



RF Inductors / 射频电感器

● Chip Beads / 贴片磁珠	
○ Multilayer Chip Beads Inductors for High Current - MA Series -----	1
○ Multilayer Inductor - MB Series -----	3
● Chip Inductors / 贴片电感器	
○ Thin Film Chip Inductor - AL Series -----	8
○ Multilayer Chip Inductors for High Frequency - MF Series -----	12
○ Chip Inductors Multilayer - MI Series -----	15
● Air Core Choke Coils / 空心线圈电感器	
○ SMD Inductors Flat Top Air Core - AM Series -----	18
○ SMD Inductors Non-Flat Top Air Core - AD Series -----	25
● Wirewound Chip Inductors / 绕线贴片电感器	
○ SMD Inductors - Wirewound Chip Molded Type CM Series -----	26
○ SMD Wirewound Inductors Chip Open-Type - WL Series -----	30
○ Molded Type Chip Wirewound Inductor - EC Series -----	43
○ Chip Wirewound Inductor Molded Type - EM Series -----	47

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Chip Beads

Multilayer Chip Bead Inductors for High Current - MA Series

► Multilayer Chip Bead Inductor Features

High current rating up to 6A.

Excellent solderability and heat resistance.

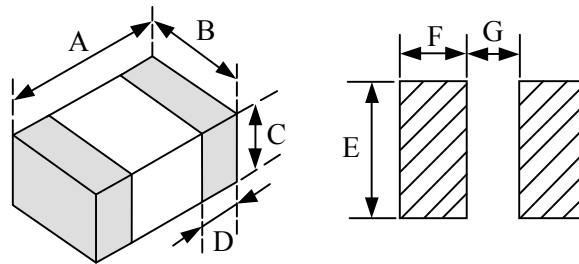
Closed magnetic circuit structure allows high density mounting while preventing crosstalk.

► Multilayer Chip Bead Inductor Applications

Notebook Computer, Disc Drive Unit(CD/DVD), Inkjet Printer, Hard Disk Drive, Copying Machine, Display Monitor, Gaming Machine, Color TV, Video Tape Recorder, DVD Player, Video Camera, Digital Still Camera, Car Electronics, Lowest EMI.

► Multilayer Chip Bead Inductor Configurations & Dimensions (unit: mm)

Land Pattern



Type	A	B	C	D	E	F	G
TCMA160808 (0603)	1.6 ± 0.2	0.8 ± 0.2	0.8 ± 0.2	0.3 ± 0.2	0.7	0.7	0.7
TCMA201209 (0805)	2.0 ± 0.2	1.2 ± 0.2	0.9 ± 0.2	0.5 ± 0.3	1.0	0.8	1.0
TCMA321611 (1206)	3.2 ± 0.2	1.6 ± 0.2	1.1 ± 0.2	0.5 ± 0.3	1.4	1.1	2.2
TCMA322513 (1210)	3.2 ± 0.2	2.5 ± 0.2	1.3 ± 0.2	0.5 ± 0.3	2.3	1.1	2.2
TCMA451616 (1806)	4.5 ± 0.2	1.6 ± 0.2	1.6 ± 0.2	0.5 ± 0.3	1.5	2.25	1.5
TCMA453215 (1812)	4.5 ± 0.2	3.2 ± 0.2	1.5 ± 0.2	0.5 ± 0.3	3.0	1.5	3.0

► Electrical Characteristics for TCMA Series Multilayer Chip Bead Inductors

Part Number	Impedance(Ω)	Tolerance(%)	Freq.(MHz)	DCR(Ω)(max)	IDC(A)(max)
TCMA160808 - U0030	30	25	100	0.030	3.0
TCMA160808 - U0060	60	25	100	0.040	3.0
TCMA160808 - U0120	120	25	100	0.100	2.5
TCMA160808 - U0300	300	25	100	0.150	2.0
TCMA160808 - U0600	600	25	100	0.200	1.0
TCMA201209 - B0007	7	25	100	0.030	3.0
TCMA201209 - U0011	11	25	100	0.010	6.0
TCMA201209 - U0017	17	25	100	0.025	3.0
TCMA201209 - U0022	22	25	100	0.025	3.0
TCMA201209 - U0030	30	25	100	0.025	3.0
TCMA201209 - U0120	120	25	100	0.060	3.0
TCMA201209 - U0300	300	25	100	0.100	2.0
TCMA201209 - U0600	600	25	100	0.150	2.0

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Chip Beads

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Part Number	Impedance(Ω)	Tolerance(%)	Freq.(MHz)	DCR(Ω)(max)	IDC(A)(max)
TCMA321611 - B0019	19	25	100	0.040	3.0
TCMA321611 - G0080	80	25	100	0.030	3.0
TCMA321611 - G0100	100	25	100	0.030	3.0
TCMA321611 - U0031	31	25	100	0.010	6.0
TCMA321611 - U0050	50	25	100	0.025	3.0
TCMA321611 - U0120	120	25	100	0.040	3.0
TCMA321611 - U0300	300	25	100	0.050	2.5
TCMA321611 - U0600	600	25	100	0.100	2.0
TCMA321611 - Z0026	26	25	100	0.010	6.0
TCMA322513 - U0030	30	25	100	0.050	3.0
TCMA322513 - U0052	52	25	100	0.050	3.0
TCMA322513 - U0065	65	25	100	0.030	3.0
TCMA451616 - U0060	60	25	100	0.010	6.0
TCMA451616 - U0075	75	25	100	0.025	3.0
TCMA451616 - U0080	80	25	100	0.050	3.0
TCMA453215 - U0070	70	25	100	0.030	6.0
TCMA453215 - U0120	120	25	100	0.050	3.0
TCMA453215 - Z0120	120	25	100	0.050	3.0

► How to Order

TCMA160808 - U 0030
① ② ③

① Multilayer Chip Beads Inductors for High Current :
 TCMA160808, TCMA201209, TCMA321611,
 TCMA322513, TCMA451616, TCMA453215.

② Material

③ Impedance



Chip Beads

Multilayer Inductor Chip Beads - MB Series

▶ Chip Bead Features

Excellent solderability and heat resistance.

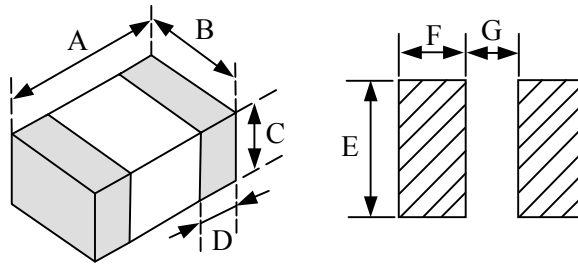
Closed magnetic circuit structure allows high density mounting while preventing crosstalk.

▶ Applications

Notebook Computer, Disc Drive Unit(CD/DVD), Inkjet Printer, Hard Disk Drive, Copying Machine, Display Monitor, Gaming Machine, Color TV, Video Tape Recorder, DVD Player, Video Camera, Digital Still Camera, Car Electronics, Lowest EMI.

▶ Chip Bead Configurations & Dimensions (unit: mm)

Land Pattern



Type	A	B	C	D	E	F	G
TCMB100505 (0402)	1.0 ± 0.1	0.5 ± 0.1	0.5 ± 0.1	0.1 (min)	0.5	0.45	0.5
TCMB160808 (0603)	1.6 ± 0.2	0.8 ± 0.2	0.8 ± 0.2	0.3 ± 0.2	0.7	0.7	0.7
TCMB201209 (0805)	2.0 ± 0.2	1.2 ± 0.2	0.9 ± 0.2	0.5 ± 0.3	1.0	0.8	1.0
TCMB321611 (1206)	3.2 ± 0.2	1.6 ± 0.2	1.1 ± 0.2	0.5 ± 0.3	1.4	1.1	2.2
TCMB321616 (1206)	3.2 ± 0.2	1.6 ± 0.2	1.6 ± 0.2	0.5 ± 0.3	1.4	1.1	2.2
TCMB322513 (1210)	3.2 ± 0.2	2.5 ± 0.2	1.3 ± 0.2	0.5 ± 0.3	2.3	1.1	2.2
TCMB451616 (1806)	4.5 ± 0.2	1.6 ± 0.2	1.6 ± 0.2	0.5 ± 0.3	1.5	2.25	1.5
TCMB453215 (1812)	4.5 ± 0.2	3.2 ± 0.2	1.5 ± 0.2	0.5 ± 0.3	3.0	1.5	3.0

▶ How to Order

TCMB100505 - U 0030
① ② ③

① Multilayer Chip Beads Inductor:

TCMB100505, TCMB160808, TCMB201209, TCMB321611, TCMB321616, TCMB322513, TCMB451616, TCMB453215

② Material

③ Impedance



Chip Beads

► Electrical Characteristics for TCMB100505 Series Chip Beads Multilayer Inductors

Part Number	Impedance(Ω)	Tolerance(%)	Freq.(MHz)	DCR(Ω)(max)	IDC(mA)(max)
TCMB100505 - B0030	30	25	100	0.40	200
TCMB100505 - B0060	60	25	100	0.50	200
TCMB100505 - B0120	120	25	100	0.70	100
TCMB100505 - B0220	220	25	100	0.90	100
TCMB100505 - B0300	300	25	100	1.00	100
TCMB100505 - G0030	30	25	100	0.30	500
TCMB100505 - G0060	60	25	100	0.40	200
TCMB100505 - G0120	120	25	100	0.50	200
TCMB100505 - G0220	220	25	100	0.70	100
TCMB100505 - G0300	300	25	100	0.80	100
TCMB100505 - G0450	450	25	100	0.90	100
TCMB100505 - G0600	600	25	100	1.00	100
TCMB100505 - U0030	30	25	100	0.30	500
TCMB100505 - U0060	60	25	100	0.40	200
TCMB100505 - U0120	120	25	100	0.50	200
TCMB100505 - U0220	220	25	100	0.70	100
TCMB100505 - U0300	300	25	100	0.80	100
TCMB100505 - U0450	450	25	100	0.90	100
TCMB100505 - U0600	600	25	100	1.00	100
TCMB100505 - Z0030	30	25	100	0.30	500
TCMB100505 - Z0060	60	25	100	0.40	200
TCMB100505 - Z0120	120	25	100	0.50	200
TCMB100505 - Z0220	220	25	100	0.70	100
TCMB100505 - Z0300	300	25	100	0.80	100
TCMB100505 - Z0450	450	25	100	0.90	100
TCMB100505 - Z0600	600	25	100	1.00	100





Chip Beads

► Electrical Characteristics for TCMB160808 Series Chip Beads Multilayer Inductors

Part Number	Impedance(Ω)	Tolerance(%)	Freq.(MHz)	DCR(Ω)(max)	IDC(mA)(max)
TCMB160808 - B0005	5	25	100	0.20	600
TCMB160808 - B0040	40	25	100	0.30	300
TCMB160808 - B0060	60	25	100	0.30	300
TCMB160808 - B0080	80	25	100	0.30	200
TCMB160808 - B0120	120	25	100	0.30	200
TCMB160808 - B0180	180	25	100	0.35	200
TCMB160808 - B0220	220	25	100	0.40	200
TCMB160808 - B0300	300	25	100	0.45	200
TCMB160808 - B0600	600	25	100	0.65	200
TCMB160808 - B1000	1000	25	100	0.80	50
TCMB160808 - G0060	60	25	100	0.20	300
TCMB160808 - G0080	80	25	100	0.20	300
TCMB160808 - G0120	120	25	100	0.20	200
TCMB160808 - G0220	220	25	100	0.20	200
TCMB160808 - G0300	300	25	100	0.35	200
TCMB160808 - G0450	450	25	100	0.40	200
TCMB160808 - G0600	600	25	100	0.45	200
TCMB160808 - G1000	1000	25	100	0.60	100
TCMB160808 - G1500	1500	25	100	0.70	50
TCMB160808 - G2000	2000	25	100	0.80	50
TCMB160808 - L0015	15	25	100	0.30	200
TCMB160808 - L0030	30	25	100	0.30	200
TCMB160808 - L0060	60	25	100	0.30	200
TCMB160808 - L0080	80	25	100	0.40	150
TCMB160808 - L0120	120	25	100	0.40	150
TCMB160808 - L0220	220	25	100	0.45	150
TCMB160808 - L0300	300	25	100	0.60	100
TCMB160808 - U0009	9	25	100	0.20	500
TCMB160808 - U0030	30	25	100	0.20	400
TCMB160808 - U0060	60	25	100	0.20	300
TCMB160808 - U0080	80	25	100	0.20	300
TCMB160808 - U0120	120	25	100	0.20	200
TCMB160808 - U0220	220	25	100	0.20	200
TCMB160808 - U0300	300	25	100	0.35	200
TCMB160808 - U0450	450	25	100	0.40	200
TCMB160808 - U0600	600	25	100	0.45	200
TCMB160808 - U1000	1000	25	100	0.60	100
TCMB160808 - Z0060	60	25	100	0.20	300
TCMB160808 - Z0080	80	25	100	0.20	300
TCMB160808 - Z0120	120	25	100	0.20	200
TCMB160808 - Z0220	220	25	100	0.20	200
TCMB160808 - Z0300	300	25	100	0.35	200
TCMB160808 - Z0450	450	25	100	0.40	250
TCMB160808 - Z0600	600	25	100	0.45	200
TCMB160808 - Z1000	1000	25	100	0.60	100





Chip Beads

► Electrical Characteristics for TCMB201209 Series Chip Beads Multilayer Inductors

Part Number	Impedance(Ω)	Tolerance(%)	Freq.(MHz)	DCR(Ω)(max)	IDC(mA)(max)
TCMB201209 - B0007	7	25	100	0.15	600
TCMB201209 - B0040	40	25	100	0.20	300
TCMB201209 - B0080	80	25	100	0.20	300
TCMB201209 - B0120	120	25	100	0.25	200
TCMB201209 - B0220	220	25	100	0.35	200
TCMB201209 - B0300	300	25	100	0.40	200
TCMB201209 - B0600	600	25	100	0.50	200
TCMB201209 - B1000	1000	25	100	0.60	200
TCMB201209 - G0080	80	25	100	0.15	300
TCMB201209 - G0120	120	25	100	0.25	300
TCMB201209 - G0150	150	25	100	0.25	300
TCMB201209 - G0220	220	25	100	0.30	200
TCMB201209 - G0300	300	25	100	0.30	200
TCMB201209 - G0500	500	25	100	0.30	200
TCMB201209 - G0600	600	25	100	0.35	200
TCMB201209 - G1000	1000	25	100	0.45	200
TCMB201209 - G1500	1500	25	100	0.55	200
TCMB201209 - G2000	2000	25	100	0.60	200
TCMB201209 - U0011	11	25	100	0.15	600
TCMB201209 - U0032	32	25	100	0.15	400
TCMB201209 - U0080	80	25	100	0.15	300
TCMB201209 - U0120	120	25	100	0.25	300
TCMB201209 - U0150	150	25	100	0.25	300
TCMB201209 - U0220	220	25	100	0.30	200
TCMB201209 - U0300	300	25	100	0.30	200
TCMB201209 - U0500	500	25	100	0.30	200
TCMB201209 - U0600	600	25	100	0.35	200
TCMB201209 - U1000	1000	25	100	0.45	200
TCMB201209 - Z0010	10	25	100	0.15	600
TCMB201209 - Z0080	80	25	100	0.15	300
TCMB201209 - Z0120	120	25	100	0.25	300
TCMB201209 - Z0150	150	25	100	0.25	300
TCMB201209 - Z0220	220	25	100	0.30	200
TCMB201209 - Z0300	300	25	100	0.30	200
TCMB201209 - Z0500	500	25	100	0.30	200
TCMB201209 - Z0600	600	25	100	0.35	200
TCMB201209 - Z1000	1000	25	100	0.45	200



Chip Beads

► Electrical Characteristics for TCMB321611 Series Chip Beads Multilayer Inductors

Part Number	Impedance(Ω)	Tolerance(%)	Freq.(MHz)	DCR(Ω)(max)	IDC(mA)(max)
TCMB321611 - B0019	19	25	100	0.20	500
TCMB321611 - G0150	150	25	100	0.30	300
TCMB321611 - G0300	300	25	100	0.30	300
TCMB321611 - G0600	600	25	100	0.30	200
TCMB321611 - U0031	31	25	100	0.20	500
TCMB321611 - U0060	60	25	100	0.30	400
TCMB321611 - U0090	90	25	100	0.30	300
TCMB321611 - U0150	150	25	100	0.30	300
TCMB321611 - U0300	300	25	100	0.30	300
TCMB321611 - U0600	600	25	100	0.30	200
TCMB321611 - U1200	1200	25	50	0.50	100
TCMB321611 - U2000	2000	25	30	0.60	100
TCMB321611 - Z0026	26	25	100	0.20	500
TCMB321611 - Z0150	150	25	100	0.30	300
TCMB321611 - Z0300	300	25	100	0.30	300
TCMB321611 - Z0600	600	25	100	0.30	200
TCMB321611 - Z1200	1200	25	50	0.50	100
TCMB321611 - Z2000	2000	25	30	0.60	100

► Electrical Characteristics for TCMB321616 Series Chip Beads Multilayer Inductors

Part Number	Impedance(Ω)	Tolerance(%)	Freq.(MHz)	DCR(Ω)(max)	IDC(mA)(max)
TCMB321616 - U0060	60	25	100	0.30	400

► Electrical Characteristics for TCMB322513 Series Chip Beads Multilayer Inductors

Part Number	Impedance(Ω)	Tolerance(%)	Freq.(MHz)	DCR(Ω)(max)	IDC(mA)(max)
TCMB322513 - B0031	31	25	100	0.30	400
TCMB322513 - U0060	60	25	100	0.30	400
TCMB322513 - U0090	90	25	100	0.30	300
TCMB322513 - Z0052	52	25	100	0.30	400

► Electrical Characteristics for TCMB451616 Series Chip Beads Multilayer Inductors

Part Number	Impedance(Ω)	Tolerance(%)	Freq.(MHz)	DCR(Ω)(max)	IDC(mA)(max)
TCMB451616 - U0060	60	25	100	0.10	500
TCMB451616 - U0150	150	25	100	0.30	300
TCMB451616 - U0080	80	25	100	0.10	500
TCMB451616 - Z0150	150	25	100	0.30	300

► Electrical Characteristics for TCMB453215 Series Chip Beads Multilayer Inductors

Part Number	Impedance(Ω)	Tolerance(%)	Freq.(MHz)	DCR(Ω)(max)	IDC(mA)(max)
TCMB453215 - B0070	70	25	100	0.30	300
TCMB453215 - U0130	130	25	100	0.30	300
TCMB453215 - Z0120	120	25	100	0.30	300



RF Inductors

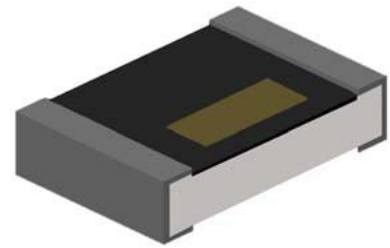
Thin Film Chip Inductor - AL Series

AL Chip Inductor Features

- A Photo Lithographic Single Layer Ceramic Chip.
- High SRF, Excellent Q, Superior Temperature Stability.
- Tight Tolerance of $\pm 1\%$ or $\pm 0.1\text{nH}$.
- Self Resonant Frequency Controlled within 10%.
- Stable Inductance in High Frequency Circuit.
- Highly Stable Design for Critical Needs.

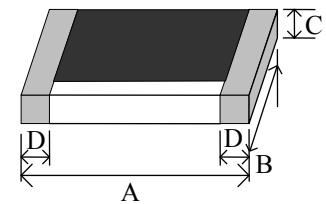
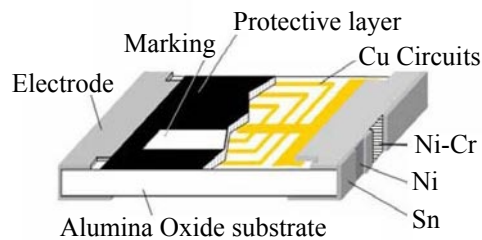
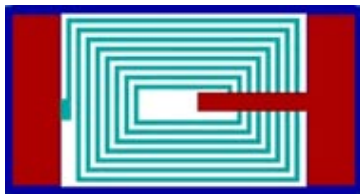
Applications

- Cellular Telephone, Pagers and GPS Products.
- VCO, TCXO Circuit and RF Transceiver Module.
- Wireless LAN, Bluetooth Module, Communication Appliances.



Thin Film Chip Inductor Construction & Dimensions (Unit: mm)

Codes	A	B	C	D
TCAL03 (0603)	1.6 ± 0.10	0.8 ± 0.10	0.45 ± 0.10	0.3 ± 0.20
TCAL02 (0402)	1.0 ± 0.05	0.5 ± 0.05	0.32 ± 0.05	0.2 ± 0.10



Standard Electrical Specifications for 0603 Chip Inductors

Inductance (nH)	Tolerance (% or nH)	Q (min)	DCR (Ω)(max)	IDC(mA)(max)	SRF(GHz)(min)
1.0	0.1/0.2/0.3nH	15 / 300MHz	0.35	800	13
1.2	0.1/0.2/0.3nH	15 / 300MHz	0.35	800	13
1.5	0.1/0.2/0.3nH	15 / 300MHz	0.35	800	10
1.8	0.1/0.2/0.3nH	15 / 300MHz	0.35	300	10
2.2	0.1/0.2/0.3nH	15 / 300MHz	0.35	300	8
2.7	0.1/0.2/0.3nH	15 / 300MHz	0.45	300	6
3.3	0.1/0.2/0.3nH	15 / 300MHz	0.45	300	6
3.9	0.1/0.2/0.3nH	15 / 300MHz	0.45	300	6
4.7	0.1/0.2/0.3nH	15 / 300MHz	0.55	300	5
5.6	0.1/0.2/0.3nH	15 / 300MHz	0.65	300	5
6.8	0.1/0.2/0.3nH	15 / 300MHz	0.75	300	5
8.2	0.1/0.2/0.3nH	15 / 300MHz	0.95	300	4
10	1/2/3/5%	15 / 300MHz	0.95	300	4
12	1/2/3/5%	15 / 300MHz	1.05	300	3
15	1/2/3/5%	15 / 300MHz	1.35	300	3
18	1/2/3/5%	15 / 300MHz	1.65	300	2

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RF Inductors

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Inductance (nH)	Tolerance (% or nH)	Q (min)	DCR (Ω)(max)	IDC (mA)(max)	SRF (GHz)(min)
22	1/2/3/5%	15 / 300MHz	1.95	250	2
27	1/2/3/5%	15 / 300MHz	2.35	250	2
33	1/2/3/5%	15 / 300MHz	2.75	250	1.5
39	1/2/3/5%	15 / 300MHz	3.00	200	1.5
47	1/2/3/5%	15 / 300MHz	3.00	200	1.5
56	1/2/3/5%	15 / 300MHz	5.00	150	1
68	1/2/3/5%	15 / 300MHz	5.00	150	1
100	1/2/3/5%	15 / 300MHz	7.50	100	1

Note: Test Equipment: HP4286A+Agilent 16196A

► Standard Electrical Specifications for 0402 Chip Inductors

Inductance (nH)	Tolerance (% or nH)	Q (min)	DCR (Ω)(max)	IDC (mA)(max)	SRF (GHz)(min)
0.2	0.1/0.2/0.3nH	13 / 500MHz	0.10	800	14
0.4	0.1/0.2/0.3nH	13 / 500MHz	0.10	800	14
0.8	0.1/0.2/0.3nH	13 / 500MHz	0.15	700	14
1.0	0.1/0.2/0.3nH	13 / 500MHz	0.15	700	12
1.2	0.1/0.2/0.3nH	13 / 500MHz	0.15	700	12
1.5	0.1/0.2/0.3nH	13 / 500MHz	0.25	700	10
1.6	0.1/0.2/0.3nH	13 / 500MHz	0.25	560	10
1.8	0.1/0.2/0.3nH	13 / 500MHz	0.25	560	10
2.0	0.1/0.2/0.3nH	13 / 500MHz	0.35	560	8
2.2	0.1/0.2/0.3nH	13 / 500MHz	0.35	440	8
2.7	0.1/0.2/0.3nH	13 / 500MHz	0.35	440	8
3.1	0.1/0.2/0.3nH	13 / 500MHz	0.45	380	6
3.3	0.1/0.2/0.3nH	13 / 500MHz	0.45	380	6
3.6	0.1/0.2/0.3nH	13 / 500MHz	0.55	380	6
3.9	0.1/0.2/0.3nH	13 / 500MHz	0.55	340	6
4.7	0.1/0.2/0.3nH	13 / 500MHz	0.65	320	6
5.6	0.1/0.2/0.3nH	13 / 500MHz	0.85	280	6
5.9	0.1/0.2/0.3nH	13 / 500MHz	0.85	280	6
6.8	0.1/0.2/0.3nH	13 / 500MHz	1.05	260	6
7.2	0.1/0.2/0.3nH	13 / 500MHz	1.05	260	6
8.0	0.1/0.2/0.3nH	13 / 500MHz	1.25	220	5.5
8.2	0.1/0.2/0.3nH	13 / 500MHz	1.25	220	5.5
9.1	0.1/0.2/0.3nH	13 / 500MHz	1.25	220	5.5
10	1/2/3/5%	13 / 500MHz	1.35	200	4.5
12	1/2/3/5%	13 / 500MHz	1.55	180	3.7
13.8	1/2/3/5%	13 / 500MHz	1.75	180	3.7
15	1/2/3/5%	13 / 500MHz	1.75	130	3.3
17	1/2/3/5%	13 / 500MHz	1.95	100	3.1
18	1/2/3/5%	13 / 500MHz	2.15	100	3.1
20.8	1/2/3/5%	13 / 500MHz	2.55	90	2.8
22	1/2/3/5%	13 / 500MHz	2.65	90	2.8
27	1/2/3/5%	13 / 500MHz	3.25	75	2.5
33	1/2/3/5%	13 / 500MHz	3.75	75	2.5

Note: Test Equipment: HP4286A+Agilent 16196B

Token is capable of manufacturing the optional spec based on customer's requirement.

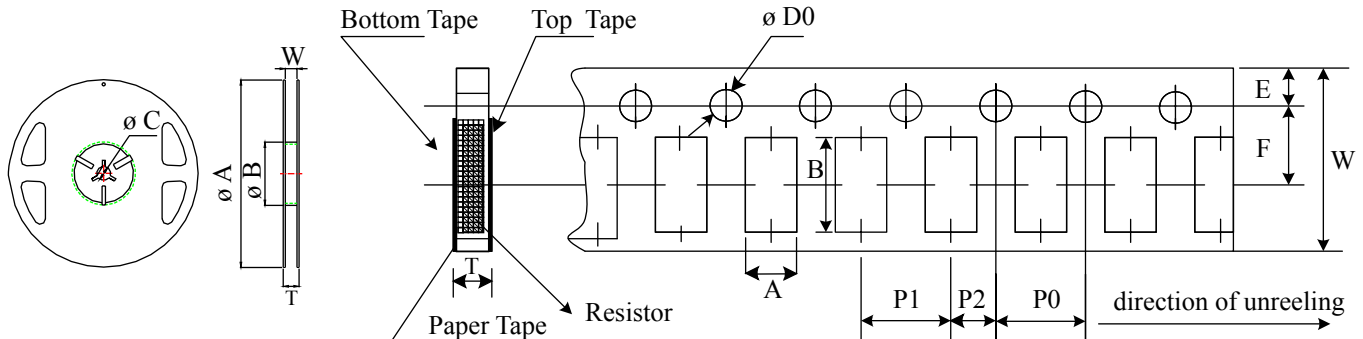




RF Inductors

► Thin Film Chip Inductor Reel Specifications & Packaging Quantity (Unit: mm)

Codes	ΦA	ΦB	ΦC	W	T	Paper Tape (PCS)
TCAL02	178 ± 1	60.2 ± 0.50	13.0 ± 0.50	13.2 ± 1.50	16.0 ± 0.20	10,000
TCAL03	178 ± 1	60.0 ± 0.50	13.0 ± 0.20	9.00 ± 0.50	12.0 ± 0.15	5,000



► Thin Film Chip Inductor Paper Tape Specifications (Unit: mm)

Codes	A	B	W ±0.10	E ±0.05	F ±0.05	P0 ±0.10	P1	P2 ±0.05	ΦD0	T
TCAL02	0.67±0.03	1.15±0.03	8.00	1.75	3.5	4.00	2.00±0.05	2.00	1.54±0.03	0.40±0.03
TCAL03	1.10±0.05	1.90±0.05	8.00	1.75	3.5	4.00	4.00±0.10	2.00	1.55±0.05	0.60±0.03

► Thin Film Chip Inductor Environmental Characteristics

Item	Specification	Test Method
Bending Test	As SPEC.	JIS-C-5202-6.1.4 Bending Amplitude 3mm for 10 seconds
Dielectric Withstand Voltage	>100V	MIL-STD-202F Method 301 Apply 100VA (rms) for 1minute.
Insulation Resistance	>1000MM	MIL-STD-202F Method 302 Apply 100VDC for 1minute.
Resistance to Soldering Heat	ΔL≤10%	MIL-STD-202F Method 210E 260±5°C, 10±1seconds
High Temperature Exposure	ΔL≤10%	JIS-C-5202-7.2 85±2°C, 1000 +48/-0 hours
Moisture Resistance	ΔL≤10%	MIL-STD-202F Method 103B 40±2°C, 90~95%RH, 1000 +48/-0 hours
Low Temperature Storage	ΔL≤10%	JIS-C-5202-7.1 -40±3°C, 1000 +48/-0 hours
Temperature Cycle	ΔL≤10%	JIS-C-5202-7.4 -40/RT/85/RT, 10 cycles
Solderability	95% min coverage	MIL-STD-202F Method 208H 235°C±5°C, 2±0.5(sec)

Note: Storage Temperature: 25±3°C; Humidity < 80%RH



RF Inductors

► How to Order



① Thin Film Chip Inductor

② Dimensions (L×W)(mm)

Code	Dimensions (L×W)	EIA
02	1.00×0.50 mm	0402
03	1.60×0.80 mm	0603

③ Inductance Tolerance

Code	Inductance Tolerance
J	±5%
H	±3%
G	±2%
F	±1%
S	±0.3nH
C	±0.2nH
B	±0.1nH

④ Packaging: T (Taping Reel)

⑤ Inductance

Code	Inductance
1N0	1.0nH
10N	10nH
20N8	20.8nH
R10	100nH



RF Inductors

Multilayer Chip Inductors for High Frequency - MF Series

► High Frequency Inductor Features

High Q and high reliability and ceramic material.

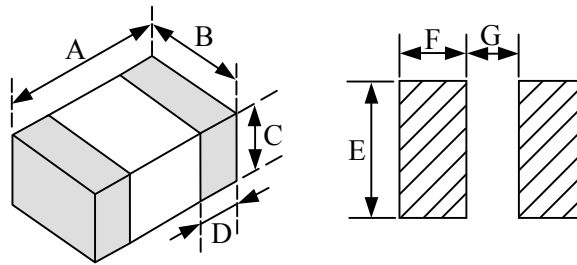
To prevent EMI interference noises between electronic circuits.

► High Frequency Inductor Applications

Notebook Computer, Disc Drive Unit(CD/DVD), Inkjet Printer, Hard Disk Drive, Copying Machine, Display Monitor, Gaming Machine, Color TV, Video Tape Recorder, DVD Player, Video Camera, Digital Still Camera, Car Electronics, Lowest EMI.

► High Frequency Inductor Configurations & Dimensions (unit: mm)

Land Pattern



Type	A	B	C	D	E	F	G
TCMF100505 (0402)	1.0 ± 0.1	0.5 ± 0.1	0.5 ± 0.1	0.1(min)	0.5	0.45	0.5
TCMF160808 (0603)	1.6 ± 0.2	0.8 ± 0.2	0.8 ± 0.2	0.3 ± 0.2	0.7	0.70	0.7
TCMF201209 (0805)	2.0 ± 0.2	1.2 ± 0.2	0.9 ± 0.2	0.5 ± 0.3	1.0	0.80	1.0

► Multilayer Chip Electrical Characteristics for TCMF100505 (0402) Series High Frequency Inductors

Part Number	Inductance (L)(nH)	Freq. (MHz)	Tolerance	SRF (MHz)(min)	DCR (Ω)(max)	IDC (mA)(max)
TCMF100505 - 1N2*	1.20	100	S	12000	0.10	300
TCMF100505 - 1N5*	1.50	100	S	10500	0.10	300
TCMF100505 - 1N8*	1.80	100	S	9400	0.10	300
TCMF100505 - 2N2*	2.20	100	S	8700	0.20	300
TCMF100505 - 2N7*	2.70	100	S	7700	0.20	300
TCMF100505 - 3N3*	3.30	100	S, K	6800	0.30	300
TCMF100505 - 3N9*	3.90	100	S, K	6300	0.30	300
TCMF100505 - 4N7*	4.70	100	S, K	5700	0.40	300
TCMF100505 - 5N6*	5.60	100	S, K	5100	0.40	300
TCMF100505 - 6N8*	6.80	100	J, K	4550	0.50	300
TCMF100505 - 8N2*	8.20	100	J, K	4100	0.50	300
TCMF100505 - 10N*	10.00	100	J, K	3750	0.60	300
TCMF100505 - 12N*	12.00	100	J, K	2950	0.60	300
TCMF100505 - 15N*	15.00	100	J, K	2600	0.70	300
TCMF100505 - 18N*	18.00	100	J, K	2350	0.80	300
TCMF100505 - 22N*	22.00	100	J, K	1950	0.90	300
TCMF100505 - 27N*	27.00	100	J, K	1750	1.00	300
TCMF100505 - 33N*	33.00	100	J, K	1700	1.50	200
TCMF100505 - 39N*	39.00	100	J, K	1650	1.80	200
TCMF100505 - 47N*	47.00	100	J, K	1300	2.00	200



RF Inductors

► Multilayer Chip Electrical Characteristics for TCMF160808 (0603) Series High Frequency Inductors

Part Number	Inductance (L)(nH)	Freq. (MHz)	Tolerance	SRF (MHz)(min)	DCR (Ω)(max)	IDC (mA)(max)
TCMF160808 - 1N2*	1.20	100	S	>6000	0.12	300
TCMF160808 - 1N5*	1.50	100	S	>6000	0.12	300
TCMF160808 - 1N8*	1.80	100	S	>6000	0.12	300
TCMF160808 - 2N2*	2.20	100	S	>6000	0.16	300
TCMF160808 - 2N7*	2.70	100	S	>6000	0.20	300
TCMF160808 - 3N3*	3.30	100	S, K	5700	0.22	300
TCMF160808 - 3N9*	3.90	100	S, K	5600	0.25	300
TCMF160808 - 4N7*	4.70	100	S, K	4800	0.28	300
TCMF160808 - 5N6*	5.60	100	S, K	4350	0.29	300
TCMF160808 - 6N8*	6.80	100	J, K	3750	0.30	300
TCMF160808 - 8N2*	8.20	100	J, K	3300	0.33	300
TCMF160808 - 10N*	10.00	100	J, K	2850	0.35	300
TCMF160808 - 12N*	12.00	100	J, K	2700	0.40	300
TCMF160808 - 15N*	15.00	100	J, K	2400	0.45	300
TCMF160808 - 18N*	18.00	100	J, K	2050	0.50	300
TCMF160808 - 22N*	22.00	100	J, K	1850	0.55	300
TCMF160808 - 27N*	27.00	100	J, K	1750	0.60	300
TCMF160808 - 33N*	33.00	100	J, K	1500	0.65	300
TCMF160808 - 39N*	39.00	100	J, K	1350	0.70	300
TCMF160808 - 47N*	47.00	100	J, K	1200	0.90	300
TCMF160808 - 56N*	56.00	100	J, K	1100	1.00	300
TCMF160808 - 68N*	68.00	100	J, K	1000	1.50	300
TCMF160808 - 82N*	82.00	100	J, K	900	1.80	300
TCMF160808 - R10*	100.00	100	J, K	830	2.10	300



RF Inductors

► Multilayer Chip Electrical Characteristics for TCMF201209 (0805) Series High Frequency Inductors

Part Number	Inductance (L)(nH)	Freq. (MHz)	Tolerance	SRF (MHz)(min)	DCR (Ω)(max)	IDC (mA)(max)
TCMF201209 - 1N5*	1.50	100	S	>6000	0.10	300
TCMF201209 - 1N8*	1.80	100	S	>6000	0.10	300
TCMF201209 - 2N2*	2.20	100	S	>6000	0.10	300
TCMF201209 - 2N7*	2.70	100	S	>6000	0.10	300
TCMF201209 - 3N3*	3.30	100	S, K	>6000	0.13	300
TCMF201209 - 3N9*	3.90	100	S, K	5400	0.15	300
TCMF201209 - 4N7*	4.70	100	S, K	4500	0.20	300
TCMF201209 - 5N6*	5.60	100	S, K	4000	0.23	300
TCMF201209 - 6N8*	6.80	100	J, K	3650	0.25	300
TCMF201209 - 8N2*	8.20	100	J, K	3000	0.28	300
TCMF201209 - 10N*	10.00	100	J, K	2500	0.30	300
TCMF201209 - 12N*	12.00	100	J, K	2450	0.35	300
TCMF201209 - 15N*	15.00	100	J, K	2000	0.40	300
TCMF201209 - 18N*	18.00	100	J, K	1750	0.45	300
TCMF201209 - 22N*	22.00	100	J, K	1700	0.50	300
TCMF201209 - 27N*	27.00	100	J, K	1550	0.55	300
TCMF201209 - 33N*	33.00	100	J, K	1350	0.60	300
TCMF201209 - 39N*	39.00	100	J, K	1300	0.65	300
TCMF201209 - 47N*	47.00	100	J, K	1200	0.70	300
TCMF201209 - 56N*	56.00	100	J, K	1150	0.75	300
TCMF201209 - 68N*	68.00	100	J, K	1000	0.85	300
TCMF201209 - 82N*	82.00	100	J, K	850	0.90	300
TCMF201209 - R10*	100.00	100	J, K	730	1.00	300

► How to Order

TCMF100505	-	1N2	S
❶		❷	❸

❶ Multilayer Chip Inductors for High Frequency : (TCMF100505, TCMF160808, TCMF201209)

❷ Inductance

Code	Inductance
1N2	1.2nH
10N	10.0nH
R10	100.00nH

❸ Tolerance

Code	Tolerance
S	0.3nH
J	5%
K	10%
M	20%



RF Inductors

Multilayer Chip Inductors - MI Series

► Multilayer Chip Inductor Features

High Q and high reliability and ceramic material.

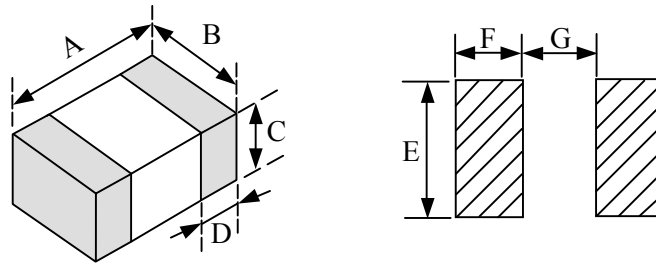
To prevent EMI interference noises between electronic circuits

► Multilayer Chip Inductor Applications

Notebook Computer, Disc Drive Unit(CD/DVD), Inkjet Printer, Hard Disk Drive, Copying Machine, Display Monitor, Gaming Machine, Color TV, Video Tape Recorder, DVD Player, Video Camera, Digital Still Camera, Car Electronics, Lowest EMI.

► Multilayer Chip Inductor Configurations & Dimensions (unit: mm)

Land Pattern



Type	A	B	C	D	E	F	G
TCMI160808 (0603)	1.6 ± 0.2	0.8 ± 0.2	0.8 ± 0.2	0.3 ± 0.2	0.7	0.7	0.7
TCMI201209 (0805)	2.0 ± 0.2	1.2 ± 0.2	0.9 ± 0.2	0.5 ± 0.3	1.0	0.8	1.0
TCMI201212 (0805)	2.0 ± 0.2	1.2 ± 0.2	1.2 ± 0.2	0.5 ± 0.3	1.0	0.8	1.0
TCMI321611 (1206)	3.2 ± 0.2	1.6 ± 0.2	1.1 ± 0.2	0.5 ± 0.3	1.4	1.1	2.2

► Electrical Characteristics for TCMI160808 (0603) Series Multilayer Chip Inductors

Part Number	Inductance (L)(μH)	Q(min)	Test Freq. (MHz)	SRF (MHz)(min)	DCR (Ω)(max)	IDC (mA)(max)
TCMI160808 - 47NM	0.047	10	50	260	0.300	50
TCMI160808 - 68NM	0.068	10	50	250	0.300	50
TCMI160808 - R10K	0.10	15	25	240	0.500	50
TCMI160808 - R12K	0.12	15	25	205	0.500	50
TCMI160808 - R15K	0.15	15	25	180	0.600	50
TCMI160808 - R18K	0.18	15	25	165	0.600	50
TCMI160808 - R22K	0.22	15	25	150	0.800	50
TCMI160808 - R27K	0.27	15	25	136	0.800	50
TCMI160808 - R33K	0.33	15	25	125	0.850	35
TCMI160808 - R39K	0.39	15	25	110	1.000	35
TCMI160808 - R47K	0.47	15	25	105	1.350	35
TCMI160808 - R56K	0.56	15	25	95	1.550	35
TCMI160808 - R68K	0.68	15	25	90	1.700	35
TCMI160808 - R82K	0.82	15	25	85	2.100	35
TCMI160808 - 1R0K	1.00	35	10	75	0.600	25
TCMI160808 - 1R2K	1.20	35	10	65	0.800	25
TCMI160808 - 1R5K	1.50	35	10	60	0.800	25
TCMI160808 - 1R8K	1.80	35	10	55	0.950	25
TCMI160808 - 2R2K	2.20	35	10	50	1.150	15



RF Inductors

► Electrical Characteristics for TCMi201209/12 (0805) Series Multilayer Chip Inductors

Part Number	Inductance(L)(μ H)	Q(min)	Test Freq. (MHz)	SRF(MHz) (min)	DCR (Ω)(max)	IDC (mA)(max)
TCMI201209 - 47NM	0.047	15	50	320	0.200	300
TCMI201209 - 68NM	0.068	15	50	280	0.200	300
TCMI201209 - R10K	0.10	20	25	235	0.300	250
TCMI201209 - R12K	0.12	20	25	220	0.300	250
TCMI201209 - R15K	0.15	20	25	200	0.400	250
TCMI201209 - R18K	0.18	20	25	185	0.400	250
TCMI201209 - R22K	0.22	20	25	170	0.500	250
TCMI201209 - R27K	0.27	20	25	150	0.500	250
TCMI201209 - R33K	0.33	20	25	145	0.550	250
TCMI201209 - R39K	0.39	25	25	135	0.650	200
TCMI201209 - R47K	0.47	25	25	125	0.650	200
TCMI201209 - R56K	0.56	25	25	115	0.750	150
TCMI201209 - R68K	0.68	25	25	105	0.800	150
TCMI201209 - R82K	0.82	25	25	100	1.000	150
TCMI201209 - 1R0K	1.00	45	10	75	0.400	50
TCMI201209 - 1R2K	1.20	45	10	65	0.500	50
TCMI201209 - 1R5K	1.50	45	10	60	0.500	50
TCMI201209 - 1R8K	1.80	45	10	55	0.600	50
TCMI201209 - 2R2K	2.20	45	10	50	0.650	30
TCMI201212 - 2R7K	2.70	45	10	45	0.750	30
TCMI201212 - 3R3K	3.30	45	10	41	0.800	30
TCMI201212 - 3R9K	3.90	45	10	38	0.900	30
TCMI201212 - 4R7K	4.70	45	10	35	1.000	30
TCMI201212 - 5R6K	5.60	50	4	32	0.900	15
TCMI201212 - 6R8K	6.80	50	4	29	1.000	15
TCMI201212 - 8R2K	8.20	50	4	26	1.100	15
TCMI201212 - 100K	10.00	50	2	24	1.150	15





RF Inductors

► Electrical Characteristics for TCMi321611 (1206) Series Multilayer Chip Inductors

Part Number	Inductance(L)(μ H)	Q(min)	Test Freq. (MHz)	SRF(MHz) (min)	DCR(Ω) (max)	IDC(mA) (max)
TCMI321611 - 47NM	0.047	20	50	320	0.150	300
TCMI321611 - 68NM	0.068	20	50	280	0.250	300
TCMI321611 - R10K	0.10	20	25	235	0.250	250
TCMI321611 - R12K	0.12	20	25	220	0.300	250
TCMI321611 - R15K	0.15	20	25	200	0.300	250
TCMI321611 - R18K	0.18	20	25	185	0.400	250
TCMI321611 - R22K	0.22	20	25	170	0.400	250
TCMI321611 - R27K	0.27	20	25	150	0.500	250
TCMI321611 - R33K	0.33	20	25	145	0.600	250
TCMI321611 - R39K	0.39	25	25	135	0.500	200
TCMI321611 - R47K	0.47	25	25	125	0.600	200
TCMI321611 - R56K	0.56	25	25	115	0.700	150
TCMI321611 - R68K	0.68	25	25	105	0.800	150
TCMI321611 - R82K	0.82	25	25	100	0.900	150
TCMI321611 - 1R0K	1.00	45	10	75	0.400	100
TCMI321611 - 1R2K	1.20	45	10	65	0.500	100
TCMI321611 - 1R5K	1.50	45	10	60	0.500	50
TCMI321611 - 1R8K	1.80	45	10	55	0.500	50
TCMI321611 - 2R2K	2.20	45	10	50	0.600	50
TCMI321611 - 2R7K	2.70	45	10	45	0.600	50
TCMI321611 - 3R3K	3.30	45	10	41	0.700	50
TCMI321611 - 3R9K	3.90	45	10	38	0.800	50
TCMI321611 - 4R7K	4.70	45	10	35	0.900	50
TCMI321611 - 5R6K	5.60	50	4	32	0.700	25
TCMI321611 - 6R8K	6.80	50	4	29	0.800	25
TCMI321611 - 8R2K	8.20	50	4	26	0.900	25
TCMI321611 - 100K	10.00	50	2	24	1.000	25

► How to Order

TCMI160808	-	47N	M
❶		❷	❸

❶ Multilayer Chip Inductors: TCMi160808, TCMi201209, TCMi201212, TCMi321611

❷ Inductance

Code	Inductance
47N	0.047 μ H
R10	0.10 μ H
1R0	1.00 μ H
100	10.00 μ H

❸ Tolerance

Code	Tolerance
S	0.3nH
J	5%
K	10%
M	20%



RF Inductors

SMD Inductors Flat Top Air Core - AM Series

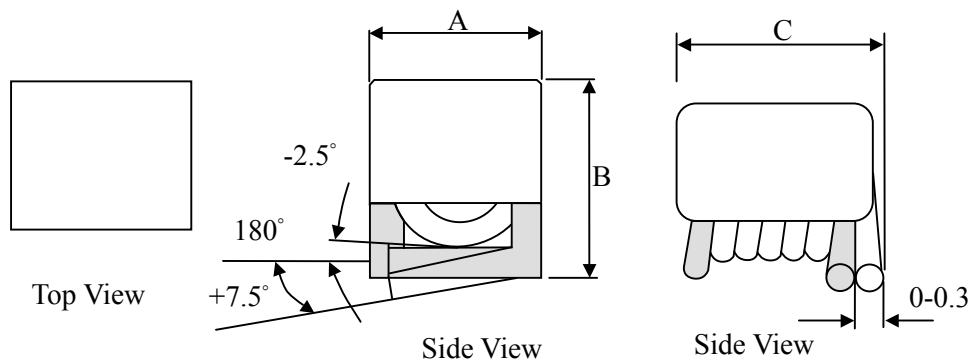
► Air Core Coil Inductor Features

- High frequency
- Excellent SRFs and high Q
- Good constitutive property and easy to operate

► Air Core Coil Inductor Applications

- Pager, Cordless phone & High Freq. Communication Products
- Intercom, CATV

► Air Core Coil Inductor Dimensions & Configurations (Unit In mm)



Type	A(max)	B(max)	C ± 0.2
TCAM0603	1.80	2.00	2.00
TCAM0805	1.80	2.10	2.85
TCAM1008	1.90	2.20	3.20

► Electrical Characteristics for TCAM0603 Series Air Core Coil Inductors

Part Number	Inductance (L)(nH)	Q (min)	Test Freq. (MHz)	SRF (MHz)(min)	DCR (mΩ)(max)	IDC (mA)(max)
TCAM0603 - 3N9K	3.9	80	300	>3000	3.0	950
TCAM0603 - 4N7K	4.7	80	300	>3000	3.6	900
TCAM0603 - 5N6K	5.6	80	300	>3000	3.8	950
TCAM0603 - 6N8K	6.8	80	300	>3000	4.5	900
TCAM0603 - 8N2K	8.2	80	300	>3000	5.3	840
TCAM0603 - 10NK	10.0	70	300	>3000	6.9	600
TCAM0603 - 12NK	12.0	70	300	>3000	8.3	600
TCAM0603 - 15NK	15.0	70	300	2500	11.5	500
TCAM0603 - 18NK	18.0	70	300	2500	12.8	500
TCAM0603 - 22NK	22.0	70	300	2400	11.3	550
TCAM0603 - 27NK	27.0	70	300	1600	17.0	500
TCAM0603 - 33NK	33.0	70	300	1600	26.9	320
TCAM0603 - 39NK	39.0	70	300	1500	30.7	320
TCAM0603 - 47NK	47.0	70	300	1500	34.5	320
TCAM0603 - 56NK	56.0	70	300	1300	38.4	320



RF Inductors

► Electrical Characteristics for TCAM0805 Series Air Core Coil Inductors

Part Number	Inductance (L)(nH)	Q (min)	Test Freq. (MHz)	SRF (MHz)(min)	DCR (mΩ)(max)	IDC (mA)(max)
TCAM0805 - 3N9K	3.9	80	300	>3000	2.6	1200
TCAM0805 - 4N7K	4.7	80	300	>3000	3.6	900
TCAM0805 - 5N6K	5.6	80	300	>3000	3.7	950
TCAM0805 - 6N8K	6.8	80	300	>3000	4.5	900
TCAM0805 - 8N2K	8.2	80	300	>3000	5.3	840
TCAM0805 - 10NK	10.0	70	300	>3000	5.4	900
TCAM0805 - 12NK	12.0	70	300	>3000	6.3	900
TCAM0805 - 15NK	15.0	70	300	2500	7.2	900
TCAM0805 - 18NK	18.0	70	300	2500	12.5	500
TCAM0805 - 22NK	22.0	70	300	2400	12.9	550
TCAM0805 - 27NK	27.0	70	300	1600	14.5	550
TCAM0805 - 33NK	33.0	70	300	1600	18.7	500
TCAM0805 - 39NK	39.0	70	300	1500	25.7	380
TCAM0805 - 47NK	47.0	70	300	1500	34.5	320
TCAM0805 - 56NK	56.0	70	300	1300	38.4	320
TCAM0805 - 68NK	68.0	70	300	1300	42.2	320

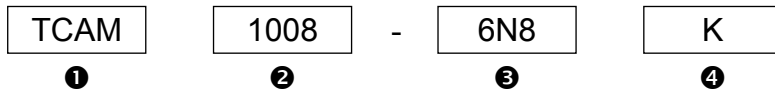
► Electrical Characteristics for TCAM1008 Series Air Core Coil Inductors

Part Number	Inductance (L)(nH)	Q (min)	Test Freq. (MHz)	SRF (MHz)(min)	DCR (mΩ)(max)	IDC (mA)(max)
TCAM1008 - 6N8K	6.8	80	300	>3000	4.0	1200
TCAM1008 - 8N2K	8.2	80	300	>3000	5.0	950
TCAM1008 - 10NK	10.0	70	300	>3000	6.0	950
TCAM1008 - 12NK	12.0	70	300	>3000	6.5	900
TCAM1008 - 15NK	15.0	70	300	2500	7.3	900
TCAM1008 - 18NK	18.0	70	300	2500	9.6	840
TCAM1008 - 22NK	22.0	70	300	2400	10.8	840
TCAM1008 - 27NK	27.0	70	300	1600	13.9	600
TCAM1008 - 33NK	33.0	70	300	1600	19.5	500
TCAM1008 - 39NK	39.0	70	300	1500	21.6	500
TCAM1008 - 47NK	47.0	70	300	1500	25.2	470
TCAM1008 - 56NK	56.0	70	300	1300	27.5	470
TCAM1008 - 68NK	68.0	70	300	1300	37.1	380
TCAM1008 - 82NK	82.0	70	300	1000	51.5	320
TCAM1008 - R10K	100.0	70	300	1000	55.5	320
TCAM1008 - R12K	120.0	70	300	950	63.4	320



RF Inductors

► How to Order



① SMD Flat Top Air Core Inductors

② Size

Code	Size
0603	TCAM0603
0805	TCAM0805
1008	TCAM1008

③ Inductance

Code	Inductance
6N8	6.8nH
10N	10.0nH
R10	100.00nH

④ Tolerance

Code	Tolerance
K	10%
M	20%



RF Inductors

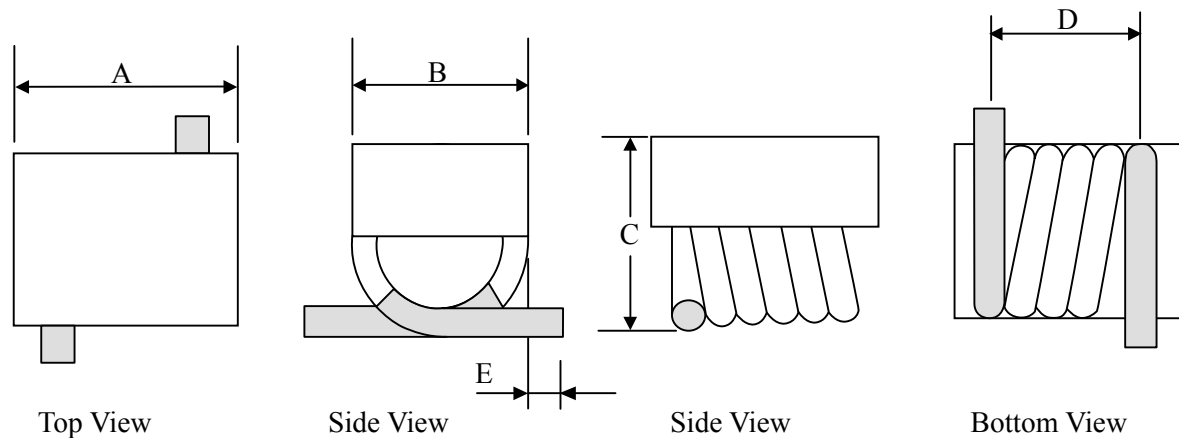
► SMD Air Core Inductor Features

- High frequency
- Excellent SRFs and high Q
- Good constitutive property and easy to operate

► SMD Air Core Inductor Applications

- Pager, Cordless phone & High Freq. Communication Products
- Intercom, CATV

► SMD Air Core Inductor Dimensions & Configurations (Unit In mm)



Type	A	B	C	D	E
TCAM2215	2.2 ± 0.3	1.4 ± 0.2	1.4 ± 0.2	1.8 ± 0.3	0.9 ± 0.3
TCAM4015	4.0 ± 0.3	1.4 ± 0.2	1.4 ± 0.2	3.5 ± 0.3	0.9 ± 0.3
TCAM132	9.0(max)	4.4 ± 0.3	4.6 ± 0.4	8.0 ± 0.5	1.3 ± 0.4

► Electrical Characteristics for TCAM2215 Series SMD Air Core Inductors

Part Number	Turns	Inductance(L)(nH)	Q(min)	Test Freq.(MHz)	SRF(GHz)(min)
TCAM2215 - 02	2	$1.65 \pm 10\%$	100	800	>3.0
TCAM2215 - 03	3	$2.55 \pm 10\%$	100	800	>3.0
TCAM2215 - 04	4	$3.85 \pm 10\%$	100	800	>3.0
TCAM2215 - 05	5	$5.45 \pm 5\%$	100	800	>3.0

► Electrical Characteristics for TCAM4015 Series SMD Air Core Inductors

Part Number	Turns	Inductance(L)(nH)	Q(min)	Test Freq.(MHz)	SRF(GHz)(min)
TCAM4015 - 06	6	$5.60 \pm 5\%$	100	800	>3.0
TCAM4015 - 07	7	$7.15 \pm 5\%$	100	800	>3.0
TCAM4015 - 08	8	$8.80 \pm 5\%$	100	800	>3.0
TCAM4015 - 09	9	$9.85 \pm 5\%$	100	800	>3.0
TCAM4015 - 10	10	$12.55 \pm 5\%$	100	800	>3.0

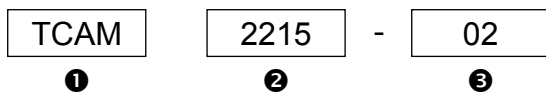


RF Inductors

► Electrical Characteristics for TCAM132 Series SMD Air Core Inductors

Part Number	Turns	Inductance(L)(nH)	Q(min)	Test Freq.(MHz)	SRF(GHz)(min)
TCAM132 - 09	9	90 ± 5%	100	50	>1.0
TCAM132 - 10	10	111 ± 5%	100	50	>1.0
TCAM132 - 11	11	130 ± 5%	100	50	>0.9
TCAM132 - 12	12	169 ± 5%	100	50	>0.8
TCAM132 - 13	13	206 ± 5%	100	50	>0.7
TCAM132 - 14	14	222 ± 5%	100	50	>0.6
TCAM132 - 15	15	246 ± 5%	100	50	>0.6
TCAM132 - 16	16	307 ± 5%	100	50	>0.5
TCAM132 - 17	17	380 ± 5%	100	50	>0.5
TCAM132 - 18	18	422 ± 5%	100	50	>0.4
TCAM132 - 19	19	491 ± 5%	100	50	>0.4
TCAM132 - 20	20	538 ± 5%	100	50	>0.4

► How to Order



❶ SMD Flat Top Air Core Inductors

❷ Size

Code	Size
2215	TCAM2215
4015	TCAM4015
132	TCAM132

❸ Turns





RF Inductors

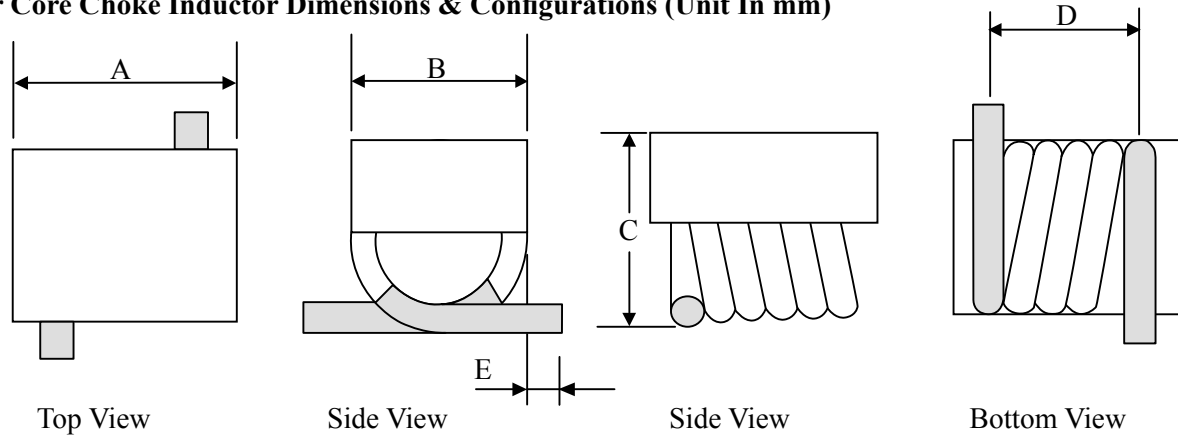
Air Core Choke Inductor Features

- High frequency
- Excellent SRFs and high Q
- Good constitutive property and easy to operate

Air Core Choke Inductor Applications

- Pager, Cordless phone & High Freq. Communication Products
- Intercom, CATV

Air Core Choke Inductor Dimensions & Configurations (Unit In mm)



Type	A ± 0.3	B ± 0.2	C ± 0.2	D ± 0.3	E ± 0.2
TCAM3730	3.30	2.60	2.70	2.90	0.70
TCAM7030	6.30	3.60	3.70	5.80	0.70

SMD Flat Top Electrical Characteristics for TCAM3730 Series Air Core Choke Inductors

Part Number	Turns	Inductance(L)(nH)	Q(min)	Test Freq.(MHz)	SRF(GHz)(min)
TCAM3730 - A01T	1	2.5 ± 10%	145	150	>3.0
TCAM3730 - A02T	2	5.0 ± 10%	140	150	>3.0
TCAM3730 - A03T	3	8.0 ± 10%	140	150	>3.0
TCAM3730 - A04T	4	12.5 ± 5%	137	150	>3.0
TCAM3730 - A05T	5	18.5 ± 5%	132	150	>2.5

SMD Flat Top Electrical Characteristics for TCAM7030 Series Air Core Choke Inductors

Part Number	Turns	Inductance(L)(nH)	Q(min)	Test Freq.(MHz)	SRF(GHz)(min)
TCAM7030 - B06T	6	17.5 ± 5%	100	150	>2.2
TCAM7030 - B07T	7	22.0 ± 5%	100	150	>2.0
TCAM7030 - B08T	8	28.0 ± 5%	100	150	>1.8
TCAM7030 - B09T	9	35.5 ± 5%	100	150	>1.2
TCAM7030 - B10T	10	43.5 ± 5%	100	150	>1.0

How to Order

TCAM
3730
-
A01T

①
②
③

① SMD Flat Top Air Core Inductors

③ Turns

② Size

Code	Size
3730	TCAM3730
7030	TCAM7030



RF Inductors

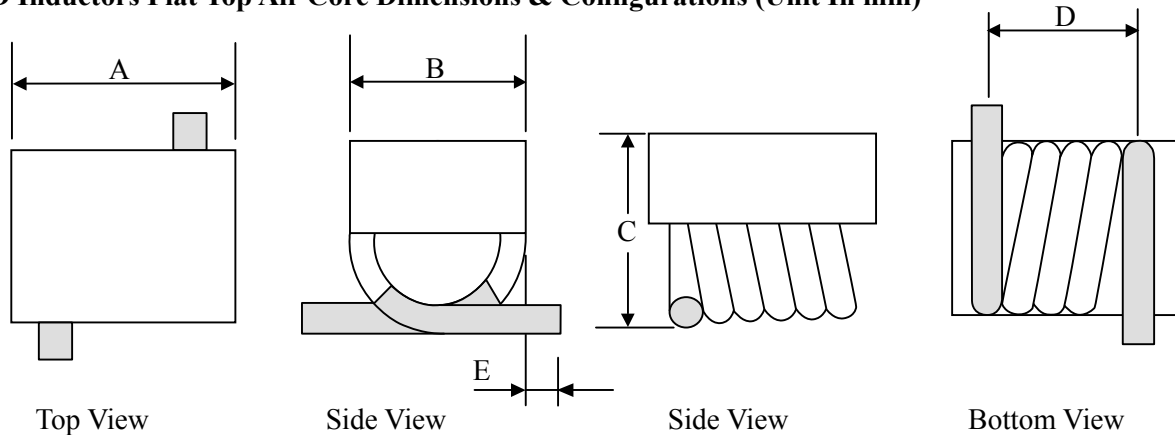
Air Core Inductor Features

- High frequency
- Excellent SRFs and high Q
- The good constitutive property and easy to operate

Air Core Inductor Applications

- Pager, Cordless phone & High Freq. Communication Products
- Intercom, CATV

SMD Inductors Flat Top Air Core Dimensions & Configurations (Unit In mm)

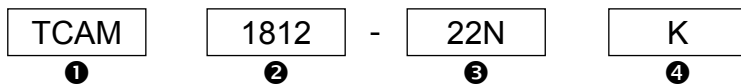


Type	A ± 0.3	B ± 0.2	C ± 0.2	D ± 0.4	E ± 0.3
TCAM1812	4.90	3.50	3.50	4.30	1.00

SMD Inductors Flat Top Electrical Characteristics for TCAM1812 Series Air Core Inductors

Part Number	Inductance(L)(nH)	Q(min)	Test Freq.(MHz)	SRF(GHz)(min)
TCAM1812 - 22NK	22	100	150	3.20
TCAM1812 - 27NK	27	100	150	2.70
TCAM1812 - 33NK	33	100	150	2.50
TCAM1812 - 39NJ	39	100	150	2.10
TCAM1812 - 47NJ	47	100	150	2.10
TCAM1812 - 56NJ	56	100	150	1.50
TCAM1812 - 68NJ	68	100	150	1.50
TCAM1812 - 82NJ	82	100	150	1.30
TCAM1812 - R10J	100	100	150	1.20
TCAM1812 - R12J	120	100	150	1.10

How to Order



① SMD Inductors Flat Top Air Core

③ Inductance

Code	Inductance
22N	22nH
R10	100.00nH

② Size

Code	Size
1812	TCAM1812

④ Tolerance

Code	Tolerance
J	5%
K	10%



RF Inductors

SMD Inductors Non-Flat Top Air Core - AD Series

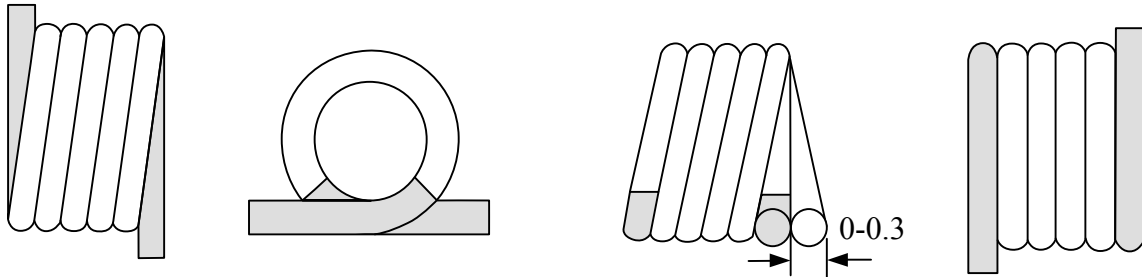
▶ Non-Flat Top Air Core SMD Inductor Features

High frequency
Highest possible SRFs as well as excellent Q values

▶ Non-Flat Top Air Core SMD Inductor Applications

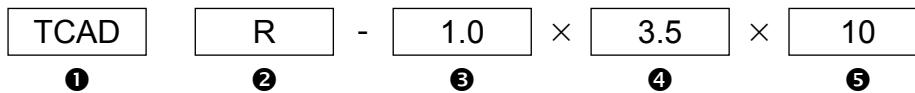
Pager, Cordless phone & High Freq. Communication Products

▶ Non-Flat Top Air Core SMD Inductor Configurations & Dimensions (unit: mm)



Note: Design as Customer's Requested Specifications.

▶ How to Order



① SMD Non-flat Top Air Core Inductors

② Type of Winding

Code	Type of Winding
R	Clockwise winding
L	Counter clockwise winding

③ Wire Diameter (mm)

④ Inner Diameter (mm)

⑤ Numbers of Turns



RF Inductors

SMD Inductors - Wirewound Chip Molded Type CM Series

► A Brief Introduction to the Product

SMD Inductors - CM322522 and CM453232 series are revolutionary, high reliable wire wound components for communication, equipment, instruments, video & audio have been developed in response to the trend toward higher density mounting of parts in electric circuits.

► Wirewound Chip Inductor Features

- High resistance to heat and humidity.
- Resistant to mechanical shocks and pressures. Accurate dimensions for automatically surface mounted.

► Wirewound Chip Inductor Applications

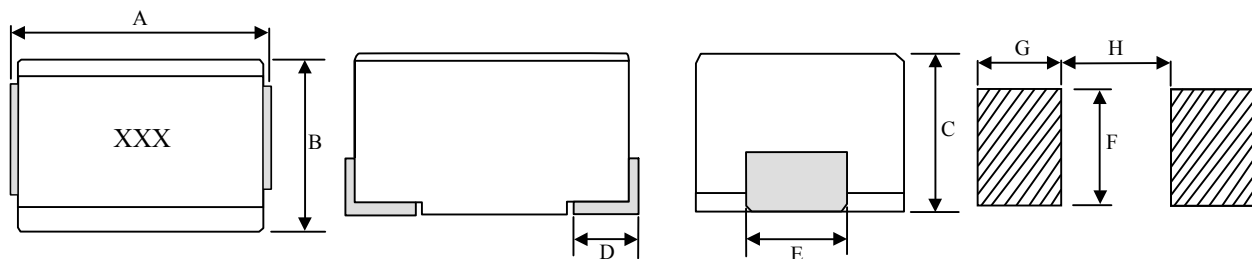
- Communication Products .
- Liquid crystal TV, Video camera .

► Materials

- Ferrite DR core, enamelled copper wire, tinned copper flat, epoxy novolac moldind compound

► SMD Inductor Wirewound Chip Molded Type Configurations & Dimensions (unit: mm)

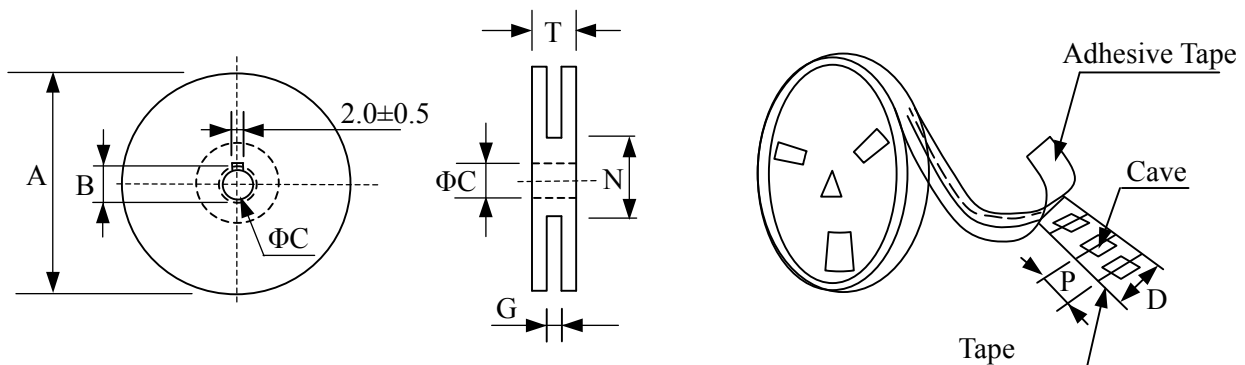
Land Pattern



Type	A	B	C	D	E	F	G	H
TCCM322522(1210)	3.2 ± 0.3	2.5 ± 0.2	2.2 ± 0.2	$0.4^{+0.1}_{-0}$	1.9 ± 0.1	3.0	1.0	2.0
TCCM453232(1812)	4.5 ± 0.3	3.2 ± 0.2	3.2 ± 0.2	$0.4^{+0.1}_{-0}$	2.6 ± 0.1	4.0	1.5	3.0

► Wirewound Chip Inductor Type Packaging

TYPE	A	B	C	D	G	N	T
8mm	178	21.0 ± 0.8	13.0 ± 0.5	8	10 max	50 min	14.4 max
12mm	178	21.0 ± 0.8	13.0 ± 0.5	10	14 max	50 min	14.4 max





RF Inductors

► Electrical Characteristics for TCCM322522(1210) Series Wirewound Chip Inductors

Part No.	Inductance (μ H)	Q (min)	Test Freq. (MHZ)	SRF (MHz)(min)	DCR (Ω)(max)	IDC (mA)
TCCM322522 - R12M	0.12 \pm 20%	30	25.2	500	0.22	450
TCCM322522 - R15M	0.15 \pm 20%	30	25.2	450	0.25	450
TCCM322522 - R18M	0.18 \pm 20%	30	25.2	400	0.28	450
TCCM322522 - R22M	0.22 \pm 20%	30	25.2	350	0.32	450
TCCM322522 - R27M	0.27 \pm 20%	30	25.2	320	0.36	450
TCCM322522 - R33M	0.33 \pm 20%	30	25.2	300	0.40	450
TCCM322522 - R39M	0.39 \pm 20%	30	25.2	250	0.45	450
TCCM322522 - R47M	0.47 \pm 20%	30	25.2	220	0.50	450
TCCM322522 - R56M	0.56 \pm 20%	30	25.2	180	0.55	450
TCCM322522 - R68M	0.68 \pm 20%	30	25.2	160	0.60	450
TCCM322522 - R82M	0.82 \pm 20%	30	25.2	140	0.65	450
TCCM322522 - 1R0M	1.0 \pm 20%	30	7.96	120	0.70	400
TCCM322522 - 1R2M	1.2 \pm 20%	30	7.96	100	0.75	390
TCCM322522 - 1R5M	1.5 \pm 20%	30	7.96	85	0.85	370
TCCM322522 - 1R8M	1.8 \pm 20%	30	7.96	80	0.90	350
TCCM322522 - 2R2M	2.2 \pm 20%	30	7.96	75	1.00	320
TCCM322522 - 2R7M	2.7 \pm 20%	30	7.96	70	1.10	290
TCCM322522 - 3R3K	3.3 \pm 10%	30	7.96	60	1.20	260
TCCM322522 - 3R9K	3.9 \pm 10%	30	7.96	55	1.30	250
TCCM322522 - 4R7K	4.7 \pm 10%	30	7.96	50	1.50	220
TCCM322522 - 5R6K	5.6 \pm 10%	30	7.96	47	1.60	200
TCCM322522 - 6R8K	6.8 \pm 10%	30	7.96	43	1.80	180
TCCM322522 - 8R2K	8.2 \pm 10%	30	7.96	40	2.00	170
TCCM322522 - 100K	10.0 \pm 10%	30	2.52	36	2.10	150
TCCM322522 - 120K	12.0 \pm 10%	30	2.52	33	2.50	140
TCCM322522 - 150K	15.0 \pm 10%	30	2.52	30	2.80	130
TCCM322522 - 180K	18.0 \pm 10%	30	2.52	27	3.30	120
TCCM322522 - 220K	22.0 \pm 10%	30	2.52	25	3.70	110
TCCM322522 - 270K	27.0 \pm 10%	30	2.52	20	5.00	80
TCCM322522 - 330K	33.0 \pm 10%	30	2.52	17	5.60	70
TCCM322522 - 390K	39.0 \pm 10%	30	2.52	16	6.40	65
TCCM322522 - 470K	47.0 \pm 10%	30	2.52	15	7.00	60
TCCM322522 - 560K	56.0 \pm 10%	30	2.52	13	8.00	55
TCCM322522 - 680K	68.0 \pm 10%	30	2.52	12	9.00	50
TCCM322522 - 820K	82.0 \pm 10%	30	2.52	11	10.00	45
TCCM322522 - 101K	100 \pm 10%	20	0.796	10	10.00	40
TCCM322522 - 121K	120 \pm 10%	20	0.796	10	11.00	70
TCCM322522 - 151K	150 \pm 10%	20	0.796	8	15.00	65
TCCM322522 - 181K	180 \pm 10%	20	0.796	7	17.00	60
TCCM322522 - 221K	220 \pm 10%	20	0.796	7	21.00	50



RF Inductors

► Electrical Characteristics for TCCM453232(1812) Series Wirewound Chip Inductors

Part No.	Inductance(μ H)	Q(min)	Test Freq.(MHZ)	SRF(MHz)(min)	DCR(Ω)(max)	IDC(mA)
TCCM453232 - R10M	0.10 \pm 20%	35	25.2	300	0.18	800
TCCM453232 - R12M	0.12 \pm 20%	25	25.2	280	0.20	770
TCCM453232 - R15M	0.15 \pm 20%	25	25.2	250	0.22	730
TCCM453232 - R18M	0.18 \pm 20%	25	25.2	220	0.24	700
TCCM453232 - R22M	0.22 \pm 20%	25	25.2	200	0.25	665
TCCM453232 - R27M	0.27 \pm 20%	30	25.2	180	0.26	635
TCCM453232 - R33M	0.33 \pm 20%	30	25.2	165	0.28	605
TCCM453232 - R39M	0.39 \pm 20%	30	25.2	150	0.30	575
TCCM453232 - R47M	0.47 \pm 20%	30	25.2	145	0.32	545
TCCM453232 - R56M	0.56 \pm 20%	30	25.2	140	0.36	520
TCCM453232 - R68M	0.68 \pm 20%	30	25.2	135	0.40	500
TCCM453232 - R82M	0.82 \pm 20%	30	25.2	130	0.45	475
TCCM453232 - 1R0K	1.0 \pm 10%	40	7.96	100	0.50	450
TCCM453232 - 1R2K	1.2 \pm 10%	40	7.96	80	0.55	430
TCCM453232 - 1R5K	1.5 \pm 10%	40	7.96	70	0.55	410
TCCM453232 - 1R8K	1.8 \pm 10%	40	7.96	60	0.65	390
TCCM453232 - 2R2K	2.2 \pm 10%	40	7.96	55	0.70	380
TCCM453232 - 2R7K	2.7 \pm 10%	40	7.96	50	0.75	370
TCCM453232 - 3R3K	3.3 \pm 10%	40	7.96	45	0.80	355
TCCM453232 - 3R9K	3.9 \pm 10%	40	7.96	40	0.90	330
TCCM453232 - 4R7K	4.7 \pm 10%	40	7.96	35	1.00	315
TCCM453232 - 5R6K	5.6 \pm 10%	40	7.96	33	1.10	300
TCCM453232 - 6R8K	6.8 \pm 10%	40	7.96	27	1.20	285
TCCM453232 - 8R2K	8.2 \pm 10%	40	7.96	25	1.40	270
TCCM453232 - 100K	10.0 \pm 10%	40	2.52	20	1.60	250
TCCM453232 - 120K	12.0 \pm 10%	40	2.52	18	2.00	225
TCCM453232 - 150K	15.0 \pm 10%	40	2.52	17	2.50	200
TCCM453232 - 180K	18.0 \pm 10%	40	2.52	15	2.80	190
TCCM453232 - 220K	22.0 \pm 10%	40	2.52	13	3.20	180
TCCM453232 - 270K	27.0 \pm 10%	40	2.52	12	3.60	170
TCCM453232 - 330K	33.0 \pm 10%	40	2.52	11	4.00	160
TCCM453232 - 390K	39.0 \pm 10%	40	2.52	10	4.50	150
TCCM453232 - 470K	47.0 \pm 10%	40	2.52	10	5.00	140
TCCM453232 - 560K	56.0 \pm 10%	40	2.52	9.0	5.50	135
TCCM453232 - 680K	68.0 \pm 10%	40	2.52	9.0	6.00	130
TCCM453232 - 820K	82.0 \pm 10%	40	2.52	8.0	7.00	120
TCCM453232 - 101K	100 \pm 10%	30	0.796	8.0	8.00	110
TCCM453232 - 121K	120 \pm 10%	30	0.796	6.0	8.00	110
TCCM453232 - 151K	150 \pm 10%	30	0.796	5.0	9.00	105
TCCM453232 - 181K	180 \pm 10%	30	0.796	5.0	9.50	102
TCCM453232 - 221K	220 \pm 10%	30	0.796	4.0	10.0	100
TCCM453232 - 271K	270 \pm 10%	30	0.796	4.0	12.0	92
TCCM453232 - 331K	330 \pm 10%	30	0.796	3.5	14.0	85
TCCM453232 - 391K	390 \pm 10%	30	0.796	3.0	18.0	80
TCCM453232 - 471K	470 \pm 10%	30	0.796	3.0	26.0	62
TCCM453232 - 561K	560 \pm 10%	20	0.796	3.0	30.0	50
TCCM453232 - 681K	680 \pm 10%	20	0.796	3.0	30.0	50
TCCM453232 - 821K	820 \pm 10%	20	0.796	2.5	35.0	30
TCCM453232 - 102K	1000 \pm 10%	20	0.252	2.5	40.0	30





RF Inductors

► Mechanical Performance Test - Wirewound Chip Inductors

REQUIREMENTS	CHARACTERISTICS	TEST METHOD(DIS C 5321)
Terminal Strength	No evidence of damage	Terminals shall withstand a pull of 0.5Kgf in a horizontal direction
Vibration	$\Delta L/L$ shall be within $\pm 3\%$. No evidence of damage	2 hours in each direction of X,Y,Z on p-Board at a frequency range of 10-55-10HZ with 1.5mm amplitude
Dropping	$\Delta L/L$ shall be within $\pm 3\%$. No evidence of damage	Dropping 1m over the ground of concrete or cement

► Electrical Performance Test - Wirewound Chip Inductors

REQUIREMENTS	CHARACTERISTICS	TEST METHOD(JIS C 5321)
Resistance to Soldering Heat	No evidence of damage $\Delta L/L$ shall be within $\pm 3\%$	Immerse in the solder (H63A) of $260 \pm 5^\circ\text{C}$ for 10 ± 1 sec, leave for 2hrs at normal TEMP
Solderability	More than 90% surface to be covered with new soldering	AV100V 60 SEC.
Dielectric with standing voltage	No evidence of breakdown resistor 1000 Mohm and over	DC500V 30 SEC.
Insulation Resistance	No evidence of breakdown, resistor 1000 Mohm and over	DC 500V 30 SEC.

► Climatic Test - Wirewound Chip Inductors

REQUIREMENTS	CHARACTERISTICS	TEST METHOD(JIS C 5321)
LOW TEMP. Characteristics	No evidence of damage, $\Delta L/L$ within $\pm 5\%$, Q/Q within $\pm 30\%$	Immerse in the solder (H63A) of $260 \pm 5^\circ\text{C}$ for 10 ± 1 sec, leave for 2hrs at normal TEMP.
TEMP. Cycling	No evidence of damage, $\Delta L/L$ within $\pm 5\%$	Keep for 30 min. at TEMP. of $-25^\circ\text{C} \sim +85^\circ$ Cat 5 cycle case of TEMP. change from low to high and V.V.
Temperature Characteristics	$\Delta L/L$ within $\pm 3\%$	$\Delta L/L$ to be measured at the temperature of between -25°C and $+85^\circ\text{C}$
Moisture load Characteristics	No evidence of damage, $\Delta L/L$ within $\pm 5\%$, Q/Q within $\pm 30\%$	TEMP. $40 \pm 2^\circ\text{C}$, Humidity 90~95% 96 \pm 2hrs, measurements shall be performed after 1~2hrs at normal TEMP..
High TEMP. overload Characteristics	No evidence of damage, $\Delta L/L$ within $\pm 5\%$, Q/Q within $\pm 30\%$	Leave for 96 \pm 2hrs in a bath of TEMP. $85 \pm 2^\circ\text{C}$, measurements shall be performed after 1~2hrs at normal TEMP.

► How to Order

TCCM322522 - R10 M

① ② ③

① SMD Inductors Wirewound Chip Molded Type: TCCM322522, TCCM453232

② Inductance

Code	Inductance
R10	0.10 μH
1R0	1.00 μH
100	10.00 $\times 10^0\mu\text{H}$
101	10.00 $\times 10^1\mu\text{H}$
102	10.00 $\times 10^2\mu\text{H}$

③ Tolerance

Code	Tolerance
J	5%
K	10%
M	20%



RF Inductor

SMD Wirewound Inductors Chip Open-Type - WL Series

► SMD Wirewound Inductor Features

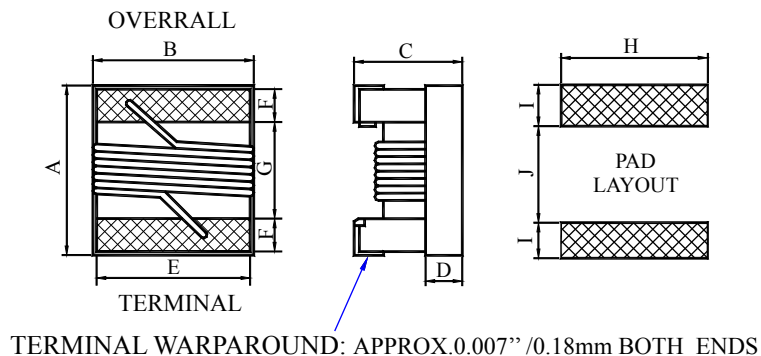
- Wire wound Ceramic Construction Provide High SRFs.
- Ultra-compact Inductors Provide Exceptional Q Values.
- Low profile , High Current are Available.
- Miniature SMD Chip Inductor for Fully Automated Assembly.
- Outstanding Endurance from Pull-up Force, Mechanical Shock and Pressure.
- Tighter Tolerance of $\pm 2\%$.
- Smaller Size of 0402 (1005).



► SMD Wirewound Inductor Features

- Cellular Phone (CDMA/GSM/PHS), Cordless Phone (DECT/CT1CT2)
- Remote Control, Security System, Wireless PDA
- TCWLL, Wireless LAN / Mouse / Keyboard / Earphone
- VCO, RF Module & Other Wireless Products, Base Station, RepeaterGPS Receiver
- CATV Filter, Tuner, Cable Modem / XDSL Tuner, Set Top Box
- USB 2.0, IEEE 1394.

► SMD Wirewound Inductor Dimensions (unit: mm)



Series	A Max.	B Max.	C Max.	D Ref.	E	F	G	H	I	J
Standard										
TCWL08	2.92	2.79	2.03	0.65	2.03	0.51	1.52	2.54	1.02	1.27
TCWL06	3.56	2.16	1.52	0.50	1.20	0.50	2.20	1.93	1.02	1.78
TCWL05	2.29	1.73	1.52	0.51	1.27	0.44	1.02	1.78	1.02	0.76
TCWL03	1.80	1.12	1.02	0.38	0.76	0.33	0.86	1.02	0.64	0.64
TCWL02	1.27	0.76	0.61	0.15	0.51	0.23	0.56	0.66	0.50	0.46
Low Profile										
TCWL08	2.92	2.79	1.40	0.65	2.03	0.51	1.52	2.54	1.02	1.27
TCWL05	2.29	1.73	1.03	0.51	1.27	0.44	1.02	1.78	1.02	0.76
High Current / High Q										
TCWL08	2.92	2.79	2.03	0.65	2.03	0.51	1.52	2.54	1.02	1.27
TCWL05	2.29	1.73	1.52	0.51	1.27	0.44	1.02	1.78	1.02	0.76
TCWL03	1.80	1.12	1.02	0.38	0.76	0.33	0.86	1.02	0.64	0.64



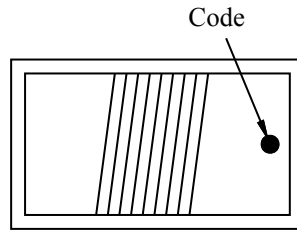
RF Inductor

► SMD Wirewound Inductor Color Coding

0603 / 0805/1206/1008 Series (0402 Series is No Color Coding)

Because of small sizes, these parts are marked with a single color dot.

The inductance value represented by the dot is shown on the data page for each series.



COLOR CODING

► Standard Electrical Specifications for 0402 Wire Wound Chip Inductors / Standard

Part Number	Inductance(nH) @ 250MHz	Tolerance (%)	Q (min)	SRF (GHz)(min)	DCR(Ω) (max)	IDC (mA)	900MHz		1.7GHz	
							L	Q	L	Q
TCWL02*T1N0	1.0	10	16	12.70	0.04	1360	1.02	77	1.02	69
TCWL02*T1N9	1.9	10,5	16	11.30	0.07	1040	1.72	68	1.74	82
TCWL02*T2N0	2.0	10,5	16	11.10	0.07	1040	1.93	54	1.93	75
TCWL02*T2N2	2.2	10,5	19	10.80	0.07	960	2.19	59	2.23	100
TCWL02*T2N4	2.4	10,5	15	10.50	0.07	790	2.24	51	2.27	68
TCWL02*T2N7	2.7	10,5	16	10.40	0.12	640	2.23	42	2.25	61
TCWL02*T3N3	3.3	10,5,2	19	7.00	0.06	840	3.10	65	3.12	87
TCWL02*T3N6	3.6	10,5,2	19	6.80	0.06	840	3.56	45	3.62	71
TCWL02*T3N9	3.9	10,5,2	19	5.80	0.06	840	3.89	50	4.00	75
TCWL02*T4N3	4.3	10,5,2	18	6.00	0.09	700	4.19	47	4.30	71
TCWL02*T4N7	4.7	10,5,2	15	4.70	0.13	640	4.55	48	4.68	68
TCWL02*T5N1	5.1	10,5,2	20	4.80	0.08	800	5.15	56	5.25	82
TCWL02*T5N6	5.6	10,5,2	20	4.80	0.08	760	5.16	54	5.28	81
TCWL02*T6N2	6.2	10,5,2	20	4.80	0.08	760	6.16	52	6.37	76
TCWL02*T6N8	6.8	10,5,2	20	4.80	0.08	680	6.56	63	6.93	78
TCWL02*T7N5	7.5	10,5,2	22	4.80	0.10	680	7.91	60	8.22	88
TCWL02*T8N2	8.2	10,5,2	22	4.40	0.10	680	8.50	57	8.85	84
TCWL02*T8N7	8.7	10,5,2	18	4.10	0.20	480	8.78	54	9.21	73
TCWL02*T9N0	9.0	10,5,2	22	4.16	0.10	680	9.07	62	9.53	78
TCWL02*T9N5	9.5	10,5,2	18	4.00	0.20	480	9.42	54	9.98	69
TCWL02*T10N	10	10,5,2	21	3.90	0.19	480	9.80	50	10.10	67
TCWL02*T11N	11	10,5,2	24	3.68	0.12	640	10.70	52	11.20	78
TCWL02*T12N	12	10,5,2	24	3.60	0.12	640	11.90	53	12.70	71
TCWL02*T13N	13	10,5,2	24	3.45	0.21	440	13.40	51	14.60	57
TCWL02*T15N	15	10,5,2	24	3.28	0.17	560	14.60	55	15.50	77
TCWL02*T16N	16	10,5,2	24	3.10	0.22	560	16.60	46	18.80	47
TCWL02*T18N	18	10,5,2	24	3.10	0.23	420	18.30	57	20.28	62
TCWL02*T19N	19	10,5,2	24	3.04	0.20	480	19.10	50	21.10	67
TCWL02*T20N	20	10,5,2	25	3.00	0.25	420	20.70	52	23.66	53
TCWL02*T22N	22	10,5,2	25	2.80	0.30	400	23.20	53	26.75	53

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RF Inductor

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Part Number	Inductance(nH) @ 250MHz	Tolerance (%)	Q (min)	SRF (GHz)(min)	DCR(Ω) (max)	IDC (mA)	900MHz		1.7GHz	
TCWL02*T23N	23	10,5,2	22	2.72	0.30	400	23.80	49	26.90	64
TCWL02*T24N	24	10,5,2	25	2.70	0.30	400	25.10	51	29.50	50
TCWL02*T27N	27	10,5,2	24	2.48	0.30	400	28.70	49	33.50	63
TCWL02*T30N	30	10,5,2	25	2.35	0.35	400	31.10	46	38.50	39
TCWL02*T33N	33	10,5,2	24	2.35	0.35	400	34.90	31	41.74	32
TCWL02*T36N	36	10,5,2	24	2.32	0.44	320	39.50	44	48.40	53
TCWL02*T39N	39	10,5,2	25	2.10	0.55	200	41.70	47	50.23	45
TCWL02*T40N	40	10,5,2	24	2.24	0.44	320	39.00	44	47.40	33
TCWL02*T43N	43	10,5,2	25	2.03	0.81	100	45.80	46	61.55	34
TCWL02*T47N	47	10,5,2	20	2.10	0.83	150	50.00	38	-	-
TCWL02*T51N	51	10,5,2	25	1.75	0.82	100	-	-	-	-
TCWL02*T56N	56	10,5,2	22	1.76	0.97	100	-	-	-	-
TCWL02*T68N	68	10,5,2	22	1.62	1.12	100	-	-	-	-

Note: Working Temperature Range: -40°C ~ 125°C

Standard Electrical Specifications for 0603 Wire Wound Chip Inductors / Standard

Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF (GHz) (min)	DCR (Ω) (max)	IDC (mA)	900MHz		1.7GHz		Color Code
							L	Q	L	Q	
Test Freq. @ 250MHz											
TCWL03*T1N6	1.6	10,5	24	12.5	0.030	700	1.53	35	1.58	55	Blue
TCWL03*T1N8	1.8	10,5	16	12.5	0.045	700	1.63	35	1.66	50	Black
TCWL03*T2N2	2.2	10,5	20	6.00	0.100	700	2.18	41	2.20	64	White
TCWL03*T2N7	2.7	10,5	16	>4.00	0.140	700	2.39	25	2.44	55	Yellow
TCWL03*T3N3	3.3	10,5,2	22	>6.00	0.080	700	3.35	47	3.40	65	Red
TCWL03*T3N6	3.6	10,5,2	22	5.80	0.063	700	3.53	49	3.58	65	Violet
TCWL03*T3N9	3.9	10,5,2	22	>6.00	0.080	700	3.95	49	3.96	67	Brown
TCWL03*T4N3	4.3	10,5,2	22	5.80	0.063	700	4.32	49	4.43	67	Orange
TCWL03*T4N5	4.5	10,5,2	20	5.80	0.120	700	4.74	55	4.87	92	Gray
TCWL03*T4N7	4.7	10,5,2	20	5.80	0.120	700	4.65	53	4.80	67	Violet
TCWL03*T5N1	5.1	10,5,2	20	5.80	0.160	700	5.13	47	5.36	56	Green
TCWL03*T5N6	5.6	10,5,2	20	5.80	0.170	700	5.53	56	5.86	77	Yellow
TCWL03*T6N2	6.2	10,5,2	25	5.80	0.110	700	6.28	60	6.40	85	Black
TCWL03*T6N3	6.3	10,5,2	25	5.80	0.110	700	6.67	41	6.86	61	Black
TCWL03*T6N8	6.8	10,5,2	27	5.80	0.110	700	6.75	60	7.10	81	Red
TCWL03*T7N5	7.5	10,5,2	28	4.80	0.106	700	7.70	60	7.82	65	Brown
TCWL03*T8N2	8.2	10,5,2	27	4.80	0.110	700	8.25	64	8.40	81	Green
TCWL03*T8N7	8.7	10,5,2	28	4.60	0.109	700	8.86	62	9.32	58	Yellow
TCWL03*T9N1	9.1	10,5,2	35	4.80	0.130	700	9.20	70	9.70	80	Black
TCWL03*T9N5	9.5	10,5,2	28	5.40	0.135	700	9.70	59	9.92	61	Blue
TCWL03*T10N	10.0	10,5,2	31	4.80	0.130	700	10.0	66	10.6	83	Orange
TCWL03*T11N	11.0	10,5,2	31	4.00	0.086	700	11.3	53	12.1	56	Gray

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RF Inductor

Continued from the preceding page.

Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF (GHz) (min)	DCR (Ω) (max)	IDC (mA)	900MHz		1.7GHz		Color Code
							L	Q	L	Q	
Test Freq. @ 250MHz											
TCWL03*T12N	12.0	10,5,2	35	4.00	0.130	700	12.3	72	13.5	83	Yellow
TCWL03*T15N	15.0	10,5,2	35	4.00	0.170	700	15.4	64	16.8	89	Green
TCWL03*T16N	16.0	10,5,2	35	3.30	0.110	700	16.5	55	18.0	52	White
TCWL03*T17N	17.0	10,5,2	35	3.20	0.170	700	17.6	56	19.4	44	Red
TCWL03*T18N	18.0	10,5,2	35	3.10	0.170	700	18.7	70	21.4	69	Blue
TCWL03*T20N	20.0	10,5,2	40	3.00	0.190	700	20.7	80	23.5	30	Green
TCWL03*T22N	22.0	10,5,2	38	3.00	0.190	700	22.8	73	26.1	71	Violet
TCWL03*T23N	23.0	10,5,2	38	2.85	0.190	700	24.1	71	28.0	71	Orange
TCWL03*T24N	24.0	10,5,2	36	2.80	0.130	700	25.7	45	30.9	40	Black
TCWL03*T27N	27.0	10,5,2	40	2.80	0.220	600	29.2	74	34.6	65	Gray
TCWL03*T30N	30.0	10,5,2	37	2.80	0.150	600	31.4	47	39.8	28	Brown
TCWL03*T33N	33.0	10,5,2	40	2.30	0.220	600	36.0	67	49.5	42	White
TCWL03*T36N	36.0	10,5,2	37	2.30	0.250	600	39.1	47	48.9	24	Red
TCWL03*T39N	39.0	10,5,2	40	2.20	0.250	600	42.7	60	60.2	40	Black
Test Freq. @ 200MHz											
TCWL03*T43N	43.0	10,5,2	38	2.00	0.280	600	46.9	44	60.3	21	Orange
TCWL03*T47N	47.0	10,5,2	38	2.00	0.280	600	52.2	62	77.2	35	Brown
TCWL03*T51N	51.0	10,5,2	35	1.90	0.280	600	55.5	69	82.2	34	Blue
TCWL03*T56N	56.0	10,5,2	38	1.90	0.310	600	62.5	56	97.0	26	Red
TCWL03*T62N	62.0	10,5,2	37	1.80	0.340	600	68.0	40	110	10	Gray
TCWL03*T68N	68.0	10,5,2	37	1.70	0.340	600	80.5	54	168	21	Orange
Test Freq. @ 150MHz											
TCWL03*T72N	72.0	10,5,2	34	1.70	0.490	400	82.0	53	135	20	Yellow
TCWL03*T82N	82.0	10,5,2	34	1.70	0.540	400	96.2	54	177	21	Green
TCWL03*T91N	91.0	10,5,2	30	1.70	0.500	400	110	50	-	-	Brown
TCWL03*TR10	100	10,5,2	34	1.40	0.580	400	124	49	-	-	Blue
TCWL03*TR11	110	10,5,2	32	1.35	0.610	300	138	43	-	-	Violet
TCWL03*TR12	120	10,5,2	32	1.30	0.650	300	166	39	-	-	Gray
TCWL03*TR13	130	10,5,2	30	1.40	0.720	300	185	60	-	-	White
Test Freq. @ 100MHz											
TCWL03*TR14	140	10,5,2	28	1.30	0.870	280	190	80	-	-	Blue
TCWL03*TR15	150	10,5,2	32	1.30	0.950	280	230	25	-	-	White
TCWL03*TR16	160	10,5,2	25	1.30	1.400	280	215	-	-	-	Yellow
TCWL03*TR18	180	10,5,2	25	1.25	1.400	250	305	22	-	-	Black
TCWL03*TR22	220	10,5,2	25	1.20	1.600	250	377	-	-	-	Brown
TCWL03*TR26	260	10,5,2	25	1.00	2.000	200	469	-	-	-	Violet
TCWL03*TR27	270	10,5,2	25	0.90	2.100	200	-	-	-	-	Red
TCWL03*TR28	280	10,5,2	25	1.00	2.400	100	-	-	-	-	Green
TCWL03*TR30	300	10,5,2	25	0.75	2.500	150	-	-	-	-	Orange
TCWL03*TR33	330	10,5,2	25	0.90	3.800	100	-	-	-	-	Blue
TCWL03*TR39	390	10,5,2	25	0.90	4.350	100	-	-	-	-	Yellow

Note: Working Temperature Range: -40°C ~ 125°C



RF Inductor

► Standard Electrical Specifications for 0805 Wire Wound Chip Inductors / Standard

Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF (GHz)(min)	DCR (Ω)(max)	IDC (mA)	Color Code
TCWL05*T2N7	2.7 @ 250MHz	10,5	80 @ 1500MHz	7.900	0.06	800	Brown
TCWL05*T2N8	2.8 @ 250MHz	10,5	80 @ 1500MHz	7.900	0.06	800	Gray
TCWL05*T3N0	3.0 @ 250MHz	10,5	65 @ 1500MHz	7.900	0.06	800	White
TCWL05*T3N3	3.3 @ 250MHz	10,5	50 @ 1500MHz	6.000	0.08	600	Black
TCWL05*T5N6	5.6 @ 250MHz	10,5	65 @ 1000MHz	5.500	0.08	600	Orange
TCWL05*T6N2	6.2 @ 250MHz	10,5	50 @ 1000MHz	5.500	0.11	600	Green
TCWL05*T6N8	6.8 @ 250MHz	10,5	50 @ 1000MHz	5.500	0.11	600	Brown
TCWL05*T7N5	7.5 @ 250MHz	10,5	50 @ 1000MHz	4.500	0.14	600	Green
TCWL05*T8N2	8.2 @ 250MHz	10,5	50 @ 1000MHz	4.700	0.12	600	Red
TCWL05*T8N7	8.7 @ 250MHz	10,5	50 @ 1000MHz	3.900	0.21	400	White
TCWL05*T10N	10.0 @ 250MHz	10,5,2	60 @ 500MHz	4.200	0.10	600	Blue
TCWL05*T12N	12.0 @ 250MHz	10,5,2	50 @ 500MHz	4.000	0.15	600	Orange
TCWL05*T15N	15.0 @ 250MHz	10,5,2	50 @ 500MHz	3.400	0.17	600	Yellow
TCWL05*T18N	18.0 @ 250MHz	10,5,2	50 @ 500MHz	3.300	0.20	600	Green
TCWL05*T22N	22.0 @ 250MHz	10,5,2	55 @ 500MHz	2.600	0.22	500	Blue
TCWL05*T24N	24.0 @ 250MHz	10,5,2	50 @ 500MHz	2.000	0.22	500	Gray
TCWL05*T27N	27.0 @ 250MHz	10,5,2	55 @ 500MHz	2.500	0.25	500	Violet
TCWL05*T33N	33.0 @ 250MHz	10,5,2	60 @ 500MHz	2.050	0.27	500	Gray
TCWL05*T36N	36.0 @ 250MHz	10,5,2	55 @ 500MHz	1.700	0.27	500	Orange
TCWL05*T39N	39.0 @ 250MHz	10,5,2	60 @ 500MHz	2.000	0.29	500	White
TCWL05*T43N	43.0 @ 200MHz	10,5,2	60 @ 500MHz	1.650	0.34	500	Yellow
TCWL05*T47N	47.0 @ 200MHz	10,5,2	60 @ 500MHz	1.650	0.31	500	Black
TCWL05*T56N	56.0 @ 200MHz	10,5,2	60 @ 500MHz	1.550	0.34	500	Brown
TCWL05*T68N	68.0 @ 200MHz	10,5,2	60 @ 500MHz	1.450	0.38	500	Red
TCWL05*T72N	72.0 @ 150MHz	10,5,2	65 @ 500MHz	1.400	0.40	500	Green
TCWL05*T82N	82.0 @ 150MHz	10,5,2	65 @ 500MHz	1.300	0.42	400	Orange
TCWL05*T91N	91.0 @ 150MHz	10,5,2	65 @ 500MHz	1.200	0.48	400	Black
TCWL05*TR10	100 @ 150MHz	10,5,2	65 @ 500MHz	1.200	0.46	400	Yellow
TCWL05*TR11	110 @ 150MHz	10,5,2	50 @ 250MHz	1.000	0.48	400	Brown
TCWL05*TR12	120 @ 150MHz	10,5,2	50 @ 250MHz	1.100	0.51	400	Green
TCWL05*TR15	150 @ 100MHz	10,5,2	50 @ 250MHz	0.920	0.56	400	Blue
TCWL05*TR18	180 @ 100MHz	10,5,2	50 @ 250MHz	0.870	0.64	400	Violet
TCWL05*TR20	200 @ 100MHz	10,5,2	50 @ 250MHz	0.860	0.66	400	Orange
TCWL05*TR22	220 @ 100MHz	10,5,2	50 @ 250MHz	0.850	0.70	400	Gray
TCWL05*TR24	240 @ 100MHz	10,5,2	44 @ 250MHz	0.690	1.00	350	Red
TCWL05*TR25	250 @ 100MHz	10,5,2	45 @ 250MHz	0.680	1.00	350	Green
TCWL05*TR27	270 @ 100MHz	10,5,2	48 @ 250MHz	0.650	1.00	350	White
TCWL05*TR30	300 @ 100MHz	10,5,2	48 @ 250MHz	0.620	1.20	330	Yellow
TCWL05*TR33	330 @ 100MHz	10,5,2	48 @ 250MHz	0.600	1.40	310	Black
TCWL05*TR36	360 @ 100MHz	10,5,2	48 @ 250MHz	0.580	1.45	300	Green
TCWL05*TR39	390 @ 100MHz	10,5,2	48 @ 250MHz	0.560	1.50	290	Brown

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RF Inductor

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Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF (GHz)(min)	DCR (Ω)(max)	IDC (mA)	Color Code
TCWL05*TR43	430 @ 50MHz	10,5,2	33 @ 100MHz	0.430	1.70	230	Blue
TCWL05*TR47	470 @ 50MHz	10,5,2	33 @ 100MHz	0.375	1.70	220	Red
TCWL05*TR56	560 @ 25MHz	10,5,2	23 @ 50MHz	0.340	1.90	210	Orange
TCWL05*TR60	600 @ 25MHz	10,5,2	23 @ 50MHz	0.260	1.60	450	White
TCWL05*TR62	620 @ 25MHz	10,5,2	23 @ 50MHz	0.220	2.20	210	Yellow
TCWL05*TR68	680 @ 25MHz	10,5,2	23 @ 50MHz	0.200	2.20	190	Green
TCWL05*TR75	750 @ 25MHz	10,5,2	23 @ 50MHz	0.200	2.30	180	Blue
TCWL05*TR82	820 @ 25MHz	10,5,2	23 @ 50MHz	0.200	2.35	180	Violet
TCWL05*T1R0	1000 @ 25MHz	10,5,2	20 @ 50MHz	0.100	2.50	170	Gray
TCWL05*T1R2	1200 @ 7.9MHz	10,5,2	18 @ 25MHz	0.100	2.50	170	White
TCWL05*T1R5	1500 @ 7.9MHz	10,5,2	16 @ 25MHz	0.100	2.50	170	Black
TCWL05*T1R8	1800 @ 7.9MHz	10,5,2	16 @ 7.9MHz	0.080	2.50	170	Brown
TCWL05*T2R2	2200 @ 7.9MHz	10,5,2	16 @ 7.9MHz	0.060	2.70	160	Red
TCWL05*T2R7	2700 @ 7.9MHz	10,5,2	16 @ 7.9MHz	0.050	2.95	150	Orange

Note: Working Temperature Range: -40°C ~ 125°C

Standard Electrical Specifications for 1206 Wire Wound Chip Inductors / Standard

Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF(GHz) (min)	DCR(Ω) (max)	IDC (mA)	Color Code
TCWL06*T6N8	6.8 @ 100MHz	10,5	30 @ 300MHz	5.50	0.07	1000	Brown
TCWL06*T10N	10.0 @ 100MHz	10,5	40 @ 300MHz	4.00	0.08	1000	Red
TCWL06*T12N	12.0 @ 100MHz	10,5	40 @ 300MHz	3.20	0.08	1000	Orange
TCWL06*T15N	15.0 @ 100MHz	10,5	40 @ 300MHz	3.20	0.10	1000	Yellow
TCWL06*T18N	18.0 @ 100MHz	10,5	50 @ 300MHz	2.80	0.10	1000	Green
TCWL06*T22N	22.0 @ 100MHz	10,5	50 @ 300MHz	2.20	0.10	1000	Blue
TCWL06*T24N	24.0 @ 100MHz	10,5	50 @ 300MHz	2.00	0.10	1000	Red
TCWL06*T27N	27.0 @ 100MHz	10,5,2	50 @ 300MHz	1.80	0.11	1000	Violet
TCWL06*T33N	33.0 @ 100MHz	10,5,2	55 @ 300MHz	1.80	0.11	1000	Gray
TCWL06*T39N	39.0 @ 100MHz	10,5,2	55 @ 300MHz	1.80	0.12	1000	White
TCWL06*T47N	47.0 @ 100MHz	10,5,2	55 @ 300MHz	1.50	0.13	1000	Black
TCWL06*T56N	56.0 @ 100MHz	10,5,2	55 @ 300MHz	1.45	0.14	1000	Brown
TCWL06*T62N	62.0 @ 100MHz	10,5,2	55 @ 300MHz	1.20	0.20	1000	Violet
TCWL06*T68N	68.0 @ 100MHz	10,5,2	55 @ 300MHz	1.20	0.26	950	Red
TCWL06*T82N	82.0 @ 100MHz	10,5,2	55 @ 300MHz	1.20	0.21	920	Orange
TCWL06*T91N	91.0 @ 100MHz	10,5,2	55 @ 300MHz	1.10	0.24	900	White
TCWL06*TR10	100 @ 100MHz	10,5,2	55 @ 300MHz	1.10	0.26	850	Yellow
TCWL06*TR12	120 @ 100MHz	10,5,2	55 @ 300MHz	0.75	0.26	800	Green
TCWL06*TR15	150 @ 100MHz	10,5,2	60 @ 300MHz	0.95	0.31	750	Blue
TCWL06*TR18	180 @ 50MHz	10,5,2	55 @ 300MHz	0.90	0.43	700	Violet
TCWL06*TR22	220 @ 50MHz	10,5,2	55 @ 300MHz	0.76	0.50	670	Gray
TCWL06*TR27	270 @ 50MHz	10,5,2	55 @ 300MHz	0.74	0.56	630	White
TCWL06*TR30	300 @ 50MHz	10,5,2	50 @ 150MHz	0.68	0.60	600	Green

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RF Inductor

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Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF(GHz) (min)	DCR(Ω) (max)	IDC (mA)	Color Code
TCWL06*TR33	330 @ 50MHz	10,5,2	45 @ 150MHz	0.65	0.62	590	Black
TCWL06*TR36	360 @ 50MHz	10,5,2	45 @ 150MHz	0.60	0.65	550	Blue
TCWL06*TR39	390 @ 50MHz	10,5,2	45 @ 150MHz	0.60	0.75	530	Brown
TCWL06*TR47	470 @ 50MHz	10,5,2	45 @ 150MHz	0.55	1.30	490	Red
TCWL06*TR56	560 @ 35MHz	10,5,2	45 @ 150MHz	0.47	1.34	460	Orange
TCWL06*TR62	620 @ 35MHz	10,5,2	45 @ 150MHz	0.47	1.58	460	Gray
TCWL06*TR68	680 @ 35MHz	10,5,2	45 @ 150MHz	0.45	1.58	430	Yellow
TCWL06*TR75	750 @ 35MHz	10,5,2	45 @ 150MHz	0.44	2.25	320	White
TCWL06*TR82	820 @ 35MHz	10,5,2	45 @ 150MHz	0.42	1.82	400	Green
TCWL06*TR91	910 @ 35MHz	10,5,2	45 @ 150MHz	0.41	2.95	310	Green
TCWL06*T1R0	1000 @ 35MHz	10,5,2	45 @ 150MHz	0.40	2.80	320	Blue
TCWL06*T1R2	1200 @ 35MHz	10,5,2	45 @ 150MHz	0.38	3.20	300	Violet

Note: Working Temperature Range: -40°C ~ 125°C

Standard Electrical Specifications for 1008 Wire Wound Chip Inductors / Standard

Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF(GHz) (min)	DCR (Ω)(max)	IDC (mA)	Color Code
Δ TCWL08*T5N6	5.6 @ 50MHz	10,5	50 @ 1500MHz	4.000	0.15	1000	Black
Δ TCWL08*T10N	10 @ 50MHz	10,5,2	50 @ 500MHz	4.100	0.08	1000	Brown
Δ TCWL08*T12N	12 @ 50MHz	10,5,2	50 @ 500MHz	3.300	0.09	1000	Red
Δ TCWL08*T15N	15 @ 50MHz	10,5,2	50 @ 500MHz	2.500	0.11	1000	Orange
Δ TCWL08*T18N	18 @ 50MHz	10,5,2	50 @ 350MHz	2.400	0.12	1000	Yellow
Δ TCWL08*T22N	22 @ 50MHz	10,5,2	55 @ 350MHz	2.400	0.12	1000	Green
TCWL08*T24N	24 @ 50MHz	10,5,2	55 @ 350MHz	1.900	0.12	1000	Blue
Δ TCWL08*T27N	27 @ 50MHz	10,5,2	55 @ 350MHz	1.600	0.13	1000	Violet
Δ TCWL08*T33N	33 @ 50MHz	10,5,2	60 @ 350MHz	1.600	0.14	1000	Gray
Δ TCWL08*T36N	36 @ 50MHz	10,5,2	60 @ 350MHz	1.600	0.15	1000	Orange
Δ TCWL08*T39N	39 @ 50MHz	10,5,2	60 @ 350MHz	1.500	0.15	1000	White
Δ TCWL08*T47N	47 @ 50MHz	10,5,2	65 @ 350MHz	1.500	0.16	1000	Black
Δ TCWL08*T56N	56 @ 50MHz	10,5,2	65 @ 350MHz	1.300	0.18	1000	Brown
Δ TCWL08*T62N	59 @ 50MHz	10,5,2	65 @ 350MHz	1.250	0.20	1000	Blue
Δ TCWL08*T68N	68 @ 50MHz	10,5,2	65 @ 350MHz	1.300	0.20	1000	Red
TCWL08*T75N	75 @ 50MHz	10,5,2	60 @ 350MHz	1.100	0.21	1000	White
Δ TCWL08*T82N	82 @ 50MHz	10,5,2	60 @ 350MHz	1.000	0.22	1000	Orange
Δ TCWL08*TR10	100 @ 25MHz	10,5,2	60 @ 350MHz	1.000	0.56	650	Yellow
Δ TCWL08*TR12	120 @ 25MHz	10,5,2	60 @ 350MHz	0.950	0.63	650	Green
Δ TCWL08*TR15	150 @ 25MHz	10,5,2	45 @ 100MHz	0.850	0.70	580	Blue
Δ TCWL08*TR18	180 @ 25MHz	10,5,2	45 @ 100MHz	0.750	0.77	620	Violet
Δ TCWL08*TR22	220 @ 25MHz	10,5,2	45 @ 100MHz	0.700	0.84	500	Gray
Δ TCWL08*TR24	240 @ 25MHz	10,5,2	45 @ 100MHz	0.650	0.88	500	White
Δ TCWL08*TR27	270 @ 25MHz	10,5,2	45 @ 100MHz	0.600	0.91	500	Black

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RF Inductor

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Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF(GHz) (min)	DCR (Ω)(max)	IDC (mA)	Color Code
Δ TCWL08*TR30	300 @ 25MHz	10,5,2	45 @ 100MHz	0.585	1.00	450	Brown
Δ TCWL08*TR33	330 @ 25MHz	10,5,2	45 @ 100MHz	0.570	1.05	450	Red
Δ TCWL08*TR36	360 @ 25MHz	10,5,2	45 @ 100MHz	0.530	1.10	470	Orange
Δ TCWL08*TR39	390 @ 25MHz	10,5,2	45 @ 100MHz	0.500	1.12	470	Yellow
Δ TCWL08*TR43	430 @ 25MHz	10,5,2	45 @ 100MHz	0.480	1.15	470	Green
Δ TCWL08*TR47	470 @ 25MHz	10,5,2	45 @ 100MHz	0.450	1.19	470	Blue
Δ TCWL08*TR56	560 @ 25MHz	10,5,2	45 @ 100MHz	0.415	1.33	400	Violet
Δ TCWL08*TR62	620 @ 25MHz	10,5,2	45 @ 100MHz	0.375	1.40	300	Gray
Δ TCWL08*TR68	680 @ 25MHz	10,5,2	45 @ 100MHz	0.375	1.47	400	White
Δ TCWL08*TR75	750 @ 25MHz	10,5,2	45 @ 100MHz	0.360	1.54	360	Black
Δ TCWL08*TR82	820 @ 25MHz	10,5,2	45 @ 100MHz	0.350	1.61	400	Brown
Δ TCWL08*TR91	910 @ 25MHz	10,5,2	35 @ 50MHz	0.320	1.68	380	Red
Δ TCWL08*T1R0	1000 @ 25MHz	10,5,2	35 @ 50MHz	0.290	1.75	370	Orange
Δ TCWL08*T1R2	1200 @ 7.9MHz	10,5,2	35 @ 50MHz	0.250	2.00	310	Yellow
Δ TCWL08*T1R5	1500 @ 7.9MHz	10,5,2	28 @ 50MHz	0.200	2.30	330	Green
Δ TCWL08*T1R8	1800 @ 7.9MHz	10,5,2	28 @ 50MHz	0.160	2.60	300	Blue
Δ TCWL08*T2R2	2200 @ 7.9MHz	10,5,2	28 @ 50MHz	0.160	2.80	280	Violet
Δ TCWL08*T2R7	2700 @ 7.9MHz	10,5,2	22 @ 25MHz	0.140	3.20	290	Gray
Δ TCWL08*T3R3	3300 @ 7.9MHz	10,5,2	22 @ 25MHz	0.110	3.40	290	White
Δ TCWL08*T3R9	3900 @ 7.9MHz	10,5,2	20 @ 25MHz	0.100	3.60	260	Black
Δ TCWL08*T4R7	4700 @ 7.9MHz	10,5,2	18 @ 25MHz	0.090	4.00	260	Brown
TCWL08*T5R6	5600 @ 7.9MHz	10,5,2	16 @ 7.96MHz	0.020	4.00	240	Red
TCWL08*T6R8	6800 @ 7.9MHz	10,5,2	15 @ 7.96MHz	0.040	4.90	200	Orange
TCWL08*T8R2	8200 @ 7.9MHz	10,5,2	15 @ 7.96MHz	0.025	6.00	170	Yellow
TCWL08*T100	10000 @ 2.52MHz	10,5,2	15 @ 7.96MHz	0.020	9.00	150	Green
TCWL08*T120	12000 @ 2.52MHz	10,5,2	15 @ 7.96MHz	0.018	10.5	130	Blue
TCWL08*T150	15000 @ 2.52MHz	10,5,2	15 @ 7.96MHz	0.015	11.5	120	Violet

Note: Working Temperature Range: -40°C ~ 125°C

Δ Test Methods/Instrument: Network/Spectrum Analyzer.





RF Inductor

► Standard Electrical Specifications for 0805 Wire Wound Chip Inductors / Low Profile

Part Number	Inductance(nH)	Tolerance (%)	Q(min)	SRF(GHz) (min)	DCR(Ω) (max)	IDC (mA)	Color Code
TCWL05*TL1N8	1.8 @ 250MHz	10	55 @ 1500MHz	9.40	0.03	800	Black
TCWL05*TL3N9	3.9 @ 250MHz	10,5	50 @ 1000MHz	6.10	0.06	800	Brown
TCWL05*TL4N7	4.7 @ 250MHz	10,5	50 @ 1000MHz	5.50	0.06	800	Red
TCWL05*TL6N8	6.8 @ 250MHz	10,5	50 @ 1000MHz	5.50	0.08	800	Orange
TCWL05*TL8N2	8.2 @ 250MHz	10,5	50 @ 1000MHz	4.80	0.08	800	Yellow
TCWL05*TL10N	10.0 @ 250MHz	10,5,2	55 @ 750MHz	3.30	0.08	800	Green
TCWL05*TL12N	12.0 @ 250MHz	10,5,2	55 @ 750MHz	3.80	0.10	800	Blue
TCWL05*TL15N	15.0 @ 250MHz	10,5,2	50 @ 500MHz	2.95	0.10	800	Violet
TCWL05*TL18N	18.0 @ 250MHz	10,5,2	50 @ 500MHz	3.10	0.13	800	Gray
TCWL05*TL22N	22.0 @ 250MHz	10,5,2	50 @ 500MHz	2.90	0.15	800	Whit
TCWL05*TL27N	27.0 @ 250MHz	10,5,2	50 @ 500MHz	2.45	0.23	600	Black
TCWL05*TL33N	33.0 @ 250MHz	10,5,2	50 @ 500MHz	2.35	0.28	600	Brown
TCWL05*TL39N	39.0 @ 250MHz	10,5,2	50 @ 500MHz	2.20	0.33	600	Red
TCWL05*TL47N	47.0 @ 200MHz	10,5,2	50 @ 500MHz	2.00	0.39	600	Orange
TCWL05*TL56N	56.0 @ 200MHz	10,5,2	50 @ 500MHz	1.85	0.39	500	Yellow
TCWL05*TL68N	68.0 @ 200MHz	10,5,2	50 @ 500MHz	1.50	0.40	500	Green
TCWL05*TL82N	82.0 @ 150MHz	10,5,2	50 @ 500MHz	1.50	0.44	500	Blue
TCWL05*TLR10	100.0 @ 150MHz	10,5,2	50 @ 500MHz	1.20	0.64	400	Violet
TCWL05*TLR12	120.0 @ 150MHz	10,5,2	40 @ 250MHz	1.15	0.68	300	Gray
TCWL05*TLR15	150.0 @ 150MHz	10,5,2	40 @ 250MHz	1.05	0.80	300	Whit
TCWL05*TL1R0	1000.0 @ 25MHz	10,5,2	16 @ 50MHz	0.08	2.00	220	Black

Note: Working Temperature Range: -40°C ~ 125°C

► Standard Electrical Specifications for 1008 Wire Wound Chip Inductors / Low Profile

Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF(GHz) (min)	DCR(Ω) (max)	IDC (mA)	Color Code
TCWL08*TL4N2	4.2 @ 50MHz	10,5	42 @ 1500MHz	6.00	0.15	600	Black
TCWL08*TL6N8	6.8 @ 50MHz	10,5	50 @ 1500MHz	5.40	0.17	600	Brown
TCWL08*TL8N2	8.2 @ 50MHz	10,5	50 @ 1500MHz	5.00	0.22	600	Red
TCWL08*TL15N	15 @ 50MHz	10,5	57 @ 500MHz	3.00	0.22	600	Orange
TCWL08*TL20N	20 @ 50MHz	10,5	72 @ 500MHz	2.40	0.33	600	Yellow
TCWL08*TL27N	27 @ 50MHz	10,5	50 @ 350MHz	1.60	0.13	600	Green
TCWL08*TL30N	30 @ 50MHz	10,5	69 @ 500MHz	2.40	0.38	600	Blue
TCWL08*TL40N	40 @ 50MHz	10,5	67 @ 500MHz	2.00	0.43	600	Violet
TCWL08*TL50N	50 @ 50MHz	10,5,2	72 @ 500MHz	1.90	0.48	600	Gray
TCWL08*TL60N	60 @ 50MHz	10,5,2	75 @ 500MHz	1.80	0.52	600	White
TCWL08*TL70N	70 @ 50MHz	10,5,2	68 @ 500MHz	1.70	0.55	510	Black
TCWL08*TL80N	80 @ 50MHz	10,5,2	75 @ 500MHz	1.40	0.56	510	Brown
TCWL08*TLR56	560 @ 25MHz	10,5,2	40 @ 100MHz	0.40	1.33	400	Red

Note: Working Temperature Range: -40°C ~ 125°C





RF Inductor

► Standard Electrical Specifications for 0603 Wire Wound Chip Inductors / High Current

Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF(GHz) (min)	DCR (Ω)(max)	IDC (mA)	Color Code
TCWL03*TH1N6	1.6 @ 250MHz	10,5	24	12.50	0.030	2400	Black
TCWL03*TH3N6	3.6 @ 250MHz	10,5	24	5.90	0.048	2300	Brown
TCWL03*TH3N9	3.9 @ 250MHz	10,5	25	5.90	0.054	2200	Red
TCWL03*TH6N8	6.8 @ 250MHz	10,5	35	5.80	0.054	2100	Orange
TCWL03*TH7N5	7.5 @ 250MHz	10,5	35	3.70	0.059	2100	Yellow
TCWL03*TH8N2	8.2 @ 250MHz	10,5	38	3.70	0.060	2000	White
TCWL03*TH10N	10.0 @ 250MHz	10,5,2	38	3.70	0.071	2000	Green
TCWL03*TH12N	12.0 @ 250MHz	10,5,2	38	3.00	0.075	2000	Blue
TCWL03*TH15N	15.0 @ 250MHz	10,5,2	38	2.80	0.080	1900	Violet
TCWL03*TH18N	18.0 @ 250MHz	10,5,2	40	2.80	0.099	1900	Gray
TCWL03*TH22N	22.0 @ 250MHz	10,5,2	42	2.40	0.099	1800	White
TCWL03*TH24N	24.0 @ 250MHz	10,5,2	42	2.40	0.105	1800	Black

Note: Working Temperature Range: -40°C ~ 125°C

► Standard Electrical Specifications for 0805 Wire Wound Chip Inductors / High Q

Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF(GHz) (min)	DCR (Ω)(max)	IDC (mA)	Color Code
TCWL05*TH2N5	2.5 @ 250MHz	10,5	80 @ 1500MHz	6.00	0.020	1600	Black
TCWL05*TH5N6	5.6 @ 250MHz	10,5	98 @ 1500MHz	6.00	0.035	1600	Brown
TCWL05*TH6N2	6.2 @ 250MHz	10,5	88 @ 1000MHz	4.75	0.035	1600	Red
TCWL05*TH6N8	6.8 @ 250MHz	10,5	80 @ 1000MHz	4.40	0.035	1600	White
TCWL05*TH8N2	8.2 @ 250MHz	10,5	75 @ 1000MHz	3.00	0.075	1000	Gray
TCWL05*TH12N	12 @ 250MHz	10,5	80 @ 1000MHz	3.00	0.045	1600	Orange
TCWL05*TH15N	15 @ 250MHz	10,5,2	80 @ 1000MHz	2.80	0.100	1200	Black
TCWL05*TH16N	16 @ 250MHz	10,5,2	72 @ 500MHz	2.95	0.060	1500	Yellow
TCWL05*TH18N	18 @ 250MHz	10,5,2	75 @ 500MHz	2.55	0.060	1400	Green
TCWL05*TH20N	20 @ 250MHz	10,5,2	70 @ 500MHz	2.05	0.055	1400	Blue
TCWL05*TH22N	22 @ 250MHz	10,5,2	80 @ 500MHz	2.00	0.100	1200	Black
TCWL05*TH27N	27 @ 250MHz	10,5,2	75 @ 500MHz	2.00	0.070	1300	Violet
TCWL05*TH30N	30 @ 250MHz	10,5,2	65 @ 500MHz	1.95	0.095	1200	Gray
TCWL05*TH39N	39 @ 250MHz	10,5,2	65 @ 500MHz	1.60	0.110	1100	White
TCWL05*TH48N	48 @ 200MHz	10,5,2	65 @ 500MHz	1.40	0.095	1200	Black
TCWL05*TH51N	51 @ 200MHz	10,5,2	65 @ 500MHz	1.40	0.120	1000	Brown

Note: Working Temperature Range: -40°C ~ 125°C





RF Inductor

► Standard Electrical Specifications for 1008 Wire Wound Chip Inductors / High Q

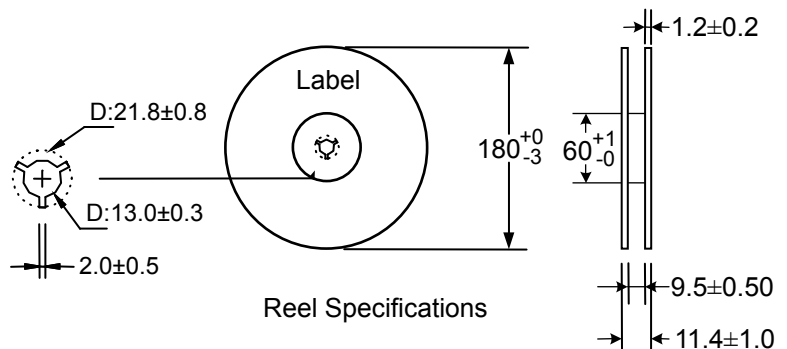
Part Number	Inductance (nH)	Tolerance (%)	Q (min)	SRF (GHz)(min)	DCR (Ω)(max)	IDC (mA)	Color Code
△ TCWL08*TH3N0	3.0 @ 50MHz	10,5	70 @ 1500MHz	6.00	0.04	1600	Black
TCWL08*TH4N1	4.1 @ 50MHz	10,5	75 @ 1500MHz	6.00	0.05	1600	Brown
△ TCWL08*TH7N8	7.8 @ 50MHz	10,5	75 @ 500MHz	3.80	0.05	1600	Red
TCWL08*TH10N	10 @ 50MHz	10,5,2	60 @ 500MHz	3.60	0.06	1600	Orange
TCWL08*TH12N	12 @ 50MHz	10,5,2	70 @ 500MHz	2.80	0.06	1500	Yellow
TCWL08*TH18N	18 @ 50MHz	10,5,2	62 @ 350MHz	2.70	0.07	1400	Green
TCWL08*TH22N	22 @ 50MHz	10,5,2	62 @ 350MHz	2.05	0.07	1400	Blue
TCWL08*TH33N	33 @ 50MHz	10,5,2	75 @ 350MHz	1.70	0.09	1300	Violet
TCWL08*TH39N	39 @ 50MHz	10,5,2	75 @ 350MHz	1.30	0.09	1300	Gray
TCWL08*TH47N	47 @ 50MHz	10,5,2	75 @ 350MHz	1.45	0.12	1200	White
TCWL08*TH56N	56 @ 50MHz	10,5,2	75 @ 350MHz	1.23	0.12	1200	Black
TCWL08*TH68N	68 @ 50MHz	10,5,2	80 @ 350MHz	1.15	0.13	1100	Brown
TCWL08*TH82N	82 @ 50MHz	10,5,2	80 @ 350MHz	1.06	0.16	1100	Red
TCWL08*THR10	100 @ 50MHz	10,5,2	52 @ 350MHz	0.82	0.16	1000	Orange

Note: Working Temperature Range: -40°C ~ 125°C

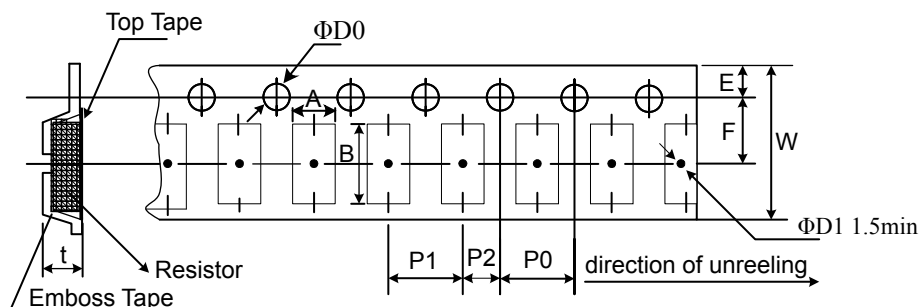
△ Parts (3.0nH, 7.8nH) are wound on a low profile bobbin.

► SMD Wirewound Inductor Packaging Quantity & Reel Specifications (Unit: mm)

Type	Emboss Plastic Tape (PCS)
TCWL08	2000
TCWL06	2000
TCWL05	2000
TCWL03	4000
TCWL02	4000



► SMD Wirewound Inductor Emboss Plastic Tape Specifications (Unit: mm)



Codes	A±0.10	B±0.10	W±0.2	E±0.10	F±0.1	P0±0.10	P1±0.10	P2±0.05	ΦD0±0.10	t±0.05
TCWL08	2.70	2.80	8.0	1.75	3.5	4.00	4.00	2.00	1.50	2.00
TCWL06	1.95	3.50	8.0	1.75	3.5	4.00	4.00	2.00	1.50	1.50
TCWL05	1.85	2.30	8.0	1.75	3.5	4.00	4.00	2.00	1.50	1.45
TCWL03	1.12	1.85	8.0	1.75	3.5	4.00	4.00	2.00	1.50	0.96
TCWL02	0.71	1.16	8.0	1.75	3.5	4.00	2.00	2.00	1.50	0.65



RF Inductor

► SMD Wirewound Inductor Environmental Characteristics

Electrical Performance Test

Item	Specification	Test Method
Vibration Test	Appearance: No damage L change: within $\pm 5\%$ Q change: within $\pm 10\%$	Test device shall be soldered on the substrate Oscillation Frequency: 10 to 55 to 10Hz for 1min Amplitude: 1.5mm Time: 2hrs for each axis (X, Y & Z), total 6hrs
Resistance to Soldering-Heat		Solder Temperature: $260\pm 5^{\circ}\text{C}$ Immersion Time: $10\pm 2\text{sec}$
Component Adhesion (Push Test)	1 lbs. For 0402 2 lbs. For 0603 3 lbs. For the rest	The device should be soldered ($260\pm 5^{\circ}\text{C}$ for 10 seconds) to a tinned copper subs rate. A dynamiter force gauge should be applied to the side of the component. The device must with stand a minimum force of 2 or 4 pounds without a failure of adhesion on termination
Drop Test	No damage	Dropping chip by each side and each corner. Drop 10 times in total Drop height: 100cm Drop weight: 125g
Solderability Test	90% covered with solder.	Inductor shall be dipped in a melted solder bath at $235\pm 5^{\circ}\text{C}$ for 5 seconds.
Resistance to Solvent Test	No damage on appearance and marking.	MIL-STD202F, Method 215D

Mechanical Performance Test

Item	Specification	Test Method
Inductance	Refer to standard electrical characteristic spec.	HP4291B
Q		HP4291B
SRF		HP8753D
DC Resistance RDC		Micro-Ohm meter (Gom-801G)
Rated Current IDC		Applied the current to coils, The inductance change should be less than 10% to initial value
Over Load Test	Inductors shall have no evidence of electrical and mechanical damage	Applied 2 times of rated allowed DC current to inductor for a period of 5 minute
Withstanding Voltage Test	Inductors shall be no evidence of electrical and mechanical damage.	AC voltage of 500 VAC applied between inductors terminal and case for 1 minute.
Insulation Resistance Test	1000M ohm min	100 VDC applied between inductor terminal and case



RF Inductor

Climatic Test

Item	Specification	Test Method															
Temperature Characteristic	Appearance: No damage L change: within $\pm 10\%$ Q change: within $\pm 20\%$	-40°C~+125°C															
Humidity Resistance		Temperature: 40 ± 2 °C Relative Humidity: 90~95% Time: 96hrs ± 2 hrs Measured after exposure in the room condition for 2hrs															
Low Temperature Storage Test		Temperature: -40 ± 2 °C Time: 48 ± 2 hrs Inductors are tested after 1 hour at room temperature															
Thermal Shock Test		One cycle: <table border="1"> <thead> <tr> <th>Step</th> <th>Temperature (°C)</th> <th>time (min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25± 3</td> <td>30</td> </tr> <tr> <td>2</td> <td>25± 2</td> <td>15</td> </tr> <tr> <td>3</td> <td>85± 3</td> <td>30</td> </tr> <tr> <td>4</td> <td>25± 2</td> <td>15</td> </tr> </tbody> </table>	Step	Temperature (°C)	time (min)	1	-25 ± 3	30	2	25 ± 2	15	3	85 ± 3	30	4	25 ± 2	15
Step		Temperature (°C)	time (min)														
1	-25 ± 3	30															
2	25 ± 2	15															
3	85 ± 3	30															
4	25 ± 2	15															
High Temperature Storage Test	Temperature: 125 ± 2 °C Time: 48 ± 2 hrs Measured after exposure in the room condition for 1hr																
High Temperature Load Life Test	There should be no evidence of short of open circuit.	Temperature: 85 ± 2 °C Time: 1000 ± 12 hrs Load: Allowed DC current															
Humidity Load Life		Temperature: 40 ± 2 °C Relative Humidity: 90~95% Time: 1000 ± 12 hrs Load: Allowed DC current															

Note: Storage Temperature: 25 ± 3 °C; Humidity < 80%RH

► How to Order

TCWL	08	J	T	L	1N6
①	②	③	④	⑤	⑥

① Wire Wound Chip Inductor

② Dimensions(L×W)(mm)

Code	Dimensions	EIA
02	1.00×0.50	0402
03	1.60×0.80	0603
05	2.00×1.20	0805
06	3.20×1.60	1206
08	2.50×2.00	1008

③ Resistance Tolerance

Code	Tolerance
G	$\pm 2\%$
J	$\pm 5\%$
K	$\pm 10\%$
M	$\pm 20\%$

④ Packaging : M ($\pm 20\%$)

⑤ Design code

Code	Design code
	Standard Inductor
L	Low Profile Inductor
H	High Current and High Q

⑥ Inductance

Code	Inductance
1N6	1.6nH
82N	82nH
R27	270nH
1R0	1000nH
100	10000nH



RF Inductors

Molded Type Chip Wirewound Inductor - EC Series

► Features

- Lead-free materials is used for the plating on the terminals.
- The product uses metal terminals, which realize excellent connection reliability.
- High resistance to heat, humidity, mechanical shocks and presser. Accurate dimensions for automatically surface mounted.
- The product has good heat durability that withstands lead-free compatible reflow soldering conditions.

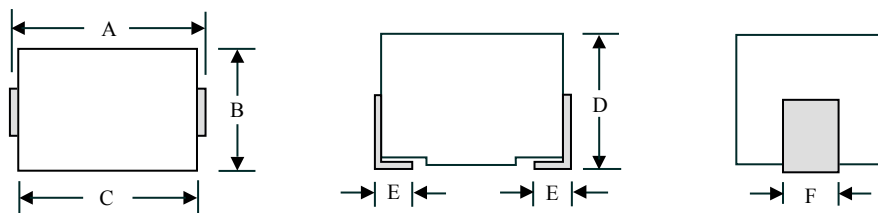
► Applications

- TCEC series high reliable wire would chip inductors for communication, equipment, instrument, video & been developed in response to the trend toward higher density mounting of parts in electric circuits.

► Operating temperature

- Range: -25 ~ +85 °C.

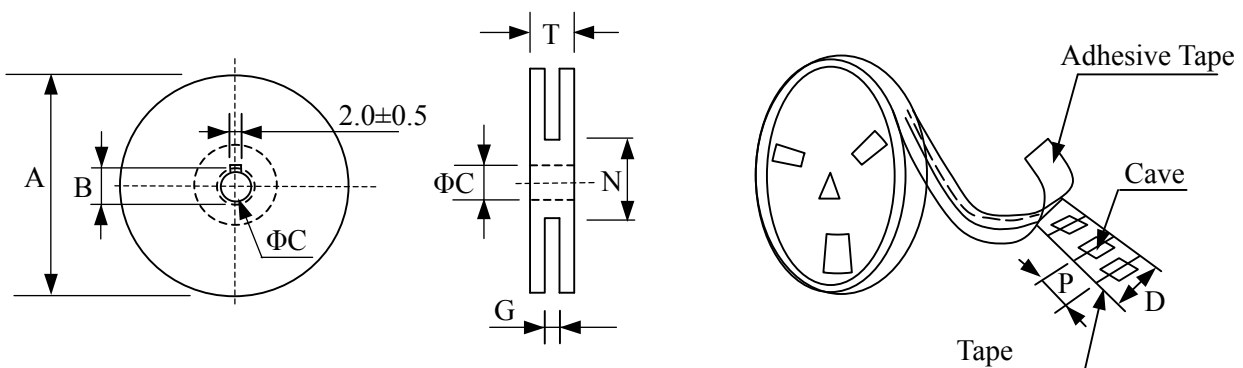
► Chip Wirewound Inductor Configurations & Dimensions (unit: mm)



Type	A	B	C	D	E	F
TCEC322522N(1210)	3.2 ± 0.4	2.5 ± 0.2	2.9 ± 0.3	2.2 ± 0.2	0.6 ± 0.2	1.0 ± 0.2
TCEC453232N(1812)	4.5 ± 0.4	3.2 ± 0.2	4.2 ± 0.3	3.2 ± 0.2	1.0 ± 0.2	1.2 ± 0.2

► Packaging - Chip Wirewound Inductors

TYPE	A	B	C	D	G	N	T
8mm	178	21.0±0.8	13.0±0.5	8	10 max	50 min	14.4 max
12mm	178	21.0±0.8	13.0±0.5	10	14 max	50 min	14.4 max





RF Inductors

► Electrical Characteristics for TCEC322522N(1210) Series - Chip Wirewound Inductors

Part No.	Inductance (μ H)	Q (min)	Test Freq. (MHZ)	SRF (MHz)(min)	DCR (Ω)(max)	IDC (mA)
TCEC322522N - 1R0M	1.0 \pm 20%	10	7.96	100	0.156	770
TCEC322522N - 1R5M	1.5 \pm 20%	10	7.96	80	0.195	580
TCEC322522N - 2R2M	2.2 \pm 20%	10	7.96	65	0.260	480
TCEC322522N - 3R3M	3.3 \pm 20%	10	7.96	55	0.325	400
TCEC322522N - 4R7M	4.7 \pm 20%	10	7.96	45	0.520	320
TCEC322522N - 6R8M	6.8 \pm 20%	10	7.96	35	0.650	280
TCEC322522N - 100K	10 \pm 10%	15	2.52	28	1.105	220
TCEC322522N - 150K	15 \pm 10%	15	2.52	25	1.690	180
TCEC322522N - 220K	22 \pm 10%	15	2.52	20	2.600	145
TCEC322522N - 330K	33 \pm 10%	15	2.52	15	3.640	115
TCEC322522N - 390K	39 \pm 10%	15	2.52	14	4.500	110
TCEC322522N - 470K	47 \pm 10%	15	2.52	13	5.460	105
TCEC322522N - 680K	68 \pm 10%	15	2.52	10	8.450	85
TCEC322522N - 820K	82 \pm 10%	15	2.52	9	8.710	80
TCEC322522N - 101K	100 \pm 10%	15	0.796	8	10.14	75

Note: Test equipment L, Q: HP4285A +16034E, or equivalent
SRF: HP8753C NETWORK ANALYZER, or equivalent.
DC resistance: AX-111A DIGITAL MILLIOHM METER, or equivalent.





RF Inductors

► Electrical Characteristics for TCEC453232N(1812) Series

Part No.	Inductance (μ H)	Q (min)	Test Freq. (MHZ)	SRF (MHz)(min)	DCR (Ω)(max)	IDC (mA)
TCEC453232N - 1R0K	1.0 \pm 10%	10	7.96	180	0.11	1050
TCEC453232N - 1R2K	1.2 \pm 10%	10	7.96	160	0.12	1000
TCEC453232N - 1R5K	1.5 \pm 10%	10	7.96	130	0.15	950
TCEC453232N - 1R8K	1.8 \pm 10%	10	7.96	100	0.16	900
TCEC453232N - 2R2K	2.2 \pm 10%	10	7.96	80	0.18	850
TCEC453232N - 2R7K	2.7 \pm 10%	10	7.96	60	0.20	800
TCEC453232N - 3R3K	3.3 \pm 10%	10	7.96	45	0.22	750
TCEC453232N - 3R9K	3.9 \pm 10%	10	7.96	40	0.24	700
TCEC453232N - 4R7K	4.7 \pm 10%	10	7.96	35	0.27	650
TCEC453232N - 5R6K	5.6 \pm 10%	10	7.96	30	0.30	650
TCEC453232N - 6R8K	6.8 \pm 10%	10	7.96	28	0.35	600
TCEC453232N - 8R2K	8.2 \pm 10%	10	7.96	25	0.40	600
TCEC453232N - 100K	10 \pm 10%	10	2.52	22	0.50	550
TCEC453232N - 120K	12 \pm 10%	10	2.52	21	0.60	500
TCEC453232N - 150K	15 \pm 10%	10	2.52	20	0.70	450
TCEC453232N - 180K	18 \pm 10%	10	2.52	19	0.80	400
TCEC453232N - 220K	22 \pm 10%	10	2.52	18	0.90	370
TCEC453232N - 270K	27 \pm 10%	10	2.52	16	1.20	330
TCEC453232N - 330K	33 \pm 10%	10	2.52	14	1.40	300
TCEC453232N - 390K	39 \pm 10%	10	2.52	12	1.60	280
TCEC453232N - 470K	47 \pm 10%	10	2.52	11.5	1.90	260
TCEC453232N - 560K	56 \pm 10%	10	2.52	11	2.20	240
TCEC453232N - 680K	68 \pm 10%	10	2.52	10	2.60	220
TCEC453232N - 820K	82 \pm 10%	10	2.52	9	3.50	200
TCEC453232N - 101K	100 \pm 10%	20	0.796	8	4.00	180
TCEC453232N - 121K	120 \pm 10%	20	0.796	7.5	4.50	160
TCEC453232N - 151K	150 \pm 10%	20	0.796	7	6.50	140
TCEC453232N - 181K	180 \pm 10%	20	0.796	6.5	7.50	120
TCEC453232N - 221K	220 \pm 10%	20	0.796	5.5	9.00	120
TCEC453232N - 271K	270 \pm 10%	20	0.796	5	11.0	100
TCEC453232N - 331K	330 \pm 10%	20	0.796	4	13.0	90

Note: Test equipment L, Q: HP4285A +16034E, or equivalent
SRF: HP8753C NETWORK ANALYZER, or equivalent.
DC resistance: AX-111A DIGITAL MILLIOHM METER, or equivalent.



RF Inductors

► Chip Wirewound Inductor Mechanical Performance Test

REQUIREMENTS	CHARACTERISTICS	TEST METHOD(DIS C 5321)
Terminal Strength	No evidence of damage	Terminals shall withstand a pull of 0.5Kgf in a horizoninal direction
Vibration	Δ L/L shall be within $\pm 3\%$. No evidence of damage	2 hours in each direction of X,Y,Z on p-Board at a frequency range of 10-55-10HZ with 1.5mm amplitude
Dropping	Δ L/L shall be within $\pm 3\%$. No evidence of damage	Dropping 1m over the ground of concete or cement

► Chip Wirewound Inductor Electrical Performance Test

REQUIREMENTS	CHARACTERISTICS	TEST METHOD(JIS C 5321)
Resistance to Soldering Heat	No evidence of damage Δ L/L shall be within $\pm 3\%$	Immerse in the solder (H63A) of $260\pm 5^\circ\text{C}$ for $10\pm 1\text{sec}$, leave for 2hrs at normal TEMP
Solderability	More than 90% surface to be covered with new soldering	AV100V 60 SEC.
Dielectric with standing voltage	No veridence of breakdown resistor 1000 Mohm and over	DC500V 30 SEC.
Insulation Resistance	No veidence of breakdown, resistor 1000 Mohm and over	DC 500V 30 SEC.

► Chip Wirewound Inductor Climatic Test

REQUIREMENTS	CHARACTERISTICS	TEST METHOD(JIS C 5321)
LOW TEMP. Characteristics	No evidence of damage, Δ L/L within $\pm 5\%$, Q/Q within $\pm 30\%$	Immerse in the solder (H63A)of $260\pm 5^\circ\text{C}$ for $10\pm 1\text{sec}$, leave for 2hrs at normal TEMP.
TEMP. Cycling	No evidence of damage, Δ L/L within ± 5	Keep for 30 min. at TEMP.of $-25^\circ\text{C}\sim +85^\circ$ Cat 5 cycle case of TEMP. change from low to high and V.V.
Temperature Characteristics	Δ L/L within $\pm 3\%$	Δ L/L to be measured at the temperature of between -25°C and $+85^\circ\text{C}$
Moiisture load Characteristics	No evidence of damage, Δ L/L within $\pm 5\%$, Q/Q within ± 30	TEMP. $40\pm 2^\circ\text{C}$,Humidity 90~95% $96\pm 2\text{hrs}$, measurements shall be performed after 1~2hrs at normal TEMP..
High TEMP. overload Characteristics	No evidence of damage, Δ L/L within $\pm 5\%$,Q/Q within ± 30	Leave for $96\pm 2\text{hrs}$ in a bath of TEMP. $85\pm 2^\circ\text{C}$,measurements shall be performed after 1~2hrs at normal TEMP.

► How to Order

TCEC322522N - 1R0 M

① ② ③

① Chip Inductors Wirewound Molded Type: TCEC322522N, TCEC453232N

② Inductance

Code	Inductance
R10	0.10 μH
1R0	1.00 μH
100	10.00 $\times 10^0\mu\text{H}$
101	10.00 $\times 10^1\mu\text{H}$
102	10.00 $\times 10^2\mu\text{H}$
103	10.00 $\times 10^3\mu\text{H}$

③ Tolerance

Code	Tolerance
K	10%
M	20%



RF Inductors

Chip Wirewound Inductor Molded Type - EM Series

► Features

- Lead-free materials is used for the plating on the terminals.
- The product uses metal terminals, which realize excellent connection reliability.
- High resistance to heat, humidity, mechanical shocks and presser. Accurate dimensions for automatically surface mounted.
- The product has good heat durability that withstands lead-free compatible reflow soldering conditions.

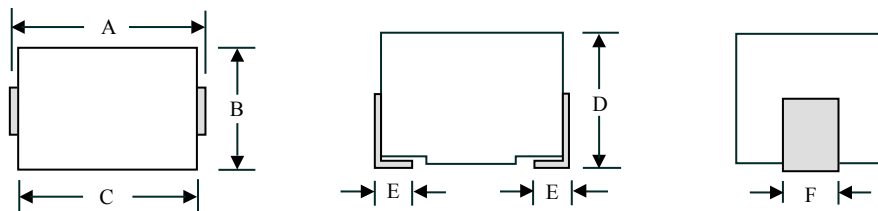
► Applications

- TCEM series high reliable wire would chip inductors for communication, equipment, instrument, video & been developed in response to the trend toward higher density mounting of parts in electric circuits.

► Operating temperature

- Range: -25 ~ +85 °C.

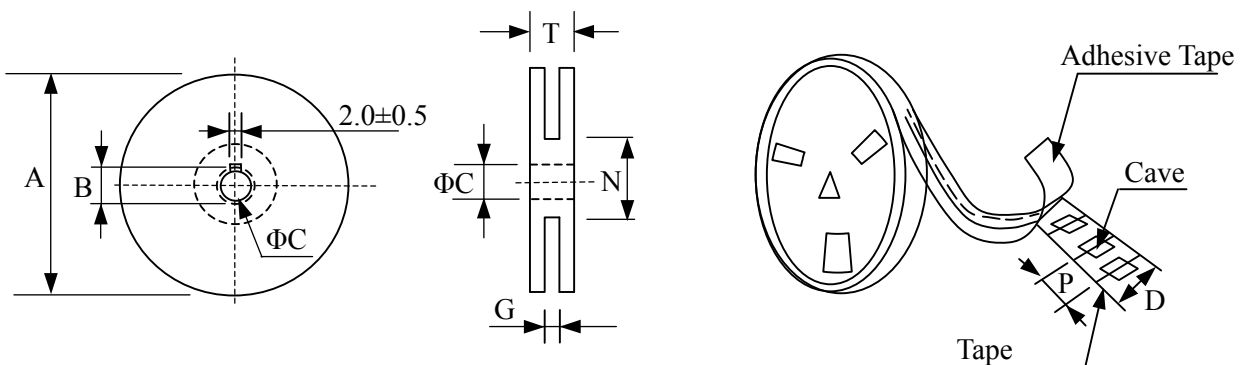
► Chip Wirewound Inductor Configurations & Dimensions (unit: mm)



Type	A	B	C	D	E	F
TCEM322522N(1210)	3.2 ± 0.4	2.5 ± 0.2	2.9 ± 0.3	2.2 ± 0.2	0.6 ± 0.2	1.0 ± 0.2
TCEM453232N(1812)	4.5 ± 0.4	3.2 ± 0.2	4.2 ± 0.3	3.2 ± 0.2	1.0 ± 0.2	1.2 ± 0.2

► Packaging - Chip Wirewound Inductors

TYPE	A	B	C	D	G	N	T
8mm	178	21.0 ± 0.8	13.0 ± 0.5	8	10 max	50 min	14.4 max
12mm	178	21.0 ± 0.8	13.0 ± 0.5	10	14 max	50 min	14.4 max





► Electrical Characteristics for TCEM322522N(1210) Series - Chip Wirewound Inductors

Part Number	Inductance (μH)	Tolerance (%)	Q (min)	Test Freq. (MHZ)	SRF (MHz)(min)	DCR (Ω)(max)	IDC (mA)
TCEM322522N - R10*	0.10	±20,±10	28	100	700	0.44	450
TCEM322522N - R12*	0.12	±20,±10	30	25.2	500	0.22	450
TCEM322522N - R15*	0.15	±20,±10	30	25.2	450	0.25	450
TCEM322522N - R18*	0.18	±20,±10	30	25.2	400	0.28	450
TCEM322522N - R22*	0.22	±20,±10	30	25.2	350	0.32	450
TCEM322522N - R27*	0.27	±20,±10	30	25.2	320	0.36	450
TCEM322522N - R33*	0.33	±20,±10	30	25.2	300	0.40	450
TCEM322522N - R39*	0.39	±20,±10	30	25.2	250	0.45	450
TCEM322522N - R47*	0.47	±20,±10	30	25.2	220	0.50	450
TCEM322522N - R56*	0.56	±20,±10	30	25.2	180	0.55	450
TCEM322522N - R68*	0.68	±20,±10	30	25.2	160	0.60	450
TCEM322522N - R82*	0.82	±20,±10	30	25.2	140	0.65	450
TCEM322522N - 1R0*	1.00	±10,±5	30	7.96	120	0.70	400
TCEM322522N - 1R2*	1.20	±10,±5	30	7.96	100	0.75	390
TCEM322522N - 1R5*	1.50	±10,±5	30	7.96	85	0.85	370
TCEM322522N - 1R8*	1.80	±10,±5	30	7.96	80	0.90	350
TCEM322522N - 2R2*	2.20	±10,±5	30	7.96	75	1.00	320
TCEM322522N - 2R7*	2.70	±10,±5	30	7.96	70	1.10	290
TCEM322522N - 3R3*	3.30	±10,±5	30	7.96	60	1.20	260
TCEM322522N - 3R9*	3.90	±10,±5	30	7.96	55	1.30	250
TCEM322522N - 4R7*	4.70	±10,±5	30	7.96	50	1.50	220
TCEM322522N - 5R6*	5.60	±10,±5	30	7.96	45	1.60	200
TCEM322522N - 6R8*	6.80	±10,±5	30	7.96	40	1.80	180
TCEM322522N - 8R2*	8.20	±10,±5	30	7.96	35	2.00	170
TCEM322522N - 100*	10.0	±10,±5	30	2.52	30	2.10	150
TCEM322522N - 120*	12.0	±10,±5	30	2.52	20	2.50	140
TCEM322522N - 150*	15.0	±10,±5	30	2.52	20	2.80	130
TCEM322522N - 180*	18.0	±10,±5	30	2.52	20	3.30	120
TCEM322522N - 220*	22.0	±10,±5	30	2.52	20	3.70	110
TCEM322522N - 270*	27.0	±10,±5	30	2.52	20	5.00	80
TCEM322522N - 330*	33.0	±10,±5	30	2.52	17	5.60	70
TCEM322522N - 390*	39.0	±10,±5	30	2.52	16	6.40	65
TCEM322522N - 470*	47.0	±10,±5	30	2.52	15	7.00	60
TCEM322522N - 560*	56.0	±10,±5	30	2.52	13	8.00	55
TCEM322522N - 680*	68.0	±10,±5	30	2.52	12	9.00	50
TCEM322522N - 820*	82.0	±10,±5	30	2.52	11	10.0	45
TCEM322522N - 101*	100	±10,±5	20	0.796	10	10.0	40
TCEM322522N - 121*	120	±10,±5	20	0.796	10	11.0	70
TCEM322522N - 151*	150	±10,±5	20	0.796	8	15.0	65
TCEM322522N - 181*	180	±10,±5	20	0.796	7	17.0	60
TCEM322522N - 221*	220	±10,±5	20	0.796	7	21.0	50

Note: Test equipment L, Q: HP4285A +16034E, or equivalent
SRF: HP8753C NETWORK ANALYZER, or equivalent.
DC resistance: AX-111A DIGITAL MILLIOHM METER, or equivalent.



RF Inductors

► Electrical Characteristics for TCEM453232N(1812) Series

Part Number	Inductance (μH)	Tolerance (%)	Q (min)	Test Freq. (MHZ)	SRF (MHz)(min)	DCR (Ω)(max)	IDC (mA)
TCEM453232N - R10*	0.10	±10,±20	25	25.2	300	0.18	800
TCEM453232N - R12*	0.12	±10,±20	30	25.2	280	0.20	770
TCEM453232N - R15*	0.15	±10,±20	30	25.2	250	0.22	730
TCEM453232N - R18*	0.18	±10,±20	30	25.2	220	0.24	700
TCEM453232N - R22*	0.22	±10,±20	30	25.2	200	0.25	665
TCEM453232N - R27*	0.27	±10,±20	30	25.2	180	0.26	635
TCEM453232N - R33*	0.33	±10,±20	30	25.2	165	0.28	605
TCEM453232N - R39*	0.39	±10,±20	30	25.2	150	0.30	575
TCEM453232N - R47*	0.47	±10,±20	30	25.2	145	0.32	545
TCEM453232N - R56*	0.56	±10,±20	30	25.2	140	0.36	520
TCEM453232N - R68*	0.68	±10,±20	30	25.2	135	0.40	500
TCEM453232N - R82*	0.82	±10,±20	30	25.2	130	0.45	475
TCEM453232N - 1R0*	1.00	±10,±20	40	7.96	100	0.50	450
TCEM453232N - 1R2*	1.20	±10,±20	40	7.96	80	0.55	430
TCEM453232N - 1R5*	1.50	±10,±20	40	7.96	70	0.60	410
TCEM453232N - 1R8*	1.80	±10,±20	40	7.96	60	0.65	390
TCEM453232N - 2R2*	2.20	±10,±20	40	7.96	55	0.70	380
TCEM453232N - 2R7*	2.70	±10,±20	40	7.96	50	0.75	370
TCEM453232N - 3R3*	3.30	±10,±20	40	7.96	45	0.80	355
TCEM453232N - 3R9*	3.90	±10,±20	40	7.96	40	0.90	330
TCEM453232N - 4R7*	4.70	±10,±20	40	7.96	35	1.00	315
TCEM453232N - 5R6*	5.60	±10,±20	40	7.96	33	1.10	300
TCEM453232N - 6R8*	6.80	±10,±20	40	7.96	27	1.20	285
TCEM453232N - 8R2*	8.20	±5,±10	40	7.96	25	1.40	270
TCEM453232N - 100*	10.0	±5,±10	40	2.52	20	1.60	250
TCEM453232N - 120*	12.0	±5,±10	40	2.52	18	2.00	225
TCEM453232N - 150*	15.0	±5,±10	40	2.52	17	2.50	200
TCEM453232N - 180*	18.0	±5,±10	40	2.52	15	2.80	190
TCEM453232N - 220*	22.0	±5,±10	40	2.52	13	3.20	180
TCEM453232N - 270*	27.0	±5,±10	40	2.52	12	3.60	170
TCEM453232N - 330*	33.0	±5,±10	40	2.52	11	4.00	160
TCEM453232N - 390*	39.0	±5,±10	40	2.52	10	4.50	150
TCEM453232N - 470*	47.0	±5,±10	40	2.52	10	5.00	140
TCEM453232N - 560*	56.0	±5,±10	40	2.52	9	5.50	135
TCEM453232N - 680*	68.0	±5,±10	40	2.52	9	6.00	130
TCEM453232N - 820*	82.0	±5,±10	40	2.52	8	7.00	120
TCEM453232N - 101*	100	±5,±10	30	0.796	8	8.00	110
TCEM453232N - 121*	120	±5,±10	30	0.796	6	8.00	110
TCEM453232N - 151*	150	±5,±10	30	0.796	5	9.00	105

Continued on the following page. ↘



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Part Number	Inductance (μH)	Tolerance (%)	Q (min)	Test Freq. (MHZ)	SRF (MHz)(min)	DCR (Ω)(max)	IDC (mA)
TCEM453232N - 181*	180	±5,±10	30	0.796	5	9.50	102
TCEM453232N - 221*	220	±5,±10	30	0.796	4	10.0	100
TCEM453232N - 271*	270	±5,±10	30	0.796	4	12.0	92
TCEM453232N - 331*	330	±5,±10	30	0.796	3.5	14.0	85
TCEM453232N - 391*	390	±5,±10	30	0.796	3	18.0	80
TCEM453232N - 471*	470	±5,±10	30	0.796	3	26.0	62
TCEM453232N - 561*	560	±5,±10	20	0.796	3	30.0	50
TCEM453232N - 681*	680	±5,±10	20	0.796	3	30.0	50
TCEM453232N - 821*	820	±5,±10	20	0.796	2.5	35.0	30
TCEM453232N - 102*	1000	±5,±10	10	0.252	2.5	40.0	30

Note: Test equipment L, Q: HP4285A +16034E, or equivalent
 SRF: HP8753C NETWORK ANALYZER, or equivalent.
 DC resistance: AX-111A DIGITAL MILLIOHM METER, or equivalent.

► Chip Wirewound Inductor Mechanical Performance Test

REQUIREMENTS	CHARACTERISTICS	TEST METHOD(DIS C 5321)
Terminal Strength	No evidence of damage	Terminals shall withstand a pull of 0.5Kgf in a horizontal direction
Vibration	Δ L/L shall be within ±3%. No evidence of damage	2 hours in each direction of X,Y,Z on p-Board at a frequency range of 10-55-10HZ with 1.5mm amplitude
Dropping	Δ L/L shall be within ±3%. No evidence of damage	Dropping 1m over the ground of concrete or cement

► Chip Wirewound Inductor Electrical Performance Test

REQUIREMENTS	CHARACTERISTICS	TEST METHOD(JIS C 5321)
Resistance to Soldering Heat	No evidence of damage Δ L/L shall be within ±3%	Immerse in the solder (H63A) of 260±5°C for 10±1sec, leave for 2hrs at normal TEMP
Solderability	More than 90% surface to be covered with new soldering	AV100V 60 SEC.
Dielectric with standing voltage	No evidence of breakdown resistor 1000 Mohm and over	DC500V 30 SEC.
Insulation Resistance	No evidence of breakdown, resistor 1000 Mohm and over	DC 500V 30 SEC.





RF Inductors

► Chip Wirewound Inductor Climatic Test

REQUIREMENTS	CHARACTERISTICS	TEST METHOD(JIS C 5321)
LOW TEMP. Characteristics	No evidence of damage, $\Delta L/L$ within $\pm 5\%$, Q/Q within $\pm 30\%$	Immerse in the solder (H63A) of $260 \pm 5^\circ\text{C}$ for 10 ± 1 sec, leave for 2hrs at normal TEMP.
TEMP. Cycling	No evidence of damage, $\Delta L/L$ within ± 5	Keep for 30 min. at TEMP. of $-25^\circ\text{C} \sim +85^\circ$ Cat 5 cycle case of TEMP. change from low to high and V.V.
Temperature Characteristics	$\Delta L/L$ within $\pm 3\%$	$\Delta L/L$ to be measured at the temperature of between -25°C and $+85^\circ\text{C}$
Moisture load Characteristics	No evidence of damage, $\Delta L/L$ within $\pm 5\%$, Q/Q within ± 30	TEMP. $40 \pm 2^\circ\text{C}$, Humidity 90~95% 96 ± 2 hrs, measurements shall be performed after 1~2hrs at normal TEMP..
High TEMP. overload Characteristics	No evidence of damage, $\Delta L/L$ within $\pm 5\%$, Q/Q within ± 30	Leave for 96 ± 2 hrs in a bath of TEMP. $85 \pm 2^\circ\text{C}$, measurements shall be performed after 1~2hrs at normal TEMP.

► How to Order

TCEM322522N -
 1R0
M

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❶ Chip Wirewound Inductors Molded Type: TCEM322522N, TCEM453232N

❷ Inductance

Code	Inductance
R10	$0.10\mu\text{H}$
1R0	$1.00\mu\text{H}$
100	$10.00 \times 10^0\mu\text{H}$
101	$10.00 \times 10^1\mu\text{H}$
102	$10.00 \times 10^2\mu\text{H}$
103	$10.00 \times 10^3\mu\text{H}$

❸ Tolerance

Code	Tolerance
J	5%
K	10%
M	20%

