

# Multilayer Ceramic Chip Capacitors

## General use(ESR-controlling type)

### CER series

Type:            **CERB**  
                      **CERD**

Issue date:      October 2011

- All specifications are subject to change without notice.
  - Conformity to RoHS Directive: This means that, in conformity with EU Directive 2002/95/EC, lead, cadmium, mercury, hexavalent chromium, and specific bromine-based flame retardants, PBB and PBDE, have not been used, except for exempted applications.
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# REMINDERS

Please read this before using the product.

## SAFETY REMINDERS

### REMINDERS

1. If you intend to use a product listed in this catalog for a purpose that may cause loss of life or other damage, you must contact our company's sales window.
2. We may modify products or discontinue production of a product listed in this catalog without prior notification.
3. We provide "Delivery Specification" that explain precautions for the specifications and safety of each product listed in this catalog. We strongly recommend that you exchange these delivery specifications with customers that use one of these products.
4. If you plan to export a product listed in this catalog, keep in mind that it may be a restricted item according to the "Foreign Exchange and Foreign Trade Control Law". In such cases, it is necessary to acquire export permission in harmony with this law.
5. Any reproduction or transferring of the contents of this catalog is prohibited without prior permission from our company.
6. We are not responsible for problems that occur related to the intellectual property rights or other rights of our company or a third party when you use a product listed in this catalog. We do not grant license of these rights.
7. This catalog only applies to products purchased through our company or one of our company's official agencies. This catalog does not apply to products that are purchased through other third parties.
8. The descriptions in this catalog apply as of October, 2011.

# Multilayer Ceramic Chip Capacitors General Use(ESR-Controlling Type)

Conformity to RoHS Directive

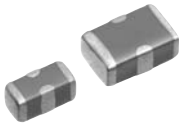
## CER Series

### FEATURES

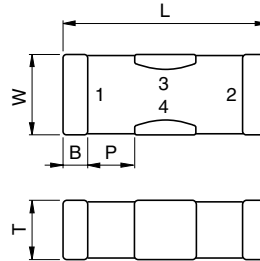
- The series is provided with standard capacitor functions, to which desired ESR values are added.
- Voltage fluctuations between the power source and CPU can be suppressed by controlling the impedance of the capacitors installed around the CPU.
- May be able to reduce the number of parts that surround capacitors, which contributes to cost reduction, miniaturization and quality improvement.
- Since the land patterns are the same as those of standard products, replacement of existing products is possible.

### APPLICATION EXAMPLES

- Decoupling of CPUs and GPUs
- Smoothing of output voltage of power supply ICs, etc. (replacement for electrolytic capacitors)



### SHAPES AND DIMENSIONS



### DIMENSIONS

The dimensions of each product are described within the product name.

#### Dimensions L×W

The fourth alphabet in the product name corresponds to the dimensions of L×W.

Refer to the table below for specific values.

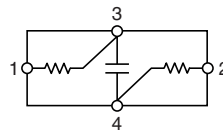
Type	Dimensions in mm			
	L	W	B	P
B	1.60±0.20	0.80±0.10	0.10min.	0.20min.
D	2.00±0.20	1.25±0.20	0.10min.	0.20min.

#### Product's Thickness T

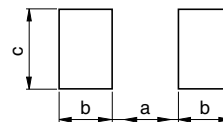
The value in parentheses at the end of the product name corresponds to thickness T.

Refer to the table of "CAPACITANCE RANGES" for specific values.

### CIRCUIT DIAGRAM



### RECOMMENDED PC BOARD PATTERNS



Type	Dimensions in mm		
	a	b	c
CERB	1.1	0.5	0.8
CERD	1.3	0.7	1.3

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**PRODUCT IDENTIFICATION**

CER	B	2M	X5R	0G	105	M	(	080	A	B	)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)		

**(1) Series name**
**(2) Dimensions L×W**

B	1.6×0.8mm
D	2.0×1.25mm

**(3) ESR**

1C	20mΩ
1F	35mΩ
1J	50mΩ
2A	100mΩ
2C	200mΩ
2J	500mΩ
2M	650mΩ
3U	1200mΩ

**(4) Capacitance temperature characteristics**

Class 2 (Temperature stable and general purpose)

Temperature characteristics	Capacitance change	Temperature range
X5R	±15%	-55 to +85°C

**(5) Rated voltage E<sub>dc</sub>**

0G	4V
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**(6) Nominal capacitance**

The capacitance is expressed in three digit codes and in units of pico farads (pF).

The first and second digits identify the first and second significant figures of the capacitance.

The third digit identifies the multiplier.

R designates a decimal point.

105	1,000,000pF (1μF)
106	10,000,000pF (10μF)

**(7) Capacitance tolerance**

Symbol	Tolerance
M	±20%

**(8) Dimensions T**

Expressed by a three-digit number in mm units.

The second and third digits denote the first and second decimal places, respectively.

080	0.80mm
085	0.85mm

**(9) Packaging style**

A	ø178mm reel with 4mm-pitch
B	ø178mm reel with 2mm-pitch
C	ø178mm reel with 1mm-pitch
D	ø330mm reel with 4mm-pitch
E	ø330mm reel with 2mm-pitch
F	ø330mm reel with 1mm-pitch
H	Bulk(bag)
J	ø330mm reel with 8mm-pitch
K	ø178mm reel with 8mm-pitch

**(10) TDK internal code**

In brochures issued in August, 2011 and later, the product thickness and packing specifications are described at the end of the ordering name [the product name described in brochures] in parentheses.

Since the existing ordering name could not clearly express the product thickness and packing specifications, it has been changed to a new product description method that solves this inconvenience.

Please be aware that the last five digits of the ordering name on the delivery label and those in the brochure differ.

No changes have been made to the delivery name.

(Example)

Brochure issued date	Ordering name (description in the brochure)	Delivery name (description on the delivery label)
Prior to July, 2011	C1608X5R1C105K	C1608X5R1C105KT000N
August, 2011 or later	C1608X5R1C105K(080AA)	C1608X5R1C105KT000N

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**CAPACITANCE RANGES: CLASS 2**
**TEMPERATURE CHARACTERISTICS: X5R(±15%)**

Capacitance	Dimension L×W	Thickness T(mm)	Capacitance tolerance	D.F. (%)max.	Insulation resistance (MΩ)min.	ESR (mΩ)	Part No. Rated voltage Edc: 4V
1μF	1608	0.80±0.10	±20%	10	100	200	CERB2CX5R0G105M(080AB)
						650	CERB2MX5R0G105M(080AB)
						1200	CERB3UX5R0G105M(080AB)
10μF	2012	0.85±0.15	±20%	10	10	20	CERD1CX5R0G106M(085AB)
						35	CERD1FX5R0G106M(085AB)
						50	CERD1JX5R0G106M(085AB)
						100	CERD2AX5R0G106M(085AB)
						200	CERD2CX5R0G106M(085AB)
						500	CERD2JX5R0G106M(085AB)

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