

# Multilayer Ceramic Inductors

## Multilayer Ceramic Inductors Add New Options for High-Frequency Applications

### ► Preview

Ceramic materials and process technologies have allowed Token to add magnetics portfolio with a new series of multilayer high-frequency ceramic inductors. The Token TRMF series inductors are aimed at signal shaping and RF filtering applications in a wide range of electronic systems. Target end products include remote controls, high-end video processing equipment, set-top boxes, cell phones, pagers, keyless entry systems, wireless and wireline networks, and cable modems.

Standard inductance options for the TRMF series range from 1 nH to 100 nH. Available tolerances are  $\pm 0.3\text{nH}$ ,  $\pm 5\%$ , and  $\pm 10\%$ . Maximum DC resistance (DCR) ranges from  $0.1\Omega$  to  $2.5\Omega$  depending on inductance. In a space-saving surface-mount 0402 package measures (1 x 0.5 mm) and with 2-mil (0.5 mm) height profile. 0402, 0603, and 0805 package size are available.

TRMF inductors feature a high Q rating and minimum self-resonant frequency ranges from 0.6 GHz to 10 GHz. Designed for reliable operation in high-frequency applications, TRMF inductors are rated for currents from 100 mA to 500 mA. Their surface-mount packaging is solderable by reflow or wave methods and specified for a wide operating temperature range of  $-55^\circ\text{C}$  to  $+125^\circ\text{C}$ .

The TRMF series is fully RoHS compliant and is supplied in tape and reel packaging ready for use with automated assembly processes.

Contact us with your specific needs.

### Features :

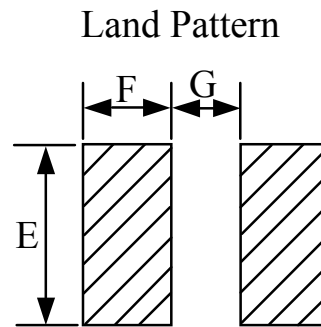
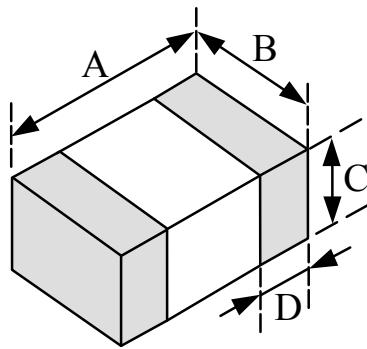
- High Q and high reliability and ceramic material.
- To prevent EMI interference noises between electronic circuits.

### Applications :

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



► Configurations & Dimensions (unit: mm)

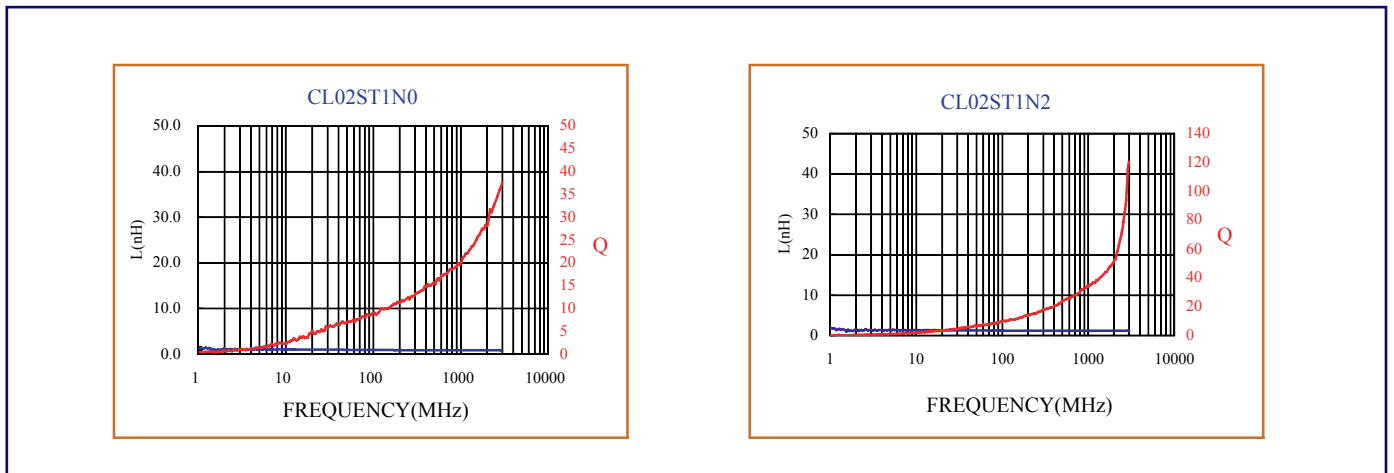


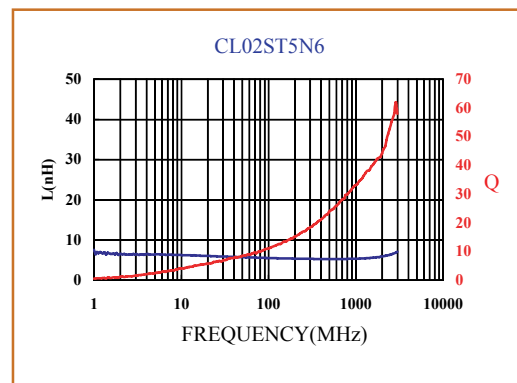
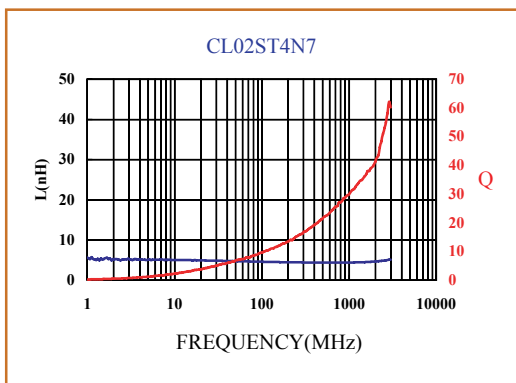
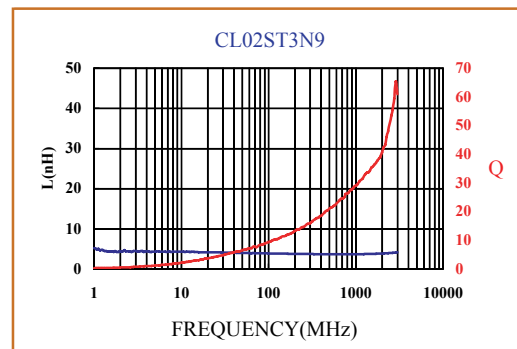
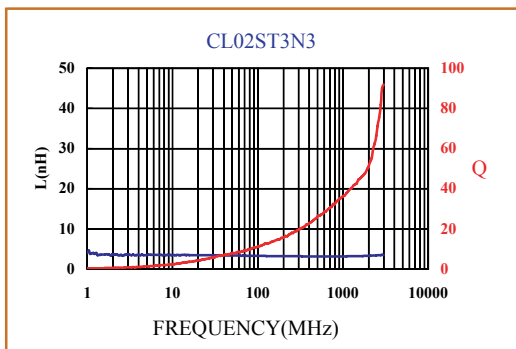
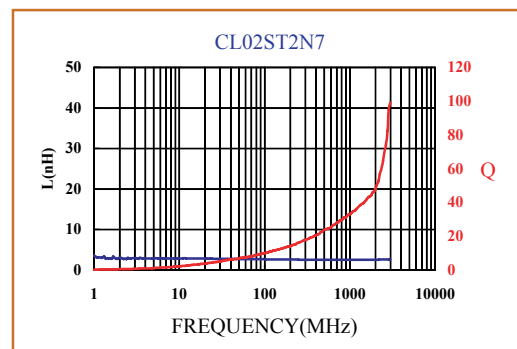
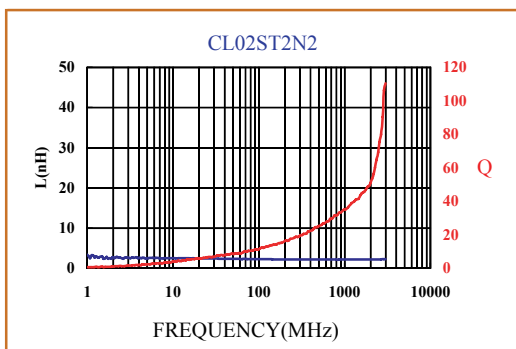
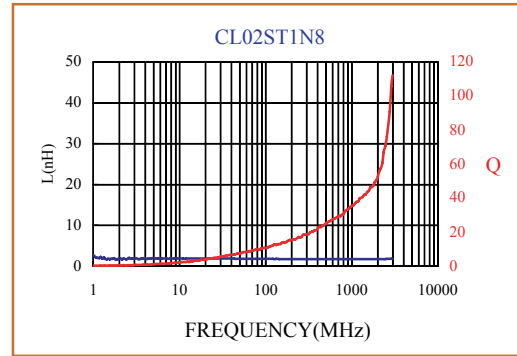
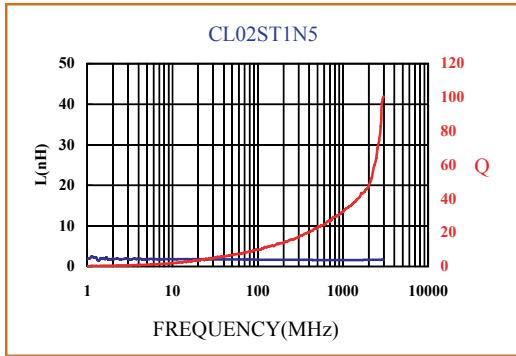
Type	A	B	C	D	E	F	G
TRMF100505 (0402)	$1.0 \pm 0.1$	$0.5 \pm 0.1$	$0.5 \pm 0.1$	0.1(min)	0.5	0.45	0.5
TRMF160808 (0603)	$1.6 \pm 0.2$	$0.8 \pm 0.2$	$0.8 \pm 0.2$	$0.3 \pm 0.2$	0.7	0.70	0.7
TRMF201209 (0805)	$2.0 \pm 0.2$	$1.2 \pm 0.2$	$0.9 \pm 0.2$	$0.5 \pm 0.3$	1.0	0.80	1.0

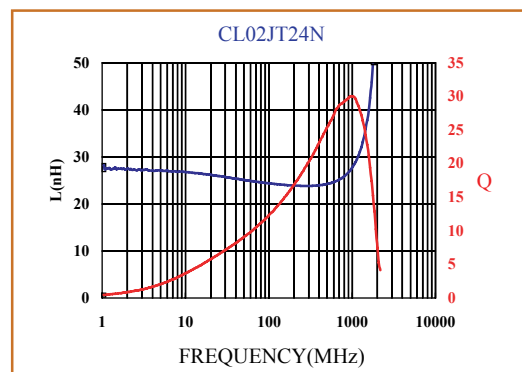
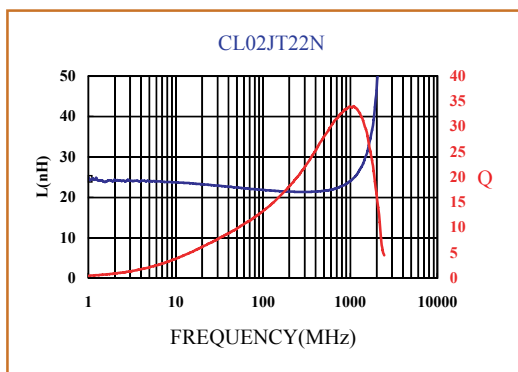
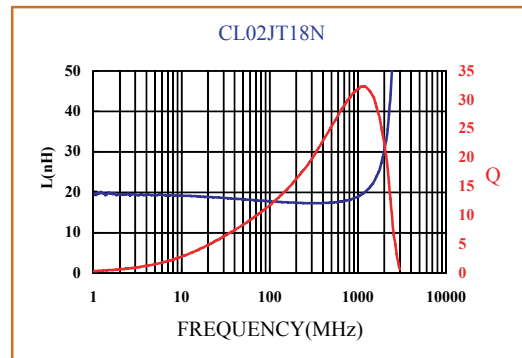
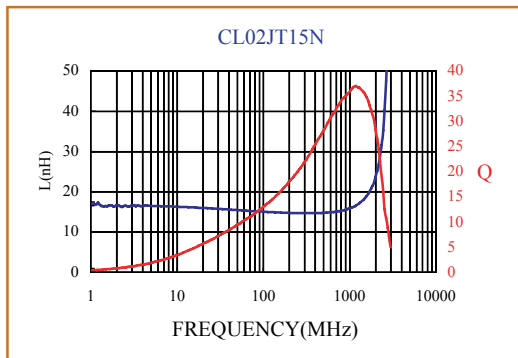
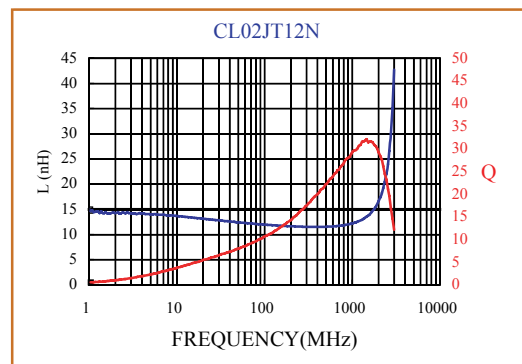
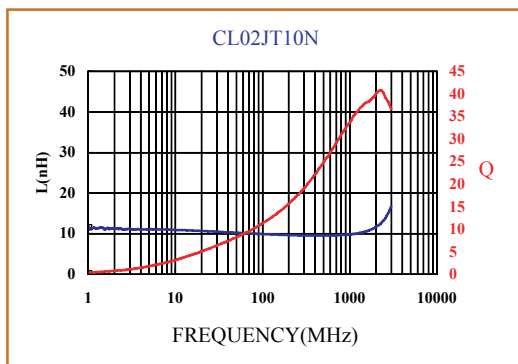
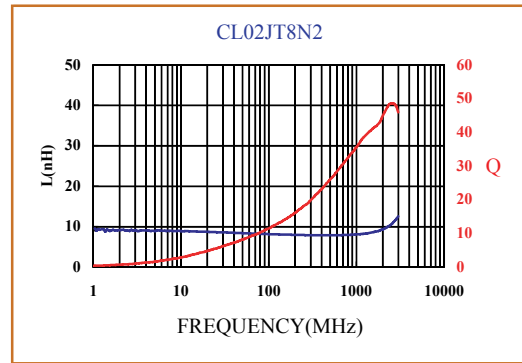
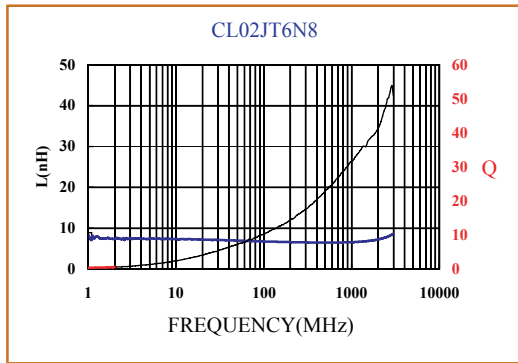
► (TRMF100505) Electrical Characteristics (EIA 0402)

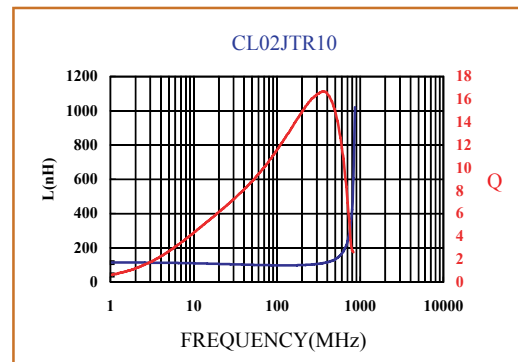
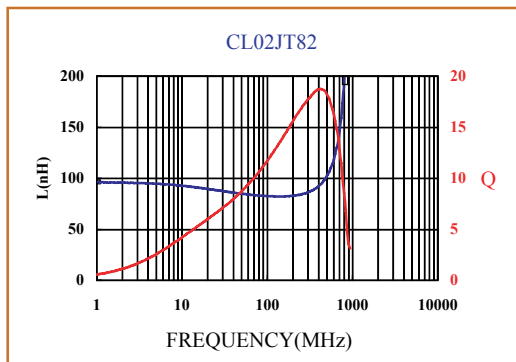
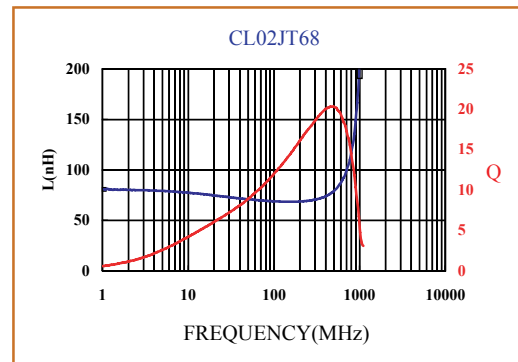
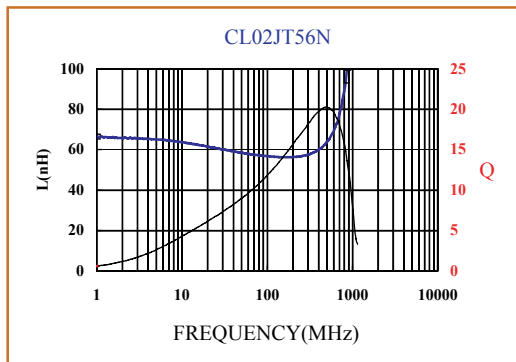
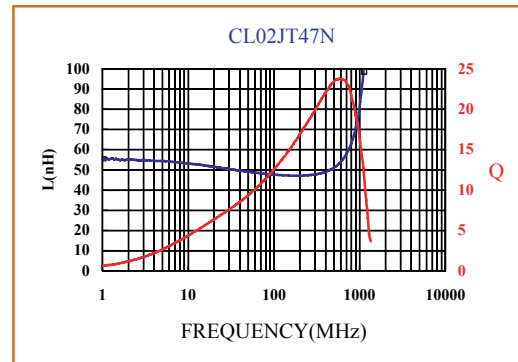
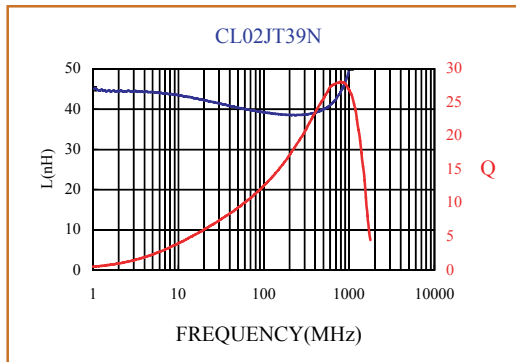
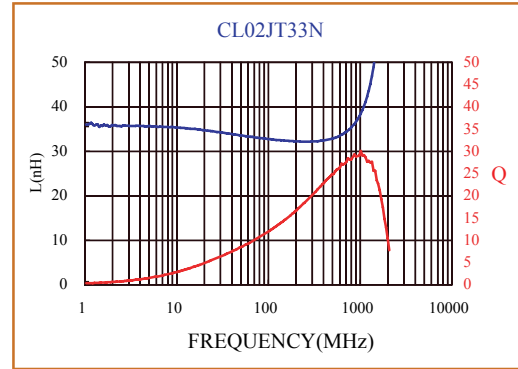
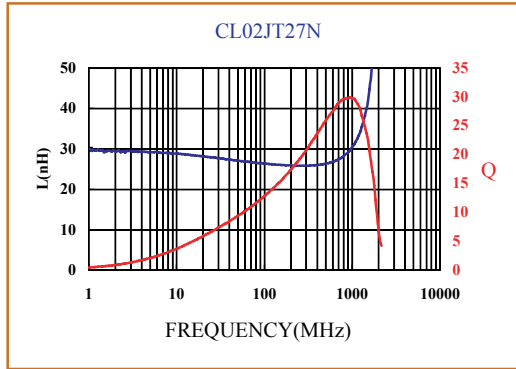
Part Number	Inductance (nH)	Tolerance	Quality Factor /Min	L/Q Freq. (MHz)	Q (typical) Frequency (MHz)			Resistance DC/Max (Ohm)	Self Resonant Frequency /Min.(GHz)	Current DC/Max (mA)
					100	500	800			
TRMF100505 - 1N0*	1.0	± 0.3nH	8	100	11	33	37	0.12	10.0	300
TRMF100505 - 1N2*	1.2	± 0.3nH	8	100	11	29	26	0.12	10.0	300
TRMF100505 - 1N5*	1.5	± 0.3nH	8	100	12	29	40	0.13	6.00	300
TRMF100505 - 1N8*	1.8	± 0.3nH	8	100	11	26	34	0.14	6.00	300
TRMF100505 - 2N2*	2.2	± 0.3nH	8	100	11	26	36	0.16	6.00	300
TRMF100505 - 2N7*	2.7	± 0.3nH	8	100	12	29	38	0.17	6.00	300
TRMF100505 - 3N3*	3.3	±0.3nH,±10%	8	100	11	28	37	0.19	6.00	300
TRMF100505 - 3N9*	3.9	±0.3nH,±10%	8	100	11	26	32	0.22	4.00	300
TRMF100505 - 4N7*	4.7	±0.3nH,±10%	8	100	12	28	37	0.24	4.00	300
TRMF100505 - 5N6*	5.6	±0.3nH,±10%	8	100	11	26	35	0.27	4.00	300
TRMF100505 - 6N8*	6.8	±5%,±10%	8	100	11	26	34	0.32	3.90	300
TRMF100505 - 8N2*	8.2	±5%,±10%	8	100	12	26	34	0.37	3.50	300
TRMF100505 - 10N*	10	±5%,±10%	8	100	11	25	31	0.42	3.20	300
TRMF100505 - 12N*	12	±5%,±10%	8	100	11	25	31	0.50	2.60	300
TRMF100505 - 15N*	15	±5%,±10%	8	100	11	24	30	0.55	2.30	300
TRMF100505 - 18N*	18	±5%,±10%	8	100	11	24	30	0.65	2.00	300
TRMF100505 - 22N*	22	±5%,±10%	8	100	12	24	30	0.80	1.60	300
TRMF100505 - 27N*	27	±5%,±10%	8	100	11	24	28	0.90	1.40	300
TRMF100505 - 33N*	33	±5%,±10%	8	100	12	23	26	1.00	1.20	200
TRMF100505 - 39N*	39	±5%,±10%	8	100	11	21	24	1.20	1.10	150
TRMF100505 - 47N*	47	±5%,±10%	8	100	11	21	23	1.30	0.90	150
TRMF100505 - 56N*	56	±5%,±10%	8	100	12	21	21	2.00	0.75	150
TRMF100505 - 68N*	68	±5%,±10%	8	100	11	19	19	2.20	0.75	100
TRMF100505 - 82N*	82	±5%,±10%	8	100	10	19	16	2.50	0.60	100
TRMF100505 - R10*	100	±5%,±10%	8	100	10	18	-	2.50	0.60	100

Note: Measuring Equipment : HP-4291B + 16192A  
Storage Temperature : 25±3°C ; Humidity<80% RH



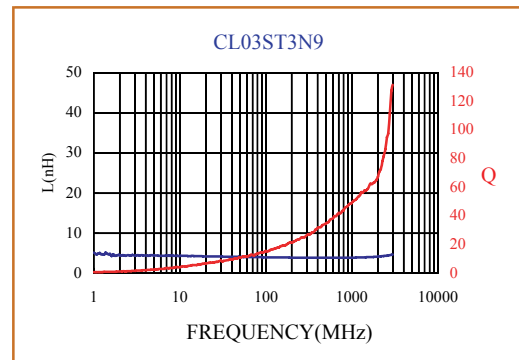
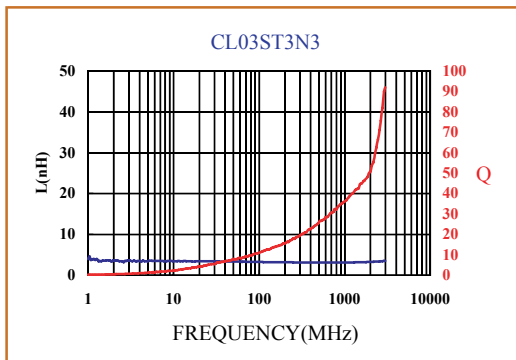
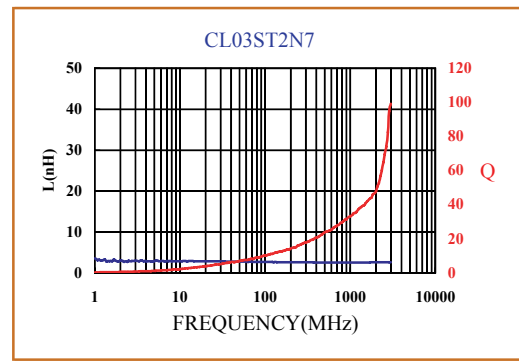
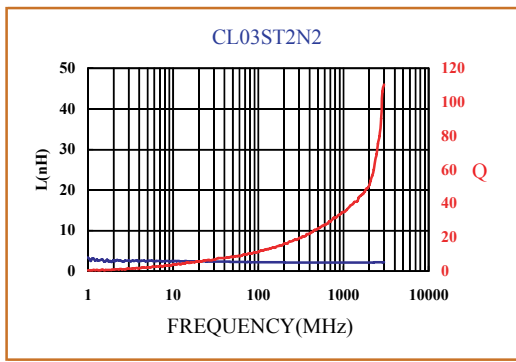
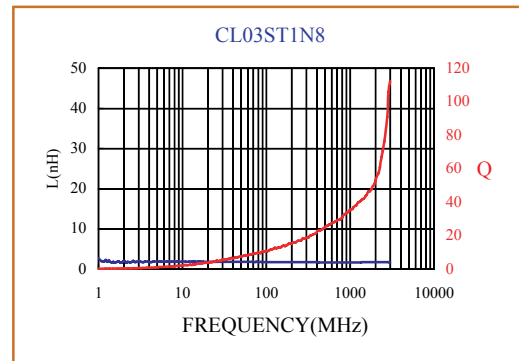
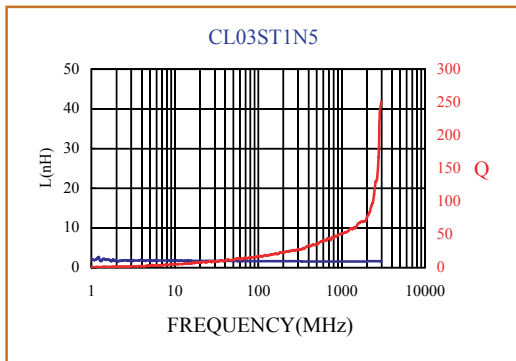
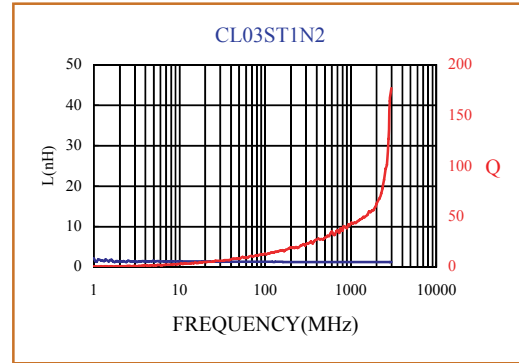
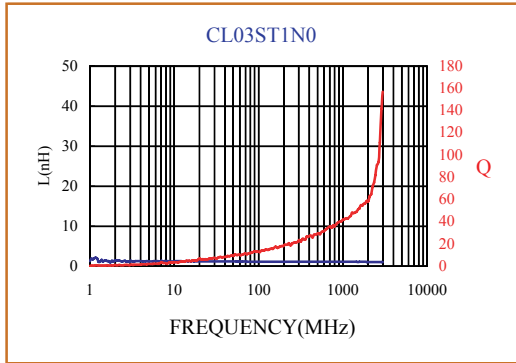




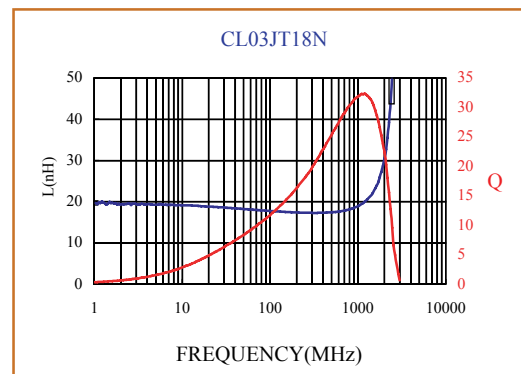
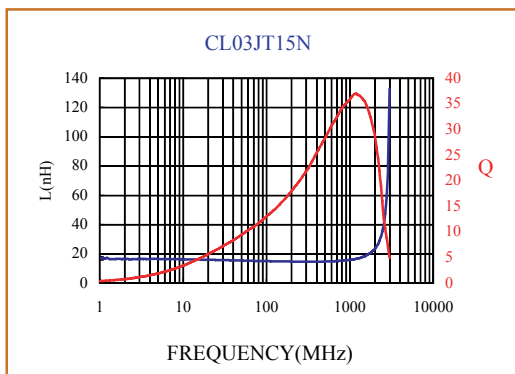
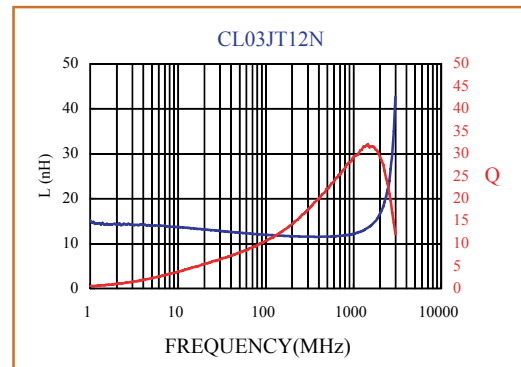
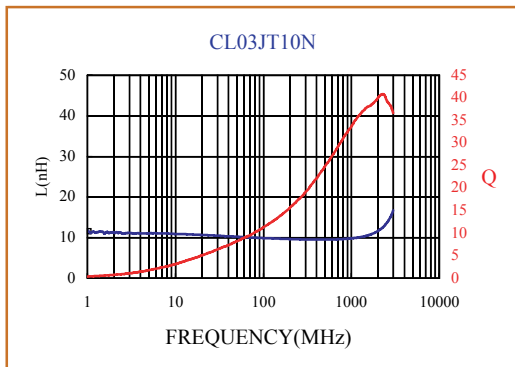
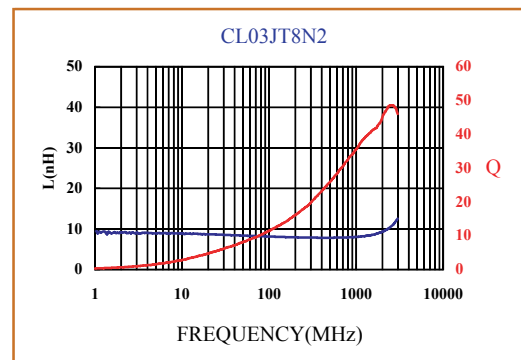
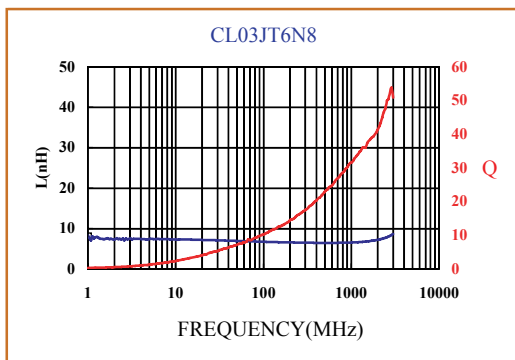
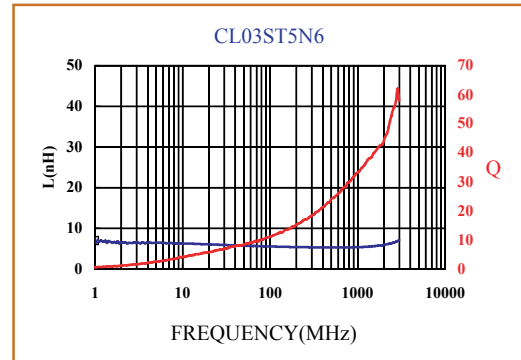
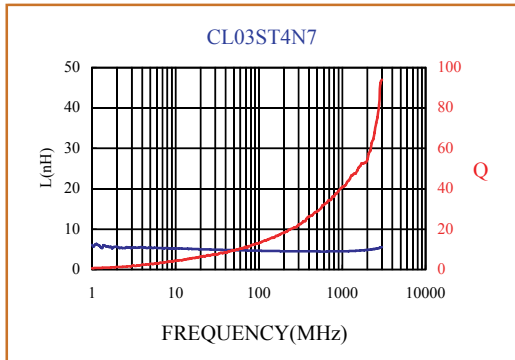


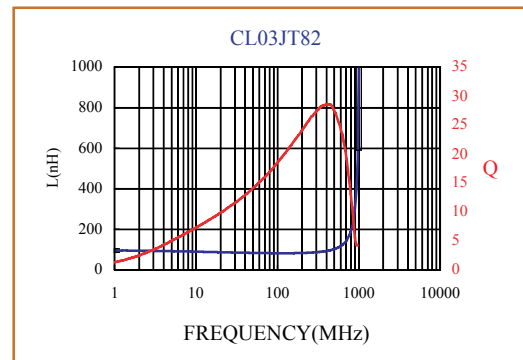
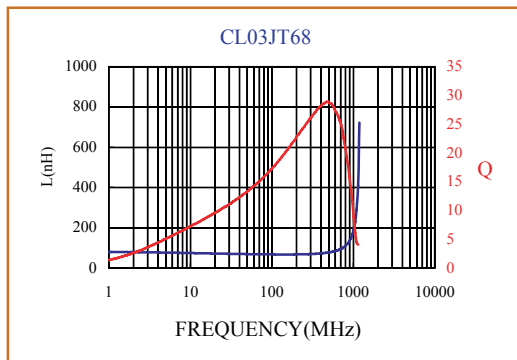
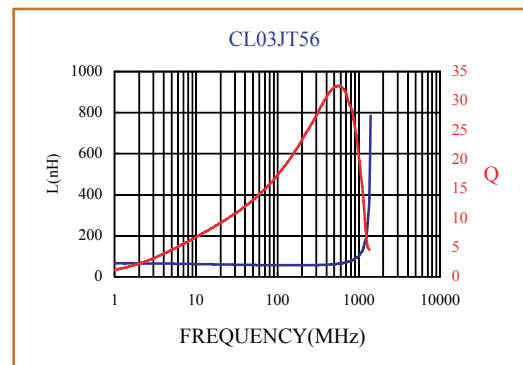
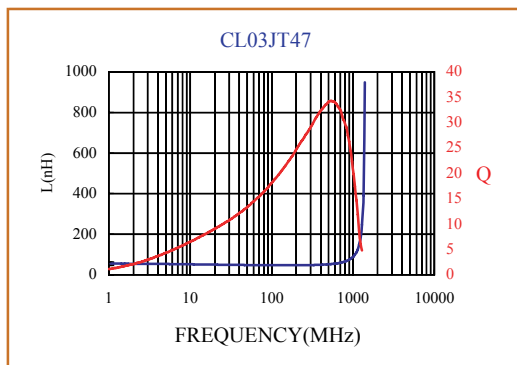
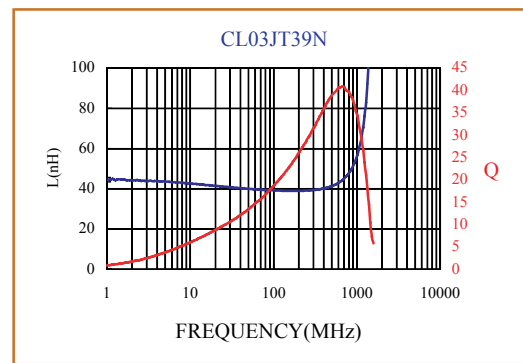
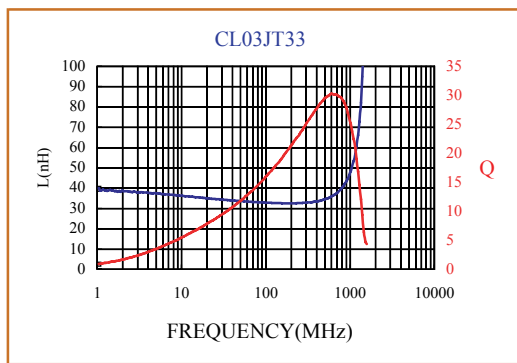
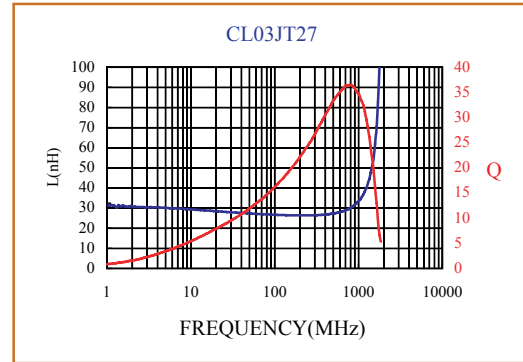
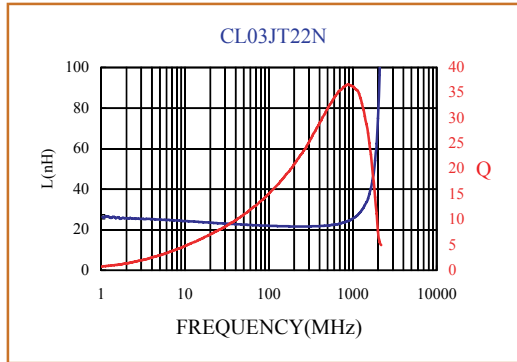
▶ (TRMF201209) Electrical Characteristics (EIA 0805)

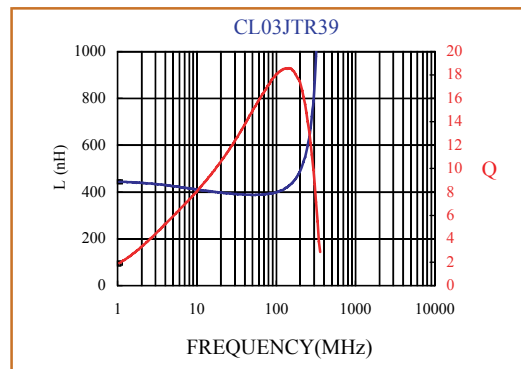
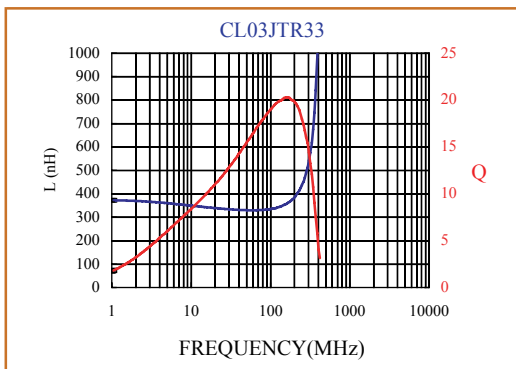
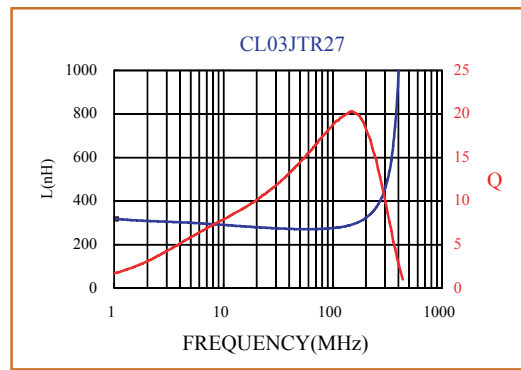
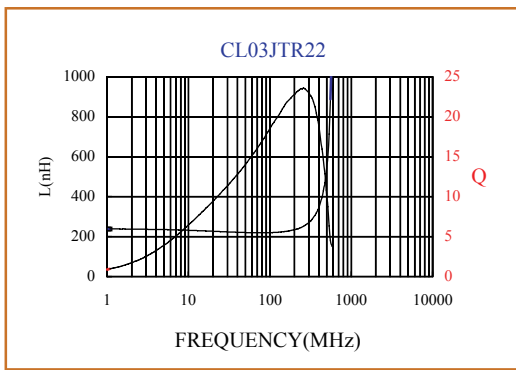
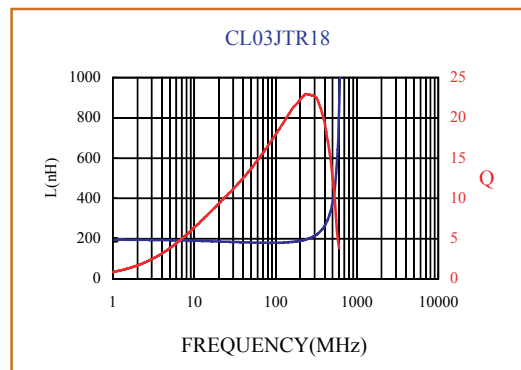
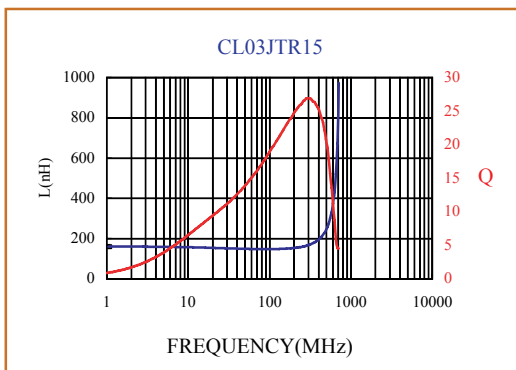
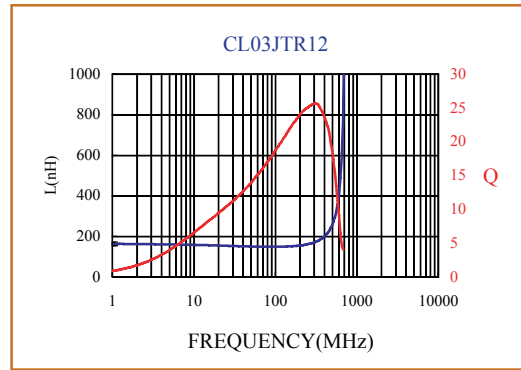
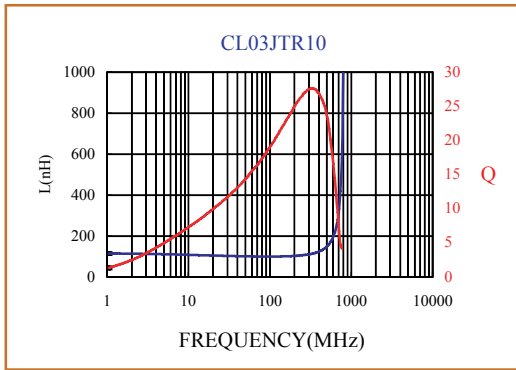
Part Number	Inductance (nH)	Tolerance	Quality Factor /Min.	L/Q Freq (MHz)	Self Resonant Frequency /Min.(GHz)	Resistance DC/Max (Ohm)	Current DC/Max (mA)
TRMF201209 - 1N0*	1.0	±0.3nH	10	100	>6.00	0.10	300
TRMF201209 - 1N2*	1.2	±0.3nH	10	100	>6.00	0.10	300
TRMF201209 - 1N5*	1.5	±0.3nH	10	100	>6.00	0.10	300
TRMF201209 - 1N8*	1.8	±0.3nH	10	100	>6.00	0.10	300
TRMF201209 - 2N2*	2.2	±0.3nH	10	100	>6.00	0.10	300
TRMF201209 - 2N7*	2.7	±0.3nH	12	100	>6.00	0.10	300
TRMF201209 - 3N3*	3.3	±0.3nH,±10%	12	100	>6.00	0.13	300
TRMF201209 - 3N9*	3.9	±0.3nH,±10%	12	100	5.40	0.15	300
TRMF201209 - 4N7*	4.7	±0.3nH,±10%	12	100	4.50	0.20	300
TRMF201209 - 5N6*	5.6	±0.3nH,±10%	12	100	4.00	0.23	300
TRMF201209 - 6N8*	6.80	±5%,±10%	15	100	3.65	0.25	300
TRMF201209 - 8N2*	8.2	±5%,±10%	15	100	3.00	0.28	300
TRMF201209 - 10N*	10	±5%,±10%	15	100	2.50	0.30	300
TRMF201209 - 12N*	12	±5%,±10%	15	100	2.45	0.35	300
TRMF201209 - 15N*	15	±5%,±10%	15	100	2.00	0.40	300
TRMF201209 - 18N*	18	±5%,±10%	15	100	1.75	0.45	300
TRMF201209 - 22N*	22	±5%,±10%	15	100	1.70	0.50	300
TRMF201209 - 27N*	27	±5%,±10%	15	100	1.55	0.55	300
TRMF201209 - 33N*	33	±5%,±10%	15	100	1.35	0.60	300
TRMF201209 - 39N*	39	±5%,±10%	18	100	1.30	0.65	300
TRMF201209 - 47N*	47	±5%,±10%	18	100	1.20	0.70	300
TRMF201209 - 56N*	56	±5%,±10%	18	100	1.15	0.75	300
TRMF201209 - 68N*	68	±5%,±10%	18	100	1.00	0.80	300
TRMF201209 - 82N*	82	±5%,±10%	18	100	0.85	0.90	300
TRMF201209 - R10*	100	±5%,±10%	18	100	0.73	1.00	300











▶ (TRMF160808) Electrical Characteristics (EIA 0603)

Part Number	Inductance (nH)	Tolerance	Quality Factor /Min	L/Q Freq. (MHz)	Q (typical) Frequency (MHz)			Resistance DC/Max (Ohm)	Self Resonant Frequency /Min.(GHz)	Current DC/Max (mA)
					100	500	800			
TRMF160808 - 1N0*	1.0	±0.3nH	8	100	15	36	49	0.10	6.0	500
TRMF160808 - 1N2*	1.2	±0.3nH	8	100	15	36	49	0.10	6.0	500
TRMF160808 - 1N5*	1.5	±0.3nH	8	100	14	34	47	0.10	6.0	500
TRMF160808 - 1N8*	1.8	±0.3nH	8	100	17	40	55	0.10	6.0	500
TRMF160808 - 2N2*	2.2	±0.3nH	8	100	15	38	49	0.10	6.0	500
TRMF160808 - 2N7*	2.7	±0.3nH	8	100	14	37	48	0.10	6.0	500
TRMF160808 - 3N3*	3.3	±0.3nH,±10%	10	100	16	40	51	0.13	6.0	500
TRMF160808 - 3N9*	3.9	±0.3nH,±10%	10	100	14	36	48	0.15	6.0	500
TRMF160808 - 4N7*	4.7	±0.3nH,±10%	10	100	14	37	48	0.20	4.0	500
TRMF160808 - 5N6*	5.6	±0.3nH,±10%	10	100	14	36	46	0.23	4.0	500
TRMF160808 - 6N8*	6.8	±5%,±10%	10	100	15	37	48	0.25	3.75	500
TRMF160808 - 8N2*	8.2	±5%,±10%	10	100	16	39	50	0.28	3.30	500
TRMF160808 - 10N*	10	±5%,±10%	12	100	16	37	47	0.30	3.0	300
TRMF160808 - 12N*	12	±5%,±10%	12	100	15	36	45	0.35	2.6	300
TRMF160808 - 15N*	15.00	±5%,±10%	12	100	16	38	48	0.40	2.3	300
TRMF160808 - 18N*	18	±5%,±10%	12	100	17	38	47	0.45	2.0	300
TRMF160808 - 22N*	22	±5%,±10%	12	100	18	40	49	0.50	1.6	300
TRMF160808 - 27N*	27	±5%,±10%	12	100	18	40	47	0.55	1.4	300
TRMF160808 - 33N*	33	±5%,±10%	12	100	17	40	46	0.60	1.2	300
TRMF160808 - 39N*	39	±5%,±10%	12	100	19	40	46	0.65	1.1	300
TRMF160808 - 47N*	47	±5%,±10%	12	100	17	36	39	0.70	0.9	300
TRMF160808 - 56N*	56	±5%,±10%	12	100	18	36	37	0.75	0.9	300
TRMF160808 - 68N*	68	±5%,±10%	12	100	18	35	36	0.85	0.7	300
TRMF160808 - 82N*	82	±5%,±10%	12	100	18	33	29	1.00	0.6	300
TRMF160808 - R10*	100	±5%,±10%	12	100	18	28	16	1.20	0.6	300

## ▶ How to Order

TRMF100505

1N2

S

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❶ Part Number: TRMF100505, TRMF160808, TRMF201209

❷ Inductance

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

❸ Tolerance

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

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