

Overview

KEMET L-MRS Metal Shielded Chip Power Inductors are ideal for use in DC to DC switching power supplies. By adding metal composite resin to the ferrite core, this base material provides excellent DC bias characteristics and is capable to withstand higher current compared with conventional ferrite type inductors.

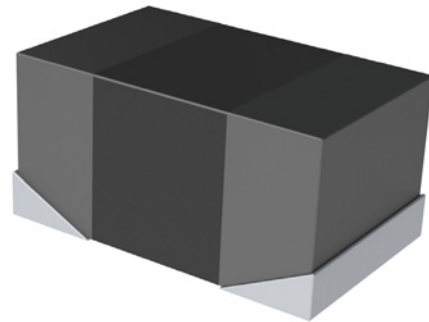
Parts ending with "H" represent higher operating temperature capability up to 125°C, allow for higher rated current and lower DC resistance, compared with parts ending with "T".

Applications

- PC, tablet, peripherals
- Portable and wearable equipment
- Optical storage, HDD
- Digital still camera
- Gaming
- Network equipment

Benefits

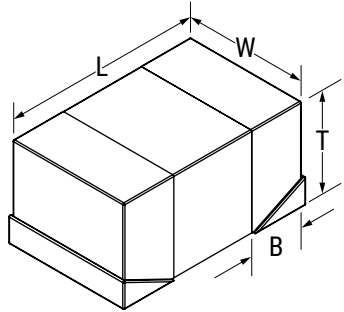
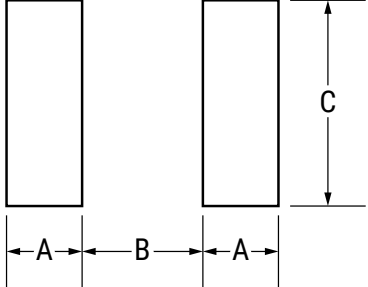
- Excellent DC bias
- High efficiency
- High current
- Low magnetic leakage
- Bottom surface electrode
- Inductance value from 0.24 to 4.7 μH
- Rated current range up to 5.1 A
- Rated DC Resistance range from typical 0.02 to 0.635 Ω
- Operating temperature range from -40°C to $+105^{\circ}\text{C}$ for parts ending with "T" and -40°C to $+125^{\circ}\text{C}$ for parts ending with "H"
- Low profile from 1 to 1.2 mm maximum
- Down sizing



Part Number System

L	0603	P	1R5	M	MRS	T
Inductor	EIA Case Size (L" x W")	Height (mm)	Inductance Value (μH)	Inductance Tolerance	Series	Packaging & Operating Temperature
	0603 (1608 in mm) 1008 (2520 in mm)	P = 1.0 mm Q = 1.2 mm	R = decimal point Examples: 1R5 = 1.5 μH R68 = 0.68 μH	M = $\pm 20\%$ N = $\pm 30\%$	MRS = Metal resin shielded chip power inductor	T = Tape & Reel, operating temperature up to $+105^{\circ}\text{C}$ H = Tape & Reel, operating temperature up to $+125^{\circ}\text{C}$

Dimensions – Millimeters (Inches)

Dimensions - Millimeters (Inches)						Land Pattern - Millimeters		
								
EIA Size Code	Metric Size Code	L Length	W Width	T Thickness	B Bandwidth	A	B	C
0603	1608	1.60 (0.063) ±0.20 (0.008)	0.80 (0.031) ±0.20 (0.008)	1.00 (0.039) Maximum	0.45 (0.016) ±0.15 (0.006)	0.55	0.70	1.00
1008	2520	2.50 (0.098) ±0.20 (0.008)	2.00 (0.079) ±0.20 (0.008)	1.20 (0.047) Maximum	0.50 (0.020) ±0.20 (0.008)	0.60	1.50	2.00

Performance Characteristics

Item	Performance Characteristics
Operating Temperature Range	L*****MCCT = -40°C to +105°C L*****MCCH = -40°C to 125°C
Rated Inductance Range	0.24 – 4.7 µH
Inductance Tolerance	±20% or ±30%
Rated Current Range Typical	0.41 – 5.1 A
Rated Current Range Maximum	0.37 – 4.3 A
Rated DC Resistance Range Typical	0.02 – 0.635 Ω
Rated DC Resistance Range Maximum	0.026 – 0.73 Ω

Environmental Compliance

All KEMET Chip Inductors are RoHS and REACH Compliant.

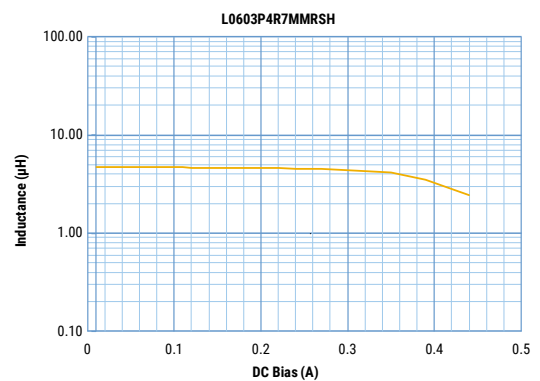
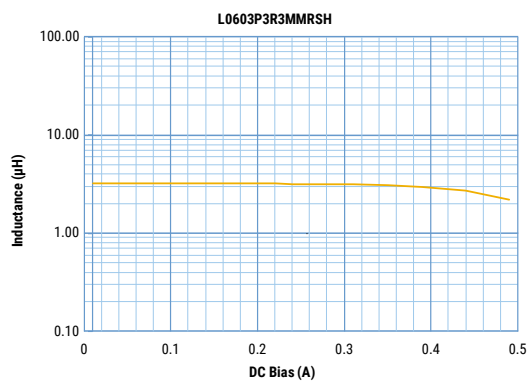
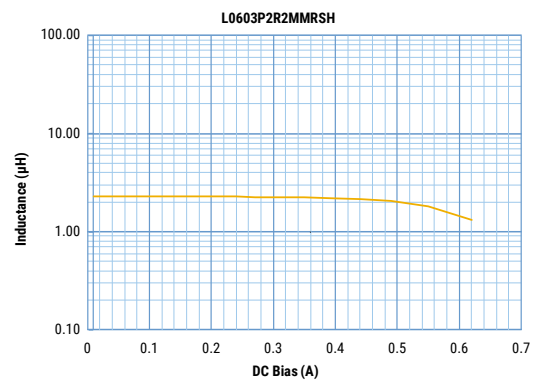
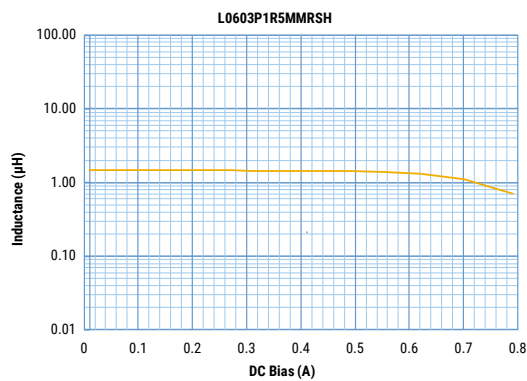
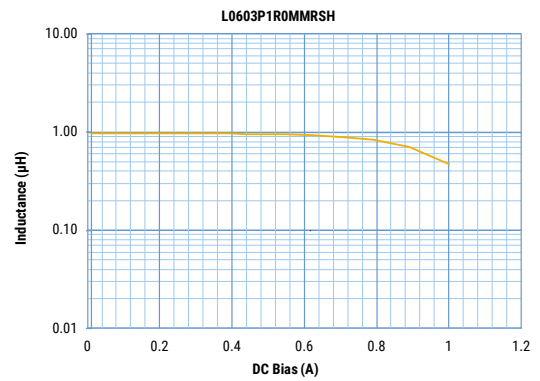
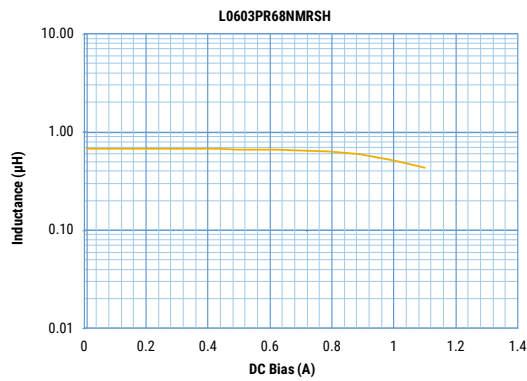
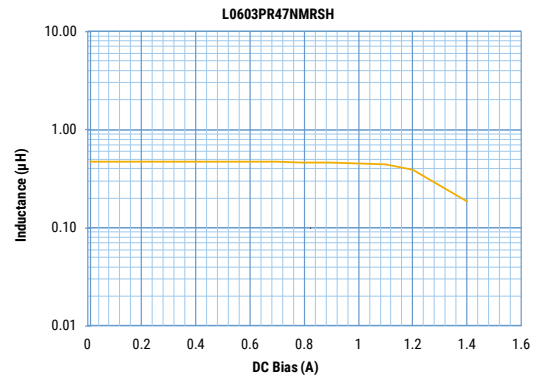
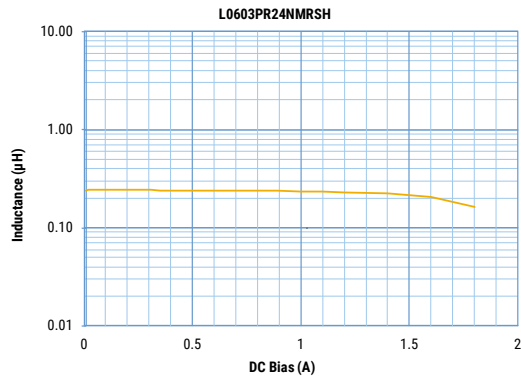


Table 1 – Ratings & Part Number Reference

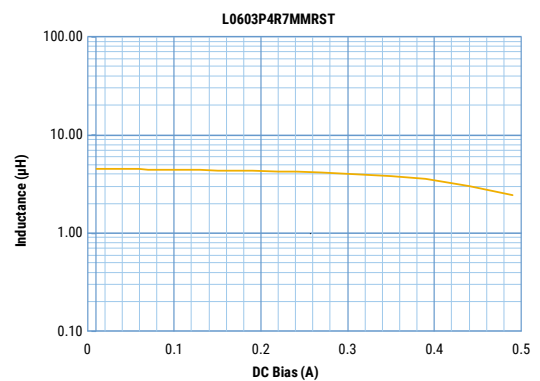
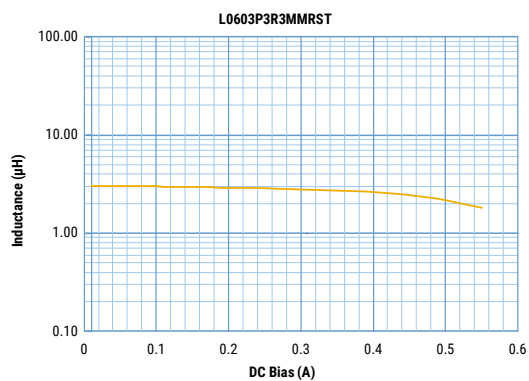
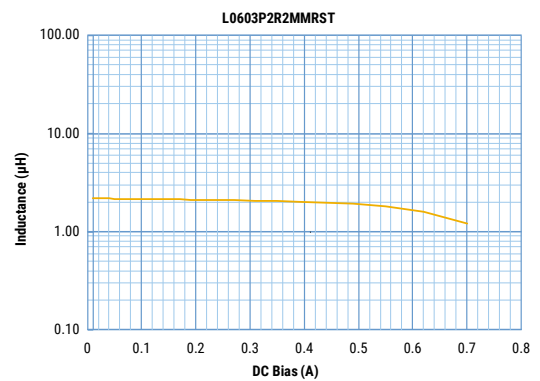
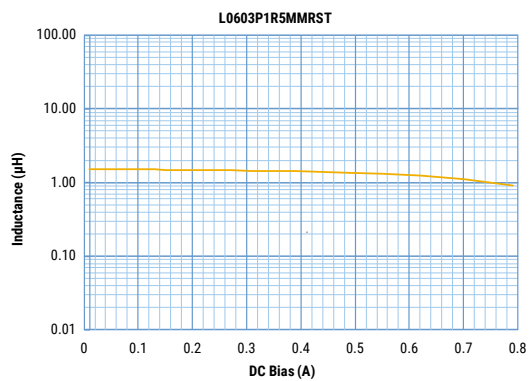
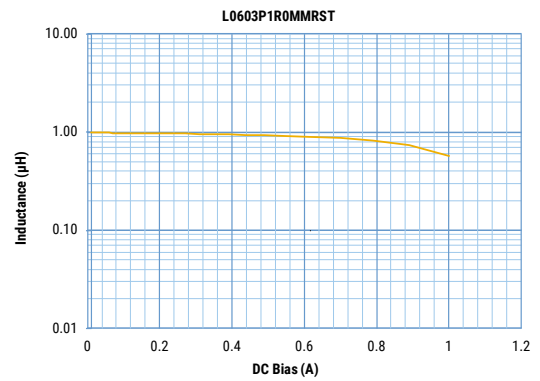
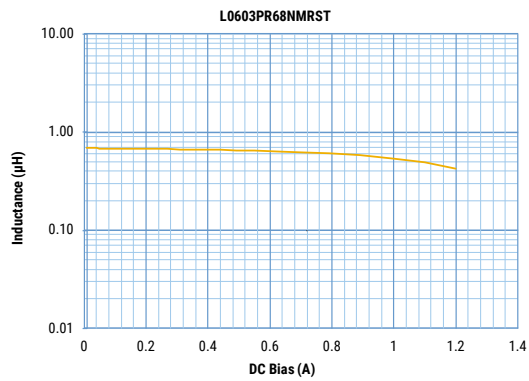
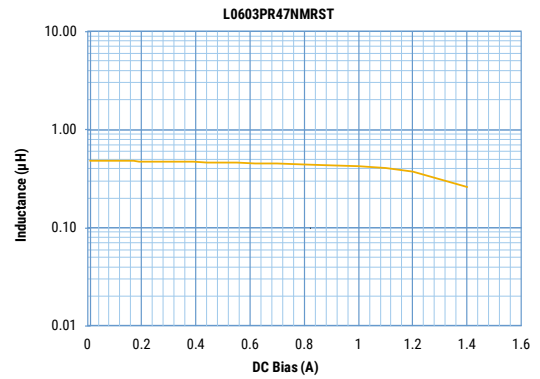
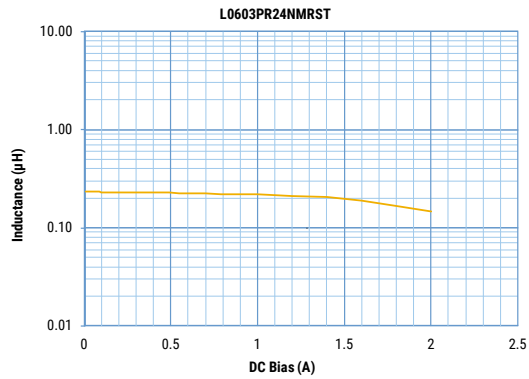
Part Number	Inductance (μH) at 1 MHz	Inductance Tolerance	DC Resistance (Ω) Maximum	DC Resistance (Ω) Typical	Rated Current Isat (A) ¹ Maximum	Rated Current Isat (A) ¹ Typical	Rated Current Irms (A) ² Maximum	Rated Current Irms (A) ² Typical
L0603PR24NMRSH	0.24	±30 %	0.05	0.043	1.65	1.8	2.3	2.5
L0603PR47NMRSH	0.47	±30 %	0.104	0.09	1.1	1.2	1.4	1.5
L0603PR68NMRSH	0.68	±30 %	0.12	0.105	0.95	1.05	1.2	1.3
L0603P1R0MMRSH	1	±20 %	0.15	0.13	0.8	0.9	1.15	1.25
L0603P1R5MMRSH	1.5	±20 %	0.2	0.175	0.65	0.72	1	1.1
L0603P2R2MMRSH	2.2	±20 %	0.345	0.3	0.52	0.58	0.75	0.85
L0603P3R3MMRSH	3.3	±20 %	0.512	0.445	0.45	0.49	0.6	0.65
L0603P4R7MMRSH	4.7	±20 %	0.73	0.635	0.37	0.41	0.5	0.55
L1008QR24NMRSH	0.24	±30 %	0.026	0.02	4.3	5.1	3.5	3.9
L1008QR47NMRSH	0.47	±30 %	0.042	0.035	3.6	4.1	2.6	2.9
L1008QR68NMRSH	0.68	±30 %	0.058	0.048	2.9	3.4	2.15	2.4
L1008Q1R0MMRSH	1	±20 %	0.072	0.06	2	2.3	1.85	2.05
L1008Q1R5MMRSH	1.5	±20 %	0.106	0.092	1.8	2.1	1.5	1.7
L1008Q2R2MMRSH	2.2	±20 %	0.159	0.138	1.5	1.8	1.25	1.4
L1008Q3R3MMRSH	3.3	±20 %	0.26	0.225	1.2	1.5	0.97	1.05
L1008Q4R7MMRSH	4.7	±20 %	0.38	0.33	1.1	1.3	0.8	0.9
L0603PR24NMRST	0.24	±30 %	0.049	0.043	1.65	1.8	2.3	2.5
L0603PR47NMRST	0.47	±30 %	0.104	0.09	1.1	1.2	1.4	1.5
L0603PR68NMRST	0.68	±30 %	0.12	0.105	0.95	1.05	1.2	1.3
L0603P1R0MMRST	1	±20 %	0.15	0.13	0.8	0.9	1.15	1.25
L0603P1R5MMRST	1.5	±20 %	0.2	0.175	0.65	0.72	1	1.1
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Part Number	Inductance (μH)	Inductance Tolerance	DC Resistance (Ω) Maximum	DC Resistance (Ω) Typical	Rated Current Isat (A) ¹ Maximum	Rated Current Isat (A) ¹ Typical	Rated Current Irms (A) ² Maximum	Rated Current Irms (A) ² Typical

¹ Inductance drop 30% at rated current at 20°C² T = 40 K rise at rated current at 20°C

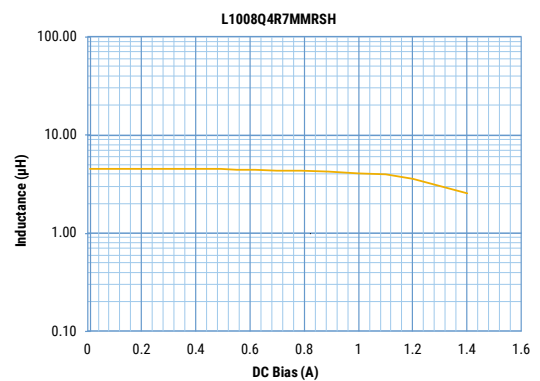
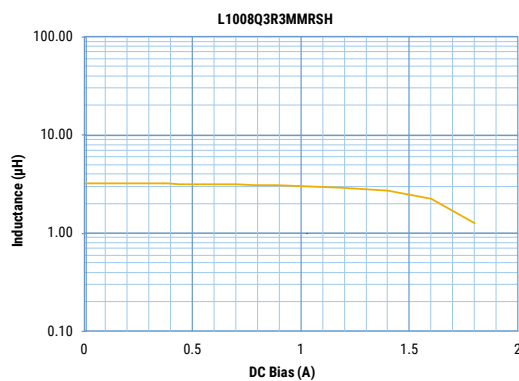
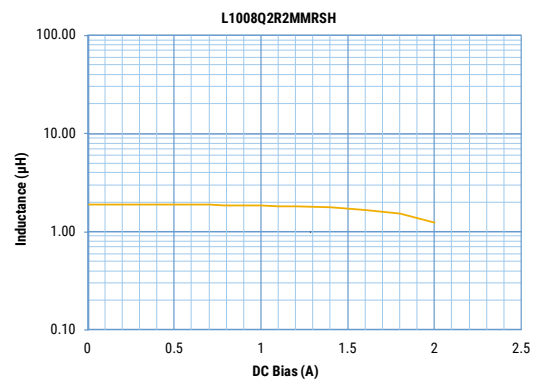
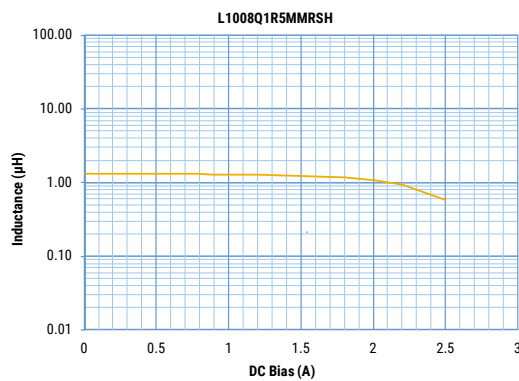
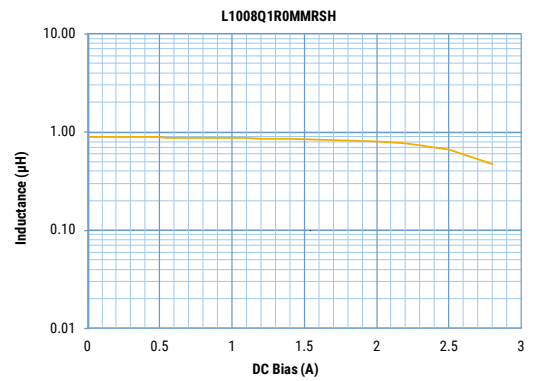
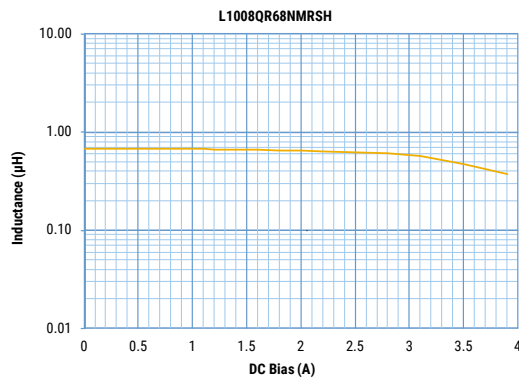
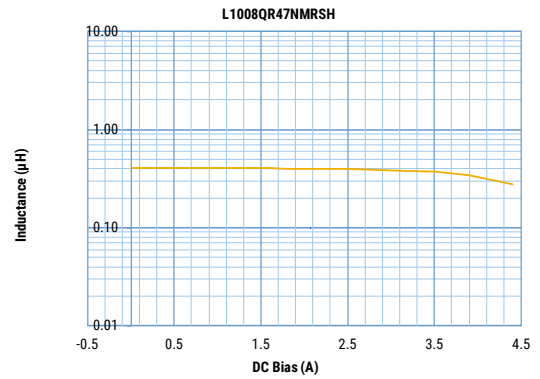
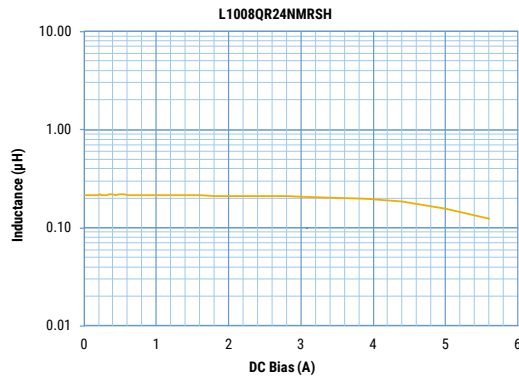
DC-Superposed Characteristics



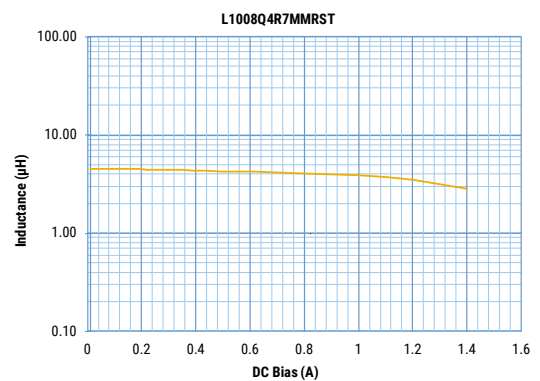
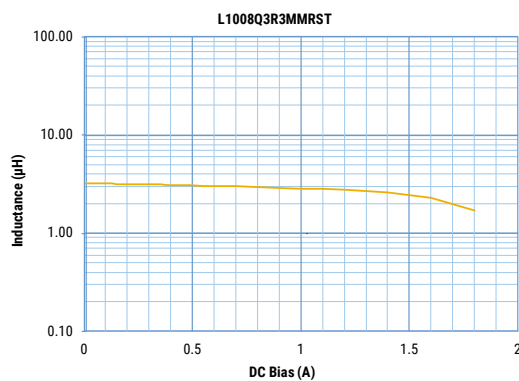
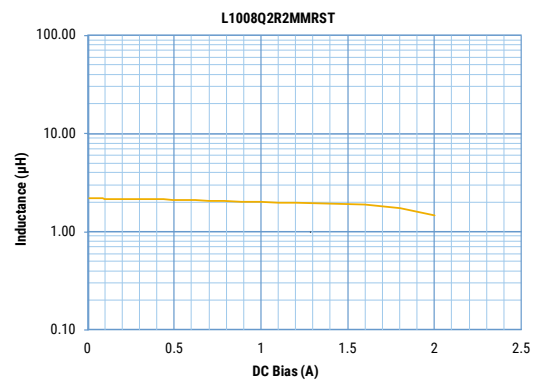
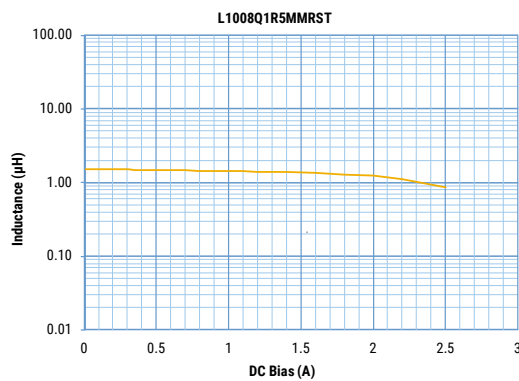
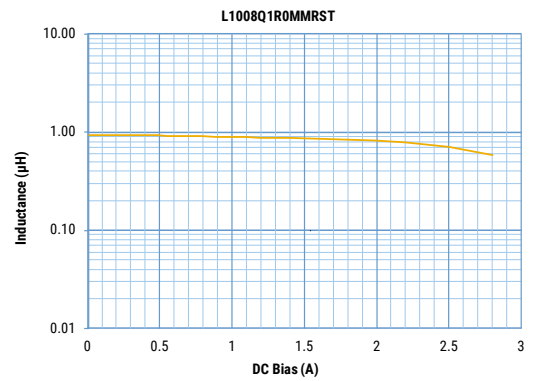
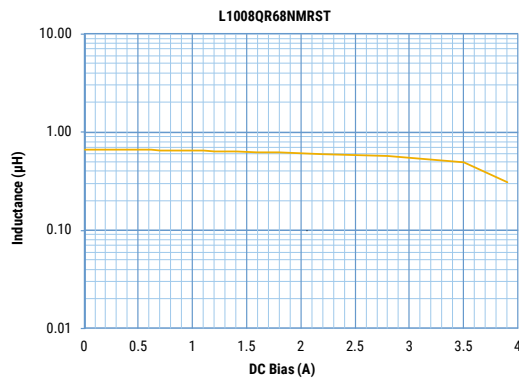
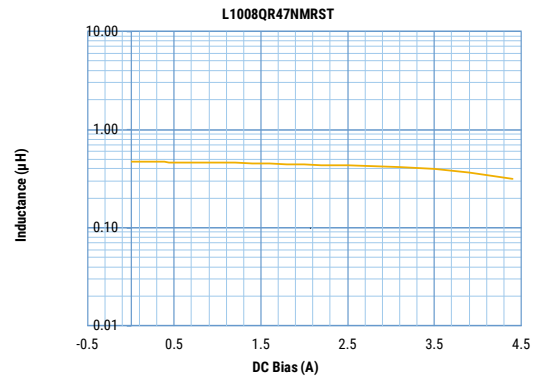
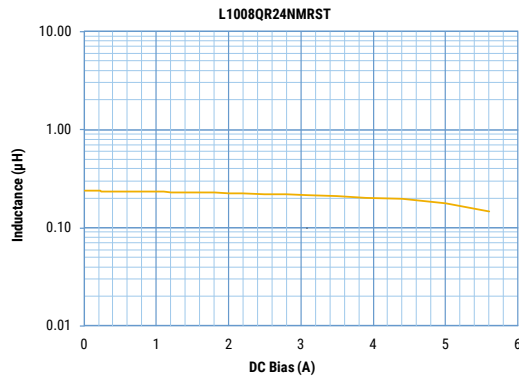
DC-Superposed Characteristics cont.



DC-Superposed Characteristics cont.

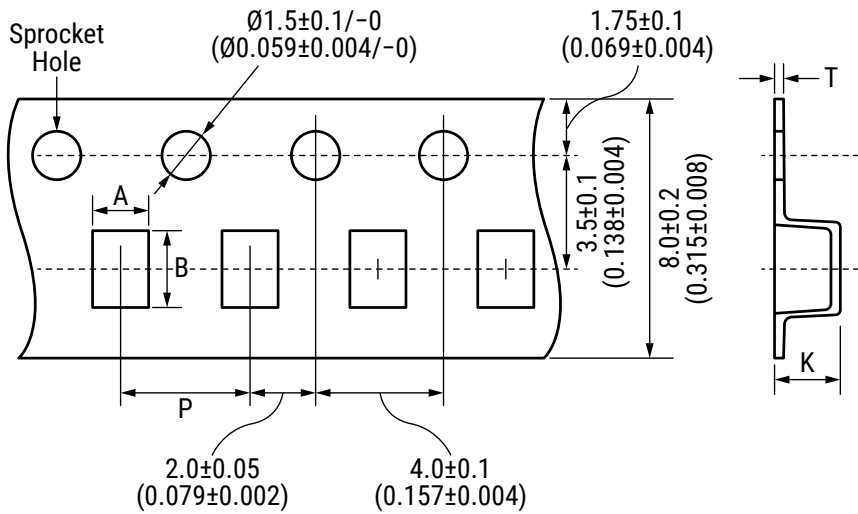


DC-Superposed Characteristics cont.



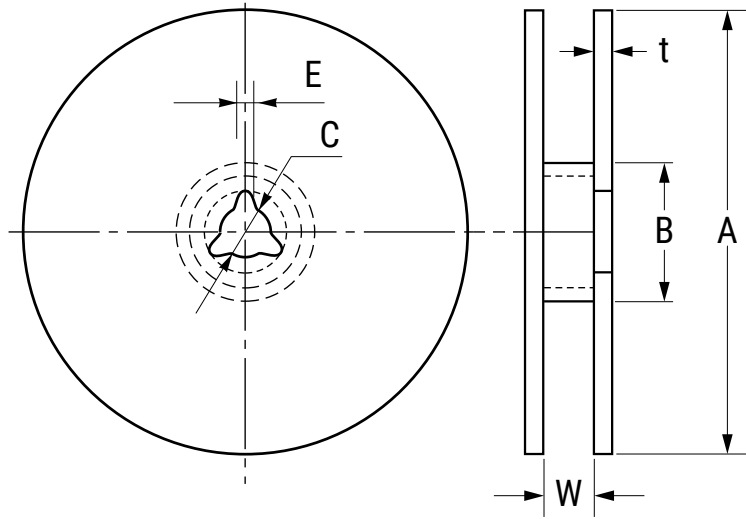
Taping Specifications - Millimeters (Inches)

0806 and 1008 Embossed (Plastic) Tape 8mm Width



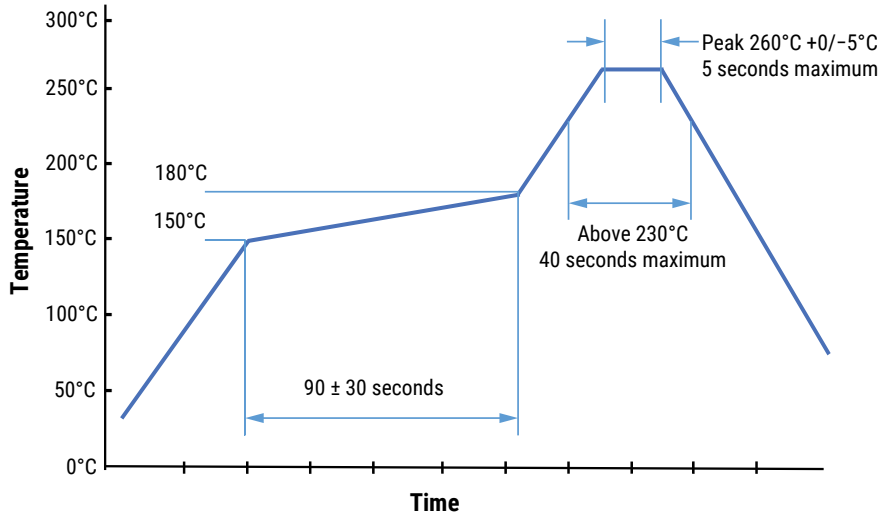
EIA Case Size	Metric Case Size	Height	Reel Quantity		Cavity		Pitch	Thickness	
					A	B	P	T	K
0603	1608	1	3,000	Nominal	1.10	1.90	4.00	0.25	1.20
				Tolerance			± 0.1	± 0.05	Maximum
1008	2520	1.2	3,000	Nominal	2.30	2.80	4.00	0.30	1.45
				Tolerance	± 0.1	± 0.1	± 0.1	± 0.05	Maximum

Reel Specifications - Millimeters



Series		Dimensions - Millimeters					
		A	B	C	E	t	W
L-MRS	Nominal	ø180.0	ø60.0	ø13.0	2.0	2.5	10.0
	Tolerance	Maximum	Minimum	±0.5	±0.5	Maximum	±1.5

Recommended Reflow Soldering Profile



Handling Precautions

Inductors should be stored in normal working environments. While the inductors themselves are quite robust in other environments, exposure to high temperatures, high humidity, corrosive atmospheres, and long-term storage degrades solderability.

KEMET recommends that maximum storage temperature not exceed 40°C and maximum storage humidity not exceed 70% relative humidity. Atmospheres should be free of chlorine-bearing and sulfur-bearing compounds. Temperature fluctuations should be minimized to avoid condensation on the parts.

For optimized solderability, inductor stock should be used promptly, preferably within six months of receipt.

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