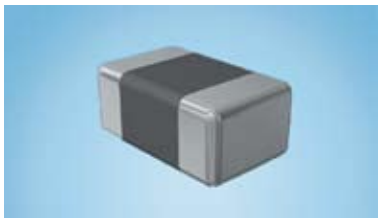


EMI Ferrite Chip Beads

Steward's surface mount ferrite chips provide compact, cost effective EMI filtering for densely packed PCB designs. The small footprint enables placement very close to troublesome high frequency devices. Our proprietary SMT construction yields rugged components with impedance versus frequency characteristics superior to those of similar products.

Features:

• Small footprint • Excellent retention under bias • Rugged, monolithic construction • Superior impedance vs. frequency characteristics • Economical • Broad range of sizes (from 0402 up to 3312) • Broad range of impedance values and current ratings

Applications:

• Filtering of power input pins and devices using high speed clocks • Filtering of low frequency input/output signals of shielded enclosures • High frequency filtering of medium speed clocks and video signals • Prevention of oscillations in high frequency amplifiers • Data bus filtration • Discrete component filtration in power supplies • Telecom Products

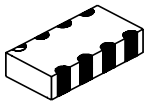
Test Specifications:

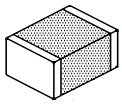
• Maximum current ratings are determined by testing to a maximum temperature rise of 40°C with continuous operating current
Tested with: • E4991A (100kHz - 3.0 GHz) or HP8753 (to 6 GHz) Network/Spectrum Analyzer • HP43961A Impedance Test Kit • HP16193A Test Fixture or Inter-Continental Microwave custom fixtures • HP16200A DC Bias Adapter • Philips PM2811 DC Power Supply • Ambient Temperature 23.5°C ± 2° • Bandwidth 3 kHz • Sweep Time 423 ms • Impedance is rated at ± 25% @100MHz

Steward PART NUMBERING SYSTEM EXAMPLE

HI	1612	X	560	R	-10
Product Series Code	Part Size Code	Rated Continuous Current Code	Impedance Value Code	Packaging Code	Additional Description

HI High Current Chips (> 3 Amps)
MI Mid Current Chips (1-2.5 Amps)
HR High Retention Under Bias
LI Low Current Chips (< 1 Amp and < 400 Ohms)
HZ High Impedance Chips (<1 Amp and > 400 Ohms)
HF High Frequency


Chip Array


Chip Bead

Ambient Operating Temperature Range: -55°C to +125°C

PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICAL OHMS @ 100 MHz	500 MHz	1 GHz	DCR MAX (Ohms)	RATED I MAX (continuos) mA
ULTRA HIGH CURRENT CHIPS						
HI1612X560R-10	**4131 (1612)**	56	90	100	0.004	10000
HI3312X101R-10	**8531 (3312)**	100	175	225	0.004	10000
HIGH CURRENT CHIPS						
HI0603P600R-10	**1608 (0603)**	60	90	95	0.040	3000
HI0805Q310R-10	**2012 (0805)**	31	42	46	0.025	4500
HI0805R800R-10		80	109	89	0.016	5000
HI0805O121R-10		120	125	70	0.020	3500
HI1206T500R-10	**3216 (1206)**	50	73	80	0.010	6000
HI1206N800R-10		80	120	129	0.035	3000
HI1206N101R-10		100	144	150	0.035	3000
HI1206P121R-10		120	168	124	0.030	4000
HI1206T161R-10		160	220	160	0.018	6000

PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICAL OHMS @ 100 MHz	500 MHz	1 GHz	DCR MAX (Ohms)	RATED I MAX (continuos) mA
HIGH CURRENT CHIPS (continued)						
HI1806T600R-10	**4516 (1806)**	60	102	107	0.010	6000
HI1806N910R-10		91	140	151	0.030	3000
HI1812T800R-10	**4532 (1812)**	80	121	129	0.010	6000
HI1812V101R-10		100	148	156	0.010	8000
HI2220T101R-10	**5620 (2220)**	100	148	152	0.006	6000
HI2220R151R-10		150	215	196	0.015	5000
HI2220P171R-10		170	318	349	0.030	4000
HI2220R181R-10		180	263	234	0.020	5000
HI2220P251R-10		250	172	91	0.015	4000
HI2220P271R-10		270	360	250	0.035	4000
HI2220R301R-10		300	190	100	0.020	5000
HI2220Q401R-10		400	159	99	0.025	4500

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PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICAL OHMS @ 100 MHz	500 MHz	1 GHz	DCR MAX (Ohms)	RATED I MAX (continuos) mA
HIGH CURRENT CHIPS (continued)						
HI2220P551R-10		550	670	343	0.035	4000
HI2220P601R-10		600	184	106	0.025	4000
HI2220P701R-10		700	140	90	0.025	4000
HR2220P601R-10		600	150	75	0.025	4000
HR2220V801R-00		800	125	75	0.010	8000
MID CURRENT CHIPS						
MI0603K300R-10	**1608 (0603)**	30	43	45	0.090	1500
MI0603J600R-10		60	92	103	0.100	1000
MI0603J680R-10		68	106	99	0.100	1000
MI0603M121R-10		120	195	155	0.050	2500
MI0603L221R-10		220	219	121	0.065	2000
MI0603L301R-10		300	225	120	0.100	2000
MI0603J601R-10		600	400	200	0.200	1000
MI0805K110R-10	**2012 (0805)**	11	18	19	0.060	1500
MI0805K400R-10		40	60	63	0.050	1500
MI0805M221R-10		220	274	167	0.050	2500
MI0805L301R-10		300	271	147	0.100	2000
MI0805K601R-10		600	275	140	0.100	1500
MI0805J102R-10		1000	226	108	0.150	1000
MI1206K260R-10	**3216 (1206)**	26	38	40	0.060	1500
MI1206K310R-10		31	45	50	0.045	1500
MI1206K601R-10		60	250	130	0.100	2000
MI1206K900R-10		90	142	158	0.080	1500
MI1206L501R-10		500	150	82	0.060	2000
MI1210K600R-10	**3225 (1210)**	60	90	95	0.035	1500
MI1806J800R-10	**4516 (1806)**	78	114	118	0.030	1000
MI1812K121R-10	**4532 (1812)**	120	198	213	0.055	1500

PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICAL OHMS @ 100 MHz	500 MHz	1 GHz	DCR MAX (Ohms)	RATED I MAX (continuos) mA
LOW CURRENT CHIPS						
LI0402E300R-10	**1005 (0402)**	30	50	57	0.300	500
LI0402E600R-10		60	90	93	0.300	500
LI0402D121R-10		120	205	195	0.400	400
LI0402B301R-10		300	454	351	0.800	200
LI0603G800R-10	**1608 (0603)**	80	120	107	0.200	700
LI0603G121R-10		120	156	113	0.200	700
LI0603E151R-10		150	197	131	0.25	500
LI0603G221R-10		220	279	168	0.300	700
LI0603D301R-10		300	286	165	0.350	400
LI0805H750R-10	**2012 (0805)**	75	112	113	0.150	800
LI0805H121R-10		120	167	129	0.150	800
LI0805H151R-10		150	207	138	0.150	800
LI0805G201R-10		200	221	128	0.300	700
LI0805G301R-10		300	248	146	0.200	700
LI1206H121R-10	**3216 (1206)**	120	144	135	0.150	800
LI1206H151R-10		150	173	123	0.150	800
LI1806E800R-10	**4516 (1806)**	80	117	124	0.300	500
LI1806E101R-10		100	131	130	0.300	500
LI1806C151R-10		150	219	227	0.500	300
LI1812D121R-10	**4532 (1812)**	120	182	184	0.400	400

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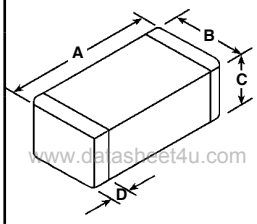
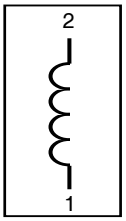
PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICAL OHMS @			DCR MAX (Ohms)	RATED I MAX (continuos) mA
		100 MHz	500 MHz	1 GHz		
HIGH IMPEDANCE CHIPS						
HZ0402A601R-10	**1005 (0402)**	600	644	399	1.000	100
HZ0603C601R-10	**1608 (0603)**	600	338	171	0.450	300
HZ0603C651R-10		650	650	936	0.600	300
HZ0603B751R-10		750	437	198	0.600	200
HZ0603B102R-10		1000	1300	850	0.800	200
HZ0603B112R-10		1100	1300	850	0.800	200
HZ0603A222R-10		2200	375	175	1.500	100
HZ0805G471R-10	**2012 (0805)**	470	286	150	0.350	700
HZ0805E601R-10		600	304	151	0.300	500
HZ0805D102R-10		1000	328	168	0.350	400
HZ0805D152R-10		1500	333	166	0.400	400
HZ0805C202R-10		2000	345	175	0.500	300
HZ0805B272R-10		2700	319	164	0.800	200
HZ1206E601R-10	**3216 (1206)**	600	202	103	0.300	500
HZ1206C202R-10		950	180	100	0.500	300
HZ1206D102R-10		1000	185	100	0.400	400
HZ1206E152R-10		1500	188	57	0.300	500

PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICAL OHMS @			DCR MAX (Ohms)	RATED I MAX (continuos) mA
		100 MHz	500 MHz	1 GHz		
HIGH FREQUENCY CHIPS						
HF1206J150R-10	**3216 (1206)**	2	7	15	0.06	1000
4-LINE CHIP ARRAYS						
DA1206D600R-10	**3216 (1206)**	60	115	60	0.200	400
DA1206C121R-10		120	181	151	0.200	300
DA1206D301R-10		300	437	245	0.400	400
DA1206E300R-10		300	55	64	0.300	00500
DA1206B601R-10		600	475	230	0.600	200
DA1206B102R-10		1000	520	240	0.800	200

CHIP SIZE



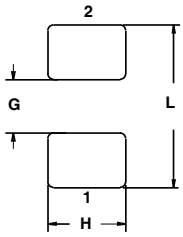
Equivalent Circuit



Metric (EIA) Pkg. Size	A mm (inches)	B mm (inches)	C mm (inches)	D mm (inches)
1005 (0402)	1.01 ± 0.18 (0.040 ± 0.007)	0.50 ± 0.20 (0.020 ± 0.008)	0.50 ± 0.20 (0.020 ± 0.007)	0.30 MAX (0.012 MAX)
1608 (0603)	1.60 ± 0.15 (0.063 ± 0.006)	0.80 ± 0.15 (0.031 ± 0.006)	0.80 + 0.15 (0.031 + 0.006)	0.36 + 0.15 (0.014 + 0.006)
2012 (0805)	2.00 + 0.20 (0.079 + 0.008)	1.25 + 0.20 (0.049 + 0.008)	0.90 + 0.20 (0.035 + 0.008)	0.51 + 0.25 (0.020 + 0.010)
3216 (1206)	3.20 + 0.20 (0.126 + 0.008)	1.60 + 0.20 (0.063 + 0.008)	1.10 + 0.20 (0.043 + 0.008)	0.51 + 0.25 (0.020 + 0.010)
3225 (1210)	3.20 + 0.20 (0.126 + 0.008)	2.50 + 0.20 (0.098 + 0.008)	1.40 + 0.20 (0.055 + 0.008)	0.46 + 0.20 (0.018 + 0.008)
4030 (1612)	4.06 + 0.20 (0.160 + 0.008)	3.05 + 0.20 (0.120 + 0.008)	2.28 + 0.20 (0.090 + 0.008)	0.46 + 0.20 (0.018 + 0.008)
4516 (1806)	4.50 + 0.25 (0.177 + 0.010)	1.60 + 0.25 (0.063 + 0.010)	1.60 + 0.25 (0.063 + 0.010)	0.51 + 0.25 (0.020 + 0.010)
4532 (1812)	4.50 + 0.25 (0.177 + 0.010)	3.20 + 0.25 (0.126 + 0.010)	1.40 + 0.25 (0.055 + 0.010)	0.46 + 0.20 (0.018 + 0.008)
5650 (2220)	5.59 + 0.51 (0.220 + 0.020)	5.08 + 0.25 (0.200 + 0.010)	3.45 + 0.25 (0.136 + 0.010)	0.76 + 0.25 (0.030 + 0.008)
6350 (2520)	6.40 + 0.51 (0.252 + 0.020)	5.00 + 0.25 (0.197 + 0.010)	3.00 + 0.25 (0.118 + 0.010)	0.76 + 0.25 (0.030 + 0.008)
8530 (3312)	8.50 + 0.20 (0.335 + 0.008)	3.05 + 0.20 (0.120 + 0.008)	2.28 + 0.20 (0.090 + 0.008)	0.51 + 0.25 (0.020 + 0.010)

LAND PATTERN FOR REFLOW SOLDERING

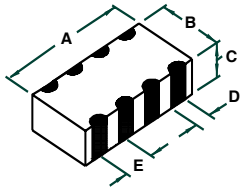
Land Pattern



Chip Bead

L	G	H
2.10 (0.083)	0.50 (0.020)	0.55 (0.022)
2.60 (0.102)	0.60 (0.023)	0.80 (0.031)
3.23 (0.127)	0.66 (0.026)	1.47 (0.058)
4.40 (0.173)	2.20 (0.087)	1.40 (0.055)
4.06 (0.160)	1.62 (0.084)	2.92 (0.115)
8.64 (0.340)	2.13 (0.084)	4.06 (0.160)
5.70 (0.224)	2.70 (0.106)	1.40 (0.055)
5.90 (0.232)	2.57 (0.101)	4.22 (0.166)
9.19 (0.362)	3.07 (0.121)	6.10 (0.240)
9.50 (0.374)	3.81 (0.151)	6.10 (0.240)
13.08 (0.515)	6.48 (0.255)	4.06 (0.160)

4-Line Chip Array Size

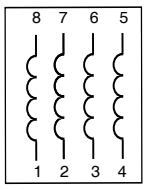


Metric (EIA) Pkg. Size	A mm (inches)	B mm (inches)	C mm (inches)	D mm (inches)
3216 (1206)	3.20 + 0.20 (0.126 + 0.008)	1.60 + 0.20 (0.063 + 0.008)	1.10 + 0.20 (0.043 + 0.008)	0.51 + 0.25 (0.020 + 0.010)

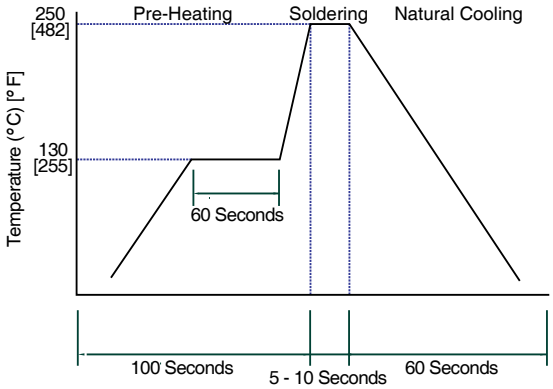
LAND PATTERN FOR REFLOW SOLDERING

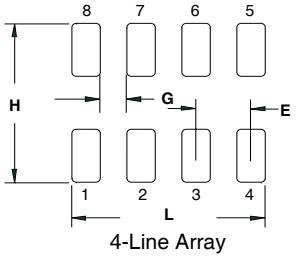
L	G	H	E
2.77 (0.109)	0.38 (0.015)	2.44 (0.096)	0.80 (0.031)

Equivalent Circuit



Recommended Lead Free Soldering Conditions





4-Line Array

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