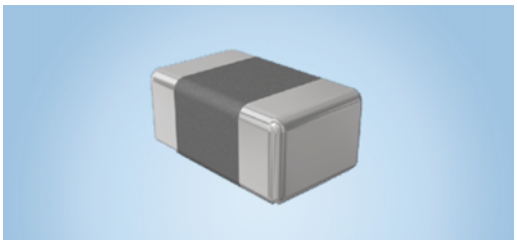


EMI Ferrite Chip Beads

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 2220 and 3312) •Broad range of impedance values and current ratings •Also offered in lead free

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:

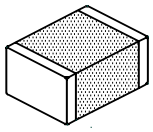
•Maximum current ratings are determined by testing to a maximum temperature rise of 40°C with continuous operating current
Tested with: •E4991A (100kHz - 3.0 GHz) or HP8753 (to 6 GHz) Network/Spectrum Analyzer •HP43961A Impedance Test Kit •HP16193A Test Fixture or Inter-Continental Microwave custom fixtures •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

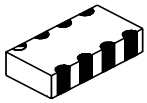
DM	1612	X	560	R	–	00
PRODUCT SERIES CODE	PART SIZE CODE	RATED CURRENT CODE	IMPEDANCE VALUE CODE	PACKAGING CODE		ADDITIONAL DESCRIPTION

DM Ultra High Current Chips (10 Amps +)
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)
DA Chip Array (< 1 Amp)

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



Chip Bead



Chip Array

PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICL OHMS @ 100MHz	500MHz	1GHz	DCR MAX OHMS	RATED I MAX (continuous) mA
Ultra High Current Chips						
DM1612X560R-00	**4131 (1612)**	56	90	100	0.004	10,000
DM3312X101R-00	**8531 (3312)**	100	175	225	0.004	10,000
High Current Chips						
HI0603P600R-00	**1608 (0603)**	60	90	95	0.040	3,000
HI0805Q310R-00	**2012 (0805)**	31	42	46	0.025	4,500
HI0805R800R-01		80	109	89	0.016	5,000
HI0805O121R-00		120	128	72	0.020	3,500
HI1206T500R-00	**3216 (1206)**	50	73	80	0.010	6,000
HI1206N800R-00		80	120	129	0.035	3,000
HI1206N101R-00		100	144	150	0.035	3,000
HI1206P121R-00		120	168	124	0.030	4,000
HI1206T161R-00		160	220	160	0.018	6,000

PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICL OHMS @ 100MHz	500MHz	1GHz	DCR MAX OHMS	RATED I MAX (continuous) mA
High Current Chips *(Continued)*						
HI1806T600R-00	**4516 (1806)**	60	102	107	0.010	6,000
HI1812T800R-00	**4532 (1812)**	80	121	129	0.010	6,000
HI1812V101R-00		100	148	156	0.010	8,000
HI2220T101R-00	**5650 (2220)**	100	148	152	0.006	6,000
HI2220R151R-00		150	215	196	0.015	5,000
HI2220R181R-00		180	260	230	0.020	5,000
HI2220P171R-00		170	318	349	0.030	4,000
HI2220P251R-00		250	172	91	0.015	4,000
HI2220P271R-00		270	360	250	0.035	4,000
HI2220R301R-00		300	190	100	0.020	5,000
HI2220Q401R-00		400	159	99	0.025	4,500
HI2220P551R-00		550	670	343	0.035	4,000

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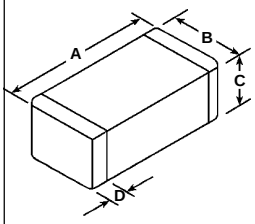
PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICL OHMS @ 100MHz	500MHz	1GHz	DCR MAX OHMS	RATED I MAX (continuous) mA
High Current Chips *(Continued)*						
HI2220P601R-00		600	184	106	0.025	4,000
HI2220P701R-00		700	140	90	0.025	4,000
HR2220P601R-00		600	150	75	0.025	4,000
HR2220V801R-00		800	125	75	0.010	8,000
HI2520P501R-00	6350 (2520)	500	215	133	0.020	4,000
HI2520P601R-00		600	639	165	0.015	4,000
HI2520P751R-00		750	173	114	0.020	4,000
Mid Current Chips						
MI0603J600R-00	**1608 (0603)**	60	92	103	0.100	1,000
MI0603J680R-00		68	106	99	0.100	1,000
MI0603M121R-00		120	195	155	0.050	2,500
MI0603L301R-00		300	225	120	0.100	2,000
MI0603J601R-00		600	400	200	0.200	1,000
MI0603K300R-00		30	43	44	0.090	1,500
MI0805J070R-00	**2012 (0805)**	7	23	28	0.100	1,000
MI0805K110R-00		11	18	19	0.060	1,500
MI0805K260R-00		26	43	45	0.060	1,500
MI0805K400R-00		40	60	63	0.050	1,500
MI0805M221R-00		220	274	167	0.050	2,500
MI0805L301R-00		300	271	147	0.100	2,000
MI0805K601R-00		600	275	140	0.100	1,500
MI1206K260R-00	**3216 (1206)**	26	38	40	0.060	1,500
MI1206K310R-00		31	45	50	0.045	1,500
MI1206K900R-00		90	142	158	0.080	1,500

PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICL OHMS @ 100MHz	500MHz	1GHz	DCR MAX OHMS	RATED I MAX (continuous) mA
Mid Current Chips *(Continued)*						
MI1206L501R-00		500	150	82	0.060	2,000
MI1206K601R-00		600	250	130	0.080	2,000
MI1210K600R-00	3225 (1210)	60	90	95	0.035	1,500
MI1812K121R-00	**4532 (1812)**	120	198	213	0.055	1,500
Low Current Chips						
LI0402E300R-00	**1005 (0402)**	30	50	57	0.300	500
LI0402E600R-00		60	90	93	0.300	500
LI0402D121R-00		120	205	195	0.400	400
LI0402B301R-00		300	454	351	0.800	200
LI0603G800R-00	**1608 (0603)**	80	120	107	0.200	700
LI0603G121R-00		120	156	113	0.200	700
LI0603G221R-00		220	279	168	0.300	700
LI0603D301R-00		300	286	165	0.350	400
LI0805H750R-00		75	112	113	0.150	800
LI0805H121R-00		120	167	129	0.150	800
LI0805H151R-00		150	207	138	0.150	800
LI0805G301R-00		300	248	146	0.200	700
LI1206E310R-00	3216 (1206)	31	43	46	0.200	500
LI1206H121R-00		120	144	135	0.150	800
LI1206H151R-00		150	173	123	0.150	800
LI1806E800R-00	4516 (1806)	80	117	124	0.300	500
LI1806E101R-00		100	131	130	0.300	500
LI1806C151R-00		150	219	227	0.500	300

PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICL OHMS @ 100MHz	500MHz	1GHz	DCR MAX OHMS	RATED I MAX (continuous) mA
High Impedance Chips						
HZ0402A601R-00	**1005 (0402)**	600	644	399	1.000	100
HZ0603C601R-00	**1608 (0603)**	600	338	171	0.450	300
HZ0603C651R-00		650	650	936	0.600	300
HZ0603B102R-00		1,000	376	187	0.600	200
HZ0603B112R-00		1,100	1,300	850	0.800	200
HZ0603A222R-00		2,200	375	175	1.500	100
HZ0805G471R-00	**2012 (0805)**	470	286	150	0.350	700
HZ0805E601R-00		600	304	151	0.300	500
HZ0805D102R-00		1,000	328	168	0.350	400
HZ0805D152R-00		1500	333	166	0.400	400
HZ0805C202R-00		2,000	345	175	0.500	300

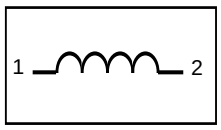
PART NUMBER	METRIC (EIA) PKG. SIZE	IMPEDANCE (Z) TYPICL OHMS @ 100MHz	500MHz	1GHz	DCR MAX OHMS	RATED I MAX (continuous) mA
High Impedance Chips *(Continued)*						
HZ1206E601R-00	**3216 (1206)**	600	202	103	0.300	500
HZ1206D102R-00		1,000	185	100	0.400	400
HZ1206C202R-00		950	180	100	0.500	300
4-Line Chip Arrays						
DA1206E300R-00	**3216 (1206)**	30	55	64	0.300	500
DA1206D600R-00		60	115	60	0.200	400
DA1206C121R-00		120	181	151	0.200	300
DA1206D301R-00		300	437	245	0.400	400
DA1206B601R-00		600	475	230	0.600	200
DA1206B102R-00		1,000	520	240	0.800	200

Chip Size



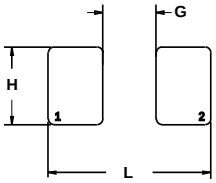
Metric (EIA) Pkg. Size	A mm (inches)	B mm (inches)	C mm (inches)	D mm (inches)
1005 (0402)	1.01 ± 0.18 (0.040 ± 0.007)	0.50 ± 0.20 (0.020 ± 0.008)	0.50 ± 0.20 (0.020 ± 0.008)	0.30 MAX (0.012 MAX)
1608 (0603)	1.60 ± 0.15 (0.063 ± 0.006)	0.80 ± 0.15 (0.031 ± 0.006)	0.80 ± 0.15 (0.031 ± 0.006)	0.36 ± 0.15 (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)
2012 (0805)	2.00 ± 0.20 (0.079 ± 0.008)	1.25 ± 0.20 (0.049 ± 0.008)	1.25 ± 0.20 (0.049 ± 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 ± 051 (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 ± 0.010)
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)

Equivalent Circuit



Land Patterns for Reflow Soldering

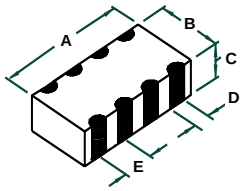
Land Pattern for Reflow Soldering



Chip Bead

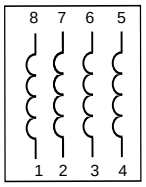
L**	G	H
2.10 (0.083)	0.50 (0.020)	0.55 (0.022)
2.60 (0.102)	0.60 (0.023)	0.80 (0.031)
3.23 (0.127)	0.66 (0.026)	1.47 (0.058)
3.23 (0.127)	0.66 (0.026)	1.47 (0.058)
4.40 (0.173)	2.20 (0.087)	1.40 (0.055)
4.06 (0.160)	1.62 (0.084)	2.92 (0.115)
8.64 (0.340)	2.13 (0.084)	4.06 (0.160)
5.70 (0.224)	2.70 (0.106)	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 (01507)	6.10 (0.240)
13.08 (0.515)	6.48 (0.255)	4.06 (0.160)

4-Line Chip Array Size

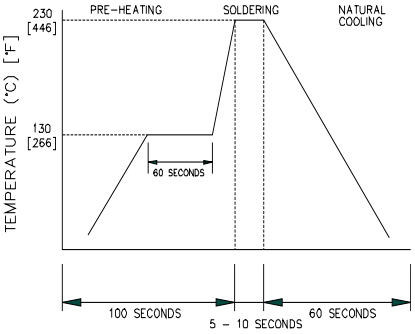


Metric (EIA) Pkg. Size	A mm (inches)	B mm (inches)	C mm (inches)	D mm (inches)
3216 (1206)	3.20 ± 0.20 (0.126 ± 0.008)	1.60 ± 0.20 (0.063 ± 0.008)	0.80 ± 0.20 (0.031 ± 0.008)	0.40 ± 0.15 (0.016 ± 0.006)

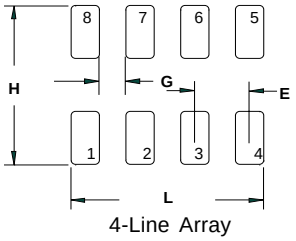
Equivalent Circuit



Recommended Soldering Conditions



Land Patterns for Reflow Soldering



4-Line Array

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

** - For wave soldering, add 0.762mm (0.030”) to the L dimension

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