Multilayer Ceramic Chip Capacitors

ESR-controlling type

CER series

Type: **CERB(C1608)**
CERD(C2012)

Issue date: June 2009

- 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.

TDK

ESR-Controlling Multilayer Ceramic Chip Capacitors

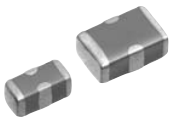
Conformity to RoHS Directive

FEATURES

- This is a ceramic chip capacitor with the additional function of controlling (assures design of) the ESR (Equivalent Series Resistance) value as desired.
- This function enables control of voltage change, which can occur between the power source and the CPU, by controlling the impedance of capacitors located around the CPU.
- This enables a reduction in the number of parts used and contributes to cost savings, set downsizing, and upgrading quality.
- The replacement of existing products is easy because the mounting method is the same as products with two terminals.

APPLICATIONS

For smoothing, and decoupling



PRODUCT IDENTIFICATION

CERB	3U	X5R	0G	105	M
(1)	(2)	(3)	(4)	(5)	(6)

(1) Type name

CERB	C1608 shape
CERD	C2012 shape

(2) ESR Code

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

(3) Capacitance temperature characteristics

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

(4) Rated voltage

0G	4V

(5) 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.

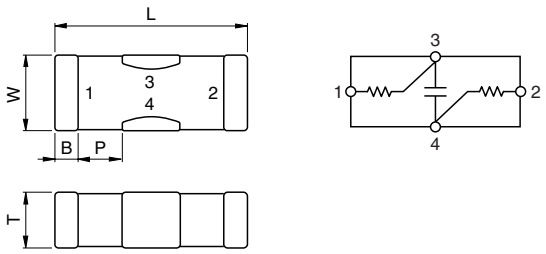
R designates a decimal point.

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

(6) Capacitance tolerance

Symbol	Tolerance
K	±10%
M	±20%

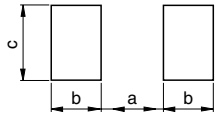
SHAPES AND DIMENSIONS/CIRCUIT DIAGRAM



Dimensions in mm

Type	CERB(1608)	CERD(2012)
L	1.60±0.20	2.00±0.20
W	0.80±0.10	1.25±0.20
T	0.80±0.10	0.85±0.15
B	0.10min.	0.30±0.20
P	0.20min.	0.20min.

RECOMMENDED PC BOARD PATTERNS



Dimensions in mm

Type	a	b	c
CERB	1.1	0.5	0.8
CERD	1.3	0.7	1.3

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ELECTRICAL CHARACTERISTICS

CERB TYPE

TEMPERATURE CHARACTERISTICS: X5R(±15%, –55 to +85°C)

RATED VOLTAGE Edc: 4V (0G)

Capacitance (µF)	Tolerance (%)	D.F. (%)max.	Insulation resistance (MΩ)min.	ESR (mΩ)	Part No. Temperature characteristics: X5R
1	±20	10	100	200	CERB2CX5R0G105M
1	±20	10	100	650	CERB2MX5R0G105M
1	±20	10	100	1200	CERB3UX5R0G105M

• Contact us for ESR values not shown above (Variable ESR value: 10 to 1200mΩ).

CERD TYPE

TEMPERATURE CHARACTERISTICS: X5R(±15%, –55 to +85°C)

RATED VOLTAGE Edc: 4V (0G)

Capacitance (µF)	Tolerance (%)	D.F. (%)max.	Insulation resistance (MΩ)min.	ESR (mΩ)	Part No. Temperature characteristics: X5R
10	±20	10	10	20	CERD1CX5R0G106M
10	±20	10	10	35	CERD1FX5R0G106M

• Contact us for ESR values not shown above (Variable ESR value: 10 to 500mΩ).

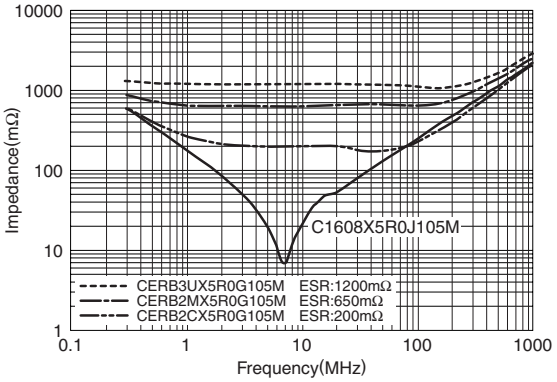
EQUIVALENT CIRCUIT

ESL=Equivalent Series Inductance
ESR=Equivalent Series Resistance

TYPICAL ELECTRICAL CHARACTERISTICS

IMPEDANCE FREQUENCY CHARACTERISTICS

CERB TYPE



CERD TYPE