MULTILAYER CERAMIC CHIP CAPACITORS

Trimming type
CKE series

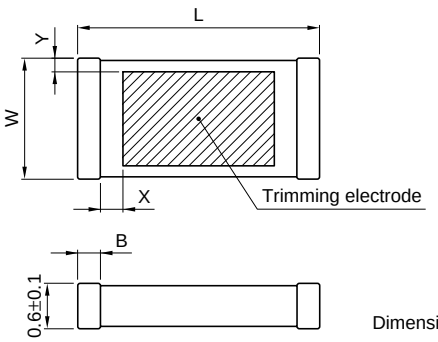
FEATURES

- Because the capacitance adjustment can be accomplished without dependence on mechanical structures, trimmed values are not prone to fluctuation as a result of shock or other external factors.
- Highly linear trimming area characteristics make precise adjustment possible using a laser trimming machine.
- High Q values can be attained at high frequencies.
- Enables the design of highly space-efficient high-packing-density circuits.

APPLICATIONS

Portable telephones, car telephones, TVs, VCR remote controls, digital high frequency products, or other high frequency products.

SHAPES AND DIMENSIONS



Dimensions in mm

PRODUCT IDENTIFICATION

CKE30	C0H	1H	210	Y	X
(1)	(2)	(3)	(4)	(5)	(6)

(1)Series name

(2)Capacitance temperature characteristics

Temperature characteristics	Temperature coefficient	Temperature range
C0H	0±60ppm/°C	–25 to +85°C

(3) Rated voltage Edc

1H	50V

(4) Nominal capacitance

2R5	2.5pF
6R5	6.5pF
020	2.0pF
210	21pF

(5) Capacitance tolerance

Y	0 to +30%

(6) Packaging style

T	Taping (reel)
B	Bulk

Type	L +0.3, –0.1	W +0.3, –0.1	B	Trimming range X	Trimming range Y
CKE20	2	1.25	0.2±0.05	0.1min.	0.1min.
CKE30	3.2	1.6	0.3±0.15	0.3+0.2, –0.05	0.15+0.2, –0.05
CKE40	3.2	2.5	0.3±0.15	0.3+0.2, –0.05	0.15+0.2, –0.05

CAPACITANCE RANGES/CLASS1(TEMPERATURE COMPENSATION)

TEMPERATURE CHARACTERISTICS: CH (0±60ppm/°C)

RATED VOLTAGE Edc: 50V

Capacitance (pF)	Tolerance	Trimming range (pF)	Q min. 200MHz	Q min. 900MHz	Thickness (mm)max.	Part No.
6.5	0 to +30%	1.2 to 6.5	200	25	0.7	CKE20C0H1H6R5Y
2	0 to +30%	0.5 to 2	600	100	0.7	CKE30C0H1H020Y
6.5	0 to +30%	1.2 to 6.5	300	40	0.7	CKE30C0H1H6R5Y
2.5	0 to +30%	0.5 to 2.5	600	125	0.7	CKE40C0H1H2R5Y
4.5	0 to +30%	1 to 4.5	400	75	0.7	CKE40C0H1H4R5Y
12	0 to +30%	2.5 to 12	200	25	0.7	CKE40C0H1H120Y
21	0 to +30%	3 to 21	90		0.7	CKE40C0H1H210Y

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TYPICAL ELECTRICAL CHARACTERISTICS

LASER TRIMMING CONDITIONS

Output: 0.5W, oscillation frequency: 3kHz, scan speed: 30mm/s, laser beam spot diameter: 50µm

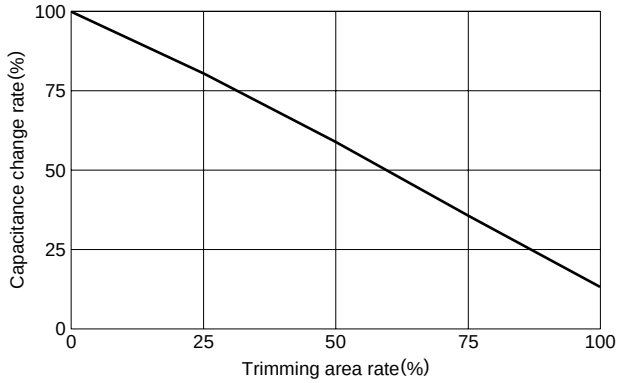
SAMPLE: CKE30C0H1H6R5Y

Characteristics curve	Trimming area rate	Capacitance
1	0%	8.4pF
2	25%	6.8pF
3	50%	5pF
4	75%	3.1pF
5	100%	1.2pF

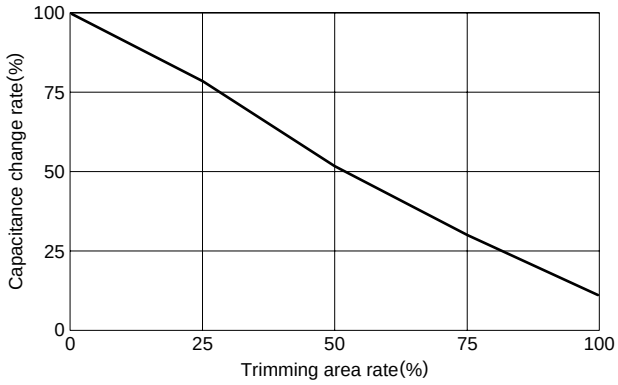
SAMPLE: CKE40C0H1H210Y

Characteristics curve	Trimming area rate	Capacitance
1	0%	23pF
2	25%	18pF
3	50%	11.7pF
4	75%	6.9pF
5	100%	2.5pF

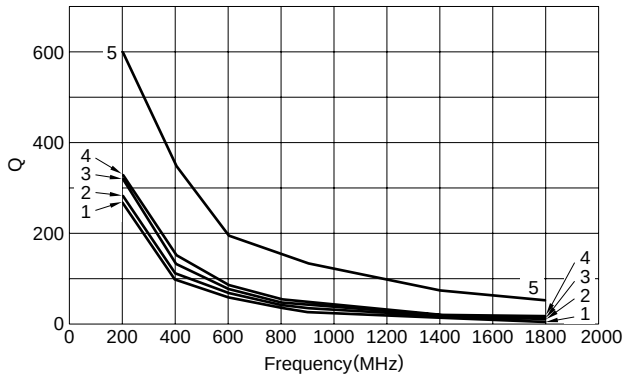
CAPACITANCE CHANGE vs.TRIMMING AREA CHARACTERISTICS



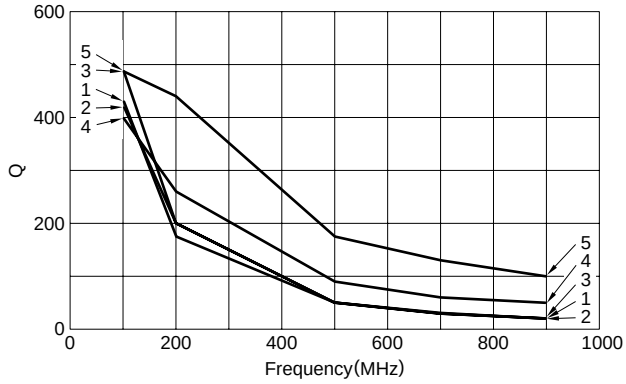
CAPACITANCE CHANGE vs.TRIMMING AREA CHARACTERISTICS



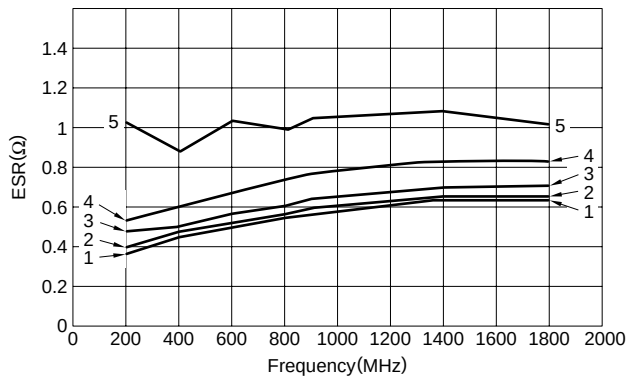
Q vs. FREQUENCY CHARACTERISICS



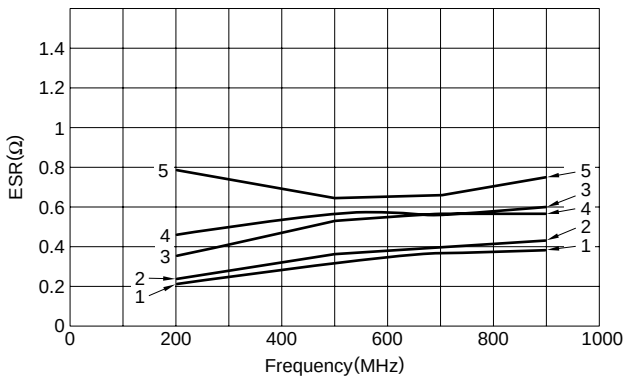
Q vs. FREQUENCY CHARACTERISICS



ESR vs. FREQUENCY CHARACTERISICS



ESR vs. FREQUENCY CHARACTERISICS



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RELIABILITY AND TEST CONDITIONS

Item	Reliability	Test methods and test conditions
Exterior	No dirt, defect, and discoloration affecting electrical/mechanical performance and reliability.	Micrometer (×3)
Insulation resistance*	10000MΩmin.	Measurement voltage: DC. 50V Voltage applied time: 60s
Withstand voltage*	No dielectric nor mechanical damages.	Measurement voltage: 300% of rated DC voltage Voltage applied time: 1 to 5s Charge and discharge current: 50mA max.
Capacitance*	Within specified tolerance.	Measurement frequency: 1MHz±10% Measurement voltage Erms: 0.5 to 5V

Capacitance	Capacitance	After trimming
2pF	+30, –0% max.	0.5pF min.
2.5pF	+30, –0% max.	0.5pF min.
4.5pF	+30, –0% max.	1pF min.
6.5pF	+30, –0% max.	1.2pF min.
12pF	+30, –0% max.	2.5pF min.
21pF	+30, –0% max.	3pF min.

Q (Loss coefficient)

Measurement frequency: 200MHz±10%
900MHz±10%
Measurement voltage Erms: 0.5 to 5V

Capacitance	Q min.	
	200MHz	900MHz
2pF	600	100
2.5pF	600	125
4.5pF	400	75
6.5pF	200	25
12pF	200	25
21pF	90	

Item	Reliability	Test methods and test conditions
Solderability	Solder fillet must be formed without any abnormality.	Check exterior by entering sample into reflow furnace with peak temperature of 215°C. Solder: synthetic composition of Sn 63%, Pb 35%, Ag 2%, and flux 10%

Temperature cycle*

Leave sample in each temperature of 1 to 4 steps for the specified time in order.
Repeat this operation 5 times consecutively.
Measure after leaving sample at room temperature and humidity for 24±2h.

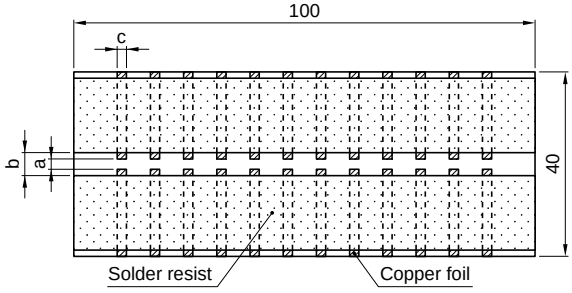
Exterior	No mechanical defect.		
Capacitance	Characteristics	Variance from previous test value	
	C0H	More than 10pF ±3% min. 10pF or less: ±0.3pF min.	
Insulation resistance	1000MΩ min.		
Withstand voltage	No dielectric nor mechanical damages.		

Step	Temperature(°C)	Time(min)
1	–25±3	30±3
2	Room temperature	2 to 5
3	85±2	30±3
4	Room temperature	2 to 5

High temperature resistance*

Solder sample to test board as shown below.
Temperature: 85±2°C
Impressed voltage: Rated DC voltage
Time: 1000+4.8, 0h
Charge and discharge current: 50mA max.
Measure after leaving sample at room temperature and humidity for 24±2h.

Exterior	No mechanical damage		
Capacitance	Characteristics	Variance from previous test value	
	C0H	More than 10pF ±3% min. 10pF or less: ±0.3pF min.	
Insulation resistance	1000MΩ min.		



Dimensions in mm

Type	a	b	c
CKE20	1.2	4	1.65
CKE30	2.2	5	2
CKE40	2.2	5	2.9

Material: Glass epoxy resin
(corresponding to type GE4 specified in JIS C 6484)
Board thickness: 1.6mm

Copper foil(0.035mm thick)
Solder resist

* Guaranteed when the capacitor is processed in conforming to TDK's laser process conditions.