



## Surface Mount Multilayer Ceramic Inductors

- *Monolithic structure provides high reliability in a wide temperature and humidity range*
- *High quality ceramic material and unique manufacturing process provides high Q at high frequency*
- *Nickel barrier with solder overcoat for excellent solderability*
- *RoHS compliant*



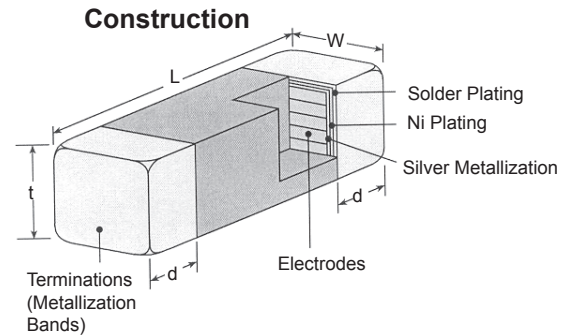
### MHL Series Specifications

#### Part Number Determination

MHL1ECTTE3N9S						
MHL	1E	C	T	TE	3N9	S
TYPE	SIZE	MATERIAL	TERMINATION MATERIAL	PACKAGING	NOMIAL INDUCTANCE	TOLERANCE
MHL- Multilayer Ceramic Inductor	1E=0402 1J=0603	Permeability Code: C T	T: 100% Tin	TP: 7" paper tape 2mm pitch (1E only - 10,000 pieces/reel) TD: 7" paper tape (1J - 4000 pieces/reel)	3N9 = 3.9nH R10 = 100nH	S: ±0.3nH J: ±5%

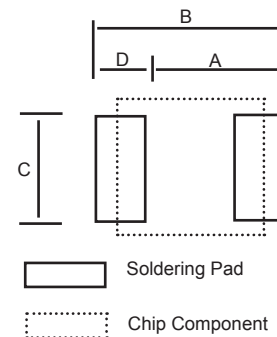
#### Package Dimensions in(mm)

Series	L	W	t	d
<b>1E (0402)</b>	0.039±0.004 (1.0±0.1)	0.02±0.004 (0.5±0.1)	0.02±0.004 (0.5±0.1)	0.01±0.004 (0.25±0.1)
<b>1J (0603)</b>	0.063±0.006 (1.6±0.15)	0.031±0.006 (0.8±0.15)	0.031±0.006 (0.8±0.15)	0.014±0.006 (0.36±0.15)



#### Land Pattern (mm)

Type	Style	A	B	C	D
MHL	1E	0.4	1.6	0.6	----
	1J	0.55	2.6	0.94	----



*(specifications continued on following page)*

**Engineering Design Kits Available**  
**See Garrett Kit Catalog**





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### MHL Series Specifications

#### Electrical Characteristics (0603)

Part Designation	Case Size	Inductance L (nH)	Inductance Tolerance	Q			Self Resonant Frequency Typical (MHz)	DC Resistance Maximum ( $\Omega$ )	Allowable DC Current Maximum (mA)	Operating Temperature Range
				Minimum (100MHz)	Typical (100MHz)	Typical (800MHz)				
MHL1JCTTD1N5	0603	1.5	S: $\pm 0.3$ nH	8	14	46	6000	0.10	1000	-55°C to +125°C
MHL1JCTTD1N8		1.8								
MHL1JCTTD2N2		2.2								
MHL1JCTTD2N7		2.7								
MHL1JCTTD3N3		3.3								
MHL1JCTTD3N9		3.9								
MHL1JCTTD4N7		4.7								
MHL1JCTTD5N6		5.6								
MHL1JCTTD6N8		6.8								
MHL1JCTTD8N2		8.2								
MHL1CJTDD10N		10	10	15	46	4000	0.13	600		
MHL1JCTTD12N		12								
MHL1JCTTD15N		15								
MHL1JCTTD18N		18								
MHL1JCTTD22N		22								
MHL1JCTTD27N		27								
MHL1JTDD27N		27								
MHL1JCTTD33N		33								
MHL1JCTTD39N		39								
MHL1JTDD39N		39								
MHL1JCTTD47N		47	12	15	46	3500	0.15	600		
MHL1JCTTD56N		56								
MHL1JCTTD68N		68								
MHL1JCTTD82N		82								
MHL1JCTTDR10		100								
MHL1JCTTDR12		120								
MHL1JCTTDR15		150								
MHL1JCTTDR18		180								
MHL1JCTTDR22		220								
MHL1JCTTDR22		220								
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	4000	0.20	500		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	900	0.23	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	39	0.25	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	37	0.28	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	36	0.28	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	29	0.30	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	16	0.35	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	600	0.40	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	600	0.45	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	900	0.50	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	1100	0.55	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	1200	0.60	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	1400	0.65	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	1600	0.70	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	2000	0.75	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	2300	0.80	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	2600	0.85	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	3200	0.90	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	3500	1.0	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	4000	1.1	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	4600	1.2	400		
MHL1JCTTD56N	56									
MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
MHL1JCTTDR10	100									
MHL1JCTTDR12	120									
MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									
MHL1JCTTD47N	47	J: $\pm 5\%$	8	13	---	6000	1.3	400		
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MHL1JCTTD68N	68									
MHL1JCTTD82N	82									
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MHL1JCTTDR15	150									
MHL1JCTTDR18	180									
MHL1JCTTDR22	220									
MHL1JCTTDR22	220									