

# MULTILAYER TYPE

## FERRITE CHIP INDUCTOR



- Inductance Range: 0.047 to 33  $\mu$ H.
- Operating Temperature Range: -55°C to +125°C.
- Soldering Method: Reflow or Wave Soldering, suitable for lead free soldering.
- Packaging Method: Tape & Reel (per EIA Specifications).
- Storage Temperature: max. 40°C, RH 70%.
- Reel QTY 4K for 160808 3K and 4K for 20209.
- ROHS compliant.



### Features

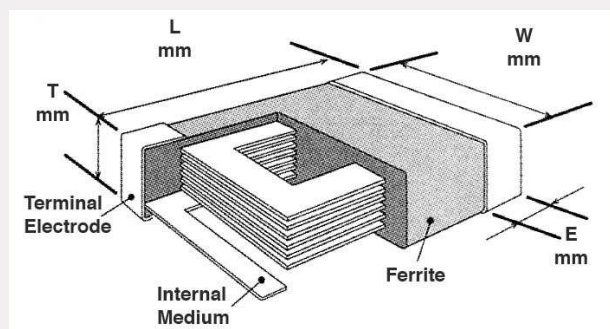
- The monolithic construction ensures high reliability.
- Closed magnetic flux avoids magnetic leakage and interference, thus allows for higher mounting density.

### Application Field

- RF and wireless communication, information technology equipment which includes computer, telecommunications, radar detectors, automotive electronics, cellular phones, pagers, audio equipment, PDAs, keyless remote system and low-voltage power supply modules.

### Part Number Code

<b>MLI</b>	<b>160808</b>	<b>-</b>	<b>R047</b>	<b>M</b>
Series Name	Size Code		Inductance (R= decimal point )	Tolerance : K=±10% M=±20%



### Shape and Dimensions

Size code	Size	Length(L)	Width (W)	Thickness (T)	Electrode Width (E)
0603	160808	1.6±0.15	0.8±0.15	0.8±0.15	0.3±0.2
0805	201209	2.0±0.2	1.25±0.2	0.9±0.2	0.5±0.3
0805	201212	2.0±0.2	1.25±0.2	1.25±0.2	0.5±0.3
1206	321611	3.2±0.2	1.6±0.2	1.1±0.2	0.5±0.3

# MULTILAYER TYPE

## FERRITE CHIP INDUCTOR

### Specifications

Part Number	Inductance (μH)	Q		Test Freq (MHz)	SRF(MHz)		DCR (Ω)		Rated Current max.(mA)
		min.	Typ		min.	Typ.	max.	Typ.	
MLI-160808-47NM	0.047	10	20	50	260	350	0.25	0.15	50
MLI-160808-56NM	0.056	10	20	50	255	325	0.25	0.15	50
MLI-160808-68NM	0.068	10	20	50	250	325	0.25	0.15	50
MLI-160808-82NM	0.082	10	20	50	245	310	0.25	0.15	50
MLI-160808-R10K	0.10	15	25	25	240	295	0.50	0.30	50
MLI-160808-R12K	0.12	15	25	25	235	280	0.50	0.30	50
MLI-160808-R15K	0.15	15	25	25	205	260	0.60	0.30	50
MLI-160808-R18K	0.18	15	25	25	190	245	0.60	0.30	50
MLI-160808-R22K	0.22	15	25	25	170	230	0.80	0.40	50
MLI-160808-R27K	0.27	15	25	25	155	210	0.80	0.40	50
MLI-160808-R33K	0.33	15	25	25	140	200	0.80	0.40	35
MLI-160808-R39K	0.39	15	25	25	125	185	1.00	0.50	35
MLI-160808-R47K	0.47	15	25	25	120	170	1.00	0.50	35
MLI-160808-R56K	0.56	15	25	25	110	155	1.55	0.75	35
MLI-160808-R68K	0.68	15	25	25	100	140	1.70	0.80	35
MLI-160808-R82K	0.82	15	25	25	95	125	2.1	0.85	35
MLI-160808-1R0K	1.0	35	50	10	85	105	0.60	0.30	25
MLI-160808-1R2K	1.2	35	50	10	70	100	0.80	0.40	25
MLI-160808-1R5K	1.5	35	50	10	65	90	0.80	0.40	25
MLI-160808-1R8K	1.8	35	50	10	60	80	0.80	0.40	25
MLI-160808-2R2K	2.2	35	50	10	55	75	1.00	0.50	15
MLI-160808-2R7K	2.7	35	50	10	50	70	1.20	0.60	15
MLI-160808-3R3K	3.3	35	50	10	45	60	1.40	0.70	15
MLI-160808-4R7K	4.7	40	50	10	40	50	1.80	0.80	15
MLI-160808-100K	10	30	50	2	17	30	1.85	1.10	3
MLI-201209-47NM	0.047	20	30	50	320	400	0.20	0.11	300
MLI-201209-56NM	0.056	20	30	50	300	350	0.20	0.11	300
MLI-201209-68NM	0.068	20	30	50	280	320	0.20	0.11	300
MLI-201209-82NM	0.082	20	30	50	275	300	0.20	0.11	300
MLI-201209-R10K	0.10	20	30	25	255	280	0.30	0.16	250
MLI-201209-R12K	0.12	20	30	25	250	250	0.30	0.16	250
MLI-201209-R15K	0.15	20	30	25	230	230	0.40	0.21	250
MLI-201209-R18K	0.18	20	30	25	210	220	0.40	0.21	250
MLI-201209-R22K	0.22	20	30	25	195	200	0.50	0.26	250
MLI-201209-R27K	0.27	20	30	25	170	200	0.50	0.26	250
MLI-201209-R33K	0.33	20	30	25	165	180	0.50	0.31	250
MLI-201209-R39K	0.39	25	35	25	155	170	0.60	0.36	200
MLI-201212-R47K*	0.47	25	35	25	140	160	0.60	0.36	200
MLI-201212-R56K*	0.56	25	35	25	130	150	0.70	0.41	150
MLI-201212-R68K*	0.68	25	35	25	120	135	0.80	0.46	150
MLI-201212-R82K*	0.82	25	35	25	115	125	1.00	0.56	150
MLI-201212-1R0K*	1.0	45	55	10	85	105	0.40	0.21	50
MLI-201212-1R2K*	1.2	45	55	10	75	95	0.50	0.26	50
MLI-201212-1R5K*	1.5	45	55	10	65	85	0.50	0.26	50
MLI-201212-1R8K*	1.8	45	55	10	60	78	0.60	0.31	50
MLI-201212-2R2K*	2.2	45	60	10	55	70	0.60	0.36	30
MLI-201212-2R7K*	2.7	45	60	10	50	64	0.70	0.41	30
MLI-201212-3R3K*	3.3	45	60	10	45	58	0.80	0.46	30
MLI-201212-3R9K*	3.9	45	60	10	44	53	0.90	0.51	30
MLI-201212-4R7K*	4.7	45	60	10	41	48	1.00	0.56	30

Above part numbers are listed with standard tolerance.

\* Please refer to the information on page 32.

# MULTILAYER TYPE

## FERRITE CHIP INDUCTOR

### Specifications

Part Number	Inductance (μH)	Q		Test Freq (MHz)	SRF(MHz)		DCR (Ω)		Rated Current max.(mA)
		min.	Typ		min.	Typ.	max.	Typ.	
MLI-201212-5R6K*	5.6	50	60	4	37	45	0.90	0.56	15
MLI-201212-6R8K*	6.8	50	60	4	34	43	1.00	0.56	15
MLI-201212-8R2K*	8.2	50	60	4	30	40	1.10	0.56	15
MLI-201212-100K*	10.0	50	60	2	28	33	1.00	0.50	15
MLI-201212-120K*	12.0	50	60	2	26	30	1.10	0.55	15
MLI-201212-150K*	15.0	35	60	1	22	27	0.80	0.46	5
MLI-201212-180K*	18.0	35	60	1	21	25	0.90	0.51	5
MLI-201212-220K*	22.0	35	60	1	19	22	1.10	0.61	5
MLI-201212-270K*	27.0	30	60	1	14	21	1.15	1.10	5
MLI-201212-330K*	33.0	30	60	0.4	13	20	1.25	1.15	5
MLI-321611-47NM	0.047	20	30	50	320	400	0.15	0.08	300
MLI-321611-56NM	0.056	20	30	50	310	360	0.25	0.13	300
MLI-321611-68NM	0.068	20	30	50	280	330	0.25	0.13	300
MLI-321611-82NM	0.082	20	30	50	275	300	0.25	0.13	300
MLI-321611-R10K	0.10	20	30	25	270	280	0.25	0.13	250
MLI-321611-R12K	0.12	20	30	25	250	260	0.3	0.18	250
MLI-321611-R15K	0.15	20	30	25	200	240	0.3	0.18	250
MLI-321611-R18K	0.18	20	30	25	185	220	0.4	0.23	250
MLI-321611-R22K	0.22	20	30	25	170	200	0.4	0.23	250
MLI-321611-R27K	0.27	20	30	25	150	180	0.5	0.28	250
MLI-321611-R33K	0.33	20	30	25	145	170	0.5	0.28	250
MLI-321611-R39K	0.39	25	35	25	135	160	0.5	0.28	200
MLI-321611-R47K	0.47	25	35	25	125	145	0.6	0.34	200
MLI-321611-R56K	0.56	25	35	25	115	135	0.7	0.39	150
MLI-321611-R68K	0.68	25	35	25	105	125	0.8	0.44	150
MLI-321611-R82K	0.82	25	35	25	100	115	0.9	0.50	150
MLI-321611-1R0K	1.0	45	60	10	87	90	0.4	0.23	100
MLI-321611-1R2K	1.2	45	60	10	75	80	0.5	0.28	100
MLI-321611-1R5K	1.5	45	60	10	69	70	0.5	0.28	50
MLI-321611-1R8K	1.8	45	60	10	64	66	0.5	0.28	50
MLI-321611-2R2K	2.2	45	60	10	58	58	0.6	0.34	50
MLI-321611-2R7K	2.7	45	60	10	52	53	0.6	0.34	50
MLI-321611-3R3K	3.3	45	65	10	48	49	0.7	0.39	50
MLI-321611-3R9K	3.9	45	65	10	44	45	0.8	0.44	50
MLI-321611-4R7K	4.7	45	65	10	41	41	0.9	0.50	50
MLI-321611-5R6K	5.6	50	65	4	32	38	0.8	0.39	25
MLI-321611-6R8K	6.8	50	65	4	29	34	0.9	0.44	25
MLI-321611-8R2K	8.2	50	65	4	26	31	1.0	0.50	25
MLI-321611-100K	10.0	50	65	2	26	30	0.6	0.35	25
MLI-321611-120K	12.0	50	65	2	26	28	0.6	0.35	15
MLI-321611-150K	15.0	50	65	1	22	27	0.7	0.40	5
MLI-321611-180K	18.0	50	65	1	21	26	0.7	0.40	5
MLI-321611-220K	22.0	50	65	1	19	21	0.9	0.50	5
MLI-321611-270K	27.0	50	65	1	17	19	0.9	0.50	5
MLI-321611-330K	33.0	50	65	1	15	18	1.05	0.80	5

Above part numbers are listed with standard tolerance.

\* MLI-201212 is due to be phased out and replaced with MLI-201209. All electrical parameters remain the same, dimensions will change as indicated on page 30.

# MULTILAYER TYPE

## HIGH FREQUENCY CERAMIC CHIP INDUCTOR



- Inductance Range: 1.0 to 270nH.
- Operating Temperature Range: -55°C to +125°C.
- Soldering Method: Reflow or Wave Soldering, suitable for lead free soldering.
- Packaging Method: Tape & Reel (per EIA Specifications).
- Storage Temperature: max. 40°C, RH 70%.
- ROHS compliant.

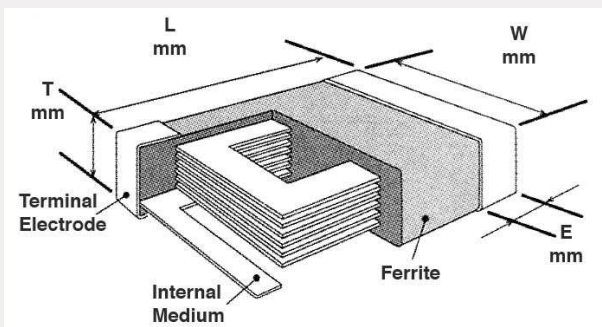


### Application Field

- RF and wireless communication, information technology equipment which includes computer, telecommunications, radar detectors, automotive electronics, cellular phones, pagers, audio equipment, PDAs, keyless remote system and low-voltage power supply modules.

### Part Number Code

<b>HFI</b>	<b>160808</b>	<b>-</b>	<b>39N</b>	<b>J</b>
Series Name	Size Code		Inductance (N= decimal point )	Tolerance : S=±0.3nH J= ±5% K=±10%



### Shape and Dimensions

Size code	Size	Length(L)	Width (W)	Thickness (T)	Electrode Width (E)
0402	100505	1.0±0.1	0.5±0.1	0.5±0.1	0.25±0.1
0603	160808	1.6±0.15	0.8±0.15	0.8±0.15	0.3±0.2
0805	201209	2.0±0.2	1.25±0.2	0.9±0.2	0.5±0.3

# MULTILAYER TYPE

## HIGH FREQUENCY CERAMIC CHIP INDUCTOR

### Specifications

Part Number	Inductance (nH)	Q min.	Test Freq. (MHz)	Q(Typical) Frequency (MHz)						SRF (MHz)		DCR ( $\Omega$ )		Rated Current max. (mA)
				100	300	500	800	1000	1800	min.	Typ.	max.	Typ	
HFI-100505-1N0S	1.0	8	100	10	16	21	26	30	36	10000	18000	0.12	-	300
HFI-100505-1N2S	1.2	8	100	10	18	23	26	31	44	10000	17000	0.12	-	300
HFI-100505-1N5S	1.5	8	100	11	20	25	30	35	51	6000	11000	0.13	-	300
HFI-100505-1N8S	1.8	8	100	11	20	25	30	35	48	6000	11000	0.14	-	300
HFI-100505-2N2S	2.2	8	100	10	18	23	28	32	45	6000	8700	0.16	-	300
HFI-100505-2N7S	2.7	8	100	10	17	21	25	30	40	6000	7800	0.17	-	300
HFI-100505-3N3S	3.3	8	100	10	17	22	27	31	41	6000	6400	0.19	-	300
HFI-100505-3N9S	3.9	8	100	10	16	19	24	26	35	4000	5800	0.22	-	300
HFI-100505-4N7S	4.7	8	100	10	15	19	23	26	35	4000	5100	0.24	-	300
HFI-100505-5N6S	5.6	8	100	10	15	20	25	26	35	4000	4700	0.27	-	300
HFI-100505-6N8J	6.8	8	100	10	15	19	23	26	35	3900	4200	0.32	-	250
HFI-100505-8N2J	8.2	8	100	10	18	22	26	29	35	3600	3800	0.37	-	250
HFI-100505-10NJ	10.0	8	100	10	15	18	21	23	25	3200	3200	0.42	-	250
HFI-100505-12NJ	12.0	8	100	10	15	18	22	23	24	2700	2900	0.50	-	250
HFI-100505-15NJ	15.0	8	100	10	15	19	22	24	23	2300	2500	0.55	-	250
HFI-100505-18NJ	18.0	8	100	10	16	20	24	25	23	2100	2400	0.65	-	200
HFI-100505-22NJ	22.0	8	100	10	18	22	25	26	18	1900	2200	0.80	-	200
HFI-100505-27NJ	27.0	8	100	10	18	22	25	25	16	1600	2000	0.90	-	200
HFI-100505-33NJ	33.0	8	100	10	16	19	21	20	-	1300	1800	1.00	-	200
HFI-100505-39NJ	39.0	8	100	10	18	21	23	20	-	1200	1600	1.20	-	150
HFI-100505-47NJ	47.0	8	100	10	16	18	18	15	-	1000	1500	1.30	-	150
HFI-100505-56NJ	56.0	8	100	11	18	21	17	14	-	750	1300	1.40	-	150
HFI-100505-68NJ	68.0	8	100	11	16	18	17	12	-	750	1250	1.40	-	150
HFI-100505-82NJ	82.0	8	100	11	17	19	15	8	-	600	1100	2.00	-	100
HFI-100505-R10J	100.0	8	100	11	16	17	10	2	-	600	1000	2.60	-	100

Above part numbers are listed with standard tolerance.

# MULTILAYER TYPE

## HIGH FREQUENCY CERAMIC CHIP INDUCTOR

### Specifications

Part Number	Inductance (nH)	Q min.	Test Freq. (MHz)	Q(Typical) Frequency (MHz)						SRF (MHz)		DCR ( $\Omega$ )		Rated Current max. (mA)
				100	300	500	800	1000	1800	min.	Typ.	max.	Typ	
HFI-160808-1N0S	1.0	8	100	15	30	43	54	63	55	10000	15000	0.05	0.015	300
HFI-160808-1N2S	1.2	8	100	14	26	38	48	55	55	10000	14000	0.05	0.015	300
HFI-160808-1N5S	1.5	8	100	11	21	28	35	40	55	6000	13000	0.10	0.03	300
HFI-160808-1N8S	1.8	8	100	10	18	24	31	35	55	6000	11000	0.10	0.06	300
HFI-160808-2N2S	2.2	8	100	14	26	35	44	40	55	6000	10000	0.10	0.06	300
HFI-160808-2N7S	2.7	10	100	12	22	29	37	45	55	6000	7000	0.10	0.06	300
HFI-160808-3N3S	3.3	10	100	16	30	40	51	47	55	4000	5900	0.12	0.06	300
HFI-160808-3N9S	3.9	10	100	11	20	25	31	35	51	3500	4500	0.14	0.07	300
HFI-160808-4N7S	4.7	10	100	11	20	26	33	35	55	3500	4500	0.16	0.08	300
HFI-160808-5N6S	5.6	10	100	15	27	36	44	46	64	3500	4000	0.18	0.09	300
HFI-160808-6N8J	6.8	10	100	15	29	38	44	47	65	3000	3600	0.22	0.11	300
HFI-160808-8N2J	8.2	10	100	13	24	31	37	41	45	3000	3500	0.24	0.13	300
HFI-160808-10NJ	10.0	12	100	15	27	34	40	47	40	2800	3000	0.26	0.16	300
HFI-160808-12NJ	12.0	12	100	12	21	27	30	49	24	2000	2500	0.28	0.17	300
HFI-160808-15NJ	15.0	12	100	15	23	30	34	36	22	2000	2200	0.32	0.20	300
HFI-160808-18NJ	18.0	12	100	15	22	28	31	31	11	1800	2000	0.35	0.21	300
HFI-160808-22NJ	22.0	12	100	17	28	34	37	36	-	1800	1900	0.40	0.25	300
HFI-160808-27NJ	27.0	12	100	15	25	31	32	30	-	1500	1700	0.45	0.28	300
HFI-160808-33NJ	33.0	12	100	15	24	28	28	24	-	1200	1500	0.55	0.35	300
HFI-160808-39NJ	39.0	12	100	14	26	31	28	23	-	1100	1300	0.60	0.38	300
HFI-160808-47NJ	47.0	12	100	17	27	31	28	24	-	900	1300	0.70	0.45	300
HFI-160808-56NJ	56.0	12	100	19	30	34	26	16	-	900	1200	0.75	0.50	300
HFI-160808-68NJ	68.0	12	100	17	27	30	20	7	-	700	1000	0.85	0.55	300
HFI-160808-82NJ	82.0	12	100	16	26	29	18	-	-	600	1000	0.95	0.60	300
HFI-160808-R10J	100.0	12	100	18	26	24	3	-	-	600	800	1.00	0.65	300
HFI-160808-R12J	120.0	8	50	17	24	21	-	-	-	500	800	1.20	0.68	300
HFI-160808-R15J	150.0	8	50	19	25	20	-	-	-	500	700	1.20	0.73	300
HFI-160808-R18J	180.0	8	50	18	22	13	-	-	-	400	600	1.30	0.85	300
HFI-160808-R22J	220.0	8	50	18	21	-	-	-	-	400	500	1.50	0.95	300
HFI-160808-R27J	270.0	8	50	19	-	-	-	-	-	350	490	1.60	1.05	300

Above part numbers are listed with standard tolerance.

# MULTILAYER TYPE

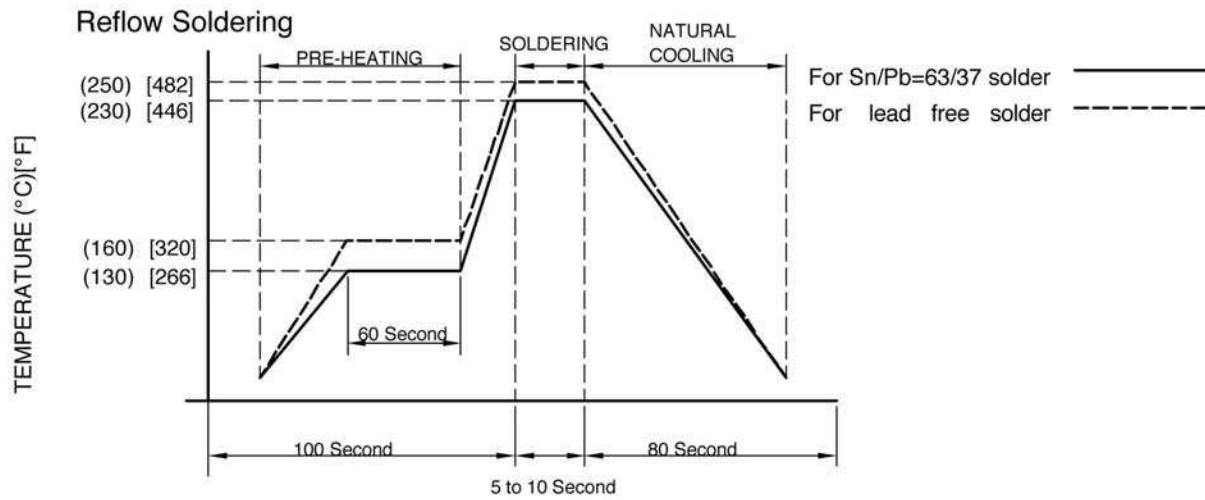
## HIGH FREQUENCY CERAMIC CHIP INDUCTOR

### Specifications

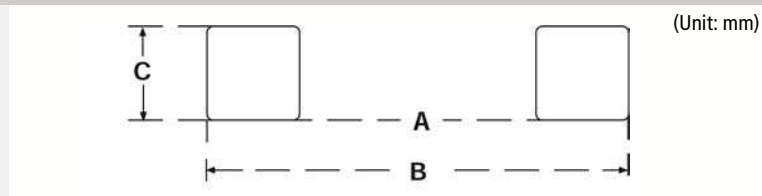
Part Number	Inductance (nH)	Q min.	Test Freq. (MHz)	Q(Typical) Frequency (MHz)						SRF (MHz)		DCR ( $\Omega$ )		Rated Current max. (mA)
HFI-201209-6N8J	6.8	15	100	19	35	44	55	60	61	2500	3300	0.25	0.06	300
HFI-201209-8N2J	8.2	15	100	20	35	45	53	60	41	2000	2600	0.28	0.07	300
HFI-201209-10NJ	10.0	15	100	20	41	53	60	60	36	2000	2300	0.30	0.09	300
HFI-201209-12NJ	12.0	15	100	20	28	36	40	45	15	1500	2000	0.35	0.10	300
HFI-201209-15NJ	15.0	15	100	20	37	46	48	45	9	1500	1800	0.40	0.11	300
HFI-201209-18NJ	18.0	15	100	20	42	52	54	45	2	1300	1700	0.45	0.13	300
HFI-201209-22NJ	22.0	18	100	20	33	40	38	31	-	1200	1400	0.50	0.16	300
HFI-201209-27NJ	27.0	18	100	20	37	44	38	29	-	1000	1300	0.55	0.17	300
HFI-201209-33NJ	33.0	18	100	20	32	36	28	15	-	1000	1200	0.60	0.19	300
HFI-201209-39NJ	39.0	18	100	21	32	36	21	12	-	800	1100	0.65	0.25	300
HFI-201209-47NJ	47.0	18	100	21	31	33	17	12	-	800	1000	0.70	0.26	300
HFI-201209-56NJ	56.0	18	100	21	31	31	12	9	-	700	900	0.75	0.28	300
HFI-201209-68NJ	68.0	18	100	22	31	30	9	-	-	600	800	0.80	0.33	300
HFI-201209-82NJ	82.0	18	100	22	31	26	4	-	-	500	700	0.90	0.37	300
HFI-201209-R10J	100.0	18	100	22	30	22	16	-	-	500	700	0.90	0.40	300
HFI-201209-R12J	120.0	13	50	22	27	17	20	-	-	400	600	0.95	0.43	300
HFI-201209-R15J	150.0	13	50	21	27	9	-	-	-	300	600	1.00	0.46	300
HFI-201209-R18J	180.0	13	50	20	21	8	-	-	-	300	500	1.10	0.50	300
HFI-201209-R22J	220.0	12	50	24	20	4	-	-	-	300	500	1.20	0.75	300
HFI-201209-R27J	270.0	12	50	24	17	17	-	-	-	200	400	1.30	0.85	300
HFI-201209-R33J	330.0	12	50	24	10	-	-	-	-	200	380	1.05	0.90	300
HFI-201209-R39J	390.0	12	50	24	-	-	-	-	-	200	300	1.50	0.95	300
HFI-201209-R47J	470.0	10	50	24	-	-	-	-	-	200	290	1.50	1.05	300

Above part numbers are listed with standard tolerance.

### Recommended Soldering Conditions



### Land Patterns for Reflow Soldering



### Solder Land Information

Size	A	B	C*
<b>1005</b>	0.4 ~ 0.6 (0.015 ~ 0.023)	1.6 ~ 2.6 (0.063 ~ 0.102)	0.4 ~ 0.7 (0.0157 ~ 0.027)
<b>1608</b>	0.5 ~ 0.7 (0.019 ~ 0.027)	2.1 ~ 3.1 (0.083 ~ 0.122)	0.65 ~ 0.95 (0.026 ~ 0.037)
<b>2012</b>	1.0 ~ 1.2 (0.039 ~ 0.047)	3.0 ~ 4.0 (0.118 ~ 0.157)	0.8 ~ 1.1 (0.031 ~ 0.043)
<b>3216</b>	2.0 ~ 2.4 (0.019 ~ 0.094)	4.2 ~ 5.2 (0.165 ~ 0.204)	1.0 ~ 1.4 (0.039 ~ 0.055)
<b>3225</b>	2.1 ~ 2.3 (0.082 ~ 0.09)	4.2 ~ 5.2 (0.165 ~ 0.204)	2.2 ~ 2.5 (0.0866 ~ 0.098)
<b>4516</b>	3.4 ~ 3.7 (0.133 ~ 0.145)	6.3 ~ 7.3 (0.248 ~ 0.287)	1.3 ~ 1.7 (0.051 ~ 0.067)
<b>4532</b>	3.4 ~ 3.7 (0.133 ~ 0.145)	6.3 ~ 7.3 (0.248 ~ 0.287)	2.9 ~ 3.2 (0.144 ~ 0.126)

NOTE: FOR W133E SOLDERING, ADD 0.030" (0.762) TO THE "C" DIMENSION