

Data Sheet

Customer:

Product: Shielded SMD Power Inductor – PCF Series

Sizes.: 4010/4020/4030/5010/5020/5030/6020/6030/6915/6919/
7040

Issued Date: 20-Feb-17

Edition: REV.B5



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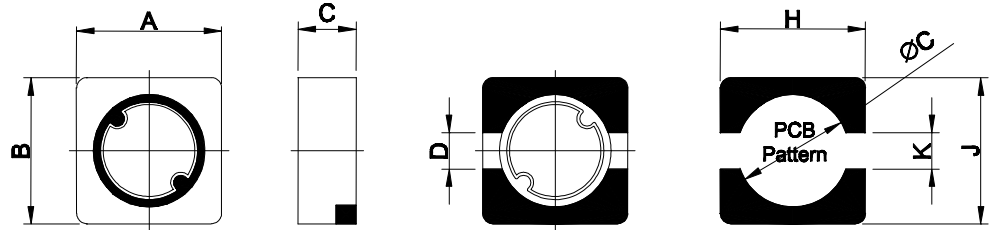
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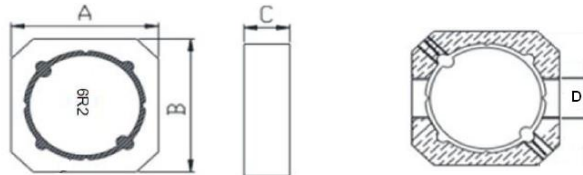
Shielded SMD Power Inductor



PCF 4010/4020/4030/5010/5020/5030/6915/6919/7040



PCF6020/6030



Features

- Directly connected electrode on ferrite core
- Available in magnetically shielded
- Low DC resistance
- Suitable for large current
- Available on tape and reel for auto surface mounting

Applications

- Power Supply For VTRs
- OA Equipment.
- Notebook PCs
- Portable Communication Equipment
- DC/DC Converters, etc.

Characteristics

- Rated Current:
4010/4020/5010/5020/5030/6915/6919/7040: The DC current when the inductance becomes 30% lower than its initial value.
- 4030/6020/6030: The DC current when the inductance becomes 35% lower than its initial value. (Ta=25°C)
- Operating temperature range: -40~+125°C

Dimensions

Unit: mm

Type	A	B	C max.	D	H	J	K	ΦC
PCF4010	3.8±0.3	3.8±0.3	1.25	1.2	4.4	4.4	1.1	3.0
PCF4020	3.8±0.3	3.8±0.3	2.00	1.2	4.4	4.4	1.1	3.0
PCF4030	3.8±0.3	3.8±0.3	3.00	1.2	4.4	4.4	1.1	3.0
PCF5010	5.0±0.3	5.0±0.3	1.20	2.0	5.9	5.9	1.9	4.2
PCF5020	5.0±0.3	5.0±0.3	2.00	2.0	5.9	5.9	1.9	4.2
PCF5030	5.0±0.3	5.0±0.3	3.00	2.0	5.9	5.9	1.9	4.2
PCF6020	6.0±0.2	6.0±0.2	2.00	2.0	6.6	6.6	2.0	4.6
PCF6030	6.0±0.2	6.0±0.2	3.00	2.0	6.6	6.6	2.0	4.6
PCF6915	6.9±0.3	6.9±0.3	1.50	2.5	7.3	7.3	2.0	5.3
PCF6919	6.9±0.3	6.9±0.3	1.90	2.5	7.3	7.3	2.0	5.3
PCF7040	7.0±0.4	7.0±0.4	4.30	1.8	8.0	8.0	1.6	6.0

Inductance and rated current ranges

– PCF4010	1.0~180μH	1.60~0.110A
– PCF4020	0.47~1800μH	1.84~0.036A
– PCF4030	1.5~560μH	1.90~0.090A
– PCF5010	1.2~820μH	1.77~0.077A
– PCF5020	1.0~820μH	2.70~0.120A
– PCF5030	1.0~560μH	4.00~0.014A
– PCF6020	1.3~150μH	3.20~0.350A
– PCF6030	2.2~150μH	3.00~0.350A
– PCF6915	1.0~820μH	3.28~0.100A
– PCF6919	0.36~1500μH	8.00~0.095A
– PCF7040	0.36~1000μH	9.24~0.180A

- Test equipment:
L: HP4284A LCR meter
DCR: Milli-ohm meter
- Electrical specifications at 25°C

Product Identification

PCF	4010	M	T	101
Product Type	Dimensions (AxBxC)	Inductor Tolerance	Packaging Style	Inductance
	4010: 3.8x3.8x1.25 4020: 3.8x3.8x2.0 4030: 3.8x3.8x3.0 5010: 5.0x5.0x1.2 5020: 5.0x5.0x2.0 5030: 5.0x5.0x3.0 6020: 6.0x6.0x2.0 6030: 6.0x6.0x3.0 6915: 6.9x6.9x1.5 6919: 6.9x6.9x1.9 7040: 7.0x7.0x4.3	M: ±20% N: ±30%	T: Tape and Reel	1R0: 1.0μH 470: 47μH 101: 100μH

Electrical Characteristics

PCF4010 / 4020 / 4030 / 5010 Type

Codes	L (μ H)	Tolerance	Test Condition	DCR (Ω) max.				IDC (A) max.			
				4010	4020	4030	5010	4010	4020	4030	5010
R47	0.47	N	100KHz, 0.25V	-	0.017	-	-	-	1.840	-	-
1R0	1.0	M, N	100KHz, 0.25V	0.060	0.030	-	0.044	1.600	1.800	-	1.800
1R2	1.2	M, N	100KHz, 0.25V	0.065	0.043	-	0.050	1.400	1.700	-	1.770
1R5	1.5	M, N	100KHz, 0.25V	0.077	0.052	0.015	0.069	1.240	1.600	1.900	1.710
1R8	1.8	M, N	100KHz, 0.25V	0.093	0.056	0.018	-	1.220	1.550	1.760	-
2R0	2.0	M, N	100KHz, 0.25V	-	-	-	0.100				1.440
2R2	2.2	M, N	100KHz, 0.25V	0.125	0.058	0.020	0.110	1.200	1.500	1.670	1.400
2R4	2.4	M, N	100KHz, 0.25V	0.139	-	0.022	-	0.980	-	1.650	-
2R5	2.5	M, N	100KHz, 0.25V	-	0.059	-	-	-	1.400	-	-
2R7	2.7	M, N	100KHz, 0.25V	-	0.059	0.028	-	-	1.400	1.450	-
3R3	3.3	M, N	100KHz, 0.25V	0.187	0.064	0.032	0.140	0.890	1.300	1.440	1.140
3R5	3.5	M, N	100KHz, 0.25V	0.210	0.127	-	0.150	0.850	1.300	-	1.100
3R6	3.6	M, N	100KHz, 0.25V	-	-	0.035	-	-	-	1.430	-
3R9	3.9	M, N	100KHz, 0.25V	0.220	0.135	0.037	-	0.780	1.120	1.320	-
4R3	4.3	M, N	100KHz, 0.25V	-	-	0.043	-	-	-	1.000	-
4R7	4.7	M, N	100KHz, 0.25V	0.240	0.146	0.045	0.190	0.710	1.100	0.970	0.950
5R1	5.1	M, N	100KHz, 0.25V	-	-	0.046	-	-	-	0.940	-
5R6	5.6	M, N	100KHz, 0.25V	0.320	0.176	-	0.193	0.620	0.950	-	0.900
6R2	6.2	M, N	100KHz, 0.25V	-	0.220	-	0.200	-	0.910	-	0.840
6R8	6.8	M, N	100KHz, 0.25V	0.350	0.238	0.065	0.200	0.570	0.900	0.870	0.800
7R5	7.5	M, N	100KHz, 0.25V	-	-	0.079	-	-	-	0.820	-
8R2	8.2	M, N	100KHz, 0.25V	0.470	0.272	0.091	0.300	0.520	0.800	0.770	0.750
100	10	M	1KHz, 0.25V	0.570	0.299	0.105	0.350	0.470	0.700	0.700	0.660
120	12	M	1KHz, 0.25V	0.750	-	0.119	0.430	0.430	-	0.670	0.620
150	15	M	1KHz, 0.25V	0.810	0.472	0.140	0.440	0.380	0.610	0.540	0.590
180	18	M	1KHz, 0.25V	1.060	-	0.175	0.750	0.350	-	0.500	0.570
220	22	M	1KHz, 0.25V	1.150	0.592	0.201	0.820	0.320	0.520	0.480	0.560
270	27	M	1KHz, 0.25V	1.670	0.630	0.227	-	0.290	0.440	0.400	-
330	33	M	1KHz, 0.25V	1.840	1.075	0.287	1.160	0.280	0.430	0.350	0.430
390	39	M	1KHz, 0.25V	2.310	-	0.341	-	0.250	-	0.330	-
470	47	M	1KHz, 0.25V	2.630	1.309	0.430	1.590	0.220	0.340	0.320	0.340
560	56	M	1KHz, 0.25V	2.860	-	0.471	-	0.200	-	0.300	-
680	68	M	1KHz, 0.25V	3.940	2.613	0.532	2.140	0.180	0.250	0.270	0.290
820	82	M	1KHz, 0.25V	4.900	2.950	0.675	2.720	0.160	0.200	0.230	0.250
101	100	M	1KHz, 0.25V	5.740	3.255	0.850	3.550	0.140	0.190	0.210	0.220
121	120	M	1KHz, 0.25V	7.310	-	1.110	4.890	0.130	-	0.200	0.200
151	150	M	1KHz, 0.25V	9.300	3.550	1.230	5.200	0.120	0.120	0.170	0.190
181	180	M	1KHz, 0.25V	9.500	-	1.560	7.550	0.110	-	0.150	0.170
221	220	M	1KHz, 0.25V	-	4.900	1.800	7.760	-	0.090	0.140	0.150
271	270	M	1KHz, 0.25V	-	6.000	2.200	10.13	-	0.090	0.130	0.145
331	330	M	1KHz, 0.25V	-	7.280	2.640	11.23	-	0.080	0.120	0.140
391	390	M	1KHz, 0.25V	-	-	3.200	-	-	-	0.100	-
471	470	M	1KHz, 0.25V	-	-	3.820	16.86	-	-	0.100	0.098
561	560	M	1KHz, 0.25V	-	-	4.620	22.78	-	-	0.090	0.097
681	680	M	1KHz, 0.25V	-	13.370	-	24.87	-	0.070	-	0.085
821	820	M	1KHz, 0.25V	-	-	-	28.09	-	-	-	0.077
102	1000	M	1KHz, 0.25V	-	19.550	-	-	-	0.065	-	-
152	1500	M	1KHz, 0.25V	-	36.150	-	-	-	0.038	-	-
182	1800	M	1KHz, 0.25V	-	57.620	-	-	-	0.036	-	-

Electrical Characteristics

PCF 5020 / 5030 / 6020 / 6030 Type

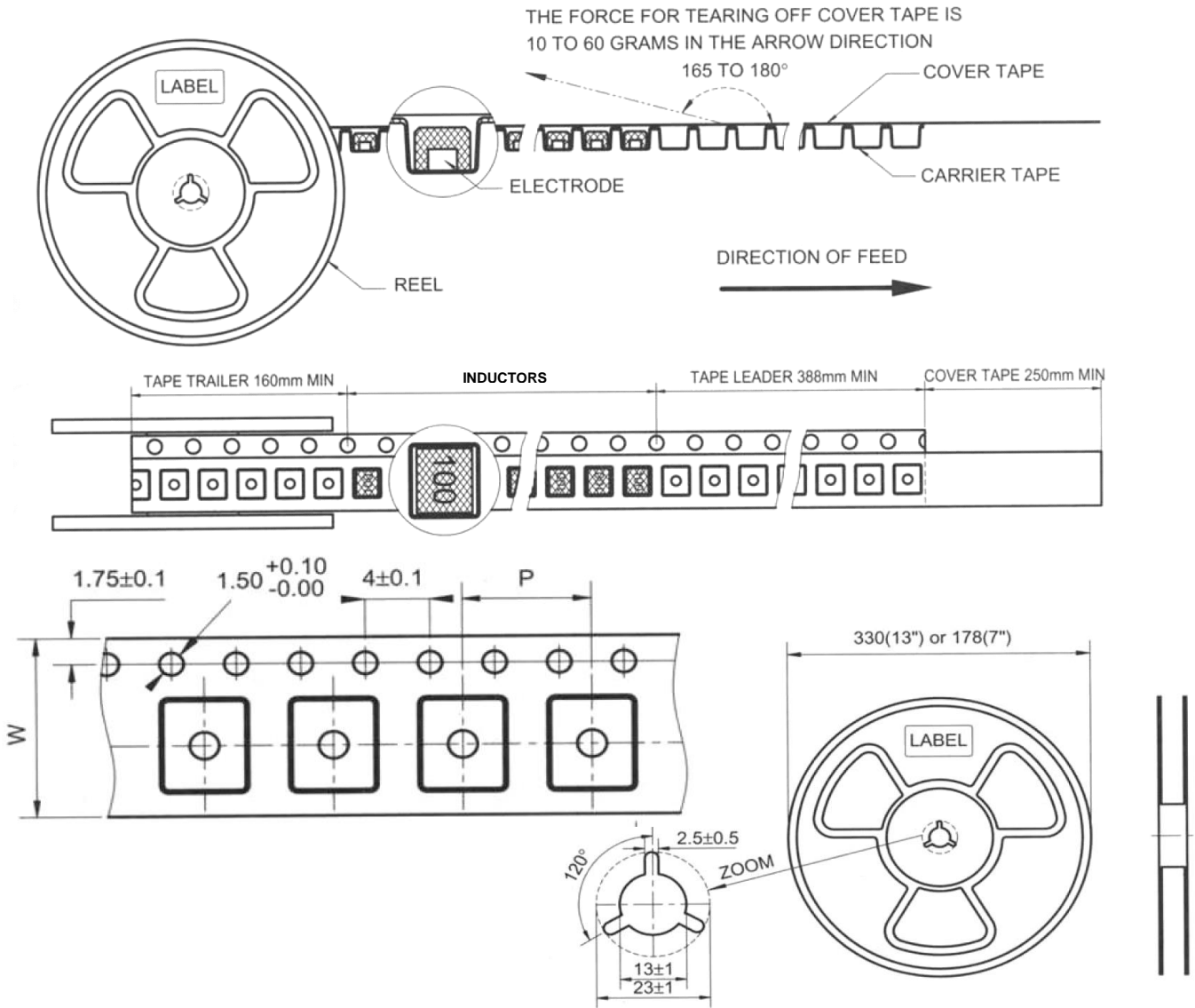
Codes	L (μ H)	Tolerance		Test Condition		DCR (Ω) max.				IDC (A) max.			
		5020 5030	6020 6030	5020/5030	6020/6030	5020	5030	6020	6030	5020	5030	6020	6030
1R0	1.0	M, N	-	100KHz, 0.25V	-	0.030	0.015	-	-	2.700	4.000	-	-
1R1	1.1	M, N	-	100KHz, 0.25V	-	-	0.020	-	-	-	3.870	-	-
1R2	1.2	M, N	-	100KHz, 0.25V	-	0.044	0.022	-	-	2.150	3.800	-	-
1R3	1.3	-	N	-	100KHz, 0.1V	-	-	0.031	-	-	-	3.200	-
1R5	1.5	-	N	-	100KHz, 0.1V	-	-	0.035	-	-	-	3.100	-
2R0	2.0	M, N	-	100KHz, 0.25V	-	0.046	0.027	-	-	1.900	2.920	-	-
2R2	2.2	M, N	N	100KHz, 0.25V	100KHz, 0.1V	0.059	0.029	0.040	0.030	1.630	2.410	2.700	3.000
2R7	2.7	M, N	-	100KHz, 0.25V	-	0.060	-	-	-	1.550	-	-	-
3R3	3.3	M, N	N	100KHz, 0.25V	100KHz, 0.1V	0.062	0.034	0.060	0.036	1.500	2.360	2.100	2.800
3R5	3.5	M, N	-	100KHz, 0.25V	-	0.073	-	-	-	1.340	-	-	-
4R1	4.1	M, N	-	100KHz, 0.25V	-	0.081	-	-	-	1.200	-	-	-
4R7	4.7	M, N	M	100KHz, 0.25V	100KHz, 0.1V	0.087	0.045	0.070	0.045	1.140	1.870	1.800	2.600
5R3	5.3	-	M	-	100KHz, 0.1V	-	-	0.075	0.045	-	-	1.700	2.500
5R6	5.6	M, N	-	100KHz, 0.25V	-	0.093	0.052	-	-	1.000	1.600	-	-
6R2	6.2	M, N	M	100KHz, 0.25V	100KHz, 0.1V	-	-	0.085	0.070	-	-	1.600	1.800
6R8	6.8	M, N	M	100KHz, 0.25V	100KHz, 0.1V	0.105	0.068	0.090	0.072	0.950	1.510	1.500	1.700
8R2	8.2	M, N	M	100KHz, 0.25V	100KHz, 0.1V	0.139	0.084	0.125	0.080	0.900	1.380	1.450	1.600
100	10	M	M	1KHz, 0.25V	100KHz, 0.1V	0.150	0.090	0.150	0.085	0.760	1.330	1.250	1.400
120	12	M	-	1KHz, 0.25V	-	0.170	0.125	-	-	0.660	1.080	-	-
150	15	M	M	1KHz, 0.25V	100KHz, 0.1V	0.210	0.142	0.220	0.120	0.630	1.050	1.100	1.200
180	18	M	-	1KHz, 0.25V	-	-	0.160	-	-	-	0.950	-	-
220	22	M	M	1KHz, 0.25V	100KHz, 0.1V	0.275	0.208	0.320	0.160	0.560	0.860	0.900	1.100
270	27	M	-	1KHz, 0.25V	-	-	0.222	-	-	-	0.750	-	-
330	33	M	M	1KHz, 0.25V	100KHz, 0.1V	0.455	0.257	0.450	0.220	0.440	0.720	0.800	1.000
390	39	M	-	1KHz, 0.25V	-	0.540	-	-	-	0.380	-	-	-
470	47	M	M	1KHz, 0.25V	100KHz, 0.1V	0.730	0.352	0.600	0.300	0.350	0.620	0.700	0.800
560	56	M	-	1KHz, 0.25V	-	0.800	-	-	-	0.320	-	-	-
680	68	M	M	1KHz, 0.25V	100KHz, 0.1V	0.935	0.525	0.900	0.400	0.300	0.510	0.500	0.560
820	82	M	M	1KHz, 0.25V	100KHz, 0.1V	-	-	1.000	0.480	-	-	0.450	0.500
101	100	M	M	1KHz, 0.25V	100KHz, 0.1V	1.500	0.801	1.200	0.560	0.230	0.430	0.420	0.450
121	120	M	-	1KHz, 0.25V	-	1.910	0.850	-	-	0.220	0.340	-	-
151	150	M	M	1KHz, 0.25V	100KHz, 0.1V	2.680	1.100	1.800	1.000	0.210	0.260	0.350	0.350
181	180	M	-	1KHz, 0.25V	-	3.045	1.190	-	-	0.200	0.240	-	-
221	220	M	-	1KHz, 0.25V	-	3.520	1.530	-	-	0.195	0.200	-	-
271	270	M	-	1KHz, 0.25V	-	4.380	-	-	-	0.193	-	-	-
331	330	M	-	1KHz, 0.25V	-	5.560	2.030	-	-	0.190	0.190	-	-
391	390	M	-	1KHz, 0.25V	-	-	3.000	-	-	-	0.160	-	-
471	470	M	-	1KHz, 0.25V	-	7.820	3.500	-	-	0.180	0.150	-	-
561	560	M	-	1KHz, 0.25V	-	9.790	4.450	-	-	0.170	0.140	-	-
681	680	M	-	1KHz, 0.25V	-	-	-	-	-	-	-	-	-
821	820	M	-	1KHz, 0.25V	-	15.00	-	-	-	0.120	-	-	-

Electrical Characteristics

PCF6915 / 6919 / 7040 Type

Codes	L (μ H)	Tolerance	Test Condition	DCR (Ω) max.			IDC (A) max.		
				6915	6919	7040	6915	6919	7040
R36	0.36	N	100KHz, 0.25V	-	0.015	0.005	-	8.00	9.24
R56	0.56	N	100KHz, 0.25V	-	-	0.006	-	-	8.50
R80	0.80	N	100KHz, 0.25V	-	-	0.009	-	-	5.80
R82	0.82	M, N	100KHz, 0.25V	-	0.035	-	-	3.52	-
1R0	1.0	M, N	100KHz, 0.25V	0.050	0.035	0.040	3.28	3.52	2.10
1R2	1.2	M, N	100KHz, 0.25V	-	-	0.040	-	-	2.10
1R5	1.5	M, N	100KHz, 0.25V	0.067	-	0.040	2.53	-	2.10
1R8	1.8	M, N	100KHz, 0.25V	-	0.052	0.040	-	3.05	2.09
2R0	2.0	M, N	100KHz, 0.25V	0.085	-	-	2.06	-	-
2R2	2.2	M, N	100KHz, 0.25V	-	0.071	0.041	-	2.50	2.08
2R5	2.5	M, N	100KHz, 0.25V	-	-	0.041	-	-	2.08
2R7	2.7	M, N	100KHz, 0.25V	0.110	-	-	1.87	-	-
3R0	3.0	M, N	100KHz, 0.25V	-	0.086	-	-	2.15	-
3R3	3.3	M, N	100KHz, 0.25V	0.130	-	0.041	1.58	-	2.07
3R9	3.9	M, N	100KHz, 0.25V	0.160	0.110	-	1.46	2.01	-
4R3	4.3	M, N	100KHz, 0.25V	-	-	0.041	-	-	2.06
4R7	4.7	M, N	100KHz, 0.25V	0.200	0.130	0.042	1.30	1.95	2.05
5R6	5.6	M, N	100KHz, 0.25V	0.230	0.150	0.043	1.22	1.82	2.04
6R8	6.8	M, N	100KHz, 0.25V	0.280	0.170	0.044	1.16	1.67	2.04
8R2	8.2	M, N	100KHz, 0.25V	0.310	0.190	0.047	1.13	1.52	2.02
100	10	M	1KHz, 0.25V	0.330	0.240	0.049	1.03	1.39	2.00
120	12	M	1KHz, 0.25V	0.460	0.290	0.058	0.87	1.22	1.90
150	15	M	1KHz, 0.25V	0.530	0.380	0.081	0.80	1.09	1.60
180	18	M	1KHz, 0.25V	0.620	0.440	0.091	0.73	1.03	1.48
220	22	M	1KHz, 0.25V	0.700	0.490	0.110	0.71	0.95	1.32
270	27	M	1KHz, 0.25V	0.910	0.640	0.150	0.65	0.84	1.26
330	33	M	1KHz, 0.25V	1.150	0.740	0.170	0.57	0.80	1.10
390	39	M	1KHz, 0.25V	1.380	0.910	0.230	0.50	0.75	1.05
470	47	M	1KHz, 0.25V	1.540	1.020	0.260	0.48	0.69	1.00
560	56	M	1KHz, 0.25V	1.860	1.260	0.350	0.45	0.63	0.85
680	68	M	1KHz, 0.25V	2.320	1.570	0.380	0.41	0.56	0.78
820	82	M	1KHz, 0.25V	2.540	1.890	0.430	0.37	0.51	0.74
101	100	M	1KHz, 0.25V	3.200	2.120	0.610	0.32	0.47	0.70
121	120	M	1KHz, 0.25V	4.240	2.550	0.660	0.29	0.42	0.60
151	150	M	1KHz, 0.25V	4.770	3.370	0.880	0.27	0.37	0.52
181	180	M	1KHz, 0.25V	6.040	3.730	0.980	0.24	0.32	0.46
221	220	M	1KHz, 0.25V	7.950	4.540	1.170	0.22	0.29	0.40
271	270	M	1KHz, 0.25V	10.51	5.970	1.640	0.19	0.25	0.36
331	330	M	1KHz, 0.25V	11.63	7.740	1.860	0.18	0.23	0.32
391	390	M	1KHz, 0.25V	12.97	9.920	2.850	0.16	0.21	0.28
471	470	M	1KHz, 0.25V	16.87	12.95	3.010	0.15	0.18	0.26
561	560	M	1KHz, 0.25V	22.30	14.36	3.620	0.13	0.16	0.24
681	680	M	1KHz, 0.25V	25.11	18.52	4.630	0.12	0.14	0.22
821	820	M	1KHz, 0.25V	28.41	20.23	5.200	0.10	0.13	0.20
102	1000	M	1KHz, 0.25V	-	28.25	6.000	-	0.11	0.18
122	1200	M	1KHz, 0.25V	-	31.85	-	-	0.10	-
152	1500	M	1KHz, 0.25V	-	36.72	-	-	0.095	-

■Tape and Reel specifications



Unit: mm

Type	Tape size		Parts Per Reel
	W	P	13"
PCF4010	12	8	3500
PCF4020	12	8	3500
PCF4030	12	8	2500
PCF5010	12	8	4000
PCF5020	12	8	3500
PCF5030	12	8	2000
PCF6020	16	12	1500
PCF6030	16	12	1500
PCF6915	16	12	2000
PCF6919	16	12	2000
PCF7040	16	12	1000

■ SMT 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):

