

Signal Inductor Ceramic Chip High Frequency type

SIM-20T series

MERITEK

FEATURE

- Operating temperature: -55°C ~ +105°C (Including self-temperature rise)
- Monolithic inorganic material construction.
- Closed magnetic circuit avoids crosstalk.
- Excellent solderability and heat resistance
- High SRF up to 6GHz and above



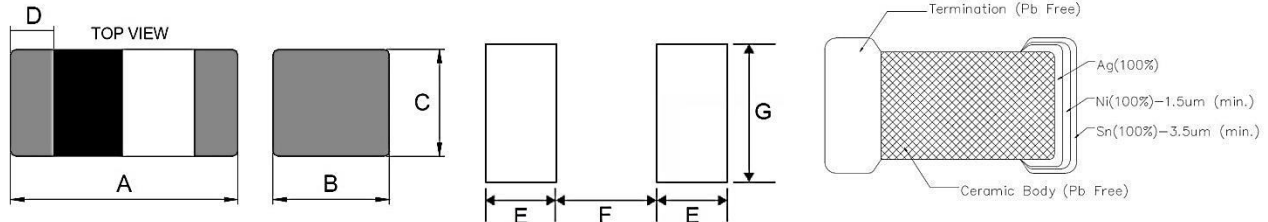
PART NUMBERING SYSTEM



SIM (1) 01 (2) 0N8 (3) S (4) A5 (5) 20T (6)

No	item	Code	Description	Series Reference
(1)	Meritek Series	SIM	Signal Inductor	Multi-Layer Ceramic Chip, High Frequency Type
(2)	Dimension	01	01: 0201, 0.6x0.3mm	See Dimensions Table
(3)	Inductance	0N8	0N8:0.8nH	First two: Significant, Third: Multiplier; N:Decimal
(4)	Tolerance	S	S: ±0.3nH	J:±5%
(5)	Rated Current	A5	A5: 0.5A	Max Current, 'A' denotes decimal point
(6)	Internal Code	20T	Internal reference	Internal control or project reference

DIMENSIONS



Size	A (mm)	B (mm)	C (mm)	D (mm)	E (mm)	F (mm)	G (mm)
SIM01 (0201)	0.60±0.05	0.30±0.05	0.30±0.05	0.15±0.05	0.35	0.30	0.40
SIM02 (0402)	1.00±0.05	0.50±0.05	0.50±0.05	0.25±0.10	0.50	0.40	0.60
SIM03 (0603)	1.60±0.20	0.80±0.20	0.80±0.20	0.30±0.20	0.80	0.85	0.95

ELECTRICAL CHARACTERISTICS

Size	Part Number	Inductance (nH)	Tolerance (%)	Test Frequency (Hz)	Q Min.	Rated Current (mA)	DCR (Ω) Max.	SRF Min. (MHz)
0201	SIM010N8SA520T	0.8	±0.3	100M / 50mV	4	500	0.1	>10000
	SIM011N0SA4720T	1	±0.3	100M / 50mV	4	470	0.11	>10000
	SIM011N2SA4520T	1.2	±0.3	100M / 50mV	4	450	0.12	>10000
	SIM011N5SA3020T	1.5	±0.3	100M / 50mV	4	430	0.13	>10000
	SIM011N8SA3920T	1.8	±0.3	100M / 50mV	4	390	0.16	>10000
	SIM012N0SA3820T	2.0	±0.3	100M / 50mV	4	380	0.17	>10000
	SIM012N2SA3620T	2.2	±0.3	100M / 50mV	4	360	0.19	8800
	SIM012N4SA3520T	2.4	±0.3	100M / 50mV	4	350	0.2	8300

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Size	Part Number	Inductance (nH)	Tolerance (%)	Test Frequency (Hz)	Q Min.	Rated Current (mA)	DCR (Ω) Max.	SRF Min. (MHz)
0201	SIM012N7SA3420T	2.7	±0.3	100M / 50mV	4	340	0.21	7700
	SIM013N0SA3320T	3.0	±0.3	100M / 50mV	4	330	0.22	7200
	SIM013N3SA3220T	3.3	±0.3	100M / 50mV	4	320	0.23	6700
	SIM013N6SA3120T	3.6	±0.3	100M / 50mV	4	310	0.25	6400
	SIM013N9SA320T	3.9	±0.3	100M / 50mV	4	300	0.27	6000
	SIM014N3SA2820T	4.3	±0.3	100M / 50mV	4	280	0.3	5700
	SIM014N7SA2720T	4.7	±0.3	100M / 50mV	4	280	0.3	5300
	SIM015N1SA2620T	5.1	±0.3	100M / 50mV	4	270	0.33	5000
	SIM015N6SA2520T	5.6	±0.3	100M / 50mV	4	260	0.36	4600
	SIM016N2SA2520T	6.2	±0.3	100M / 50mV	4	250	0.38	4200
	SIM016N8JA2420T	6.8	±5%	100M / 50mV	4	250	0.39	3900
	SIM017N5JA2420T	7.5	±5%	100M / 50mV	4	240	0.41	3600
	SIM018N2JA2320T	8.2	±5%	100M / 50mV	4	230	0.45	3400
	SIM019N1JA2220T	9.1	±5%	100M / 50mV	4	220	0.48	3200
	SIM01100JA2220T	10	±5%	100M / 50mV	4	220	0.51	2900
	SIM01120JA1920T	12	±5%	100M / 50mV	4	190	0.68	2700
	SIM01150JA1820T	15	±5%	100M / 50mV	4	180	0.71	2300
	SIM01180JA1720T	18	±5%	100M / 50mV	4	170	0.81	2100
	SIM01220JA1520T	22	±5%	100M / 50mV	4	150	1	1800
	SIM01270JA1220T	27	±5%	100M / 50mV	4	120	1.35	1800
SIM01330JA1120T	33	±5%	100M / 50mV	4	110	1.47	1700	
SIM01390JA120T	39	±5%	100M / 50mV	4	100	1.72	1500	
SIM01470JA120T	47	±5%	100M / 50mV	4	100	1.9	1300	
SIM01560JA0820T	56	±5%	100M / 50mV	4	80	2.27	1100	
SIM01680JA0820T	68	±5%	100M / 50mV	4	80	2.66	1100	
SIM01820JA0720T	82	±5%	100M / 50mV	4	70	3.37	1000	
0402	SIM021N0SA420T	1.0	±0.3	100M / 50mV	7	400	0.1	10000
	SIM021N2SA420T	1.2	±0.3	100M / 50mV	7	400	0.1	10000
	SIM021N5SA320T	1.5	±0.3	100M / 50mV	7	300	0.1	6000
	SIM021N8SA320T	1.8	±0.3	100M / 50mV	7	300	0.1	6000
	SIM022N0SA320T	2.0	±0.3	100M / 50mV	7	300	0.2	6000
	SIM022N2SA320T	2.2	±0.3	100M / 50mV	7	300	0.2	6000
	SIM022N4SA320T	2.4	±0.3	100M / 50mV	7	300	0.2	6000
	SIM022N7SA320T	2.7	±0.3	100M / 50mV	7	300	0.2	6000
	SIM023N0SA320T	3.0	±0.3	100M / 50mV	7	300	0.2	6000
	SIM023N3SA320T	3.3	±0.3	100M / 50mV	7	300	0.2	6000
	SIM023N6SA320T	3.6	±0.3	100M / 50mV	7	300	0.2	4000
	SIM023N9SA320T	3.9	±0.3	100M / 50mV	7	300	0.2	4000
	SIM024N3SA320T	4.3	±0.3	100M / 50mV	7	300	0.2	4000
	SIM024N7SA320T	4.7	±0.3	100M / 50mV	7	300	0.2	4000
	SIM025N1SA320T	5.1	±0.3	100M / 50mV	7	300	0.3	4000

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Size	Part Number	Inductance (nH)	Tolerance (%)	Test Frequency (Hz)	Q Min.	Rated Current (mA)	DCR (Ω) Max.	SRF Min. (MHz)
0402	SIM025N6SA320T	5.6	±0.3	100M / 50mV	7	300	0.3	4000
	SIM026N2JA320T	6.2	±5%	100M / 50mV	7	300	0.3	3900
	SIM026N8JA320T	6.8	±5%	100M / 50mV	7	300	0.3	3900
	SIM027N5JA320T	7.5	±5%	100M / 50mV	7	300	0.4	3700
	SIM028N2JA320T	8.2	±5%	100M / 50mV	7	300	0.4	3600
	SIM029N1JA320T	9.1	±5%	100M / 50mV	7	300	0.4	3400
	SIM02100JA320T	10	±5%	100M / 50mV	7	300	0.4	3200
	SIM02120JA320T	12	±5%	100M / 50mV	8	300	0.5	2700
	SIM02150JA320T	15	±5%	100M / 50mV	8	300	0.5	2300
	SIM02180JA320T	18	±5%	100M / 50mV	8	300	0.6	2100
	SIM02220JA320T	22	±5%	100M / 50mV	8	300	0.6	1900
	SIM02270JA320T	27	±5%	100M / 50mV	8	300	0.7	1600
	SIM02330JA220T	33	±5%	100M / 50mV	8	200	0.8	1300
	SIM02390JA220T	39	±5%	100M / 50mV	8	200	1	1200
	SIM02470JA220T	47	±5%	100M / 50mV	8	200	1.1	1100
	SIM02560JA220T	56	±5%	100M / 50mV	8	200	1.2	750
	SIM02680JA1820T	68	±5%	100M / 50mV	8	180	1.4	750
	SIM02820JA1520T	82	±5%	100M / 50mV	8	150	2.4	750
	SIM02101JA1520T	100	±5%	100M / 50mV	8	150	2.6	700
	SIM02121JA1520T	120	±5%	100M / 50mV	8	150	2.8	600
SIM02151JA120T	150	±5%	100M / 50mV	8	100	3.2	550	
SIM02181JA120T	180	±5%	100M / 50mV	8	100	3.7	500	
SIM02221JA120T	220	±5%	100M / 50mV	8	100	4	400	
SIM02271JA0520T	270	±5%	100M / 50mV	8	50	4.5	350	
SIM02331JA0520T	330	±5%	100M / 50mV	8	50	7	350	
0603	SIM031N5SA420T	1.5	±0.3	100M / 50mV	8	400	0.1	10000
	SIM031N8SA420T	1.8	±0.3	100M / 50mV	8	400	0.12	9800
	SIM032N2SA420T	2.2	±0.3	100M / 50mV	8	400	0.2	7600
	SIM032N7SA420T	2.7	±0.3	100M / 50mV	8	400	0.2	7000
	SIM033N3SA420T	3.3	±0.3	100M / 50mV	8	400	0.2	6200
	SIM033N9SA420T	3.9	±0.3	100M / 50mV	8	400	0.25	5600
	SIM034N7SA420T	4.7	±0.3	100M / 50mV	8	400	0.3	4800
	SIM035N6SA420T	5.6	±0.3	100M / 50mV	8	400	0.3	4600
	SIM036N8JA420T	6.8	±5%	100M / 50mV	8	400	0.35	4200
	SIM038N2JA420T	8.2	±5%	100M / 50mV	8	400	0.35	3600
	SIM03100JA320T	10	±5%	100M / 50mV	8	300	0.4	3200
	SIM03120JA320T	12	±5%	100M / 50mV	8	300	0.4	2800
	SIM03150JA320T	15	±5%	100M / 50mV	8	300	0.45	2600
	SIM03180JA320T	18	±5%	100M / 50mV	8	300	0.6	2400
	SIM03220JA320T	22	±5%	100M / 50mV	8	300	0.6	2000
	SIM03270JA320T	27	±5%	100M / 50mV	8	300	0.8	1900

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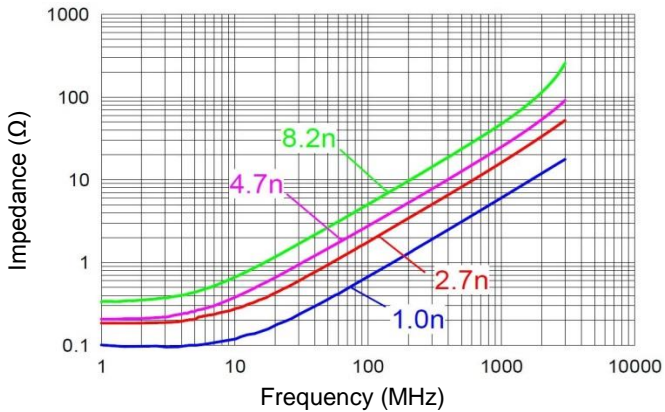
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ELECTRICAL CHARACTERISTICS

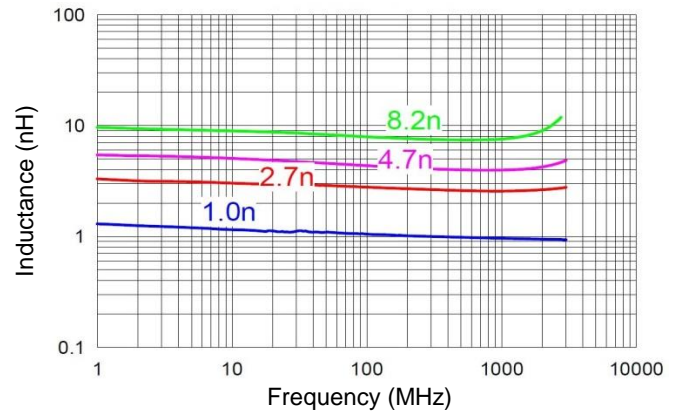
Size	Part Number	Inductance (nH)	Tolerance (%)	Test Frequency (Hz)	Q Min.	Rated Current (mA)	DCR (Ω) Max.	SRF Min. (MHz)
0603	SIM03330JA320T	33	±5%	100M / 50mV	8	300	0.8	1600
	SIM03390JA320T	39	±5%	100M / 50mV	8	300	1	1400
	SIM03470JA220T	47	±5%	100M / 50mV	8	200	1	1200
	SIM03560JA220T	56	±5%	100M / 50mV	8	200	1	1000
	SIM03680JA220T	68	±5%	100M / 50mV	8	200	1	900
	SIM03820JA220T	82	±5%	100M / 50mV	8	200	1	800
	SIM03101JA220T	100	±5%	100M / 50mV	8	200	1.4	700
	SIM03121JA1520T	120	±5%	100M / 50mV	8	150	1.6	600
	SIM03151JA1520T	150	±5%	100M / 50mV	8	150	1.8	500
	SIM03181JA1520T	180	±5%	100M / 50mV	8	150	1.8	500

CHARICTERISTIC CURVES – SIM01 Series, 0201

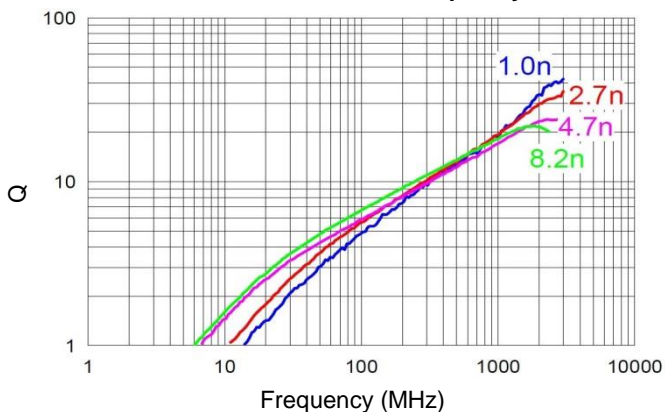
SIM01 Series- Impedance vs Frequency



SIM01 Series- Inductance vs Frequency



SIM01 Series- Q vs Frequency



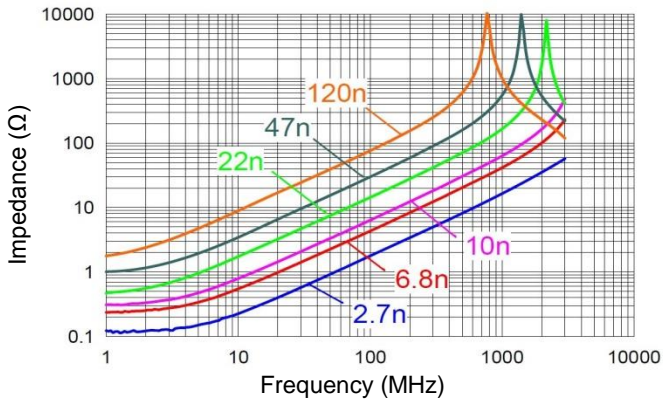
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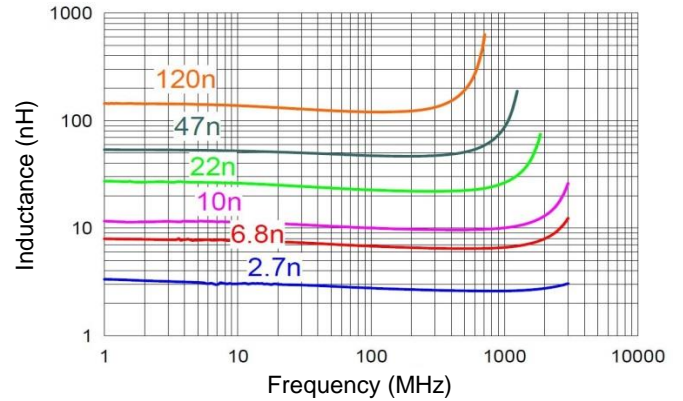
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CHARACTERISTIC CURVES – SIM02 Series, 0402

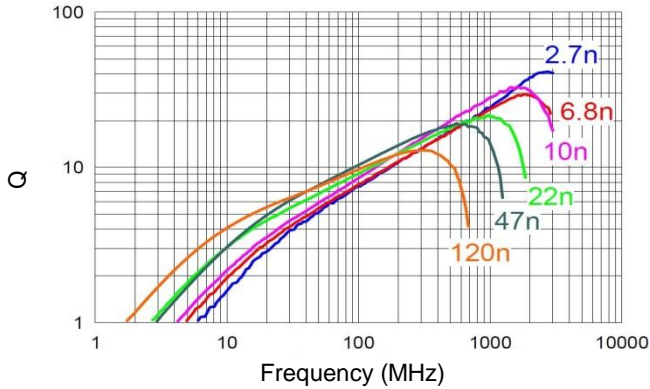
SIM02 Series- Impedance vs Frequency



SIM02 Series- Inductance vs Frequency

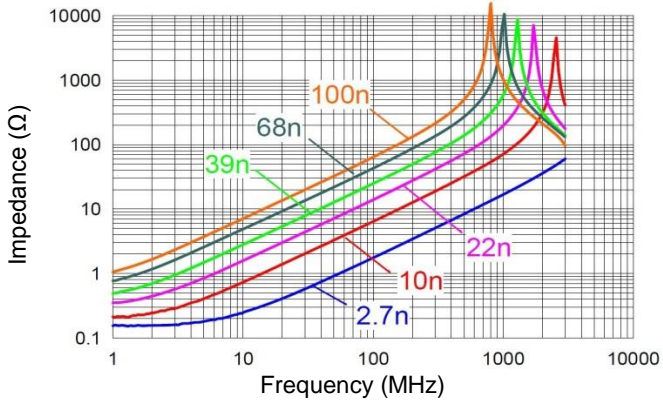


SIM02 Series- Q vs Frequency

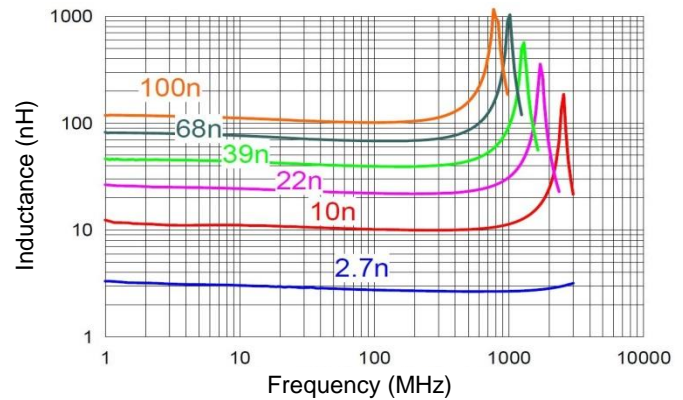


CHARACTERISTIC CURVES – SIM03 Series, 0603

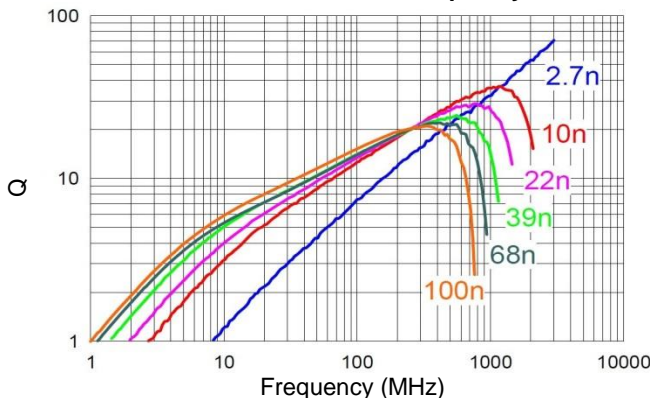
SIM03 Series- Impedance vs Frequency



SIM03 Series- Inductance vs Frequency



SIM03 Series- Q vs Frequency



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RELIABILITY TEST CONDITON AND REQUIREMENT

Item	Test Standards / Conditions / Equipment	Requirement															
Temperature Rise Test	Applied the allowed DC current. Temperature measured by digital surface thermometer.	Rated Current < 1A Δ T 20°CMax. Rated Current \geq 1A Δ T 40°CMax.															
Solderability	Preheat: 150°C for 60sec., Solder: Sn:96.5% - Ag:3% - Cu:0.5% Solder temperature: 245 \pm 5°C, Flux for lead free: Rosin. 9.5% Depth: completely cover the termination. Dip time: 4 \pm 1sec.	More than 95% of the terminal electrode should be covered with solder.															
Resistance to Soldering Heat	Solder temperature: 260 \pm 5°C for 10 \pm 1 seconds Temperature ramp/immersion and emersion rate: 25mm/s \pm 6mm/s. Depth: Completely cover the termination.	Appearance: no damage. Impedance: within \pm 15%of initial value. Inductance: within \pm 10%of initial value. Q: Shall not exceed the specification value. RDC: within \pm 15% of initial value and shall not exceed the specification value.															
Vibration	Preconditioning: Run through IR reflow for 2 times. Oscillation Frequency: 10~2K~10 Hz for 20 minutes Equipment : Vibration checker, Total Amplitude:1.52mm \pm 10% Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations)	Appearance: no damage. Impedance: within \pm 15%of initial value. Inductance: within \pm 10%of initial value. Q: Shall not exceed the specification value. RDC: within \pm 15% of initial value and shall not exceed the specification value.															
Shock	Test condition: <table border="1"> <thead> <tr> <th>Type</th> <th>Peak Value (g's)</th> <th>Normal duration (ms)</th> <th>Wave Form</th> <th>Velocity change (ft/sec)</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> <tr> <td>Lead</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> </tbody> </table>	Type	Peak Value (g's)	Normal duration (ms)	Wave Form	Velocity change (ft/sec)	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3	Appearance: no damage. Impedance: within \pm 10%of initial value. Inductance: within \pm 10%of initial value. Q: Shall not exceed the specification value. RDC: within \pm 15% of initial value and shall not exceed the specification value.
Type	Peak Value (g's)	Normal duration (ms)	Wave Form	Velocity change (ft/sec)													
SMD	50	11	Half-sine	11.3													
Lead	50	11	Half-sine	11.3													
Terminal strength	Preconditioning: Run through IR reflow for 2 times. With component mounted on a PCB apply a force >0805:1kg , \leq 0805:0.5kg to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to shock the component being tested.	Appearance: no damage. Impedance: within \pm 15%of initial value. Inductance: within \pm 10%of initial value. Q: Shall not exceed the specification value. RDC: within \pm 15% of initial value and shall not exceed the specification value.															
Thermal Shock	Preconditioning: Run through IR reflow for 2 times. Number of cycles: 500. Condition for 1 cycle: <table border="1"> <thead> <tr> <th>No.</th> <th>Temp. (°C)</th> <th>Time (min.)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-55\pm2°C</td> <td>30\pm5</td> </tr> <tr> <td>2</td> <td>25\pm2°C</td> <td>\leq30 seconds</td> </tr> <tr> <td>3</td> <td>+105\pm2°C</td> <td>30\pm5</td> </tr> </tbody> </table> Measured at room temperature after placing for 24 \pm 2 hrs.	No.	Temp. (°C)	Time (min.)	1	-55 \pm 2°C	30 \pm 5	2	25 \pm 2°C	\leq 30 seconds	3	+105 \pm 2°C	30 \pm 5	Appearance: no damage. Impedance: within \pm 15%of initial value. Inductance: within \pm 10%of initial value. Q: Shall not exceed the specification value. RDC: within \pm 15% of initial value and shall not exceed the specification value.			
No.	Temp. (°C)	Time (min.)															
1	-55 \pm 2°C	30 \pm 5															
2	25 \pm 2°C	\leq 30 seconds															
3	+105 \pm 2°C	30 \pm 5															
Bending	Shall be mounted on a FR4 substrate of the following dimensions: <table border="1"> <thead> <tr> <th>Dimensions</th> <th>Bending depth</th> </tr> </thead> <tbody> <tr> <td>\geq0805:40x100x1.2mm</td> <td>1.2mm</td> </tr> <tr> <td><0805:40x100x0.8mm</td> <td>0.8mm</td> </tr> </tbody> </table> Duration of 10 sec for a min.	Dimensions	Bending depth	\geq 0805:40x100x1.2mm	1.2mm	<0805:40x100x0.8mm	0.8mm	Appearance: no damage. Impedance: within \pm 10%of initial value. Inductance: within \pm 10%of initial value. Q: Shall not exceed the specification value. RDC: within \pm 15% of initial value and shall not exceed the specification value.									
Dimensions	Bending depth																
\geq 0805:40x100x1.2mm	1.2mm																
<0805:40x100x0.8mm	0.8mm																
Load Humidity	Preconditioning: Run through IR reflow for 2 times. Humidity: 85 \pm 2%R.H. Temperature: 85 \pm 2°C. Duration: 1000hrs Min. with 100% rated current. Measured at room temperature after 24 \pm 2 hrs.	Appearance: no damage. Impedance: within \pm 15%of initial value. Inductance: within \pm 10%of initial value. Q: Shall not exceed the specification value. RDC: within \pm 15% of initial value and shall not exceed the specification value.															
Life Test	Preconditioning: Run through IR reflow for 2 times. Temperature: 105 \pm 2°C Applied current: rated current. Duration: 1000 \pm 12 Hrs. Measured at room temperature after 24 \pm 2 Hrs.	Appearance: no damage. Impedance: within \pm 15%of initial value. Inductance: within \pm 10%of initial value. Q: Shall not exceed the specification value. RDC: within \pm 15% of initial value and shall not exceed the specification value.															

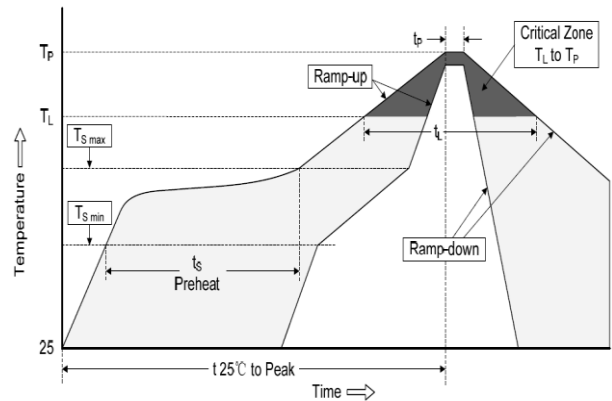
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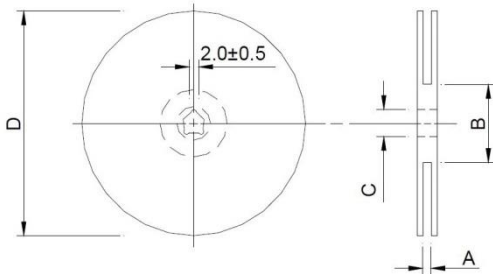
RECOMMENDED SOLDERING PROFILES

Reflow Condition		
Pre Heat	Temp. Min $T_{s(min)}$	150°C
	Temp. Max $T_{s(max)}$	200°C
	Time (min. to max.) (t_s)	60 ~180 seconds
Reflow	Temp. (T_L)	217°C
	Time (min. to max.) (t_L)	60 ~150 seconds
Peak Temperature (T_P)		260°C
Time within 5°C of actual peak Temperature (t_p)		10 seconds max.
Reflow times:		3 times Max.

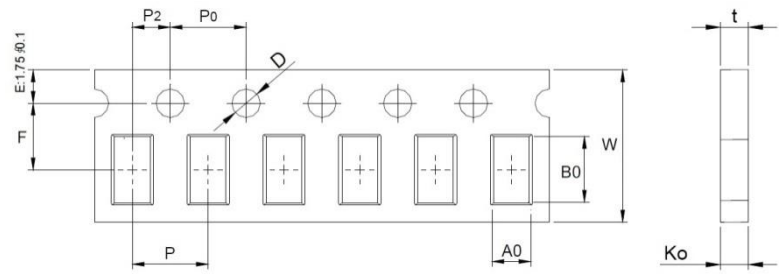


PACKAGING SPECIFICATIONS

Reel Specification & Packaging Quantity



Paper Tape Specification



Size	Reel Dimension (mm)						
	Quantity	Tape Width	Reel Diameter	A	B	C	D
0402	Paper 10K	8mm	7"	8±1.5	57.0±2.0	12.5±1.5	178.0±2.0
0603	Paper 4K	8mm	7"	8±1.5	57.0±2.0	12.5±1.5	178.0±2.0

Size	Paper Tape Dimension (mm)									
	A0	B0	W	F	P0	P	P2	D	t	Ko
0402	0.65±0.1	1.15±0.10	8±0.3	3.5±0.05	4±0.1	2±0.05	-	1.5±0.1	0.8max	0.8max
0603	1.10±0.2	1.90±0.2	8±0.1	3.5±0.1	4±0.1	4±0.2	2±0.1	1.56+0.1/-0.05	1.10max	1.10max

*Specifications subject to change without notice.