

**SHIELDED POWER INDUCTOR****P7604 Family****Features**

- \* Lead-free (Pb-free)
- \* RoHS compliant
- \* Magnetic Shielding
- \* High Current (to 5A)
- \* Low DCR (to 20mΩ)
- \* Low profile (3-7mm)
- \* Wide range (1μH – 10,000μH)
- \* Surface Mount
- \* Flat top for pick & place

**Applications**

- \* DC-DC Converters
- \* High Current/Low Voltage Converters
- \* Notebook and handheld equipment
- \* Flash memory programmers

**DESCRIPTION**

The P7604 family comprises high current, shielded power inductors.

Components are available in five mechanical sizes and offer exceptionally compact solutions for applications requiring high energy storage.

The miniature 1608 parts employ a ceramic base for optimum heat transfer and have very high current rating for their size; the 3308 and 3316 parts have the same footprint but differ in height, 3308 being only 3mm.

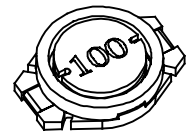
The P7604 family of components is compliant with RoHS Directive 2002/95/EC, and suitable for Pb-free and conventional placement and reflow.



P7604-1608



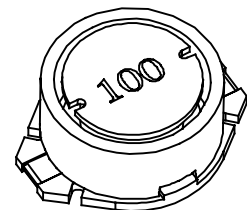
P7604-2012



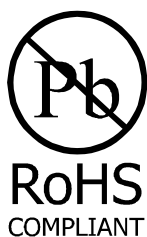
P7604-3308



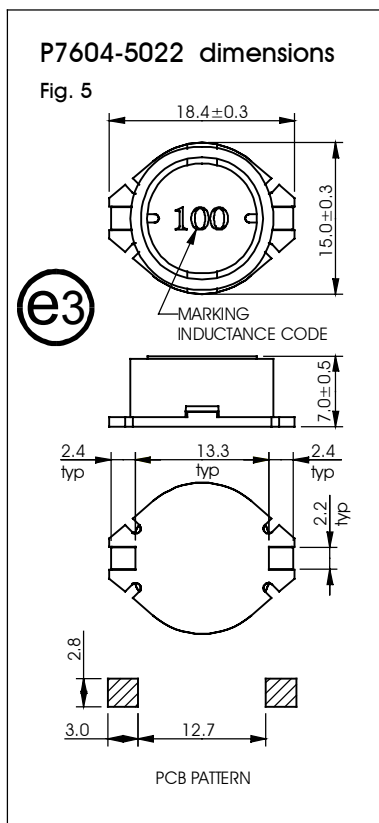
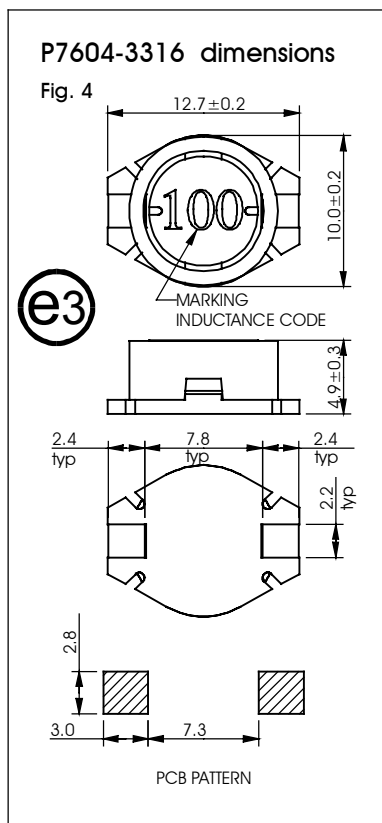
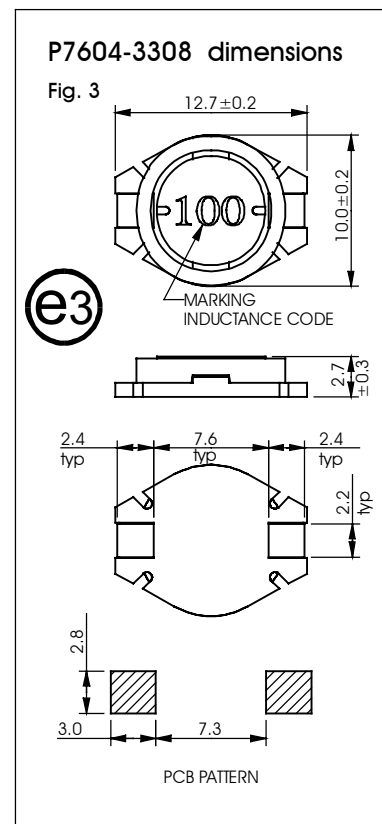
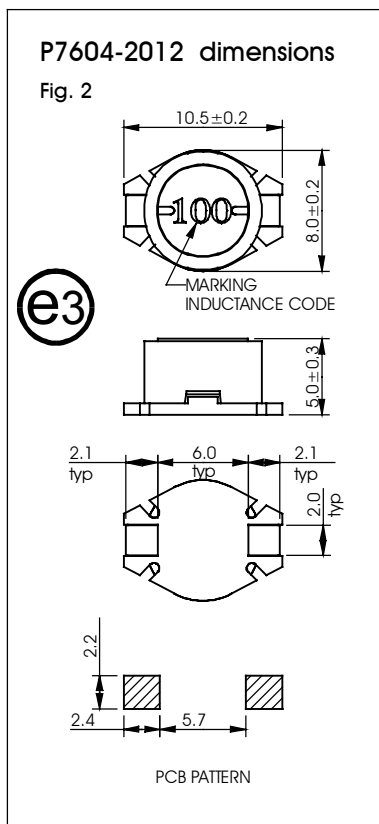
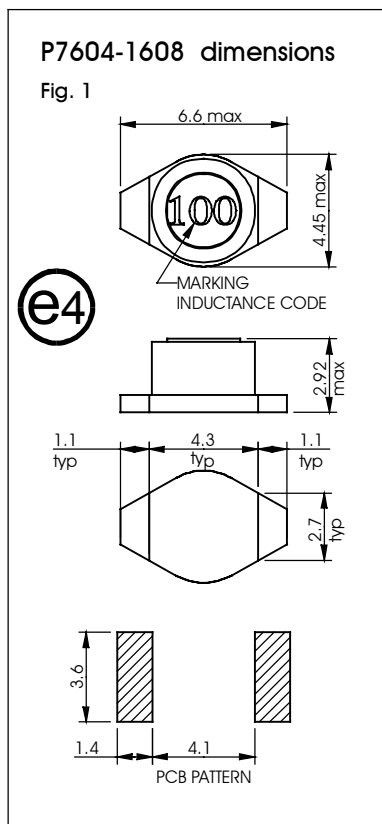
P7604-3316



P7604-5022



## CONSTRUCTION



Dimensions shown are in millimetres

Terminal plating JESD97 category e3 or e4 as shown.

Recommended reflow solder profile:

2 minutes @ 150-200°C,  
10 seconds @ 260°C;  
time above 217°C 60 seconds maximum.

## SPECIFICATIONS

### Electrical

1608 size

Part Number	Inductance ( $\mu\text{H}$ ) <sup>(1)</sup>	DCR ( $\Omega$ ) Max	SRF (MHz) <sup>(2)</sup>	Rated Current $I_{\text{RMS}}$ (A) <sup>(3)</sup>
P7604-1608-1R0M	1.0 $\pm$ 20%	0.040	250	3.0
P7604-1608-1R5M	1.5 $\pm$ 20%	0.045	125	2.8
P7604-1608-2R2M	2.2 $\pm$ 20%	0.050	120	1.8
P7604-1608-3R3M	3.3 $\pm$ 20%	0.055	120	1.6
P7604-1608-4R7M	4.7 $\pm$ 20%	0.060	105	1.4
P7604-1608-6R8M	6.8 $\pm$ 20%	0.065	50	1.2
P7604-1608-100M	10 $\pm$ 20%	0.075	38	1.0
P7604-1608-150M	15 $\pm$ 20%	0.090	33	0.8
P7604-1608-220M	22 $\pm$ 20%	0.11	25	0.7
P7604-1608-330M	33 $\pm$ 20%	0.19	20	0.6
P7604-1608-470M	47 $\pm$ 20%	0.23	20	0.5
P7604-1608-680M	68 $\pm$ 20%	0.29	15	0.4
P7604-1608-101M	100 $\pm$ 20%	0.48	10	0.3
P7604-1608-151M	150 $\pm$ 20%	0.59	9	0.26
P7604-1608-221M	220 $\pm$ 20%	0.77	6	0.22
P7604-1608-331M	330 $\pm$ 20%	1.4	5	0.20
P7604-1608-471M	470 $\pm$ 20%	1.8	4	0.19
P7604-1608-681M	680 $\pm$ 20%	2.2	3	0.18
P7604-1608-102M	1000 $\pm$ 20%	3.4	2	0.15
P7604-1608-152M	1500 $\pm$ 20%	4.2	2	0.12
P7604-1608-222M	2200 $\pm$ 20%	8.5	2	0.10
P7604-1608-332M	3300 $\pm$ 20%	11	1	0.08
P7604-1608-472M	4700 $\pm$ 20%	14	1	0.06
P7604-1608-682M	6800 $\pm$ 20%	25	1	0.04
P7604-1608-103M	10000 $\pm$ 20%	33	0.8	0.02

### Notes

1. Inductance measured at 100kHz, 100mV.
2. SRF (Self resonant Frequency) is typical and for reference only.
3. Rated current is the current at which the temperature rise is 30°C typical.  
Note that for this 1608 size, the DC current at which saturation occurs is lower than the rated AC current.
4. Operating temperature -25°C to +85°C.
5. For non-standard inductance values, please contact Profec.

2012 size

Part Number	Inductance ( $\mu\text{H}$ ) <sup>(1)</sup>	DCR ( $\Omega$ ) Max	SRF (MHz) <sup>(2)</sup>	Rated Current $I_{\text{RMS}}$ (A) <sup>(3)</sup>	$I_{\text{sat}}$ (A) <sup>(4)</sup>
P7604-2012-2R2M	2.2±20%	0.040	75	2.50	6.0
P7604-2012-3R9M	3.9±20%	0.055	50	2.10	4.5
P7604-2012-5R6M	5.9±20%	0.065	40	1.95	4.0
P7604-2012-8R2M	8.2±20%	0.080	32	1.75	3.0
P7604-2012-100M	10±20%	0.10	28	1.50	2.5
P7604-2012-120M	12±20%	0.12	24	1.40	2.0
P7604-2012-150M	15±20%	0.14	22	1.30	1.8
P7604-2012-180L	18±15%	0.16	19	1.20	1.6
P7604-2012-220L	22±15%	0.18	17	1.10	1.5
P7604-2012-270L	27±15%	0.20	15.5	1.00	1.4
P7604-2012-330L	33±15%	0.24	13.5	0.92	1.3
P7604-2012-390L	39±15%	0.26	12.0	0.84	1.0
P7604-2012-470L	47±15%	0.28	10.5	0.75	0.90
P7604-2012-560K	56±10%	0.38	9.5	0.68	0.80
P7604-2012-680K	68±10%	0.44	9.0	0.60	0.70
P7604-2012-820K	82±10%	0.55	8.5	0.54	0.60
P7604-2012-101K	100±10%	0.60	7.5	0.50	0.50
P7604-2012-121K	120±10%	0.75	7.0	0.45	0.45
P7604-2012-151K	150±10%	0.90	6.5	0.40	0.40
P7604-2012-181K	180±10%	1.05	4.8	0.35	0.37
P7604-2012-221K	220±10%	1.2	4.5	0.30	0.35
P7604-2012-271K	270±10%	1.4	4.2	0.27	0.32
P7604-2012-331K	330±10%	1.8	3.8	0.24	0.30
P7604-2012-391K	390±10%	2.1	3.6	0.22	0.28
P7604-2012-471K	470±10%	2.3	3.5	0.20	0.26
P7604-2012-561K	560±10%	3.0	3.0	0.18	0.25
P7604-2012-681K	680±10%	3.4	2.8	0.17	0.23
P7604-2012-821K	820±10%	4.0	2.5	0.16	0.22
P7604-2012-102K	1000±10%	5.0	2.2	0.15	0.20

### Notes

1. Inductance measured at 100kHz, 100mV.
2. SRF (Self resonant Frequency) is typical and for reference only.
3. Rated current is the current at which the temperature rise is 40°C typical.
4. Saturation Current,  $I_{\text{sat}}$ , is the DC current at which the zero current inductance drops by 10% (typ).
5. Operating temperature -25°C to +85°C.
6. For non-standard inductance values, please contact Profec.

3308 size

Part Number	Inductance ( $\mu\text{H}$ ) <sup>(1)</sup>	DCR ( $\Omega$ ) Max	SRF (MHz) <sup>(2)</sup>	Rated Current $I_{\text{RMS}}$ (A) <sup>(3)</sup>	$I_{\text{sat}}$ (A) <sup>(4)</sup>
P7604-3308-2R2M	2.2±20%	0.045	90	3.5	4.2
P7604-3308-3R0M	3.0±20%	0.062	70	3.0	3.6
P7604-3308-3R9M	3.0±20%	0.070	60	2.8	3.4
P7604-3308-4R7M	4.7±20%	0.078	50	2.5	3.0
P7604-3308-6R8M	6.8±20%	0.10	50	2.2	2.6
P7604-3308-100M	10±20%	0.15	38	2.0	2.2
P7604-3308-120M	12±20%	0.19	29	1.7	2.0
P7604-3308-150M	15±20%	0.20	30	1.5	1.8
P7604-3308-180M	18±20%	0.27	25	1.4	1.6
P7604-3308-220M	22±20%	0.30	22	1.3	1.5
P7604-3308-270M	27±20%	0.40	18	1.2	1.3
P7604-3308-330M	33±20%	0.45	17	1.1	1.2
P7604-3308-390M	39±20%	0.56	17	0.95	1.1
P7604-3308-470M	47±20%	0.65	15	0.80	1.05
P7604-3308-560M	56±20%	0.68	14	0.75	1.00
P7604-3308-680M	68±20%	0.80	12	0.70	0.90
P7604-3308-820M	82±20%	1.2	11	0.65	0.85
P7604-3308-101M	100±20%	1.4	9.5	0.60	0.80
P7604-3308-121M	120±20%	1.5	8.5	0.55	0.70
P7604-3308-151M	150±20%	1.8	8.0	0.50	0.65
P7604-3308-181M	180±20%	2.2	7.0	0.45	0.60
P7604-3308-221M	220±20%	2.2	6.5	0.40	0.50
P7604-3308-271L	270±15%	3.1	5.5	0.35	0.45
P7604-3308-331L	330±15%	3.6	5.2	0.30	0.40
P7604-3308-391L	390±15%	4.6	5.0	0.25	0.35
P7604-3308-471L	470±15%	5.1	4.5	0.20	0.30

### Notes

1. Inductance measured at 100kHz, 100mV.
2. SRF (Self resonant Frequency) is typical and for reference only.
3. Rated current is the current at which the temperature rise is 40°C typical.
4. Saturation Current,  $I_{\text{sat}}$ , is the DC current at which the zero current inductance drops by 10% (typ).
5. Operating temperature -25°C to +85°C.
6. For non-standard inductance values, please contact Profec.

3316 size

Part Number	Inductance ( $\mu\text{H}$ ) <sup>(1)</sup>	DCR ( $\Omega$ ) Max	SRF (MHz) <sup>(2)</sup>	Rated Current $I_{\text{RMS}}$ (A) <sup>(3)</sup>	$I_{\text{sat}}$ (A) <sup>(4)</sup>
P7604-3316-1R0M	1.0 $\pm$ 20%	0.021	130	5.0	5.6
P7604-3316-1R5M	1.5 $\pm$ 20%	0.022	110	4.5	5.2
P7604-3316-2R2M	2.2 $\pm$ 20%	0.027	90	3.1	5.0
P7604-3316-3R0M	3.0 $\pm$ 20%	0.030	65	2.9	3.9
P7604-3316-4R7M	4.7 $\pm$ 20%	0.040	50	2.5	3.2
P7604-3316-6R8M	6.8 $\pm$ 20%	0.055	30	2.2	2.8
P7604-3316-100M	10 $\pm$ 20%	0.065	28	2.0	2.4
P7604-3316-120M	12 $\pm$ 20%	0.080	25	1.8	2.2
P7604-3316-150M	15 $\pm$ 20%	0.085	20	1.7	2.0
P7604-3316-180L	18 $\pm$ 15%	0.090	19	1.6	1.8
P7604-3316-220L	22 $\pm$ 15%	0.10	18	1.4	1.6
P7604-3316-270L	27 $\pm$ 15%	0.12	16	1.3	1.5
P7604-3316-330L	33 $\pm$ 15%	0.16	14	1.2	1.4
P7604-3316-390L	39 $\pm$ 15%	0.18	12	1.05	1.2
P7604-3316-470L	47 $\pm$ 15%	0.19	11	1.00	1.0
P7604-3316-560L	56 $\pm$ 15%	0.21	10	0.90	0.95
P7604-3316-680L	68 $\pm$ 15%	0.34	9.0	0.82	0.90
P7604-3316-820L	82 $\pm$ 15%	0.38	8.0	0.75	0.85
P7604-3316-101K	100 $\pm$ 10%	0.42	7.5	0.68	0.80
P7604-3316-121K	120 $\pm$ 10%	0.46	7.0	0.60	0.70
P7604-3316-151K	150 $\pm$ 10%	0.52	6.3	0.55	0.60
P7604-3316-181K	180 $\pm$ 10%	0.70	5.5	0.50	0.65
P7604-3316-221K	220 $\pm$ 10%	0.80	5.0	0.45	0.50
P7604-3316-271K	270 $\pm$ 10%	1.1	4.5	0.40	0.45
P7604-3316-331K	330 $\pm$ 10%	1.2	4.0	0.35	0.40
P7604-3316-391K	390 $\pm$ 10%	1.4	3.8	0.33	0.35
P7604-3316-471K	470 $\pm$ 10%	1.6	3.0	0.30	0.30
P7604-3316-561K	560 $\pm$ 10%	1.8	2.7	0.28	0.28
P7604-3316-681K	680 $\pm$ 10%	2.3	2.6	0.26	0.26
P7604-3316-821K	820 $\pm$ 10%	2.6	2.5	0.24	0.24
P7604-3316-102K	1000 $\pm$ 10%	3.2	2.0	0.22	0.22
P7604-3316-122K	1200 $\pm$ 10%	3.6	2.0	0.20	0.20
P7604-3316-152K	1500 $\pm$ 10%	5.2	1.6	0.17	0.17
P7604-3316-182K	1800 $\pm$ 10%	5.7	1.4	0.16	0.16
P7604-3316-222K	2200 $\pm$ 10%	6.5	1.4	0.14	0.14
P7604-3316-272K	2700 $\pm$ 10%	8.6	1.2	0.12	0.12
P7604-3316-332K	3300 $\pm$ 10%	10.0	1.2	0.10	0.10

### Notes

1. Inductance measured at 100kHz, 100mV.
2. SRF (Self resonant Frequency) is typical and for reference only.
3. Rated current is the current at which the temperature rise is 40°C typical.
4. Saturation Current,  $I_{\text{sat}}$ , is the DC current at which the zero current inductance drops by 10% (typ).
5. Operating temperature -25°C to +85°C.
6. For non-standard inductance values, please contact Profec.

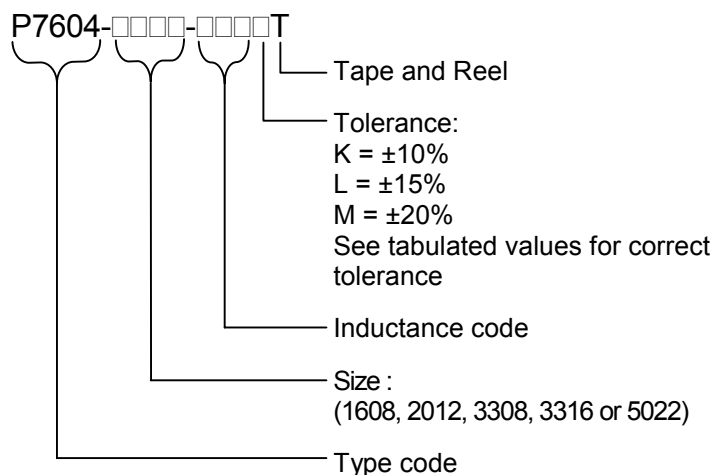
5022 size

Part Number	Inductance ( $\mu\text{H}$ ) <sup>(1)</sup>	DCR ( $\Omega$ ) Max	SRF (MHz) <sup>(2)</sup>	Rated Current $I_{\text{RMS}}$ (A) <sup>(3)</sup>	$I_{\text{sat}}$ (A) <sup>(4)</sup>
P7604-5022-100M	10 $\pm$ 20%	0.030	20	4.00	8.0
P7604-5022-150M	15 $\pm$ 20%	0.035	17	3.60	7.0
P7604-5022-220M	22 $\pm$ 20%	0.045	15	3.15	6.0
P7604-5022-330M	33 $\pm$ 20%	0.060	10	2.80	5.0
P7604-5022-470M	47 $\pm$ 20%	0.080	8.5	2.45	4.0
P7604-5022-680M	68 $\pm$ 20%	0.12	6.5	2.00	3.0
P7604-5022-101M	100 $\pm$ 20%	0.18	5.5	1.70	2.4
P7604-5022-151M	150 $\pm$ 20%	0.22	5.0	1.35	2.1
P7604-5022-221M	220 $\pm$ 20%	0.32	4.0	1.15	1.9
P7604-5022-331M	330 $\pm$ 20%	0.50	3.0	0.90	1.1
P7604-5022-471M	470 $\pm$ 20%	0.75	2.5	0.75	1.1
P7604-5022-681M	680 $\pm$ 20%	1.1	2.3	0.65	0.96
P7604-5022-102M	1000 $\pm$ 20%	1.5	1.9	0.55	0.80

### Notes

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3. Rated current is the current at which the temperature rise is 40°C typical.
4. Saturation Current,  $I_{\text{sat}}$ , is the DC current at which the zero current inductance drops by 10% (typ).
5. Operating temperature -25°C to +85°C.
6. For non-standard inductance values, please contact Profec.

### ORDERING CODE



### ABSOLUTE MAXIMUM RATINGS

Storage temperature	-40°C to +105°C
Operating temperature	-25°C to +85°C
Soldering temperature profile peak	260°C 10s
Handle in accordance with IPC/JEDEC J-STD-033 procedure for components classified as IPC/JEDEC J-STD-020 Moisture Sensitivity Level 2.	

**PROFEC**  
TRANSFORMING THE FUTURE



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