

Signal Inductor Shielded Multilayer Chip Inductor

SIM-17T Series

MERITEK

FEATURE

- Operating temperature: -40°C ~ +105°C (Including Self-temperature rise)
- Closed magnetic circuit avoids crosstalk
- Suitable for high density installation and re-flow soldering
- Size 0402 / 0603 / 0805



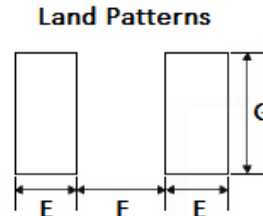
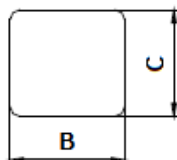
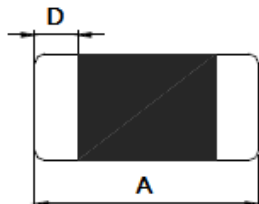
PART NUMBERING SYSTEM



SIM 02 K 1H0 17T
(1) (2) (3) (4) (5)

No	item	Code	Description	Series Reference
(1)	Meritek Series	SIM	Signal Inductor series	Multilayer Chip Inductor Type
(2)	Size Code	02	EIA size: 0402	03: 0603, 05:0805
(3)	Tolerance	K	K: $\pm 10\%$	L: $\pm 15\%$, M: $\pm 20\%$
(4)	Inductance	1H0	1H0: 1.0 μ H	47N: 47nH, H10: 0.10 μ H, 100: 10 μ H
(5)	Internal Code	17T	Internal control code	Internal control or project reference

DIMENSIONS



(Unit: mm)

Item	A	B	C	D	E	F	G
SIM02-17T	1.00 $\pm$ 0.10	0.50 $\pm$ 0.10	0.50 $\pm$ 0.10	0.25 $\pm$ 0.10	0.50	0.40	0.60
SIM03-17T	1.60 $\pm$ 0.15	0.80 $\pm$ 0.15	0.80 $\pm$ 0.15	0.30 $\pm$ 0.20	0.80	0.85	0.95
SIM05-17T	2.00 $\pm$ 0.20	1.25 $\pm$ 0.20	0.85 $\pm$ 0.20	0.50 $\pm$ 0.30	1.05	1.00	1.45
SIM05-17T*	2.00 $\pm$ 0.20	1.25 $\pm$ 0.20	1.25 $\pm$ 0.20	0.50 $\pm$ 0.30	1.05	1.00	1.45

Note: * for the inductance value at 0.47, 0.56, 0.68, 2.7, 3.3 4.7, 10 μ H

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ELECTRICAL CHARACTERISTICS

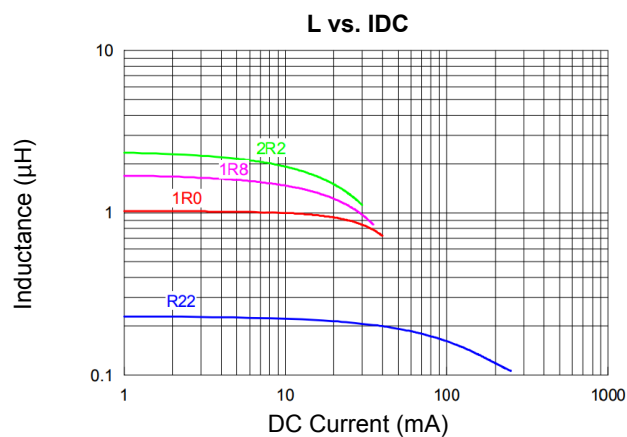
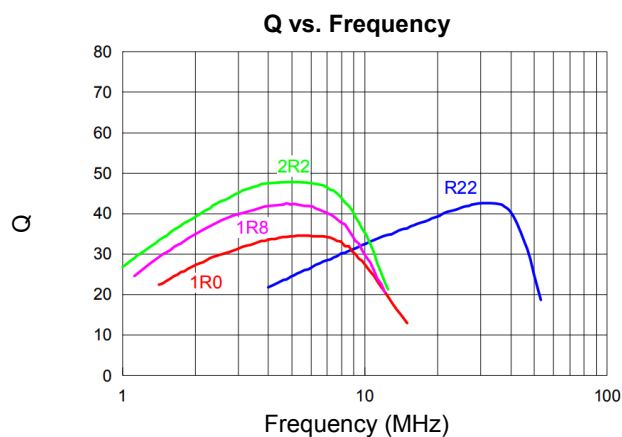
SIM02-17T Series

Inch/Metric 0402/1005	Inductance (μ H)	Inductance Tolerance (%)	Q Min.	Inductance & Q Test Frequency (MHz)	Rated Current (mA) Max.	DCR (Ω) Max.	SRF (MHz) Min.
SIM02H22□17T	0.22	K, L, M	10	25	25	1.20	110
SIM021H0□17T	1.0	K, L, M	20	10	15	0.90	40
SIM021H8□17T	1.8	K, L, M	20	10	15	1.45	30
SIM022H2□17T	2.2	K, L, M	20	10	10	1.70	28

Note:

- : Inductance tolerance K:±10%, L:±15%, M:±20%
- Rated current based on temperature rise test.

CHARACTERISTIC CURVES



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SIM-17T Series

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ELECTRICAL CHARACTERISTICS

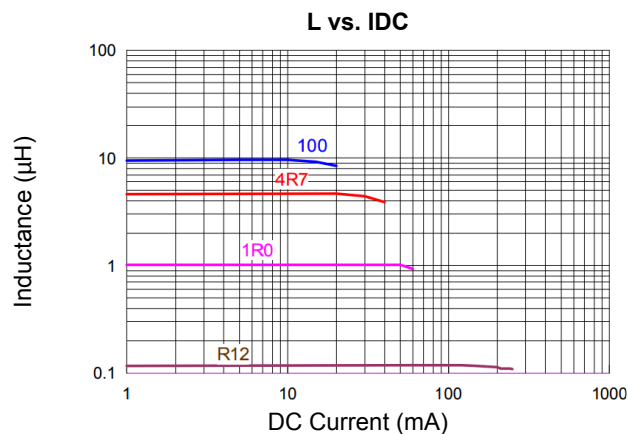
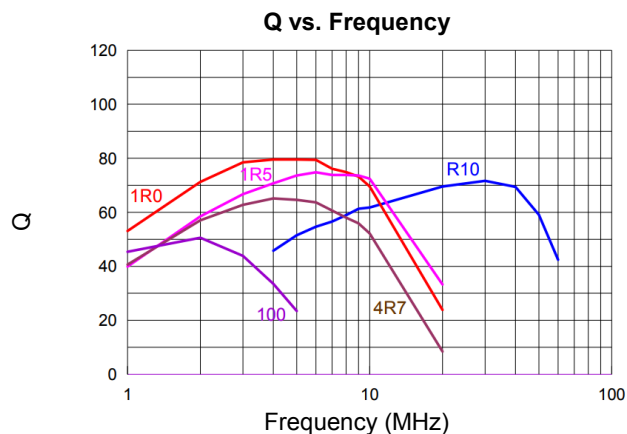
SIM03-17T Series

Inch/Metric 0603/1608	Inductance (μ H)	Inductance Tolerance (%)	Q Min.	Inductance & Q Test Frequency (MHz)	Rated Current (mA) Max.	DCR (Ω) Max.	SRF (MHz) Min.
SIM0347N□17T	0.047	K, L, M	10	50	50	0.30	260
SIM0368N□17T	0.068	K, L, M	10	50	50	0.30	250
SIM0382N□17T	0.082	K, L, M	10	50	50	0.30	245
SIM03H10□17T	0.10	K, L, M	15	25	50	0.50	240
SIM03H12□17T	0.12	K, L, M	15	25	50	0.50	205
SIM03H15□17T	0.15	K, L, M	15	25	50	0.60	180
SIM03H18□17T	0.18	K, L, M	15	25	50	0.60	165
SIM03H22□17T	0.22	K, L, M	15	25	50	0.80	150
SIM03H27□17T	0.27	K, L, M	15	25	50	0.80	136
SIM03H33□17T	0.33	K, L, M	15	25	35	0.85	125
SIM03H39□17T	0.39	K, L, M	15	25	35	1.00	110
SIM03H47□17T	0.47	K, L, M	15	25	35	1.35	105
SIM03H56□17T	0.56	K, L, M	15	25	35	1.55	95
SIM03H68□17T	0.68	K, L, M	15	25	35	1.70	80
SIM03H82□17T	0.82	K, L, M	15	25	35	2.10	75
SIM031H0□17T	1.0	K, L, M	30	10	25	0.60	70
SIM031H5□17T	1.5	K, L, M	30	10	25	0.80	55
SIM031H8□17T	1.8	K, L, M	30	10	25	0.95	50
SIM032H2□17T	2.2	K, L, M	30	10	15	1.15	45
SIM033H3□17T	3.3	K, L, M	30	10	15	1.55	38
SIM034H7□17T	4.7	K, L, M	30	10	15	2.10	33
SIM0310H□17T	10	K, L, M	30	2	15	2.55	17

Note:

- : Inductance tolerance K:±10%, L:±15%, M:±20%
- Rated current based on temperature rise test.

CHARACTERISTIC CURVES



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ELECTRICAL CHARACTERISTICS

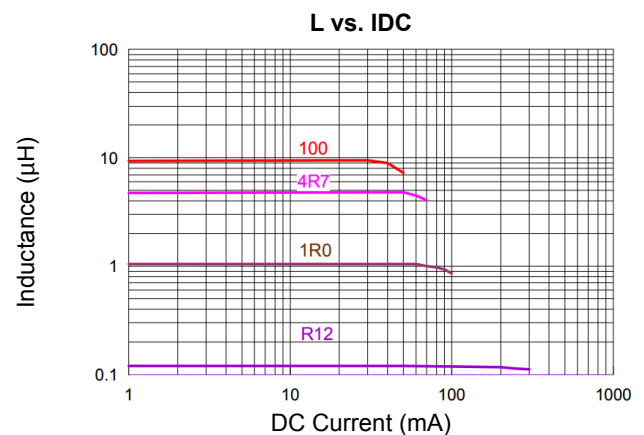
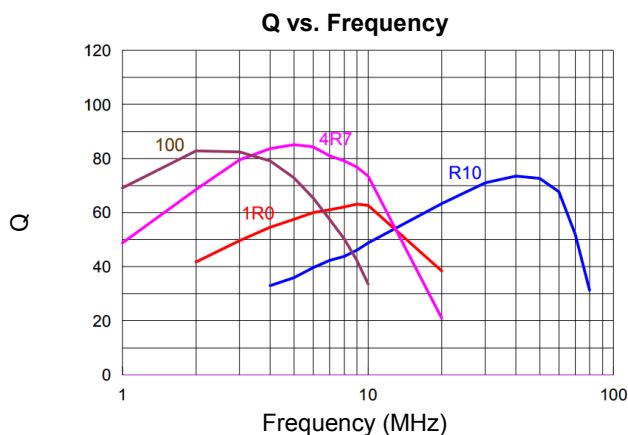
SIM05-17T Series

Inch/Metric 0805/2012	Inductance (μ H)	Inductance Tolerance (%)	Q Min.	Inductance & Q Test Frequency (MHz)	Rated Current (mA) Max.	DCR (Ω) Max.	SRF (MHz) Min.	Thickness C (mm)
SIM0547N□17T	0.047	K, L, M	15	50	300	0.20	320	0.85±0.20
SIM0568N□17T	0.068	K, L, M	15	50	300	0.20	280	0.85±0.20
SIM0582N□17T	0.082	K, L, M	15	50	300	0.20	255	0.85±0.20
SIM05H10□17T	0.10	K, L, M	20	25	250	0.30	235	0.85±0.20
SIM05H12□17T	0.12	K, L, M	20	25	250	0.30	220	0.85±0.20
SIM05H15□17T	0.15	K, L, M	20	25	250	0.40	200	0.85±0.20
SIM05H18□17T	0.18	K, L, M	20	25	250	0.40	185	0.85±0.20
SIM05H22□17T	0.22	K, L, M	20	25	250	0.50	170	0.85±0.20
SIM05H27□17T	0.27	K, L, M	20	25	250	0.50	150	0.85±0.20
SIM05H33□17T	0.33	K, L, M	20	25	250	0.55	145	0.85±0.20
SIM05H39□17T	0.39	K, L, M	25	25	200	0.65	135	0.85±0.20
SIM05H47□17T	0.47	K, L, M	25	25	200	0.65	125	1.25±0.20
SIM05H56□17T	0.56	K, L, M	25	25	150	0.75	115	1.25±0.20
SIM05H68□17T	0.68	K, L, M	25	25	150	0.80	105	1.25±0.20
SIM051H0□17T	1.0	K, L, M	45	10	50	0.40	75	0.85±0.20
SIM051H5□17T	1.5	K, L, M	45	10	50	0.50	60	0.85±0.20
SIM051H8□17T	1.8	K, L, M	45	10	50	0.60	55	0.85±0.20
SIM052H2□17T	2.2	K, L, M	45	10	30	0.65	50	0.85±0.20
SIM052H7□17T	2.7	K, L, M	45	10	30	0.75	45	1.25±0.20
SIM053H3□17T	3.3	K, L, M	45	10	30	0.80	41	1.25±0.20
SIM054H7□17T	4.7	K, L, M	45	10	30	1.00	35	1.25±0.20
SIM0510H□17T	10	K, L, M	45	2	15	1.15	24	1.25±0.20

Note:

- : Inductance tolerance K:±10%, L:±15%, M:±20%
- Rated current based on temperature rise test.

CHARACTERISTIC CURVES



Signal Inductor

Shielded Multilayer Chip Inductor

SIM-17T Series

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RELIABILITY TEST CONDITON AND REQUIREMENT

Item	Test Standards / Conditions / Equipment	Requirement															
Rated Current	DC power supply. Over rated current requirements, there will be some risk.	Refer to standard electrical characteristic spec.															
Temperature Rise Test	- Applied the allowed DC current. - Temperature measured by digital surface thermometer.	Rated Current < 1A Δ T 20℃ Max. Rated Current ≥ 1A Δ T 40℃ Max.															
Solderability	Preheat: 150℃ for 60sec. Solder: Sn:96.5% - Ag:3% - Cu:0.5% Solder temperature: 245±5℃ Flux for lead free: Rosin. 9.5% Depth: completely cover the termination. Dip time: 4±1sec.	More than 95% of the terminal electrode should be covered with solder.															
Resistance to Soldering Heat	Solder temperature: 260±5℃ for 10 seconds. Temperature ramp/immersion and emersion rate 25mm/s ±6 mm/s. Completely cover the termination.	Appearance: no damage. Impedance: within±15%of initial value. Inductance: within±10%of initial value. Q: shall not exceed the specification value. RDC: within ±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 ± 10% Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations)	Appearance: no damage. Impedance: within±15%of initial value. Inductance: within±10%of initial value. Q: shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value.															
Shock	Test condition: <table><tr><th>Type</th><th>Peak Value (g's)</th><th>Normal duration (ms)</th><th>Wave From</th><th>Velocity change (ft/sec)</th></tr><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></table>	Type	Peak Value (g's)	Normal duration (ms)	Wave From	Velocity change (ft/sec)	SMD	50	11	Half-sine	11.3	Lead	50	11	Half-sine	11.3	Appearance: no damage. Impedance: within±10%of initial value. Inductance: within±10%of initial value. Q: shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value.
Type	Peak Value (g's)	Normal duration (ms)	Wave From	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 >0805inch(2012mm):1kg <=0805inch(2012mm):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±15%of initial value. Inductance: within±10%of initial value. Q: shall not exceed the specification value. RDC: within ±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><tr><th>No.</th><th>Temp. (℃)</th><th>Time (min.)</th></tr><tr><td>1</td><td>-40±2℃</td><td>30±5</td></tr><tr><td>2</td><td>25±2℃</td><td>≤30 seconds</td></tr><tr><td>3</td><td>+105±2℃</td><td>30±5</td></tr></table> Measured at room temperature after placing for 24±2 hrs.	No.	Temp. (℃)	Time (min.)	1	-40±2℃	30±5	2	25±2℃	≤30 seconds	3	+105±2℃	30±5	Appearance: no damage. Impedance: within±15%of initial value. Inductance: within±10%of initial value. Q: shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value.			
No.	Temp. (℃)	Time (min.)															
1	-40±2℃	30±5															
2	25±2℃	≤30 seconds															
3	+105±2℃	30±5															
Bending	Shall be mounted on a FR4 substrate of the following dimensions: <table><tr><th>Dimensions</th><th>Bending depth</th></tr><tr><td>>=0805inch(2012mm):40x100x1.2mm</td><td>1.2mm</td></tr><tr><td><0805inch(2012mm):40x100x0.8mm</td><td>0.8mm</td></tr></table> Duration of 10 sec for a min.	Dimensions	Bending depth	>=0805inch(2012mm):40x100x1.2mm	1.2mm	<0805inch(2012mm):40x100x0.8mm	0.8mm	Appearance: no damage. Impedance: within±10%of initial value. Inductance: within±10%of initial value. Q: shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value.									
Dimensions	Bending depth																
>=0805inch(2012mm):40x100x1.2mm	1.2mm																
<0805inch(2012mm):40x100x0.8mm	0.8mm																

RELIABILITY TEST CONDITON AND REQUIREMENT (CONTINUED)

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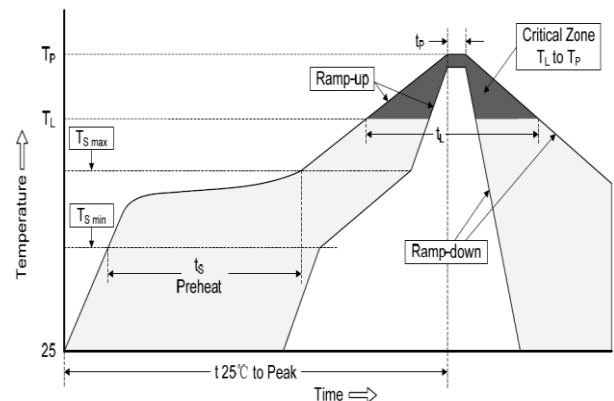
SIM-17T Series

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Item	Test Conditions / Equipment	Requirement
Load Humidity	Preconditioning: Run through IR reflow for 2 times. Humidity: 85±2%R.H. Temperature: 85±2°C. Duration: 1000hrs Min. with 100% rated current. Measured at room temperature after 24±2 hrs.	Appearance: no damage. Impedance: within±15%of initial value. Inductance: within±10%of initial value. Q: shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value.
Life Test	Preconditioning: Run through IR reflow for 2 times. Temperature: 105±2°C Applied current: rated current. Duration: 1000±12 Hrs. Measured at room temperature after 24±2 Hrs.	Appearance: no damage. Impedance: within±15%of initial value. Inductance: within±10%of initial value. Q: shall not exceed the specification value. RDC: within ±15% of initial value and shall not exceed the specification value.
Insulation Resistance	Test voltage:100±10%V for 30sec.	IR>1GΩ

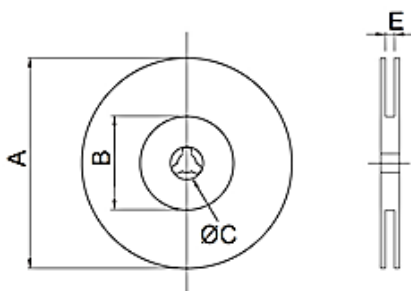
RECOMMENDED SOLDERING PROFILES

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.

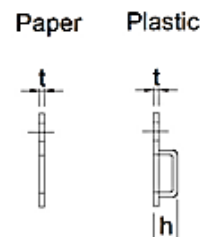
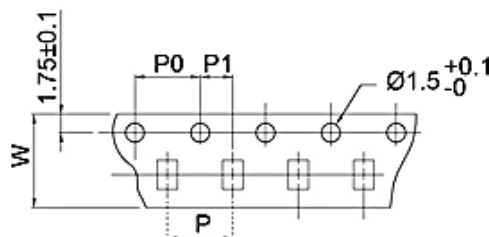


PACKAGING

CARRIER TAPE REELS



TAPE DIMENSION (mm)



Series	Reel Dimension (mm)				Tape Dimensions (mm)						Parts Per Reel
	A ±2.0	B ±2.0	C ±0.5	E ±0.5	W ±0.20	P ±0.10	P0 ±0.10	P1 ±0.10	t ±0.05	h ±0.10	
SIM02-17T	178.0	60.0	13.5	9.0	8.00	2.00	4.00	2.00	0.60	-	10,000
SIM03-17T	178.0	60.0	13.5	9.0	8.00	4.00	4.00	2.00	0.95	-	4,000
SIM05-17T	178.0	60.0	13.5	9.0	8.00	4.00	4.00	2.00	0.95	-	4,000
SIM05-17T	178.0	60.0	13.5	9.0	8.00	4.00	4.00	2.00	0.22	1.28	2,000

*Specifications subject to change without notice.