KGM03BT60E105MQ

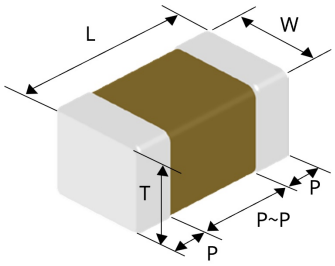
Reference Sheet

1.Scope

This reference sheet shall be applied to multilayer ceramic chip capacitors:KGM03BT60E105MQ
This product specification is based on the latest available information as of 2026-05 and may change or be discontinued without notice.
Please refer to the handling precautions before use.

2.Nomenclature

KGM	03	B	T6	0E	105	M	Q
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Series	Size	Thickness	Temperature Characteristics	Rated Voltage	Capacitance	Tolerance	Packaging



(1) Series

Code	Type
KGM	General Purpose

External Dimensions (2)Size (3)Thickness

(Unit: mm)

Size Code	Thickness Code	L	W	T	P	P-P
03	B	0.6±0.05	0.3±0.05	0.3±0.05	0.13 to 0.23	0.19min

(4)Temperature Characteristics

Code	Change in capacitance	Operating temperature range[℃]	Reference[℃]
T6	+22/-33%	-55 to 105	25

(5)Rated Voltage

Code	Voltage[Vdc]
0E	2.5

(6)Capacitance Value

Code	Capacitance
105	1 µF

(7)Tolerance

Code	Tolerance
M	±20%

(8)Packaging Configuration

Code	Carrier Tape Material	Carrier Tape Width	Component Pitch	Reel Size	Qty per Reel[pcs.]
Q	paper	8mm	1mm	ϕ180	30,000

KGM03BT60E105MQ

Reference Sheet

3.Specifications and Test Methods

Test Items		Specification	Test Conditions
Capacitance		Within tolerance	Take the initial value after heat treatment. Capacitance: C≦10μF
tanδ		12.5% max.	Measureing frequency: 1kHz±10% Measureing voltage: 1.0±0.2Vrms
Insulation Resistance		Over 50MΩ・μF	Measure after applying 100% of the rated voltage for 1 minute in normal temperature and humidity. The charge and discharge current of the capacitor must not exceed 50mA.
Dielectric Strength		Resist without problem	Apply 250 % of the rated voltage for 1 to 5 seconds. The charge and discharge current of the capacitor must not exceed 50mA.
Appearance		No problem observed	Microscope
Terminal Strength		No problem observed	Apply a sideward force of 2N to a PCB-mounted sample.
Bending Strength		No significant damage with 1mm bending	Glass epoxy PCB (90mm fulcrum spacing), 10 seconds duration time.
Vibration	**Appearance**	No problem observed	Take the initial value after heat treatment. Vibration frequency: 10 to 55(Hz) Amplitude: 1.5mm Sweeping condition: 10→55→10Hz/ 1 minute in X, Y and Z directions: 2 hours each, 6 hours in total, then measure the samples after heat treatment.
	Capacitance	within tolerance	
	tanδ	100% max. of initial value	
Resistance to Solder Heat	**Appearance**	No problem observed	Take the initial value after heat treatment. Soak the sample in 260±5°C solder for 10±0.5 seconds, and measure after heat treatment. Pre-heating conditions before soak: 80 to 100°C for 2 minutes → 150 to 200°C for 2 minutes The charge and discharge current of the capacitor must not exceed 50mA for IR and dielectric strength measurement.
	Capacitance Variation	Within ±7.5%	
	tanδ	100% max. of initial value	
	Insulation Resistance	Over 50MΩ・μF	
	Dielectric Strength	Resist without problem	
Solderability		Solder coverage: 95% min.	Soaking condition Solder Type: Sn-3.0Ag-0.5Cu Temperature: 245±5°C Time: 3±0.5 sec.

KGM03BT60E105MQ

Reference Sheet

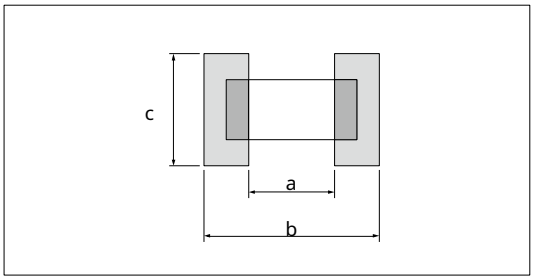
3.Specifications and Test Methods

Test Items		Specification	Test Conditions
Temperature Cycle	**Appearance**	No problem observed	Take the initial value after heat treatment. Cycle: Lowest operation temperature (30 min.) → Room temperature (3 min.) → Highest operation temperature (30min.) → Room temperature (3 min.) After 5 cycles, measure after heat treatment. The charge and discharge current of the capacitor must not exceed 50mA for IR and dielectric strength measurement.
	Capacitance Variation	Within ±7.5%	
	tanδ	100% max. of initial value	
	Insulation Resistance	Over 50MΩ・μF	
	Dielectric Strength	Resist without problem	
Load Humidity	**Appearance**	No problem observed	Take the initial value after heat treatment. Apply 100% of the rated voltage for 500+12/-0 hours in 40±2 °C and 90 to 95 %RH, Measurement after heat treatment. The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.
	Capacitance Variation	Within ±12.5%	
	tanδ	200% max. of initial value	
	Insulation Resistance	Over 10MΩ・μF	
Load Life	**Appearance**	No problem observed	Take the initial value after heat treatment. Apply 100% of the rated voltage at the highest operation temperature for 1000+12/-0 hours, Measurement after heat treatment. The charge and discharge current of the capacitor must not exceed 50mA for IR measurement.
	Capacitance Variation	Within ±12.5%	
	tanδ	200% max. of initial value	
	Insulation Resistance	Over 10MΩ・μF	
Heat Treatment		Expose sample in the temperature of 150+0/-10°C for 1 hour and leave the sample in normal temperature and humidity for 24±2 hours.	

KGM03BT60E105MQ

Reference Sheet

Substrate for Terminal Strength Test, Vibration Test, Soldering Heat Resistance Test, Temperature Cycle Test, Load Humidity Test, High-Temperature with Loading Test.



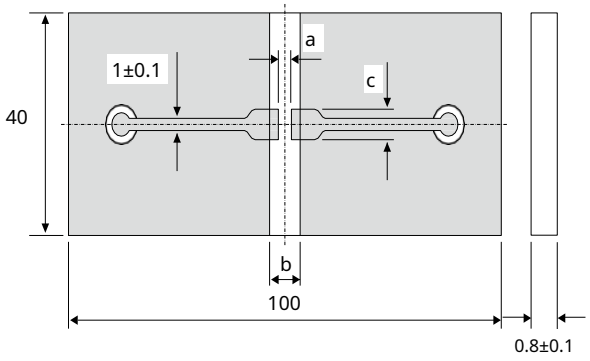
(unit : mm)

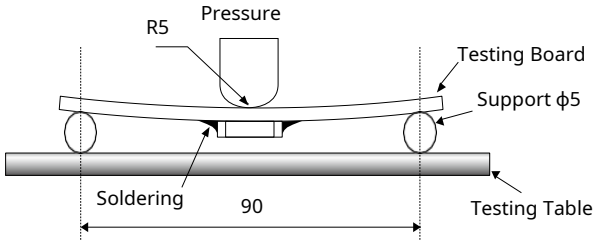
type	a	b	c
03	0.26	0.92	0.32

glass epoxy board (GE4 or FR4)

Substrate for Bending Test

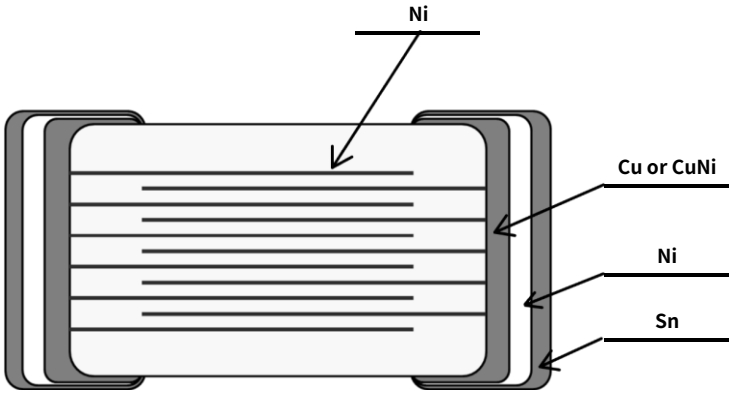
(unit : mm)





Testing Board : Glass Epoxy Board (GE4 or FR4)
Testing Board Thickness : 0.8±0.1
Circuit Thickness : 0.04±0.01

Structure



Certification status

<ISO> Acquired ISO 9001 quality management system certification.

<IATF> Acquired IATF 16949 quality management system certification.

Production facility

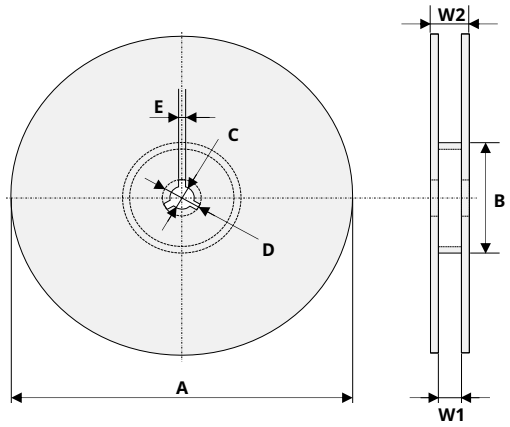
Kagoshima Kirishima Plant

KGM03BT60E105MQ

Reference Sheet

Taping Specification

Reel

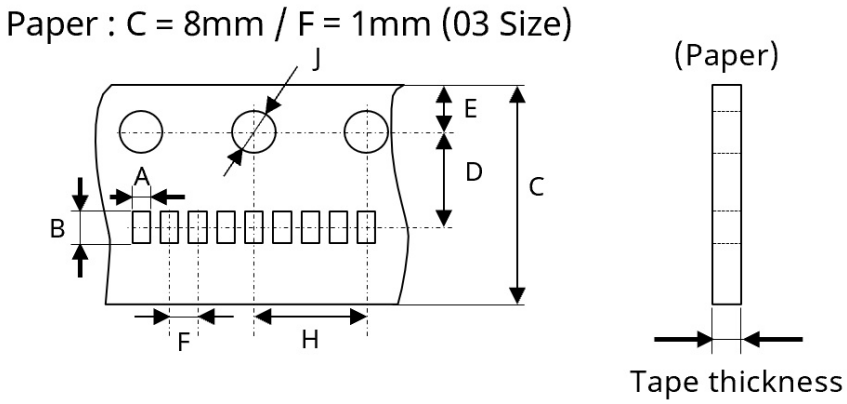


unit: mm

A	W1	W2	B	C	D	E
Φ180+0/-2.0	10.5±1.5	16.5 max.	Φ50min	Φ13±0.5	Φ21±0.8	2.0±0.5

Carrier Tape

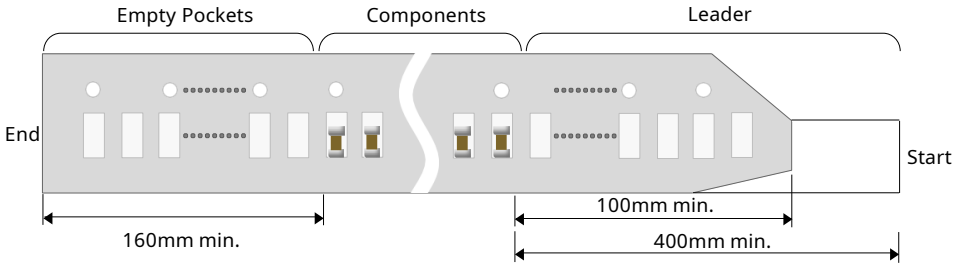
unit:mm



unit: mm

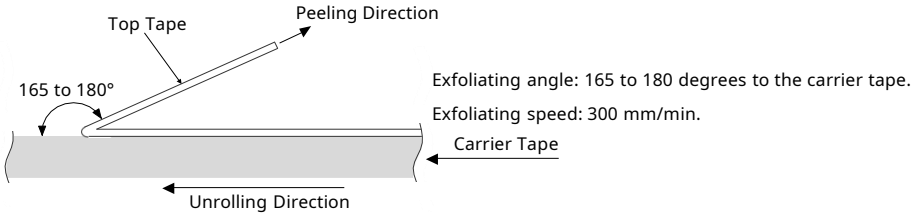
A	B	C	D	E	F	G	H	J	Tape thickness
0.39±0.03	0.69±0.03	8.0+0.3/-0.1	3.5±0.05	1.75±0.1	1.0±0.05	-	4.0±0.05	φ1.5+0.1/-0	0.5 max.

Detail of leader and trailer



Adhesive tape

1)The exfoliative strength when peeling off the top tape from the carrier tape by the method of the following figure shall be 0.1 to 0.7N.
2)When the top tape is peeled off, the adhesive stays on the top tape.
3)Chip capacitors will be in a state free without being stuck on the thermal adhesive tape.



Carrier tape

1)Chip will not fall off from carrier tape or carrier tape will not be damaged by bending than within a radius of 25mm.
2)The chip are inserted continuously without any empty pocket.
3)Chip will not be mis-mounted because of too big clearance between components and cavity.
Also the waste of carrier tape will not fill a nozzle hole of mounting machine.

KGM03BT60E105MQ

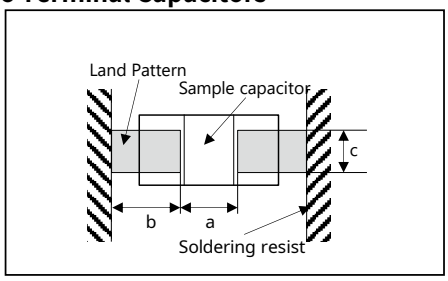
Reference Sheet

Dimensions for recommended typical land

Since the amount of solder (size of fillet) to be used has direct influence on the capacitor after mounting, the sufficient consideration is necessary.

When the amounts of solder is too much, the stress that a capacitor receives becomes larger. It may become the cause of a crack in the capacitor. When the land design of printed wiring board is considered, it is necessary to set up the form and size of land pattern so that the amount of solder is suitable.

Two Terminal Capacitors



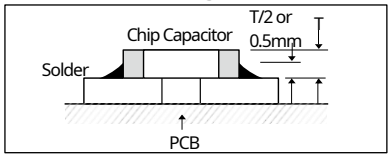
Recommended land dimension unit:mm

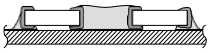
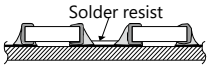
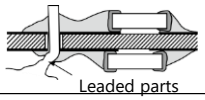
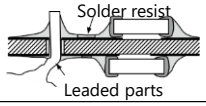
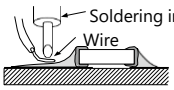
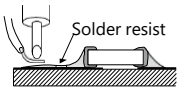
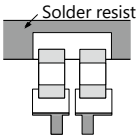
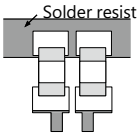
a	b	c
0.2 to 0.25	0.25 to 0.35	0.3 to 0.4

Design of printed circuit and Soldering

The recommended fillet height shall be 1/2 of the thickness of capacitors or 0.5mm. When mounting two or more capacitors in the common land, it is necessary to separate the land with the solder resist strike so that it may become the exclusive land of each capacitor.

Ideal Solder Height



Item	Prohibited	Recommended example : Separation by solder resist
Multiple parts mount		
Mount with leaded parts		
Wire soldering after mounting		
Side by side layout		

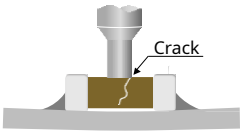
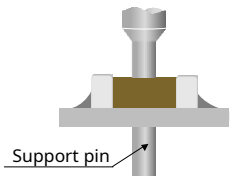
Actual Mounting

1)If the position of the vacuum nozzle is too low, a large force may be applied to the chip capacitor during mounting, resulting in cracking.

2)During mounting, set the nozzle pressure to a static load of 1 to 3 N.

3)To minimize the shock of the vacuum nozzle, provide a support pin on the back of the PCB to minimize PCB flexure.

4)Bottom position of pick up nozzle should be adjusted to the top surface of a substrate which camber is corrected.

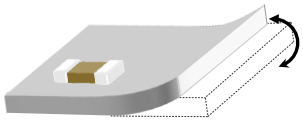
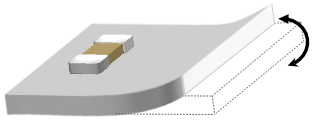
Not recommended	Ideal
	

KGM03BT60E105MQ

Reference Sheet

Mounting Design

After soldering capacitors to the PCB, bending of the board during subsequent processes — such as board cutting, breaking, inspection, component mounting, chassis assembly, or flow soldering of the reverse side after reflow — or during handling, may cause chip cracking. To prevent damage, position the capacitors to minimize stress from PCB flexure.

Not recommended	Ideal
	 Arrange the components so that they are oriented perpendicular to the direction of the applied stress.

Soldering Method

1)Ceramic is easily damaged by rapid heating or cooling. If some heat shock is unavoidable, preheat enough to limit the temperature difference (Delta T) to within 150 degree Celsius.

2)The product size 1.6×0.8mm to 3.2×1.6mm can be used in reflow and wave soldering, and the product size of bigger than 3.2×1.6mm, or smaller than 1.6×0.8mm can be used in reflow.
Circuit shortage and smoking can be created by using capacitors which are used neglecting the above caution.

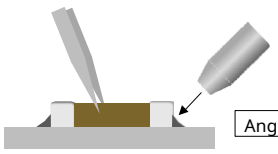
3)Please see our recommended soldering conditions.

4)In case of using Sn-Zn Solder, please contact us in advance.

5)The following condition is recommended for spot heater application.

Item	Condition
Distance	5mm min.
Angle	45°
Projection Temp.	400°C max.
Flow rate	Set at the minimum
Nozzle diameter	ϕ2 to ϕ4
Application time	10 sec. max. (1206 and smaller) 30 sec. max. (1210 and larger)

How to point spot heater

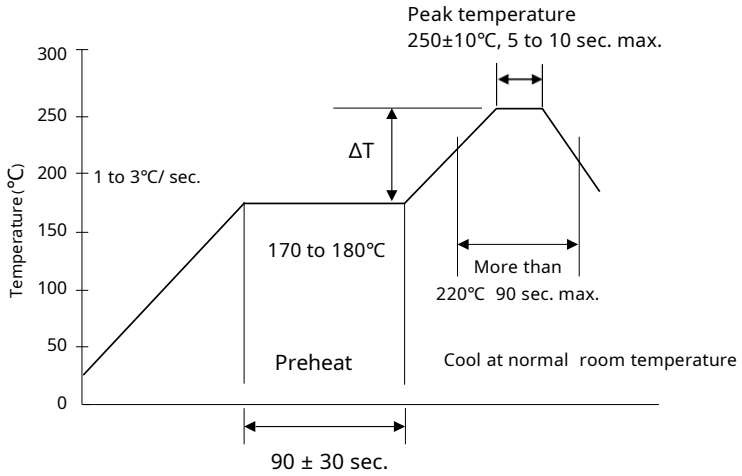


KGM03BT60E105MQ

Reference Sheet

For lead-free soldering　　Recommended temperature profile

Reflow profile



(1) Minimize soldering time.

(2) Ensure that the temperature difference does not exceed 150°C.

(3) MLCC can withstand the above reflow conditions up to 3 times.

(4) Cool naturally after soldering.

KGM03BT60E105MQ

Precautions

Circuit Design

1.Once application and assembly environments have been checked, the capacitor may be used in conformance with the rating and performance which are provided in product specifications. Use exceeding that which is specified may result in inferior performance or cause a short, open, smoking, or flaming to occur, etc.

2.Please consult the manufacturer in advance when the capacitor is used in devices such as: devices which deal with human life, i.e. medical devices; devices which are highly public orientated; and devices which demand a high standard of liability.
Accident or malfunction of devices such as medical devices, space equipment and devices having to do with atomic power could generate grave consequence with respect to human lives or, possibly, a portion of the public. Capacitors used in these devices may require high reliability design different from that of general purpose capacitors.

3.Please use the capacitors in conformance with the operating temperature provided in product specifications.
Be especially cautious not to exceed the maximum temperature. In the situation the maximum temperature set forth in product specifications is exceeded, the capacitor's insulation resistance may deteriorate, power may suddenly surge and short-circuit may occur.
The capacitor has a loss, and may self-heat due to equivalent series resistance when alternating electric current is passed therethrough. As this effect becomes especially pronounced in high frequency circuits, please exercise caution. When using the capacitor in a (self-heating) circuit, please make sure the surface of the capacitor remains under the maximum temperature for usage. Also, please make certain temperature rises remain below 20℃.

4.Please keep voltage under the rated voltage which is applied to the capacitor. Also, please make certain the peak voltage remains below the rated voltage when AC voltage is super-imposed to the DC voltage.
In the situation where AC or pulse voltage is employed, ensure average peak voltage does not exceed the rated voltage.
Exceeding the rated voltage provided in product specifications may lead to defective withstanding voltage or, in worst case situations, may cause the capacitor to smoke or flame.

5.When the capacitor is to be employed in a circuit in which there is continuous application of a high frequency voltage or a steep pulse voltage, even though it is within the rated voltage, please inquire to the manufacturer.
In the situation the capacitor is to be employed using a high frequency AC voltage or a extremely fast rising pulse voltage, even though it is within the rated voltage, it is possible capacitor reliability will deteriorate.

6.It is a common phenomenon of high-dielectric products to have a deteriorated amount of static electricity due to the application of DC voltage.
Due caution is necessary as the degree of deterioration varies depending on the quality of capacitor materials, capacity, as well as the load voltage at the time of operation.

7.Do not use the capacitor in an environment where it might easily exceed the respective provisions concerning shock and vibration specified in product specifications.
In addition, it is a common piezo phenomenon of high dielectric products to have some voltage due to vibration or to have noise due to voltage change. Please contact sales in such case.

8.If the electrostatic capacity value of the delivered capacitor is within the specified tolerance, please consider this when designing the respective product in order that the assembled product function appropriately.

9.Please contact us upon using conductive adhesives.

Storage

Please note the following regarding the storage of delivered products.

1.Set the storage temperature to +5 to +40 °C and humidity to 20 ~ 70% RH. Other meteorological conditions are in accordance with classification 1 K2 of JIS C 60721 -3 -1.

2.Store in a place where corrosive gas (H_2S, SO_2, NO_2, Cl_2, etc.) does not exist in the atmosphere. Also, avoid exposure to salty moisture. In either case, this may cause oxidation corrosion of the terminal electrode, reducing solderability.

If you store the above delivered products according to the conditions listed above, it will satisfy the solderability standard for 6 months from the shipping date.
Safety application guideline and detailed information of electrical properties are also provided in kyocera web site;
URL: https://ele.kyocera.com/en/product/capacitor/

KGM03BT60E105MQ

Reference Sheet

Notes for Using the product specification

1. Contents described herein are as of 2026-05.
2. Contents in this product specification are subject to change without notice. It is recommended to confirm the latest information at the time of usage. We may not be able to accept requests based on old product specification.
3. The products described in this product specification are intended for use in general electronic equipment (Information equipment, communication equipment, audio and video equipment, measurement equipment, home appliances, automotive equipment, etc.). If you plan to use the product in any equipment or system that requires special quality and reliability of those beyond product specification spec and whose failure or malfunction may directly threaten human life or cause physical harm (Safety equipment, aerospace, nuclear power control, medical equipment including life support equipment, etc.), please contact our company sales representative before using the product.
4. Even though we strive for improvements of quality and reliability of products, it is requested to design with enough safety margin in equipment or systems in order not to threaten human lives directly or damage human bodies or properties by an accidental result of products.
5. It is requested to design based on guaranteed specifications for such as maximum ratings, operating voltage and operating temperature. It is not the scope of our guarantee for unsatisfactory results due to misuse or inadequate usage of products in this product specification.
6. Operation summaries and circuit examples in this product specification are intended to explain typical operation and usage of the product. It is recommended to perform circuit and assembly design considering surrounding conditions upon using products in this product specification.
7. Technical information described in this product specification is meant to explain typical operations and applications of products, and it is not intended to guarantee or license intellectual properties or other industrial rights of the third party or Kyocera.
8. Trademarks, logos, and brand names used in this product specification are owned by Kyocera or the corresponding third party.
9. Certain products in this product specification are subject to the Foreign Exchange and Foreign Trade Control Act of Japan, and require the license from Japanese Government upon exporting the restricted products and technical information under the law.
   Besides, it is requested not to use products and technical information in the specification for the development and/or manufacture of weapons of mass destruction or other conventional weapons, nor to provide them to any third party with the possibility of having such purpose.
10. It is prohibited to reprint and reproduce a part or whole of this product specification without permission.

Environmental Compliance Document

All ceramic capacitors featured in this catalog are compliant with the RoHS Directive ((EU) 2015/863) and the REACH Regulation ((EC) No. 1907/2006).
Compliance certificates for various environmental regulations and requirements, including TSCA, China VOC, POPs, and California Proposition 65 (Prop 65), can be downloaded from our website.
https://ele.kyocera.com/en/support/download/capacitor/