller) \\ \hline \\ No defects or abnormalities \\ \hline \\ Within \pm 5\% \text{ or } \pm 0.5 \text{pF} \\ (Whichever is larger) \\ 30 \text{pF} \leq C : Q \geq 350 \\ 10 \text{pF} \leq C < 30 \text{pF} : Q \geq 275 + 5C/2 \\ 10 \text{pF} > C : Q \geq 200 + 10C \\ \hline \\ C : Nominal Capacitance (pF) \\ 1,000 M\Omega \text{ or } 50 M\Omega \cdot \mu \text{F min.} \\ (Whichever is smaller) \\ \hline \\ No defects or abnormalities \\ \hline \\ Within \pm 5\% \text{ or } \pm 0.5 \text{pF} \end{array}$	Isted in the following table. Let sit for 24±2 h at *room condit then measure. Step 1 2 3 4 Temp. (°C) -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
10pF > C: Q ≥ 200+10C C: Nominal Capacitance (pF) 1R. More than 1,000 M2 or 50 M2.µF (Whichever is smaller) Q 30pF > C: Q ≥ 300 Capacitance Within ±5% or ±0.5pF Change Whichever is larger) Q 30pF > C: Q ≥ 200+10C Ci Nominal Capacitance (pF) IR. 1.R. 1,000 M2 or 50 M2.µF min. (Whichever is ismaller) Apparance Apparance No defects or abnormalities Capacitance (Whin ±5% or ±0.5pF Change (Whichever is larger) I.R. 1,000 M2 or 50 M2.µF min. (Whichever is smaller) Apparance Apparance No defects or abnormalities Capacitance (Whin ±5% or ±0.5pF Change (Whichever is larger) Q 30pF > C: Q ≥ 200 Ci Nominal Capacitance(pF) I.R. 500M1 or 25M2.µF min. (Whichever is ismaller) Q 30pF > C: Q ≥ 100+10C/3 Ci Nominal Capacitance(pF) I.R. 500M1 or 25M2.µF min. (Whichever is smaller) Ci Nominal Capacitance(pF) I.R. 500M1 or 25M2.µF min. Q 30pF > C: Q ≥ 100+10C/3 Ci Nominal Capacitance Q 30pF > C:	Appearance Capacitance Change Q I.R. i.R. capacitance Capacitance Change	10pF > C : Q ≥ 200+10C C : Nominal Capacitance (pF) More than 1,000MΩ or 50 MΩ·μF (Whichever is smaller) No defects or abnormalities Within ±5% or ±0.5pF (Whichever is larger) 30pF ≤ C : Q ≥ 350 10pF ≤ C < 30pF : Q ≥ 275+5C/2 10pF > C : Q ≥ 200+10C C : Nominal Capacitance (pF) 1,000MΩ or 50MΩ·μF min. (Whichever is smaller) No defects or abnormalities Within ±5% or ± 0.5pF	Isted in the following table. Let sit for 24±2 h at *room condit then measure. Step 1 2 3 4 Temp. (°C) -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
3 C: Nominal Capacitance (pF) 3.1 Temperature Capacitance No defects or abnormalities Cycling C: Nominal Capacitance (pF) Q 30 PF ≤ C: Q ≥ 380 C: Nominal Capacitance (pF) Iben measure. Q 30 PF ≤ C: Q ≥ 275+5C/2 10 PF ≤ C < 300 F: Q ≥ 275+5C/2	Appearance Capacitance Change Q I.R. i.R. capacitance Capacitance Change	C : Nominal Capacitance (pF) More than 1,000MΩ or 50 MΩ·μF (Whichever is smaller) No defects or abnormalities Within ±5% or ±0.5pF (Whichever is larger) 30pF ≤ C : Q ≥ 350 10pF ≤ C < 30pF : Q ≥ 275+5C/2 10pF > C : Q ≥ 200+10C C : Nominal Capacitance (pF) 1,000MΩ or 50MΩ·μF min. (Whichever is smaller) No defects or abnormalities Within ±5% or ± 0.5pF	Isted in the following table. Let sit for 24±2 h at *room condit then measure. Step 1 2 3 4 Temp. (°C) -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
I.R. More than 1.000M2 or 50 M2:µF 3 Temperature Appearance No defects or abnormalities Cycling Capacitance Within ±5% or ± 0.5pF 0 300pF : C: 2235+5C/2 10pF > C: 300pF : Q: 275+5C/2 10pF > C: 20 ≥ 200+10C 1.R. 1,000M2 or 500M2:µF min. (Whichever is smaller) 4 Moisture Resistance No defects or abnormalities Capacitance (Whichever is smaller) 4 Moisture Resistance Cimminal Capacitance (pF) 1.R. 1,000M2 or 500M2:µF min. (Whichever is smaller) Q 30pF > C: Q ≥ 200 30pF > C: Q ≥ 200 Capacitance (Whichever is larger) Q 30pF > C: Q ≥ 200 Ci : Nominal Capacitance(pF) I.R. 500M2 or 25M2:µF min. (Whichever is smaller) 90-98% 90-98% 90-98% 90-98% 90-98% 90-98% 1.R. 500M2 or 25M2:µF min. (Whichever is smaller) 90-98% 90-98% 90-98% 90-98% 90-98% 90-98% 1.R. 500M2 or 25M2:µF min. 5 Biased Humidity	Appearance Capacitance Change Q I.R. i.R. capacitance Capacitance Change	More than 1,000M Ω or 50 M Ω ·µF (Whichever is smaller) No defects or abnormalities Within ±5% or ±0.5pF (Whichever is larger) 30pF \leq C : Q \geq 350 10pF \leq C < 30pF : Q \geq 275+5C/2 10pF $>$ C : Q \geq 200+10C C : Nominal Capacitance (pF) 1,000M Ω or 50M Ω ·µF min. (Whichever is smaller) No defects or abnormalities Within ±5% or ± 0.5pF	Isted in the following table. Let sit for 24±2 h at *room condit then measure. Step 1 2 3 4 Temp. (°C) -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
1 1.K. (Whichever is smaller) 3 Temperature Appearance No defects or abnormalities Perform the 1.000 cycles according to the four heat treatmer listed in the following table. Let sit for 24±2 h at 'room condit then measure. 0 30pF < C: (2 ≥ 200+10C	Appearance Capacitance Change Q I.R. i.R. capacitance Capacitance Change	(Whichever is smaller) No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$ (Whichever is larger) 30pF $\leq C : Q \geq 350$ 10pF $\leq C < 30pF : Q \geq 275+5C/2$ 10pF > C : Q $\geq 200+10C$ C : Nominal Capacitance (pF) 1,000MΩ or 50MΩ·µF min. (Whichever is smaller) No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$	Isted in the following table. Let sit for 24±2 h at *room condit then measure. Step 1 2 3 4 Temp. (°C) -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
3 Temperature Capacitance During No defects or abnormalities Perform the 1.000 cycles according to the four heat treatment in the following table. Let sit for 24±2 h at 'room condition then measure. 4 Moisture Resistance Q 30pF 5 C : Q ≥ 300+F C : 10pF S C : Q ≥ 200+10C Step 1 2 3 4 4 Moisture Resistance Appearance No defects or abnormalities Capacitance Vithin ±5% or 10.5pF Appearance No defects or abnormalities Apply the 24h heat (25 to 65°C) and humidity (80 to 98%). Iteration theory is larger) 4 Moisture Resistance Appearance No defects or abnormalities Capacitance Vithin ±5% or 10.5pF Apply the 24h heat (25 to 65°C) and humidity (80 to 98%). Iteration theory is larger) 1 I.R. 500MΩ or 25M2 µF min. (Whichever is smaller) C : Nominal Capacitance(pF) 6 E : Nominal Capacitance(pF) I.R. 500MΩ or 25M2 µF min. (Whichever is smaller) 7 Biased Humidity Appearance No defects or abnormalities Apply the rated voltage and DC1.3v0 2/·0 V (add 100kCt resisted at 85:3°C and 80 to 85%, humidity for 1.002/·0 V (add 100kCt resisted at 85:3°C and 80 to 85%, humidity for 1.002/·0 V (add 100kCt resisted at 85:3°C and 80 to 85%, humidity for 1.002/·12 A. 5 Biased Humidity Appearance No defects or abnormalities Capacitance Vithin ±5% or ± 0.5pF Apply the rated voltage and DC1.3v0 2/·0 V (add 100kCt resisted at 85:3°C and 80 to 85%, humidity for 1.002/·12 A. 6 I.R. SoupF 5 C : Q ≥ 200 300F 5 C : Q	Capacitance Change Q I.R. Appearance Capacitance Change	No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$ (Whichever is larger) $30pF \le C : Q \ge 350$ $10pF \le C < 30pF : Q \ge 275+5C/2$ $10pF > C : Q \ge 200+10C$ C : Nominal Capacitance (pF) $1,000M\Omega$ or $50M\Omega \cdot \mu F$ min. (Whichever is smaller) No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$	Isted in the following table. Let sit for 24±2 h at *room condit then measure. Step 1 2 3 4 Temp. (°C) -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
Cycing Capacitance Within ±9% or ±0.5pF Q 30pF : C : Q : 350 10pF : C < 2.350	Capacitance Change Q I.R. Appearance Capacitance Change	Within $\pm 5\%$ or $\pm 0.5pF$ (Whichever is larger) $30pF \le C : Q \ge 350$ $10pF \le C < 30pF : Q \ge 275+5C/2$ $10pF > C : Q \ge 200+10C$ C : Nominal Capacitance (pF) $1,000M\Omega$ or $50M\Omega \cdot \mu F$ min. (Whichever is smaller) No defects or abnormalities Within $\pm 5\%$ or $\pm 0.5pF$	Isted in the following table. Let sit for 24±2 h at *room condit then measure. Step 1 2 3 4 Temp. (°C) -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
9 30PF ≤ C : Q : 350 10PF ≤ C : Q : 200+10C 10F > C : Q : 200+10C 10F > C : Q : 200+10C 1 1.R. 1.00MX or 50MX µ F min. (Whichever is smaller) 15:3 1 15:3 1 4 Moisture Resistance Appearance No defects or abnormalities Change Apply the 24h heat (25 to 65°C) and humidity (80 to 98%) treatment shown below, 10 consecutive times. Let sit for 24±2 h at 'stom condition, then measure. 0 30PF > C : Q : 200+10C/3 C : Nominal Capacitance (pF) Humidity 0 : 30PF > C : Q : 200 Humidity 0 : 90-98% Humidity 1 : 2 : 4 : 5 : 6 : 7 : 8 : 9 : 0 : 12 : 2 : 4 : 5 : 6 : 7 : 8 : 9 : 0 : 12 : 3 : 4 : 5 : 6 : 7 : 8 : 9 : 0 : 12 : 2 : 4 : 5 : 6 : 7 : 8 : 9 : 0 : 12 : 2 : 4 : 5 : 6 : 7 : 8 : 9 : 0 : 12 : 2 : 2 : 10 : 10 : 10 : 10 :	Q I.R. Appearance Capacitance Change	$\begin{array}{l} 30 \text{pF} \leq \text{C}: \text{Q} \geq 350 \\ 10 \text{pF} \leq \text{C} < 30 \text{pF}: \text{Q} \geq 275 \text{+}5\text{C}/2 \\ 10 \text{pF} > \text{C}: \text{Q} \geq 200 \text{+}10\text{C} \\ \hline \text{C}: \text{Nominal Capacitance (pF)} \\ 1,000 \text{M}\Omega \text{ or } 50 \text{M}\Omega, \text{\mu}\text{F} \text{ min.} \\ (\text{Whichever is smaller}) \\ \hline \text{No defects or abnormalities} \\ \hline \text{Within } \pm5\% \text{ or } \pm 0.5 \text{pF} \end{array}$	Step 1 2 3 4 Temp. (°C) -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
4 Moisture Resistance Appearance Whichever is smaller) Apply the 24 heat (25 to 65°C) and humidity (80 to 98%) treatment shown below, 10 consecutive times. Capacitance Within ±5% or ± 0.5pF 4 Moisture Resistance Appearance Whichever is larger) Apply the 24 heat (25 to 65°C) and humidity (80 to 98%) treatment shown below, 10 consecutive times. Capacitance Within ±5% or ± 0.5pF 1.R. 5 Biased Humidity Appearance No defects or abnormalities (Whichever is smaller) Apply the 24 heat (25 to 65°C) and humidity (80 to 98%) treatment shown below, 10 consecutive times. Let sit for 24±2 h at "room condition, then measure. Humidity 5 Biased Humidity Appearance No defects or abnormalities (Whichever is smaller) Apply the rated voltage and DC1.34-0.24 V (add 100kΩ resi at 85±37 call 46 to 85%, humidity for 1,000±12h. Remove and let its for 24±2 h at "room condition, then measure. Humidity 5 Biased Humidity Apply the rated voltage and DC1.34-0.24 V (add 100kΩ resi at 85±37 call 46 to 85%, humidity for 1,000±12h. Remove and let its for 24±2 h its for 24±2 h at "room condition, then measure Humidity 1 Apply the rated voltage and DC1.34-0.24 V (add 100kΩ resi at 85±37 call 46 to 85%, humidity for 1,000±12h. Remove and let its for 24±2 h at a "room condition, then measure Humidity 1 Apply the rated voltage and DC1.34-0.24V V (add 100kΩ resi at 85±37 call 46 to 85%, humidity for 1,000±12h. Remove and let its for 24±2 h at a "room condition, then measure Humidity 1 Capacita	I.R. Appearance Capacitance Change	$\begin{array}{l} 10 \text{pF} \leq C < 30 \text{pF}: Q \geq 275 + 5C/2 \\ 10 \text{pF} > C: Q \geq 200 + 10C \\ \hline C: \text{Nominal Capacitance (pF)} \\ 1,000 \Omega \text{ or } 50 M\Omega \cdot \mu \text{F min.} \\ (Whichever is smaller) \\ \hline \text{No defects or abnormalities} \\ \hline \text{Within } \pm5\% \text{ or } \pm 0.5 \text{pF} \end{array}$	Temp. (°C) -55+0/-3 Room Temp. 125+3/-0 Room Temp. Time 15±3 1 15±3 1
$ \frac{10 \text{pF} > C: Q \ge 200+10C}{C: Nominal Capacitance (pF)} $ 1.R. 1.000M2 or 50M2.µF min. (Whichever is smaller) 4 Moisture Resistance Q 300F $\le C: Q \ge 200$ $Q 300F \le C: Q \ge 200$ $30pF > C: Q \ge 200$ C: Nominal Capacitance(pF) 1.R. 500M2 or 25M2.µF min. (Whichever is smaller) 5 Biased Humidity Appearance No defects or abnormalities C : Nominal Capacitance(pF) 1.R. 500M2 or 25M2.µF min. (Whichever is smaller) 5 Biased Humidity Q 30pF $\le C: Q \ge 200$ $30pF > C: Q \ge 200$ $30pF > C: Q \ge 100+10C/3$ C: Nominal Capacitance(pF) 1.R. 500M2 or 25M2.µF min. (Whichever is smaller) 5 Biased Humidity Appearance No defects or abnormalities Appearance No defects or abnormalities C: Nominal Capacitance(pF) 1.R. 500M2 or 25M2.µF min. (Whichever is smaller) 5 Biased Humidity Q 30pF $\le C: Q \ge 200$ $30pF > C: Q \ge 100+10C/3$ C: Nominal Capacitance(pF) $1.R. 500M2 or 25M2.µF min. (Whichever is smaller) 5 Biased Humidity Appearance No defects or abnormalities Apply the rated voltage and DC: 3+0.2/4 U (add 100k2) resist 1 \ge 1 \le 4 \le 6 + 0 \le 10 + 10 \le 20 \le 12 \ge 20030pF > C: Q \ge 100+10C/3C: Nominal Capacitance(pF)1.R. 500M2 or 25M2.µF min.$	Ce Appearance Capacitance Change	$\begin{array}{l} 10 \text{pF} > \text{C}: \text{Q} \geq 200 + 10 \text{C} \\ \hline \text{C}: \text{Nominal Capacitance (pF)} \\ 1,000 \Omega \text{ or } 50 \text{M} \Omega \cdot \mu \text{F min.} \\ (\text{Whichever is smaller}) \\ \hline \text{No defects or abnormalities} \\ \hline \text{Within } \pm 5\% \text{ or } \pm 0.5 \text{pF} \end{array}$	(°C) -55+0/-3 Temp. 125+3/-0 Temp. Time 15±3 1 15±3 1
4 Moisture Resistance Appearance No defects or abnormalities Apply the 24h heat (25 to 65°C) and humidity (80 to 98%) treatment shown below, 10 consecutive times. Change (Whichever is larger) 4 Moisture Resistance Appearance No defects or abnormalities Apply the 24h heat (25 to 65°C) and humidity (80 to 98%) treatment shown below, 10 consecutive times. Let sit for 24±2 h at "room condition, then measure. Humidity 00-90% thumidity 00-90% thum	Ce Appearance Capacitance Change	C : Nominal Capacitance (pF) 1,000MΩ or $50M\Omega \cdot \mu$ F min. (Whichever is smaller) No defects or abnormalities Within ±5% or ± 0.5pF	Time 15±3 1 15±3 1
4 Moisture Resistance Appearance No defects or abnormalities Appearance (VMichever is smaller) 4 Moisture Resistance Appearance (Within ±5% or ± 0.5pF Item (Within ±5% or ± 0.5pF Q 30pF $r \in C : Q \ge 200$ Temperature Humidity (Bo to 98%) Q 30pF $r \in C : Q \ge 200$ Temperature Humidity (Bo to 98%) C : Nominal Capacitance(pF) Item (Consecutive times.) I.R. 500MC or 25MC2·µF min. (Whichever is smaller) Source (Within ±5% or ± 0.5pF I.R. 500MC or 25MC2·µF min. (Whichever is smaller) Source (Within ±5% or ± 0.5pF I.R. Source (Stor abnormalities) Appearance (Within ±5% or ± 0.5pF I.R. Source (Stor abnormalities) Appearance (Within ±5% or ± 0.5pF I.R. Source (Stor abnormalities) Appearance (Within ±5% or ± 0.5pF This measurement Iterate the stor (Stor abnormalities) Appearance (Within ±5% or ± 0.5pF C : Nominal Capacitance(pF) I.R. Appearance (Within ±5% or ± 0.5pF Change Vithin ±5% or ± 0.5pF Change Vithin ±5% or ± 0.5pF Change Vithin ±5% or ± 0.5pF<	Ce Appearance Capacitance Change	1,000MΩ or $50M\Omega \cdot \mu F$ min. (Whichever is smaller) No defects or abnormalities Within ±5% or ± 0.5pF	
4 Moisture Resistance Appearance No defects or abnormalities Apply the 24h heat (25 to 65°C) and humidity (80 to 98%) (Treatment shown below, 10 consecutive times. Let sit for 24±2 h at "room condition, then measure. Change 4 Moisture Resistance Appearance No defects or abnormalities Apply the 24h heat (25 to 65°C) and humidity (80 to 98%) (Treatment shown below, 10 consecutive times. Let sit for 24±2 h at "room condition, then measure. Umidity B0-98% 0 30pF ≤ C: Q ≥ 200 30pF ≤ C: Q ≥ 100+10C/3 Temperature 90-98% Humidity B0-98% 90-98% 90-98% 90-98% 90-98% 90-98% 90-98% 90-98% 90-98% 90-98% 90-98%	Ce Appearance Capacitance Change	(Whichever is smaller) No defects or abnormalities Within ±5% or ± 0.5pF	
4 Moisture Resistance Appearance No defects or abnormalities Apply the 24h heat (25 to 65°C) and humidity (80 to 98%) transmission (Whichever is 0.5pF) 0 30pF ≤ C: Q ≥ 200 (Whichever is larger) Humidity	Capacitance Change	No defects or abnormalities Within ±5% or ± 0.5pF	
Resistance Notefects or abnormalities 5 Biased Humidity Appearance No defects or abnormalities Apport (Whichever is larger) Q 30pF > C : Q ≥ 100+10C/3 C: Nominal Capacitance(pF)	Capacitance Change	Within \pm 5% or \pm 0.5pF	Apply the 24h heat (25 to 65° C) and hymidity (80 to $000()$
5 Biased Appearance No defects or abnormalities Apply the rated voltage and DC1.340.2/0 V (add 100kΩ resist for 24±2 h at "room condition, then measure. 5 Biased Appearance No defects or abnormalities 1.R. S00MΩ or 25MΩ·μF min. 0 30pF ≤ C: Q ≥ 100+10C/3 0 300F ≤ C: Q ≥ 100+10C/3 0 300F ≤ C: Q ≥ 100+10C/3 0 00-80% 0 00-80% 1.R. 500MΩ or 25MΩ·μF min. 0 00-90%	Capacitance Change		
$\begin{tabular}{ c c c c c } \hline & & & & & & & & & & & & & & & & & & $			Let sit for 24±2 h at *room condition, then measure.
$\frac{30 \text{ F} \text{ C} : \text$			
5 Biased Humidity Appearance Capacitance (pF) (Whichever is smaller) 66 60 60 60 60 60 60 60 60 60 60 60 60 6	1	•	$(^{\circ}C)$ $q_{0} q_{0} q_{0} \psi$ $q_{0} q_{0} q_{0} \psi$
$\frac{1.R.}{1.R.} = \frac{1.R.}{1.R.} = \frac{1.R.}{1.R.$			
$5 Biased Humidity \qquad Appearance No defects or abnormalities Capacitance Within ±5% or ± 0.5pF Change (Whichever is larger) Q 30pF > C : Q \ge 100 + 10C/3 \\ C : Nominal Capacitance(pF) \\ I.R. 500M\Omega or 25M\Omega : µF min. \end{cases}$	I R		
$5 Biased \\ Humidity Appearance \\ Capacitance \\ Q \\ 30pF < C : Q \ge 200 \\ Q \\ 30pF > C : Q \ge 100+10C/3 \\ C : Nominal Capacitance (pF) \\ I.R. \\ 500M\Omega \ or 25M\Omega \cdot \mu F min. \\ \hline \begin{tabular}{ c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c } \hline \begin{tabular}{ c c c c c c c c } \hline \begin{tabular}{ c c c c c c c c c c c c c c c c c c c$			
$\frac{1}{5} \begin{array}{ c c c } & & & & \\ & & & \\ & & & \\ &$			
$5 Biased \\ Humidity Appearance \\ Capacitance \\ (Whichever is larger) \\ Q 30pF \leq C : Q \geq 200 \\ 30pF > C : Q \geq 100+10C/3 \\ C : Nominal Capacitance(pF) \\ \hline I.R. \\ \hline 500M\Omega \text{ or } 25M\Omega \cdot \mu \text{F min.} \\ \hline 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$			
$5 Biased \\ Humidity Appearance \\ Capacitance \\ (Whichever is larger) \\ Q 30pF \leq C : Q \geq 200 \\ 30pF > C : Q \geq 100+10C/3 \\ C : Nominal Capacitance(pF) \\ \hline I.R. \\ \hline 500M\Omega \text{ or } 25M\Omega \cdot \mu \text{F min.} \\ \hline 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\ 0 \\$			
$5 \begin{array}{c} \text{Biased} \\ \text{Humidity} \\ \hline \\ Q \\ \hline \\ Q \\ \hline \\ Q \\ \hline \\ Q \\ \hline \\ C : Nominal Capacitance (pF) \\ \hline \\ 1.R. \\ \hline \\ \\ 500M\Omega \text{ or } 25M\Omega \cdot \muF \text{ min.} \end{array} \right) \\ \hline \\ $			
$5 \begin{array}{ c c c c c c } Biased \\ Humidity \\ \hline \\ Q \\ \hline \\ Q \\ \hline \\ Change \\ \hline \\ (Whichever is larger) \\ \hline \\ Q \\ \hline \\ C : Nominal Capacitance (pF) \\ \hline \\ \hline \\ I.R. \\ \hline \\ \hline \\ S \\ O \\ C : Nominal Capacitance (pF) \\ \hline \\ \hline \\ I.R. \\ \hline \\ \hline \\ S \\ O \\ C \\ C$			
$5 \begin{array}{ c c c c c c } \hline Biased \\ Humidity \\ \hline Appearance \\ Humidity \\ \hline Appearance \\ Capacitance \\ (Whichever is larger) \\ \hline Q \\ \hline 30pF < C : Q \geq 200 \\ \hline 30pF > C : Q \geq 100+10C/3 \\ \hline C : Nominal Capacitance(pF) \\ \hline I.R. \\ \hline 500M\Omega \ or 25M\Omega \cdot \muF \ min. \end{array}$			
$5 \begin{array}{ c c c c c c } \hline Biased \\ Humidity \\ \hline Appearance \\ Humidity \\ \hline Appearance \\ Humidity \\ \hline Appearance \\ Capacitance \\ (Whichever is larger) \\ \hline Q \\ \hline 30pF \leq C: Q \geq 200 \\ \hline 30pF > C: Q \geq 100+10C/3 \\ \hline C: Nominal Capacitance (pF) \\ \hline I.R. \\ \hline 500M\Omega \ or 25M\Omega \cdot \muF \ min. \end{array}$			
$\frac{1}{5} = \frac{1}{1 + 1} = \frac{1}$			
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $			
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$			One cycle 24 hours
5Biased HumidityAppearanceNo defects or abnormalitiesApply the rated voltage and DC1.3+0.2/-0 V (add 100kΩ residual at 85±3°C and 80 to 85% humidity for 1,000±12h. Remove and let sit for 24±2 h at *room condition, then measure Q 30pF ≤ C : Q ≥ 200 30pF > C : Q ≥ 100+10C/3 C : Nominal Capacitance(pF)The charge/discharge current is less than 50mA.			0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23
Humidity Capacitance Within $\pm 5\%$ or $\pm 0.5pF$ at $85\pm3^{\circ}$ C and 80 to 85% humidity for $1,000\pm12h$. Change (Whichever is larger) Remove and let sit for 24 ± 2 h at *room condition, then measure Q $30pF \le C : Q \ge 200$ The charge/discharge current is less than 50mA. $30pF > C : Q \ge 100+10C/3$ C : Nominal Capacitance(pF) I.R. $500M\Omega$ or $25M\Omega \cdot \mu F$ min.	Appearance	No defects or abnormalities	
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$			
$30 \text{pF} > \text{C} : \text{Q} \ge 100+10 \text{C}/3$ $C : \text{Nominal Capacitance}(\text{pF})$ I.R. 500M\(\Omega \core 15 M\(\Omega\)\core \mm F min.			Remove and let sit for 24±2 h at *room condition, then measure
$\frac{C : \text{Nominal Capacitance}(pF)}{\text{I.R.}}$	Q		The charge/discharge current is less than 50mA.
I.R. 500M Ω or 25M Ω · μ F min.		30pF > C : Q ≥ 100+10C/3	
I.R. 500M Ω or 25M Ω · μ F min.		C : Nominal Capacitance(pF)	
(Whichever is smaller)	I.R.	500MΩ or 25MΩ·μF min.	
		(Whichever is smaller)	
room condition		Capacitance Change Q I.R.	$\begin{tabular}{ c c c c c } \hline Appearance & No defects or abnormalities \\ \hline Capacitance & Within \pm 5\% \ or \pm 0.5pF \\ \hline Change & (Whichever is larger) \\ \hline Q & 30pF \leq C: Q \geq 200 \\ & 30pF > C: Q \geq 100+10C/3 \\ \hline C: Nominal Capacitance(pF) \\ \hline I.R. & 500M\Omega \ or 25M\Omega\cdot\mu F \ min. \\ (Whichever is smaller) \\ \hline \end{tabular}$

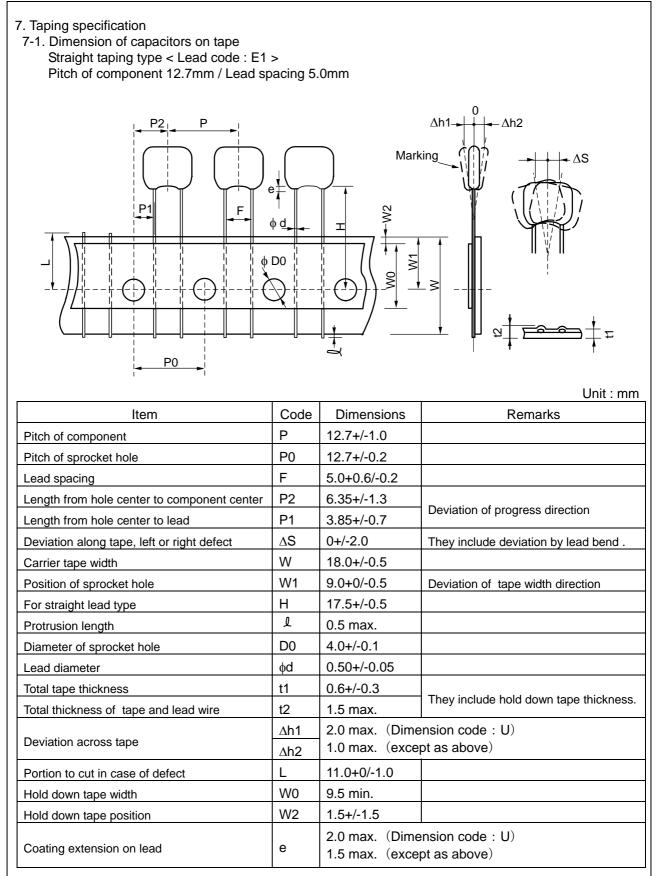
Reference only

No.	AEC-Q200		Specification		AEC-Q200 Test Method				
6	Test Item Operational Appearance								
0	Life	Capacitance	No defects or abnormalities Within ±3% or ±0.3pF (Whichever is larger)		Apply voltage in Table for 1,000±12h at 125±3°C. Let sit for 24±2 h at *room condition, then measure. The charge/discharge current is less than 50mA.				
		Change							
		Q	$30pF \le C : Q \ge 350$		Data d Malta sa	T4	\/-lt	1	
		_	$10pF \le C < 30pF : Q \ge 275+5C/2$		Rated Voltage	lest	Voltage		
			10pF > C : Q ≥ 200+10C		DC250V	150% of th	e rated voltage		
					DCC20\/		ŭ		
			C : Nominal Capacitance (pF)		DC630V	120% of th	e rated voltage		
		I.R.	1,000MΩ or 50MΩ·μF min. (Whichever is smaller)		DC1000V				
7	External Visual		No defects or abnormalities	Visua	sual inspection				
8	Physical Dimer	sion	Within the specified dimensions	Using calipers and micrometers.					
9	Marking		To be easily legible.	Visual inspection					
10	Resistance to Appearance		No defects or abnormalities		Per MIL-STD-202 Method 215				
	Solvents	Capacitance	Within the specified tolerance	Solv	Solvent 1 : 1 part (by volume) of isopropyl alcohol 3 parts (by volume) of mineral spirits Solvent 2 : Terpene defluxer Solvent 3 : 42 parts (by volume) of water				
		Q	$30pF \le C$: Q \ge 1,000	Sel					
			$30pF > C : Q \ge 400+20C$						
			C - Neminal Canaditanaa (nE)	001	1 Solvent 3 : 42 parts (by volume) of water 1 part (by volume) of propylene glycol monomethyl ether				
		I.R.	C : Nominal Capacitance (pF) More than 10,000M Ω or 500 M Ω · μ F						
		I.IX.	(Whichever is smaller)		1 part (by volume) of monoethanolamine				
11	Mechanical	Appearance	No defects or abnormalities		Three shocks in each direction should be applied along 3				
	Shock						t specimen (18 sh		
		Capacitance	Within the specified tolerance				If-sine and should		
		Q	$30pF \le C : Q \ge 1,000$	durat	duration :0.5ms, peak value:1,500G and velocity change: 4.7r				
			$30pF > C : Q \ge 400+20C$						
10			C : Nominal Capacitance (pF)	The	anasitar should b		a aimala harmania	motio	
12	Vibration	Appearance	No defects or abnormalities		The capacitor should be subjected to a simple harmonic motion having a total amplitude of 1.5mm, the frequency being varied				
		Capacitance	Within the specified tolerance						
		Q	30pF ≤ C : Q ≥ 1,000		uniformly between the approximate limits of 10 and 2,000H The frequency range, from 10 to 2,000Hz and return to 10				
		30pF > C : Q ≥ 400+20C		should be traversed in approximately 20 min. This motion					
					should be applied for 12 items in each 3 directions (total of 36 times).	3 mutually perper	ndicula		
			C : Nominal Capacitance(pF)	airec	tions (total of 36 th	nes).			
3-1	Resistance	Appearance	No defects or abnormalities	The	lead wires should	be immersed i	n the melted solde	er 1.5	
	to Soldering Heat (Non- Preheat)			2.0r	- 2.0mm from the root of terminal at 260±5°C for 10±.1 s				
		Capacitance	Within ±2.5% or ±0.25pF						
		Change	(Whichever is larger)	• F	Post-treatment				
		Dielectric	No defects		Capacitor should be stored for 24±2 hours at *room condition				
		Strength (Between							
		terminals)							
3-2	Resistance	Appearance	No defects or abnormalities	Fire	the capacitor che	uld be stored a	at 120+0/-5°C for 6	0.0/	
5-2	to	Appearance	No derects of abnormalities		onds.		120+0/-3 C 101 C	0-07-0/-	
	Soldering	Capacitance	Within ±2.5% or ±0.25pF			hould be imme	rsed in the melted	l solde	
	Heat	Change	(Whichever is larger)		Then, the lead wires should be immersed in the melted solde 1.5 to 2.0mm from the root of terminal at 260±5°C for 7.5+0/-				
	(On-	Dielectric	No defects	-	seconds.				
	Preheat)	Strength	•						
		(Between terminals)			st-treatment				
		,				stored for 24±2	2 hours at *room co	onditic	
3-3	Resistance	Appearance	No defects or abnormalities		condition				
	to				mperature of iron-	•			
	Soldering	Capacitance	Within ±2.5% or ±0.25pF		Idering time : 3.5±	U.5 seconds			
	Heat (soldering	Change	(Whichever is larger)		Soldering position Straight Lead:1.5 to 2.0mm from the root of terminal.				
	(soldering iron method)	Dielectric	No defects		mp Lead:1.5 to 2				
	Thermal Shock	Strength			p _0au. 1.0 t0 2.		sha or lead bend.		
		(Between		• Po	st-treatment				
		terminals)				stored for 24±2	2 hours at *room c	onditio	
14		Appearance	No defects or abnormalities				e two heat treatme		
		Capacitance	Within ±5% or ±0.5pF		he following table(Maximum transfer time is 20s.). Let sit f				
		Change	hange (Whichever is larger)	24±2	h at *room conditi	on, then meas	ure.		
		Q			Step	1	2	1	
			$10pF \le C < 30pF : Q \ge 275+5C/2$		Temp.			1	
			10pF > C : Q ≥ 200+10C		(°C)	-55+0/-3	125+3/-0		
					Time	45.0	4510		
			C : Nominal Capacitance (pF)		(min.) 15±3 15±3		15±3]	
		I.R.	1,000MΩ or 50MΩ· μ F min.						
			(Whichever is smaller)						
oom o	condition" Temp	erature:15 to 35	°C, Relative humidity:45 to 75%, Atmospher	e pressur	e:86 to 106kPa				

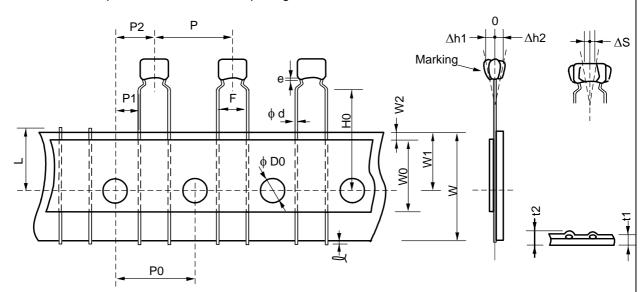
Reference only

					-			
No.	AEC-Q200 Test Item			Specifications	AEC-Q200 Test Method			
15	ESD	Appearance	No defects o	or abnormalities	Per AEC-Q200-002			
		Capacitance	Within the s	pecified tolerance	-			
		Q	$30pF \le C : Q \ge 1,000$ $30pF > C : Q \ge 400+20C$					
	I.R.		More than 1	Capacitance (pF) 0,000MΩ or 500 MΩ·μF	-			
16 Solderabil		itv	(Whichever	is smaller) hould be soldered with uniform coating or	h Should be placed into steam aging for 8h±15 min.			
-			the axial direction over 95% of the circumferential direction.		The terminal of capacitor is dipped into a solution of ethanol (JIS K 8101) and rosin (JIS K 5902) (25% rosin in weight propotion).Immerse in solder solution for 2±0.5 seconds. In both cases the depth of dipping is up to about 1.5 to 2mm fr the terminal body. Temp. of solder : 245±5°C Lead Free Solder(Sn-3.0Ag-0.5Cu) 235±5°C H60A or H63A Eutectic Solder			
17	Electrical	Apperance	No defects or abnormalities		Visual inspection.			
	Characte- rization	Capacitance		pecified tolerance	The capacitance, Q should be measured at 25°C at the frequent and voltage shown in the table.			
		Q	30pF ≤ C : C 30pF > C : C	Q ≥ 1,000 Q ≥ 400+20C	$\begin{tabular}{lllllllllllllllllllllllllllllllllll$			
			C : Nominal	Capacitance (pF)	C > 1000pF 1±0.1kHz AC1±0.2V(ms)			
		I.R.	Between Terminals	10,000MΩ or 500MΩ· μ F min. (Whichever is smaller)	The insulation resistance should be measured with DC500V (DC250V in case of rated voltage : DC250V) at 25 °C within 2 n of charging.			
		Dielectric Strength	Between Terminals	No defects or abnormalities	The capacitor should not be damaged when voltage in Table is applied between the terminations for 1 to 5 seconds. (Charge/Discharge current ≤ 50mA.)			
					Rated Voltage Test Voltage			
					DC250V 200% of the rated voltage			
					DC630V DC1000V DC1000V			
			Body Insulation	No defects or abnormalities	The capacitor is placed in a container with metal balls of 1 diameter so that each terminal, short-circuit is kept approx 2mm from the balls, and 200% of the rated DC voltage(13 the rated voltage in case of rated voltage : DC1000V) is im for 1 to 5 seconds between capacitor terminals and metal (Charge/Discharge current ≤ 50mA.)			
	Terminal Strength	Tensile Strength	Termination not to be broken or loosened		As in the figure, fix the capacitor body, apply the force gradual to each lead in the radial direction of the capacitor until reaching 10N and then keep the force applied for 10 ± 1 seconds.			
		Bending Strength			Each lead wire should be subjected to a force of 2.5N and the be bent 90° at the point of egress in one direction. Each wire then returned to the original position and bent 90° in the oppo direction at the rate of one bend per 2 to 3 seconds.			
19	Capacitance Temperature Characteristics		25°C~125°	becified Tolerance. C : -750±120 ppm/°C C : -750+120/-347 ppm/°C	The capacitance change should be measured after 5min. at each specified temperature step. Step Temperature(°C) 1 25 ± 2 2 -55 ± 3 3 25 ± 2 4 125 ± 3 5 25 ± 2 The temperature coefficient is determind using the capacitance measured in step 3 as a reference. When evalues the temperature			
	n condition'	· Top:///		elative humidity:45 to 75%, Atmosphere p	measured in step 3 as a reference. When cycling the temperal sequentially from step 1 through 5 (-55°C to +125°C) the capacitance should be within the specified tolerance for the temperature coefficient and capacitance change as Table A. The capacitance drift is caluculated by dividing the differences between the maximum and minimum measured values in the step 1, 3 and 5 by the capacitance value in step 3.			



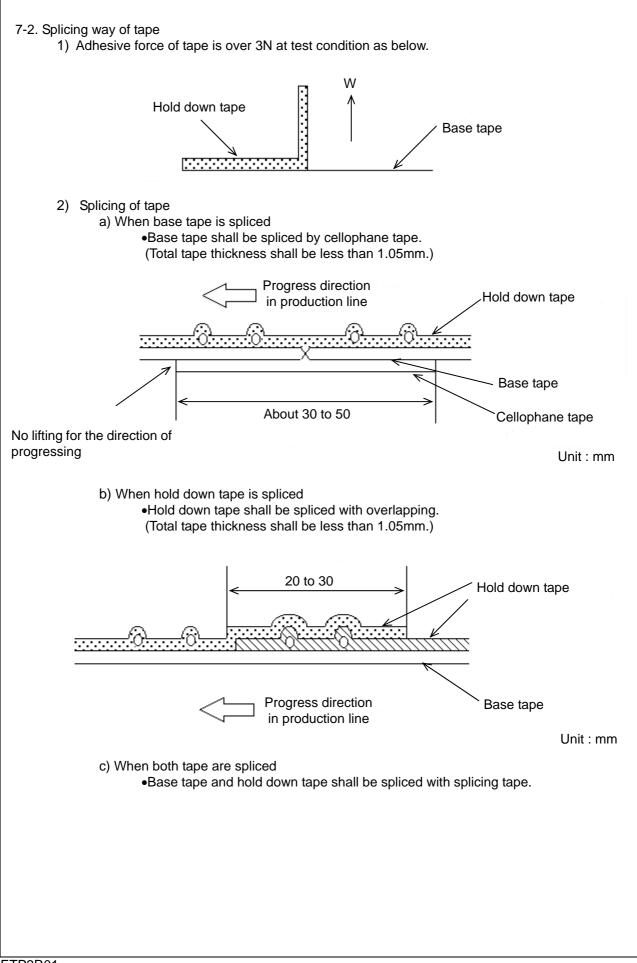


Inside crimp taping type < Lead code : M1 > Pitch of component 12.7mm / Lead spacing 5.0mm



Unit : mm

Item	Code	Dimensions	Remarks	
Pitch of component	Р	12.7+/-1.0		
Pitch of sprocket hole	P0	12.7+/-0.2		
Lead spacing	F	5.0+0.6/-0.2		
Length from hole center to component center	P2	6.35+/-1.3	Deviation of progress direction	
Length from hole center to lead	P1	3.85+/-0.7		
Deviation along tape, left or right defect	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/-0.5	Deviation of tape width direction	
Lead distance between reference and bottom plane	HO	16.0+/-0.5		
Protrusion length	l	0.5 max.		
Diameter of sprocket hole	D0	4.0+/-0.1		
Lead diameter	φd	0.50+/-0.05		
Total tape thickness	t1	0.6+/-0.3	They include held down tone thickness	
Total thickness of tape and lead wire	t2	1.5 max.	They include hold down tape thickness.	
	∆h1	2.0 max. (Dimension code : W)		
Deviation across tape	∆h2	1.0 max. (exce	pt as above)	
Portion to cut in case of defect	L	11.0+0/-1.0		
Hold down tape width	W0	9.5 min.		
Hold down tape position	W2	1.5+/-1.5		
Coating extension on lead	е	Up to the end of c	rimp	



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