

Data Sheet

Customer:

Product: SMD Power Inductor – VLH Series

Sizes.: 252010/252012/252510/322515/322520/453226/575047

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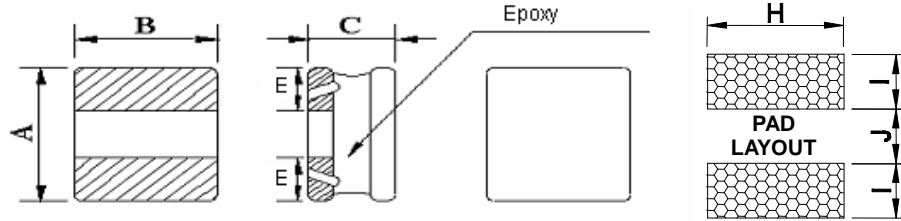
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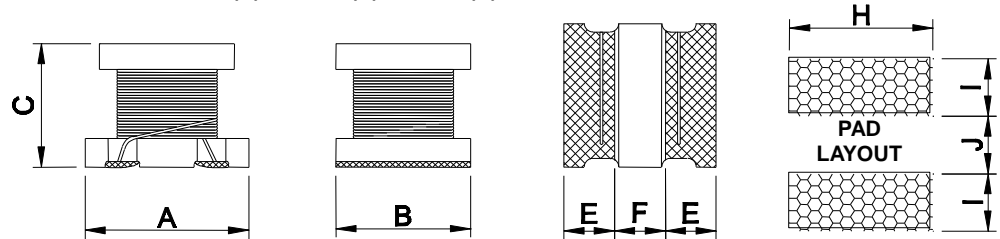
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SMD Power Inductor

VLH252010E / 252012E



VLH252510/322515(C) / 322520(C) / 453226(C) / 575047C



Dimensions

Unit: mm

Type	A	B	C	E	F	H	I	J
252010E	2.5±0.2	2.0±0.2	1.02 max	0.8 ref	-	2.0	0.85	0.8
252012E	2.5±0.2	2.0±0.2	1.20 max	0.8 ref	-	2.0	0.85	0.8
252510	2.5±0.2	2.5±0.2	1.05 max	0.9 ref	0.7 ref	2.5	1.2	0.8
322515(C)	3.2±0.3	2.5±0.2	1.55±0.3	1.05±0.3	1.05±0.3	2.0	1.5	1.0
322520(C)	3.2±0.3	2.5±0.2	2.0±0.3	0.7min.	0.7min.	2.0	1.5	1.0
453226(C)	4.5±0.3	3.2±0.2	2.6±0.4	1.0min.	1.0min.	3.0	2.0	1.2
575047C	5.7±0.3	5.0±0.3	4.7±0.3	1.3min.	1.7min.	5.0	2.0	2.0

Features

- The miniature chip inductors are wound on a special ferrite core.
- VLH322515/322520/453226 are low DC resistance.
- VLH322520C/453226C/565047C are low DC resistance, high current capacity, and high impedance characteristics. They are excellent for using as a choke coil in DC power supply circuits.

Applications

- Pagers, Cordless Phone
- High Frequency Communication Products
- Personal Computers
- Disk Drives And Computer Peripherals
- DC Power Supply Circuits

Characteristics for 252010E/ 252012E/252510/322515C

- Rated DC Current(I sat): The current when the inductance becomes 30% typical its initial value (Ta=25°C)
- Temperature Rise Current(I rms): The actual current when the temperature of coil becomes Δ T40°C.. (Ta=25°C)
- Operating temperature range: -40~125°C

Inductance and rated current ranges

- VLH252010E 1.00~22μH 2.20~0.50A
- VLH252012E 1.00~22μH 2.80~0.55A
- VLH252510 1.00~22μH 2.30~0.51A
- VLH322515 1.00~100μH 1.00~0.1A
- VLH322520 1.00~560μH 0.445~0.04A
- VLH453226 1.00~2200μH 0.50~0.03A
- VLH322515C 0.47~120μH 3.40~0.17A
- VLH322520C 1.00~560μH 1.00~0.06A
- VLH453226C 1.00~1000μH 1.08~0.05A
- VLH575047C 0.12~10000μH 6.00~0.05A

- Test equipment:

L&Q: HP4285A Precision LCR meter

DCR: Milli-ohm meter

- Electrical specifications at 25°C

Characteristics except 252010E/252012E/252510/322515C

- Rated DC Current: The current when the inductance becomes 10% lower than its initial value or the current when the temperature of coil increases Δ T20°C. The smaller one is defined as Rated DC Current. (Ta=25°C)
- Operating temperature range: -40~125°C

SMD Power Inductor

Product Identification

VLH	453226	C	-	101	K
Product Type	Dimensions (AxBxC)	Use	Appearance	Inductance	Inductance Tolerance
	252010: 2.5x2.0x1.02 252012: 2.5x2.0x1.2 252510: 2.5x2.5x1.05 322515: 3.2x2.5x1.55 322520: 3.2x2.5x2.0 453226: 4.5x3.2x2.6 575047: 5.7x5.0x4.7	C: Choke Use : General Use	- : Standard E: Epoxy	1R0: 1.0μH 470: 47μH 101: 100μH	J: ±5% K: ±10% M: ±20% N: ±30%

Electrical Characteristics

VLH252010E Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (Ω) max..	I rms(A) max.	I sat(A) max.
VLH252010E1R0□	1.0	M	1MHz, 0.1V	0.121	2.20	2.20
VLH252010E1R5□	1.5	M	1MHz, 0.1V	0.193	1.80	1.90
VLH252010E2R2□	2.2	M	1MHz, 0.1V	0.232	1.68	1.60
VLH252010E3R3□	3.3	M	1MHz, 0.1V	0.372	1.34	1.20
VLH252010E4R7□	4.7	M	1MHz, 0.1V	0.548	1.00	1.00
VLH252010E5R6□	5.6	M	1MHz, 0.1V	0.626	0.90	0.90
VLH252010E6R8□	6.8	M	1MHz, 0.1V	0.778	0.90	0.90
VLH252010E100□	10	M	1MHz, 0.1V	1.036	0.80	0.70
VLH252010E220□	22	M	1MHz, 0.1V	2.391	0.50	0.50

VLH252012E Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (Ω) max.	I rms(A) max.	I sat(A) max.
VLH252012E1R0□	1.0	M	1MHz, 0.1V	0.137	2.20	2.80
VLH252012E1R2□-1	1.2	M	1MHz, 1V	0.0685	3.15	2.95
VLH252012E1R5□	1.5	M	1MHz, 0.1V	0.190	1.86	2.20
VLH252012E2R2□	2.2	M	1MHz, 0.1V	0.285	1.70	1.80
VLH252012E3R3□	3.3	M	1MHz, 0.1V	0.454	1.20	1.30
VLH252012E4R7□	4.7	M	1MHz, 0.1V	0.659	1.04	1.10
VLH252012E5R6□	5.6	M	1MHz, 0.1V	0.685	1.00	1.10
VLH252012E6R8□	6.8	M	1MHz, 0.1V	0.988	0.94	0.94
VLH252012E100□	10	M	1MHz, 0.1V	1.190	0.84	0.82
VLH252012E220□	22	M	1MHz, 0.1V	2.743	0.54	0.55

VLH252510- Type(□:Tolerance):

Codes	L (μH)	Tolerance	Test Condition	DCR (Ω) typical.	I rms(A) typical	I sat(A) typical
VLH252510-1R0□	1.0	M	1MHz, 0.1V	0.085	1.90	2.30
VLH252510-1R5□	1.5	M	1MHz, 0.1V	0.115	1.50	1.90
VLH252510-2R2□	2.2	M	1MHz, 0.1V	0.168	1.20	1.50
VLH252510-3R3□	3.3	M	1MHz, 0.1V	0.239	1.10	1.30
VLH252510-4R7□	4.7	M	1MHz, 0.1V	0.316	0.90	1.10
VLH252510-5R6□	5.6	M	1MHz, 0.1V	0.420	0.83	0.98
VLH252510-6R8□	6.8	M	1MHz, 0.1V	0.487	0.80	0.90
VLH252510-8R2□	8.2	M	1MHz, 0.1V	0.548	0.71	0.84
VLH252510-100□	10	M	1MHz, 0.1V	0.610	0.68	0.79
VLH252510-220□	22	M	1MHz, 0.1V	1.552	0.40	0.51

■Electrical Characteristics

VLH322515- Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (Ω) max.	IDC (A) max.	SRF (MHz) min.
VLH322515-1R0□	1.0	N	1MHz, 0.1V	0.078	1.000	100
VLH322515-1R5□	1.5	N	1MHz, 0.1V	0.068	1.200	100
VLH322515-2R2□	2.2	M	1MHz, 0.1V	0.126	0.790	64
VLH322515-3R3□	3.3	M	1MHz, 0.1V	0.180	0.700	50
VLH322515-4R7□	4.7	M	1MHz, 0.1V	0.195	0.650	43
VLH322515-100□	10	K	1MHz, 0.1V	0.420	0.450	26
VLH322515-150□	15	K	1MHz, 0.1V	0.750	0.300	22
VLH322515-220□	22	K	1MHz, 0.1V	1.000	0.250	19
VLH322515-330□	33	K	1MHz, 0.1V	1.400	0.200	17
VLH322515-470□	47	K	1MHz, 0.1V	2.200	0.170	13
VLH322515-680□	68	K	1MHz, 0.1V	3.200	0.130	9
VLH322515-101□	100	K	1MHz, 0.1V	4.500	0.100	8

VLH322520- Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (Ω) max.	IDC (A) max.
VLH322520-1R0□	1.0	M	1MHz, 0.1V	0.50	0.445
VLH322520-1R2□	1.2	M	1MHz, 0.1V	0.60	0.425
VLH322520-1R5□	1.5	K, M	1MHz, 0.1V	0.60	0.400
VLH322520-1R8□	1.8	K, M	1MHz, 0.1V	0.70	0.390
VLH322520-2R2□	2.2	K, M	1MHz, 0.1V	0.80	0.370
VLH322520-2R7□	2.7	K, M	1MHz, 0.1V	0.90	0.320
VLH322520-3R3□	3.3	K, M	1MHz, 0.1V	1.00	0.300
VLH322520-3R9□	3.9	K, M	1MHz, 0.1V	1.10	0.290
VLH322520-4R7□	4.7	K, M	1MHz, 0.1V	1.20	0.270
VLH322520-5R6□	5.6	K, M	1MHz, 0.1V	1.30	0.250
VLH322520-6R8□	6.8	K, M	1MHz, 0.1V	1.50	0.240
VLH322520-8R2□	8.2	K, M	1MHz, 0.1V	1.60	0.225
VLH322520-100□	10	J, K	1MHz, 0.1V	1.80	0.190
VLH322520-120□	12	J, K	1MHz, 0.1V	2.00	0.180
VLH322520-150□	15	J, K	1MHz, 0.1V	2.20	0.170
VLH322520-180□	18	J, K	1MHz, 0.1V	2.50	0.165
VLH322520-220□	22	J, K	1MHz, 0.1V	2.80	0.150
VLH322520-270□	27	J, K	1MHz, 0.1V	3.10	0.125
VLH322520-330□	33	J, K	1MHz, 0.1V	3.50	0.115
VLH322520-390□	39	J, K	1MHz, 0.1V	3.90	0.110
VLH322520-470□	47	J, K	1MHz, 0.1V	4.30	0.100
VLH322520-560□	56	J, K	1MHz, 0.1V	4.90	0.085
VLH322520-680□	68	J, K	1MHz, 0.1V	5.50	0.080
VLH322520-820□	82	J, K	1MHz, 0.1V	6.20	0.070
VLH322520-101□	100	J, K	1MHz, 0.1V	7.00	0.080
VLH322520-121□	120	J, K	1MHz, 0.1V	8.00	0.075
VLH322520-151□	150	J, K	1MHz, 0.1V	9.30	0.070
VLH322520-181□	180	J, K	1MHz, 0.1V	10.20	0.065
VLH322520-221□	220	J, K	1MHz, 0.1V	11.80	0.065
VLH322520-271□	270	J, K	1MHz, 0.1V	12.50	0.065
VLH322520-331□	330	J, K	1MHz, 0.1V	15.00	0.065
VLH322520-391□	390	J, K	1MHz, 0.1V	22.00	0.050
VLH322520-471□	470	J, K	1KHz, 0.1V	25.00	0.045
VLH322520-561□	560	J, K	1KHz, 0.1V	28.00	0.040

■Electrical Characteristics

VLH453226- Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (Ω) max.	IDC (A) max.
VLH453226-1R0□	1.0	M	1MHz, 0.1V	0.20	0.500
VLH453226-1R2□	1.2	M	1MHz, 0.1V	0.20	0.500
VLH453226-1R5□	1.5	M	1MHz, 0.1V	0.30	0.500
VLH453226-1R8□	1.8	M	1MHz, 0.1V	0.30	0.500
VLH453226-2R2□	2.2	M	1MHz, 0.1V	0.30	0.500
VLH453226-2R7□	2.7	M	1MHz, 0.1V	0.32	0.500
VLH453226-3R3□	3.3	M	1MHz, 0.1V	0.35	0.500
VLH453226-3R9□	3.9	M	1MHz, 0.1V	0.38	0.500
VLH453226-4R7□	4.7	K, M	1MHz, 0.1V	0.40	0.500
VLH453226-5R6□	5.6	K, M	1MHz, 0.1V	0.47	0.500
VLH453226-5R6□-1	5.6	M	1MHz, 0.25V	0.18	1.180
VLH453226-6R8□	6.8	K, M	1MHz, 0.1V	0.50	0.450
VLH453226-8R2□	8.2	K, M	1MHz, 0.1V	0.56	0.450
VLH453226-100□	10	J, K	1MHz, 0.1V	0.56	0.400
VLH453226-120□	12	J, K	1MHz, 0.1V	0.62	0.380
VLH453226-150□	15	J, K	1MHz, 0.1V	0.73	0.360
VLH453226-180□	18	J, K	1MHz, 0.1V	0.82	0.340
VLH453226-220□	22	J, K	1MHz, 0.1V	0.94	0.320
VLH453226-270□	27	J, K	1MHz, 0.1V	1.10	0.300
VLH453226-330□	33	J, K	1MHz, 0.1V	1.20	0.270
VLH453226-390□	39	J, K	1MHz, 0.1V	1.40	0.240
VLH453226-470□	47	J, K	1MHz, 0.1V	1.50	0.220
VLH453226-560□	56	J, K	1MHz, 0.1V	1.70	0.200
VLH453226-680□	68	J, K	1MHz, 0.1V	1.90	0.180
VLH453226-820□	82	J, K	1MHz, 0.1V	2.20	0.170
VLH453226-101□	100	J, K	1MHz, 0.1V	2.50	0.160
VLH453226-121□	120	J, K	1MHz, 0.1V	3.00	0.150
VLH453226-151□	150	J, K	1MHz, 0.1V	3.70	0.130
VLH453226-181□	180	J, K	1MHz, 0.1V	4.50	0.120
VLH453226-221□	220	J, K	1MHz, 0.1V	5.40	0.110
VLH453226-271□	270	J, K	1MHz, 0.1V	6.80	0.100
VLH453226-331□	330	J, K	1MHz, 0.1V	8.20	0.095
VLH453226-391□	390	J, K	1MHz, 0.1V	9.70	0.090
VLH453226-471□	470	J, K	1KHz, 0.1V	11.80	0.080
VLH453226-561□	560	J, K	1KHz, 0.1V	14.50	0.070
VLH453226-681□	680	J, K	1KHz, 0.1V	17.00	0.065
VLH453226-821□	820	J, K	1KHz, 0.1V	20.50	0.060
VLH453226-102□	1000	J, K	1KHz, 0.1V	25.00	0.050
VLH453226-122□	1200	J, K	1KHz, 0.1V	30.00	0.045
VLH453226-152□	1500	J, K	1KHz, 0.1V	37.00	0.040
VLH453226-152□-2	1500	K	1KHz, 0.1V	37.00	0.055
VLH453226-182□	1800	J, K	1KHz, 0.1V	45.00	0.035
VLH453226-222□	2200	J, K	1KHz, 0.1V	50.00	0.030
VLH453226-222□-1	2200	K	1KHz, 0.1V	47.00	0.078

Note: VLH453226-222□-1 The current when the inductance becomes 30% lower than its initial value.

■Electrical Characteristics

VLH322515C- Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (Ω) ±20%	Isat (A) max.	Irms (A) max.	SRF (MHz) min.
VLH322515C-R47□	0.47	N	1MHz, 0.1V	0.030	3.40	2.55	100
VLH322515C-1R0□	1.0	N	1MHz, 0.1V	0.045	2.30	2.05	100
VLH322515C-1R5□	1.5	N	1MHz, 0.1V	0.057	1.75	1.75	70
VLH322515C-2R2□	2.2	N	1MHz, 0.1V	0.076	1.55	1.60	70
VLH322515C-3R3□	3.3	N	1MHz, 0.1V	0.120	1.25	1.20	50
VLH322515C-4R7□	4.7	N	1MHz, 0.1V	0.180	1.00	1.00	40
VLH322515C-6R8□	6.8	N	1MHz, 0.1V	0.240	0.85	0.85	40
VLH322515C-100□	10	M	1MHz, 0.1V	0.380	0.75	0.70	30
VLH322515C-150□	15	M	1MHz, 0.1V	0.570	0.60	0.52	20
VLH322515C-220□	22	M	1MHz, 0.1V	0.810	0.50	0.45	20
VLH322515C-330□	33	M	1MHz, 0.1V	1.150	0.38	0.39	13
VLH322515C-470□	47	M	1MHz, 0.1V	1.780	0.33	0.31	11
VLH322515C-680□	68	M	1MHz, 0.1V	2.280	0.28	0.275	11
VLH322515C-101□	100	M	1MHz, 0.1V	2.700	0.18	0.250	8
VLH322515C-121□	120	M	1MHz, 0.1V	4.380	0.17	0.200	8

VLH322520C- Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (Ω) max.	IDC (A) max.
VLH322520C-1R0□	1.0	M	1MHz, 0.1V	0.078	1.000
VLH322520C-2R2□	2.2	M	1MHz, 0.1V	0.126	0.790
VLH322520C-3R3□	3.3	M	1MHz, 0.1V	0.165	0.500
VLH322520C-4R7□	4.7	M	1MHz, 0.1V	0.195	0.450
VLH322520C-4R7□-2	4.7	M	100KHz, 0.25V	0.195	0.650
VLH322520C-6R8□	6.8	M	1MHz, 0.1V	0.330	0.450
VLH322520C-100□	10	M	1MHz, 0.1V	0.572	0.300
VLH322520C-220□	22	K, M	1MHz, 0.1V	0.923	0.250
VLH322520C-470□	47	K, M	1MHz, 0.1V	1.690	0.170
VLH322520C-101□	100	J, K	1MHz, 0.1V	4.550	0.100
VLH322520C-121□	120	K	1MHz, 0.1V	7.000	0.180
VLH322520C-151□	150	J, K	1MHz, 0.1V	9.100	0.080
VLH322520C-221□	220	J, K	1MHz, 0.1V	10.92	0.070
VLH322520C-331□	330	J, K	1MHz, 0.1V	13.00	0.060
VLH322520C-391□	390	J, K	1MHz, 0.1V	22.10	0.060
VLH322520C-471□	470	J, K	1MHz, 0.1V	24.70	0.060
VLH322520C-561□	560	J, K	1MHz, 0.1V	28.60	0.060

VLH453226C- Type(□:Tolerance):

Part No	L (μH)	Tolerance	Test Condition	DCR (Ω) max.	IDC (A) max.
VLH453226C-1R0□	1.0	M	1MHz, 0.1V	0.08	1.080
VLH453226C-1R5□	1.5	M	1MHz, 0.1V	0.09	1.000
VLH453226C-2R2□	2.2	M	1MHz, 0.1V	0.11	0.900
VLH453226C-3R3□	3.3	M	1MHz, 0.1V	0.13	0.800
VLH453226C-4R7□	4.7	K, M	1MHz, 0.1V	0.15	0.750
VLH453226C-6R8□	6.8	K, M	1MHz, 0.1V	0.20	0.720
VLH453226C-100□	10	J, K	1MHz, 0.1V	0.24	0.650
VLH453226C-150□	15	J, K	1MHz, 0.1V	0.32	0.570
VLH453226C-220□	22	J, K	1MHz, 0.1V	0.60	0.420
VLH453226C-330□	33	J, K	1MHz, 0.1V	1.00	0.310
VLH453226C-470□	47	J, K	1MHz, 0.1V	1.10	0.280
VLH453226C-680□	68	J, K	1MHz, 0.1V	1.70	0.220
VLH453226C-101□	100	J, K	1MHz, 0.1V	2.20	0.190
VLH453226C-151□	150	J, K	1MHz, 0.1V	3.50	0.130
VLH453226C-221□	220	J, K	1MHz, 0.1V	4.00	0.110
VLH453226C-331□	330	J, K	1MHz, 0.1V	6.80	0.100
VLH453226C-471□	470	J, K	1KHz, 0.1V	8.50	0.090
VLH453226C-102□	1000	K	1KHz, 0.1V	25.00	0.050

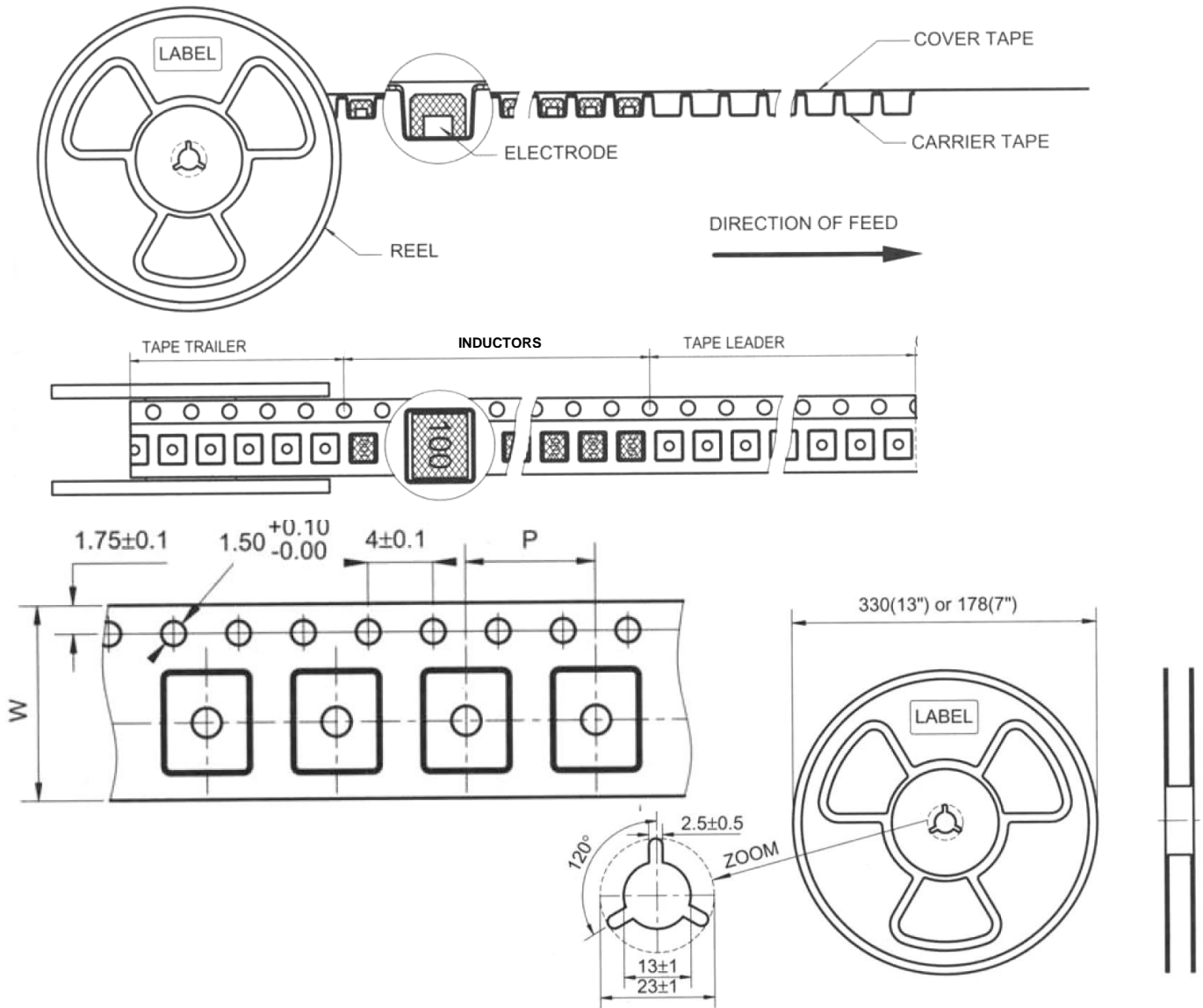
■Electrical Characteristics

VLH575047C- Type(□:Tolerance):

Part No	L (μ H)	Tolerance	Test Condition	DCR (Ω) max.	IDC (A) max.
VLH575047C-R12□	0.12	M	1MHz, 0.1V	0.0098	6.000
VLH575047C-R27□	0.27	M	1MHz, 0.1V	0.0140	5.300
VLH575047C-R47□	0.47	M	1MHz, 0.1V	0.0182	4.800
VLH575047C-1R0□	1.0	M	1MHz, 0.1V	0.0270	4.000
VLH575047C-1R5□	1.5	M	1MHz, 0.1V	0.0310	3.700
VLH575047C-2R2□	2.2	M	1MHz, 0.1V	0.0410	3.200
VLH575047C-3R3□	3.3	M	1MHz, 0.1V	0.0500	2.900
VLH575047C-4R7□	4.7	M	1MHz, 0.1V	0.0574	2.700
VLH575047C-6R8□	6.8	M	1MHz, 0.1V	0.1040	2.000
VLH575047C-100□	10	K, M	1MHz, 0.1V	0.1300	1.700
VLH575047C-100□-1	10	K	1MHz, 0.25V	0.1300	2.000
VLH575047C-150□	15	K, M	1MHz, 0.1V	0.210	1.400
VLH575047C-220□	22	K, M	1MHz, 0.1V	0.266	1.200
VLH575047C-270□	27	K, M	1MHz, 0.1V	0.300	1.000
VLH575047C-330□	33	K, M	1MHz, 0.1V	0.448	0.900
VLH575047C-470□	47	K, M	1MHz, 0.1V	0.560	0.800
VLH575047C-680□	68	K, M	1MHz, 0.1V	0.938	0.640
VLH575047C-101□	100	K, M	100KHz, 0.1V	1.204	0.560
VLH575047C-151□	150	K, M	100KHz, 0.1V	2.660	0.420
VLH575047C-221□	220	K, M	100KHz, 0.1V	3.360	0.320
VLH575047C-331□	330	K, M	100KHz, 0.1V	6.160	0.270
VLH575047C-471□	470	K, M	100KHz, 0.1V	7.560	0.240
VLH575047C-681□	680	K, M	100KHz, 0.1V	11.34	0.190
VLH575047C-102□	1000	K, M	10KHz, 0.1V	14.42	0.150
VLH575047C-222□	2200	K, M	10KHz, 0.1V	30.10	0.100
VLH575047C-472□	4700	K, M	10KHz, 0.1V	61.04	0.070
VLH575047C-472□-1	4700	M	100KHz, 0.25V	61.00	0.090
VLH575047C-103□	10000	K, M	10KHz, 0.1V	140.0	0.050

SMD Power Inductor

■Tape and Reel specifications



Unit: mm

Type	Tape size		Parts Per Reel	
	W	P	7"	13"
252010E	8	4	2000	-
252012E	8	4	2000	-
252510	8	4	2000	-
322515	8	4	2000	-
322520	12	8	1000	-
453226	12	8	500	-
575047	16	12	-	1000

SMD Power Inductor

■ SMD Power Inductor Environmental Specifications

General

Items	Specifications
Shelf Storage conditions	Temperature range: 15~28°C; Humidity: <80% relative humidity. Recommended product should be used within one year from the time of delivery.

Environmental test

Test Items	Specifications	Test Conditions / Test Methods
High temperature Storage test	No case deformation or change in appearance. $\Delta L/L \leq 10\%$	Temperature 85±2°C, Time: 48±2 hours, Tested after 1hour at room temperature.
Low temperature Storage test		Temperature -25±2°C, Time: 48±2 hours, Tested after 1hour at room temperature.
Humidity test		Temperature 40±2°C, 90~95% relative humidity Time: 96±2 hours Tested after 1hour at room temperature.
Thermal shock test		First -25°C 30minutes then 25°C 10 minutes last 85°C 30 minutes, as 1 cycle. Go through 5 cycles. Tested after 1 hour at room temperature.

Mechanical test

Test Items	Specifications	Test Conditions / Test Methods
Solderability test	Terminal area must have 90% minimum solder coverage.	Product with Lead-free terminal: Dip pads in flux then dip in solder pot at 245±5°C for 3 seconds.
Resistance to Soldering Heat	No case deformation or change in appearance.	Flux should cover the whole of the sample before heating, then be preheated for about 2 minutes over temperature of 130~150°C. Immersing to 260±5°C for 10 seconds.
Vibration test	No case deformation or change in appearance.	Apply frequency 10~55Hz. 1.5mm amplitude in each of perpendicular direction for 2 hours.
Shock resistance	$\Delta L/L \leq 10\%$	Drop down with 981m/s ² (100G) shock attitude upon a rubber block method shock testing machine, for 1 time. In each of three orientations.

The condition of reflow (recommendation)

