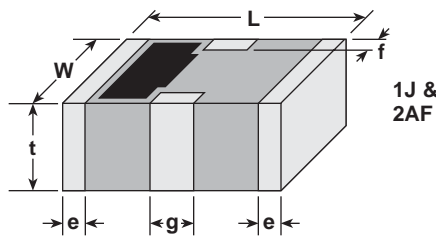


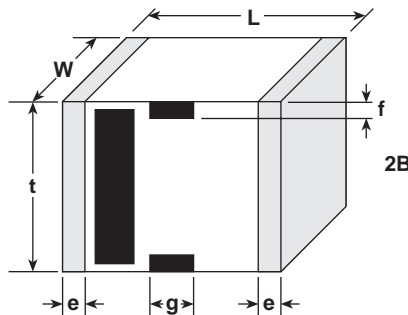
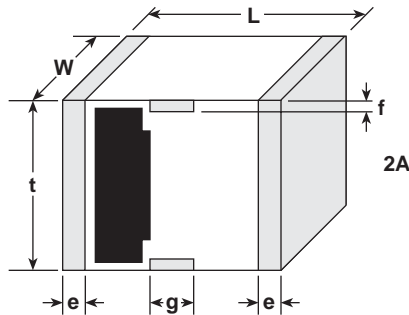
**features**

- Compact physical dimensions
- Excellent wave reduction control
- Exceptional EMI attenuation
- Excellent as impedance matching for signal lines
- Marking: Brown and black body color with no marking (1J & 2AF)  
White and black body color (2A & 2B)
- Products with lead-free terminations meet EU RoHS requirements

**dimensions and construction**



		Dimensions inches (mm)					
	Size	L	W	t	g	e	f
NEW	1J	.062±.008 (1.6±0.2)	.031±.008 (0.8±0.2)	.024±.008 (0.6±0.2)	.016±.008 (0.4±0.2)	.008±.006 (0.2±0.15)	N/A
	2AF	.079±.008 (2.0±0.2)	.049±.008 (1.25±0.2)	.031±.008 (0.8±0.2)	.016±.012 (0.4±0.3)	.012±.008 (0.3±0.2)	N/A
	2A	.079±.008 (2.0±0.2)	.049±.008 (1.25±0.2)	.063±.008 (1.6±0.2)	.016±.008 (0.4±0.2)	.004 Min. (0.1 Min.)	.02±.006 (0.25±0.15)
NEW	2B	.126±.012 (3.2±0.3)	.063±.012 (1.6±0.3)	.098±.012 (2.5±0.3)	.031±.012 (0.8±0.3)	.004 Min. (0.1 Min.)	.004 Min. (0.1 Min.)



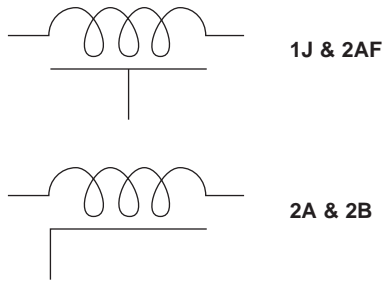
**ordering information**

New Part #	<b>KC</b>	<b>2AF</b>	<b>T</b>	<b>TE</b>	<b>120</b>	<b>N</b>	<b>6N5</b>	<b>L</b>
Type		<b>Size</b>	<b>Termination Material</b>	<b>Packaging</b>	<b>Capacitance Value (pF)</b>	<b>Capacitance Tolerance</b>	<b>Inductance Value (nH)</b>	<b>Inductance Tolerance</b>
		1J 2AF 2A 2B	T: Sn	TD: 7" paper tape (1J & 2AF only - 4,000 pieces/reel) TE: 7" embossed plastic (2A only - 2,000 pieces/reel) (2B only - 1,500 pieces/reel)	2 significant digits + no. of zeros	M: ±20% N: ±30% P: ±25%	6.5nH	L: ±15%

For further information on packaging, please refer to Appendix A.

EMI/EMC filtering

**circuit schematic**



**applications and ratings**

Item	Specification
Operating Temperature Range	-40°C to +85°C
Storage Temperature Range	-40°C to +85°C (after soldering)
Measuring Condition (Standard) Temperature Relative Humidity	15°C to 35°C 1J, 2AF, 2B: 20 - 90%; 2A: 45 - 85%
Measuring Condition (Precision) Temperature Relative Humidity	20°C ± 1°C 1J, 2AF, 2A: 60 - 67%; 2B: 20 - 90%

**applications and ratings (continued)**

	Part Designation	Capacitance (pF) %	Inductance (nH) %	Rated Voltage DC (V)	Rated Current DC (mA)	Insulation Resistance Minimum (MΩ)	Operating Temperature Range	Typical Cut-off Frequency (Att = 3dB)				
NEW	KC1JTDD680P12NL	68 ± 25%	12 ± 15%	16	200	1000	-20°C to +85°C	20 MHz				
	KC1JTDD9R5P30NL	9.5 ± 25%	30 ± 15%					400 MHz				
	KC1JTDD220P8N0L	22 ± 25%	8.0 ± 15%				-40°C to +85°C	200 MHz				
	KC1JTDD350P8N0L	35 ± 25%	8.0 ± 15%					100 MHz				
	KC1JTDD550P8N0L	55 ± 25%	8.0 ± 15%					50 MHz				
NEW	KC2AFTTD151N16N5L	150 ± 30%	16.5 ± 15%	25	200	1000	-40°C to +85°C	50 MHz				
	KC2AFTTD331N16N5L	330 ± 30%	16.5 ± 15%					20 MHz				
	KC2AFTTD220N3N0L	22 ± 30%	3.0 ± 15%					200 MHz				
	KC2AFTTD160N3N0L	16 ± 30%	3.0 ± 15%					400 MHz				
	KC2AFTTD700N8N50L	70 ± 30%	8.5 ± 15%					100 MHz				
	KC2ATTE120N6N5L	12 ± 30%	6.5 ± 15%				25	200	1000	-40°C to +85°C	530 MHz	
	KC2ATTE180N13NL	18 ± 30%	13 ± 15%								360 MHz	
	KC2ATTE350N15NL	35 ± 30%	15 ± 15%								180 MHz	
	NEW	KC2BTTE100N11NL	10 ± 30%				11 ± 15%	25	200	1000	-40°C to +85°C	660 MHz
		KC2BTTE200M17NL	20 ± 20%				17 ± 15%					320 MHz
KC2BTTE450M37NL		45 ± 20%	37 ± 15%	140 MHz								
KC2BTTE850M37NL		85 ± 20%	37 ± 15%	70 MHz								
KC2BTTE191M37NL		190 ± 20%	37 ± 15%	30 MHz								
KC2BTTE341M67NL		340 ± 20%	67 ± 15%	20 MHz								

**environmental applications**

**Performance Characteristics**

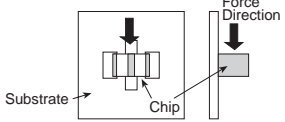
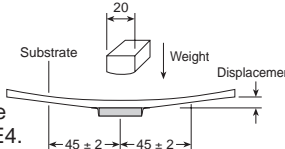
Parameter	Requirement	Test Method
Insulation Resistance	Within the tolerance	Voltage: DC25V (2AF, 2A), DC16V (1J) Test Time: 60 seconds
Capacitance	Within the tolerance	Frequency: 1MHz Voltage: 1V Equipment: HP4192A Fixture: HP16034E
Inductance	Within the tolerance	Frequency: 1MHz Current: 10mA Equipment: HP4192A Fixture: HP16034E
Resistance (2A only)	Within the tolerance	Frequency: 1MHz Current: 10mA Equipment: HP4192A Fixture: HP16034E

Specifications given herein may be changed at any time without prior notice. Please confirm technical specifications before you order and/or use.

5/23/07

## environmental applications (continued)

### Performance Characteristics

Parameter	Requirement	Test Method
Capacitance vs. Temperature Characteristics	Variation rate of capacitance in operate temperature are shown below: Part:                      Rate: KC2AT120N6NSL          ±10% KC2AT180N13NL          ±10% KC2AT350N15NL          ±10% KC2BTTE100N11NL        ±5% KC2BTTE200M17NL        ±5% KC2BTTE450M37NL        ±5% KC2BTTE850M37NL        ±5% KC2BTTE191M37NL        ±10% KC2BTTE341M67NL        ±10%	The capacitance shall be measured at each stage below. The rate shall be calculated against the capacitance measured at 20°C.  Step:      Temperature: 1            20°C 2            -40°C ± 3°C 3            20°C 4            85°C ± 3°C
Terminal Adhesion Strength	No physical damage	Solder a chip to a test substrate and then laterally apply a load (5N, 500gF) in the arrow direction 
Resistance to Solder Heat	Appearance: No physical damage Capacitance: Within tolerance Dielectric Loss: Within tolerance Insulation Resistance: Within tolerance Withstand Voltage: No abnormality	Flux: 25% rosin Preheating: 120 to 180 seconds Preheating Temperature: 150°C to 200°C (1J, 2AF, 2B) Solder: H60A Solder Temperature: 260°C ±5°C Dip Time: 5 seconds ± 0.5 second
Solderability	More than 95% of the terminal electrode shall be covered with new solder	Flux: 25% rosin Solder: H60A Solder Temperature: 235°C ±5°C Dip Time: 2 seconds ± 0.5 second
Temperature Cycle*	Appearance: No physical damage Capacitance: Within tolerance Dielectric Loss: Within tolerance Insulation Resistance: Within tolerance Withstand Voltage: No abnormality	Repeat the following heat cycle 10 times:  Step:      Temperature:      Time: 1            -40°C ± 3°C        30 minutes ± 3 minutes 2            Room Temp.        15 minutes maximum 3            85°C ± 2°C        30 minutes ± 3 minutes 4            Room Temp.        15 minutes maximum
High Temperature Resistance*	Appearance: No physical damage Capacitance: Within tolerance Dielectric Loss: Within tolerance Insulation Resistance: Within tolerance Withstand Voltage: No abnormality	Temperature: 70°C ± 2°C Bias: DC25V (2AF, 2A, 2B), DC16V (1J) Bias: DC200mA Test Time: 500 hours
Humidity Resistance (Unload)*	Appearance: No physical damage Capacitance: Within tolerance Dielectric Loss: Within tolerance Insulation Resistance: Within tolerance	Temperature: 85°C ± 2°C Humidity: 85% ± 5% Test Time: 500 hours
Substrate Bending Test	Appearance: No physical damage Capacitance: Within tolerance	After soldering a chip to a test substrate, bend the substrate by 1 mm and then measure. The substrate is GE4 or based on GE4. 
Humidity Resistance (Load)*	Appearance: No physical damage Capacitance: Within tolerance Dielectric Loss: Within tolerance Insulation Resistance: Within tolerance	Temperature: 40°C ± 2°C Humidity: 90 - 95% Bias: DC25V Bias: DC200mA Test Time: 500 hours

\* After temperature cycle test, high temperature resistance test or humidity resistance test, the tested sample should be measured after having been left in temperature from 15°C to 35°C and relative humidity from 20% to 90% for 24 hours.