

## SMD Unshielded Power Inductors / HPI TYPE

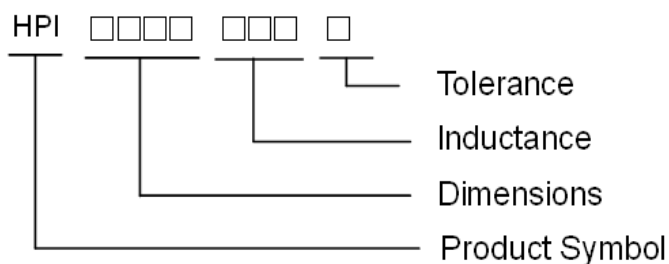
### Features:

1. Low profile very effective in space-conscious applications. (高度扁薄，適用於有空間顧慮的應用。)
2. Low resistance and high energy storage. (低電阻及高能量儲存。)

### Applications:

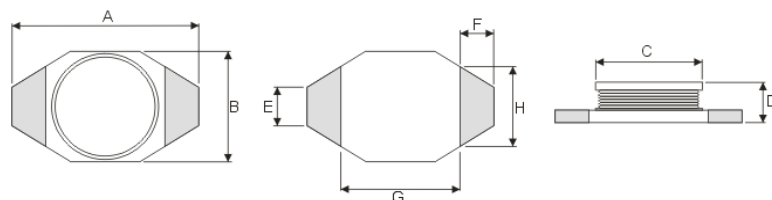
Notebook computers, Step-up and step-down Converters, Flash, Memory programmers, etc.

### Product Identification :

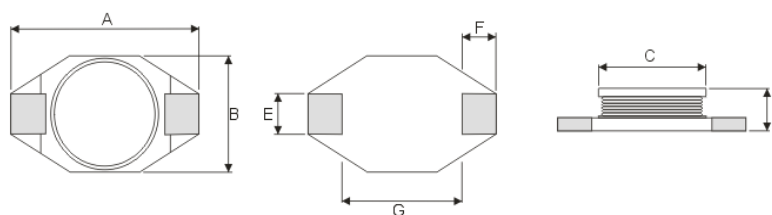


### Shape and Dimension

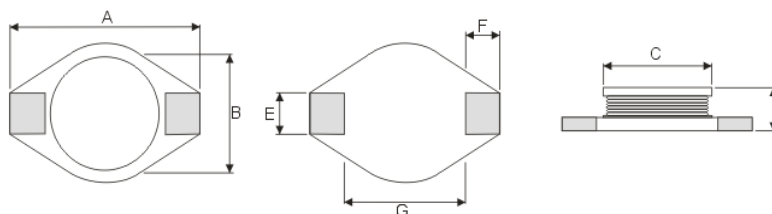
(1) HPI1608



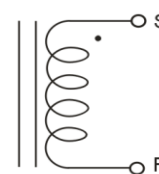
(2) HPI3316 / 3340



(3) HPI5022



### Schematic

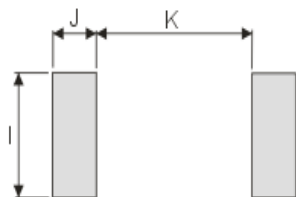


Dimensions in mm

TYPE	A(max)	B(max)	C±0.3	D(max)	E±0.3	F±0.3	G±0.3	H±0.3
HPI1608	6.6	4.45	4	2.92	1.27	1.02	4.32	2.5
HPI3316	12.95	9.4	8.38	5.21	2.54	2.54	7.62	—
HPI3340	12.95	9.4	8.38	11.43	2.54	2.54	7.62	—
HPI5022	18.54	15.24	12.7	7.11	2.54	2.54	12.7	—

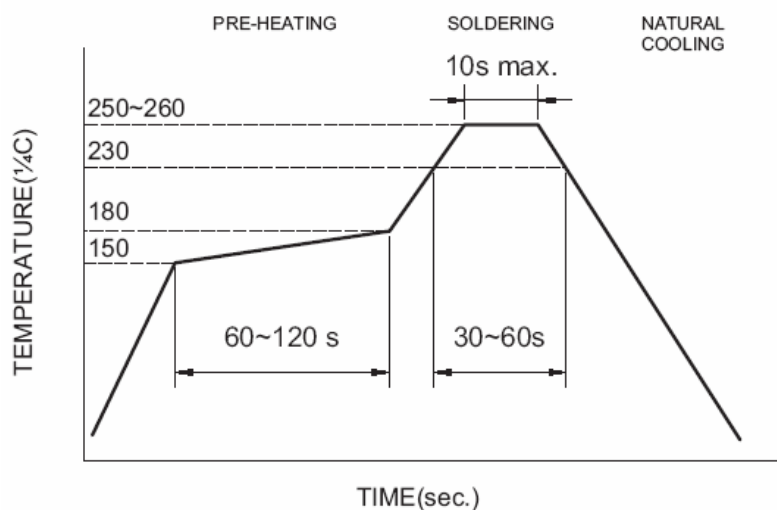
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### Land Patterns for Reflow Soldering



TYPE	l(mm)	J(mm)	K(mm)
HPI1608	3.56	1.4	4.06
HPI3316	2.79	2.92	7.37
HPI3340	2.79	2.92	7.37
HPI5022	2.79	2.92	12.45

### Recommended Reflow Soldering Conditions (For Lead Free)



## SMD Unshielded Power Inductors / HPI TYPE

### Electrical Characteristics (HPI1608 TYPE)

Part No.	INDUCTANCE ( $\mu$ H)	Tolerance ( $\pm$ %)	IDC (A) Max	DCR ( $\Omega$ ) Max	Test Condition
HPI1608-1R0□	1	20	2.90	0.05	100 KHz
HPI1608-1R5□	1.5	20	2.60	0.05	100 KHz
HPI1608-2R2□	2.2	20	2.30	0.07	100 KHz
HPI1608-3R3□	3.3	20	2.00	0.08	100 KHz
HPI1608-4R7□	4.7	20	1.50	0.09	100 KHz
HPI1608-6R8□	6.8	20	1.20	0.13	100 KHz
HPI1608-100□	10	20	1.10	0.16	100 KHz
HPI1608-150□	15	20	0.90	0.23	100 KHz
HPI1608-220□	22	20	0.70	0.37	100 KHz
HPI1608-330□	33	20	0.58	0.51	100 KHz
HPI1608-470□	47	20	0.50	0.64	100 KHz
HPI1608-680□	68	20	0.40	0.86	100 KHz
HPI1608-101□	100	20	0.31	1.27	100 KHz
HPI1608-151□	150	20	0.27	2	100 KHz
HPI1608-221□	220	20	0.22	3.11	100 KHz
HPI1608-331□	330	20	0.18	3.8	100 KHz
HPI1608-471□	470	20	0.16	5.06	100 KHz
HPI1608-681□	680	20	0.14	9.2	100 KHz
HPI1608-102□	1000	20	0.10	13.8	100 KHz

## SMD Unshielded Power Inductors / HPI TYPE

### Electrical Characteristics (HPI3316 TYPE)

Part No.	INDUCTANCE ( $\mu$ H)	Tolerance ( $\pm$ %)	IDC (A) Max	DCR ( $\Omega$ ) Max	Test Condition
HPI3316-1R0□	1	20	9.00	0.009	100 KHz
HPI3316-1R5□	1.5	20	8.00	0.01	100 KHz
HPI3316-2R2□	2.2	20	7.00	0.012	100 KHz
HPI3316-3R3□	3.3	20	6.40	0.015	100 KHz
HPI3316-4R7□	4.7	20	5.40	0.018	100 KHz
HPI3316-6R8□	6.8	20	4.60	0.027	100 KHz
HPI3316-100□	10	20	3.80	0.038	100 KHz
HPI3316-150□	15	20	3.00	0.046	100 KHz
HPI3316-220□	22	20	2.60	0.085	100 KHz
HPI3316-330□	33	20	2.00	0.1	100 KHz
HPI3316-470□	47	20	1.60	0.14	100 KHz
HPI3316-680□	68	20	1.40	0.2	100 KHz
HPI3316-101□	100	20	1.20	0.28	100 KHz
HPI3316-151□	150	20	1.00	0.4	100 KHz
HPI3316-221□	220	20	0.80	0.61	100 KHz
HPI3316-331□	330	20	0.60	1.02	100 KHz
HPI3316-471□	470	20	0.50	1.27	100 KHz
HPI3316-681□	680	20	0.40	2.02	100 KHz
HPI3316-102□	1000	20	0.30	3	100 KHz

### Electrical Characteristics (HPI3340 TYPE)

Part No.	INDUCTANCE ( $\mu$ H)	Tolerance ( $\pm$ %)	IDC (A) Max	DCR ( $\Omega$ ) Max	Test Condition
HPI3340-R47□	0.47	30	40.00	0.008	100 KHz
HPI3340-R82□	0.82	30	34.70	0.009	100 KHz
HPI3340-1R2□	1.2	30	28.40	0.01	100 KHz
HPI3340-1R5□	1.5	20	25.70	0.01	100 KHz
HPI3340-2R2□	2.2	30	23.00	0.012	100 KHz
HPI3340-3R5□	3.5	20	21.00	0.015	100 KHz
HPI3340-4R7□	4.7	20	18.00	0.02	100 KHz
HPI3340-5R6□	5.6	20	16.00	0.022	100 KHz
HPI3340-6R8□	6.8	20	15.00	0.03	100 KHz
HPI3340-8R2□	8.2	20	10.00	0.033	100 KHz
HPI3340-100□	10	20	8.00	0.04	100 KHz
HPI3340-150□	15	20	7.00	0.05	100 KHz
HPI3340-220□	22	20	5.50	0.066	100 KHz
HPI3340-330□	33	20	4.00	0.08	100 KHz
HPI3340-470□	47	20	3.80	0.11	100 KHz
HPI3340-680□	68	20	3.00	0.17	100 KHz
HPI3340-101□	100	20	2.50	0.22	100 KHz
HPI3340-151□	150	20	2.00	0.34	100 KHz
HPI3340-221□	220	20	1.60	0.44	100 KHz
HPI3340-331□	330	20	1.20	0.7	100 KHz
HPI3340-471□	470	20	1.00	0.95	100 KHz

## SMD Unshielded Power Inductors / HPI TYPE

### Electrical Characteristics ( HPI3340 TYPE )

Part No.	INDUCTANCE ( $\mu$ H)	Tolerance ( $\pm$ %)	IDC (A) Max	DCR ( $\Omega$ ) Max	Test Condition
HPI3340-681□	680	20	1.00	1.2	100 KHz
HPI3340-102□	1000	20	0.80	2	100 KHz

### Electrical Characteristics ( HPI5022 TYPE )

Part No.	INDUCTANCE ( $\mu$ H)	Tolerance ( $\pm$ %)	IDC (A) Max	DCR ( $\Omega$ ) Max	Test Condition
HPI5022-1R0□	1	20	20.00	0.009	100 KHz
HPI5022-2R2□	2.2	20	16.00	0.014	100 KHz

### Electrical Characteristics ( HPI5022 TYPE )

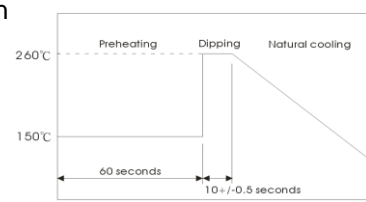
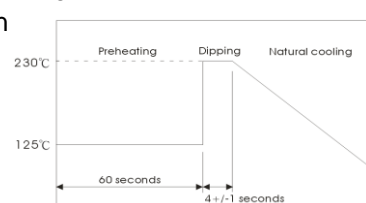
Part No.	INDUCTANCE ( $\mu$ H)	Tolerance ( $\pm$ %)	IDC (A) Max	DCR ( $\Omega$ ) Max	Test Condition
HPI5022-3R3□	3.3	20	14.00	0.018	100 KHz
HPI5022-5R6□	5.6	20	12.00	0.02	100 KHz
HPI5022-100□	10	20	10.00	0.031	100 KHz
HPI5022-150□	15	20	8.00	0.036	100 KHz
HPI5022-220□	22	20	7.00	0.047	100 KHz
HPI5022-330□	33	20	5.50	0.066	100 KHz
HPI5022-470□	47	20	4.50	0.086	100 KHz
HPI5022-680□	68	20	3.50	0.13	100 KHz
HPI5022-101□	100	20	3.00	0.19	100 KHz
HPI5022-151□	150	20	2.60	0.25	100 KHz
HPI5022-221□	220	20	2.40	0.38	100 KHz
HPI5022-331□	330	20	1.90	0.56	100 KHz
HPI5022-471□	470	20	1.40	0.85	100 KHz
HPI5022-681□	680	20	1.20	1.1	100 KHz
HPI5022-102□	1000	20	1.00	1.8	100 KHz

#### NOTE:

1. Inductance tested at 100 kHz, 0.1 Vrms, 0 Adc at 4284A (HP) LCR meter or equivalent.
2. Isat: DC current at which the inductance drops 10% (typ) from its value without current.
3. Irms: Average current for 15°C temperature rise from 25°C ambient.
4. Operating temperature range -55°C to +125°C.
5. Electrical specifications at 25°C.
6. □ Tolerance : K=10% ; M=20% ; N=30%

## SMD Unshielded Power Inductors / HPI TYPE

### Reliability and Test Conditions(可靠性測試條件)

ITEM	Performance	Test Condition
Operating Temperature 操作溫度	-55~+125°C	
Storage temperature 儲存溫度	-55~+125°C	
Rated Current 額定電流	Refer to standard electrical characteristics list. 參考標準特性規格表	
Temperature Rise Test 溫昇測試	40°C max.( $\Delta t$ ) 40度最大	
<b>Electrical Performance Test</b>		
Solder Heat Resistance 耐焊錫熱	Appearance: No significant abnormality. Inductance change: Within $\pm 20\%$ . 外觀: 無顯著異常. 電感值: 變異性在初始值20%內	Preheat: 150°C, 60sec. Solder: H63A Solder temperature: 260 $\pm$ 5°C Flux for lead free: rosin Dip time: 10 $\pm$ 0.5sec. 預熱: 150°C, 60sec. 錫爐溫度: 260 $\pm$ 5°C 時間: 10 $\pm$ 0.5sec. 助焊劑: rosin 
Solderability Test 端面焊錫性	More than 90% of the terminal electrode should be covered with solder. 端電極之錫覆蓋面達90%以上。	Preheat: 125 $\pm$ 25°C, 60sec. Solder: H63A Solder temperature: 230 $\pm$ 5°C Flux for lead free: rosin Dip time: 4 $\pm$ 1sec. 預熱: 125 $\pm$ 25°C, 60sec. 錫爐溫度: 230 $\pm$ 5°C 時間: 4 $\pm$ 1sec. 助焊劑: rosin 
High Temperature Resistance Test 高溫放置測試	Appearance: no damage. Inductance: within $\pm 20\%$ of initial value. No disconnection or short circuit. 外觀不能破損. 電感值: 變異值在初始值20%內. 電性無短路或斷線	Temperature: 85 $\pm$ 2°C. Applied current: rated current. Duration: 500 hrs.
Humidity Resistance Test 高濕放置測試	Appearance: no damage. Inductance: within $\pm 20\%$ of initial value. No disconnection or short circuit. 外觀不能破損. 電感值: 變異值在初始值20%內. 電性無短路或斷線	Temperature: 40 $\pm$ 2°C. Applied current: rated current. Duration: 500 hrs. Humidity: 90~95%

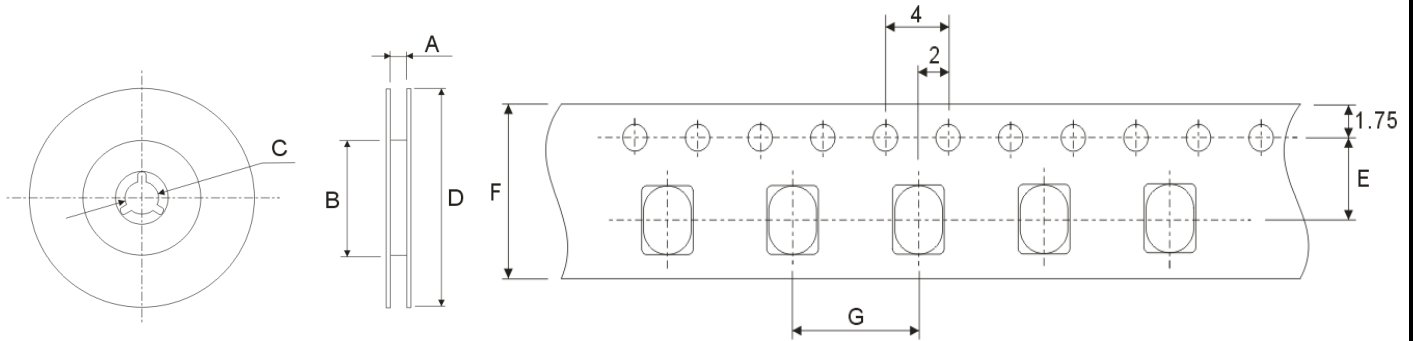
### Reliability and Test Conditions(可靠性測試條件)

**SMD Unshielded Power Inductors / HPI TYPE**

ITEM	Performance	Test Condition															
Thermal shock 熱衝擊試驗	Appearance: no damage. Inductance: within±20%of initial value. No disconnection or short circuit. 外觀不能破損. 電感值:變異值在初始值20%內. 電性無短路或斷線	Condition for 1 cycle Step1:-25±2℃ , 30±3 min. Step2:Room temperature within 15 min. Step3:+85±5℃ , 30±3 min. Step4: Room temperature within 15 min. Number of cycles: 50 <table border="1" data-bbox="1120 568 1458 786"> <thead> <tr> <th>Phase</th> <th>Temperature(℃)</th> <th>Time(min)</th> </tr> </thead> <tbody> <tr> <td>1</td> <td>-25±2℃</td> <td>30±3</td> </tr> <tr> <td>2</td> <td>Room Temp.</td> <td>15</td> </tr> <tr> <td>3</td> <td>+85±2℃</td> <td>30±3</td> </tr> <tr> <td>4</td> <td>Room Temp.</td> <td>15</td> </tr> </tbody> </table>	Phase	Temperature(℃)	Time(min)	1	-25±2℃	30±3	2	Room Temp.	15	3	+85±2℃	30±3	4	Room Temp.	15
Phase	Temperature(℃)	Time(min)															
1	-25±2℃	30±3															
2	Room Temp.	15															
3	+85±2℃	30±3															
4	Room Temp.	15															

## SMD Unshielded Power Inductors / HPI TYPE

### .Packing Specifications



TYPE	Packaging Quantity			Tape and Reel Dimension						
	Pcs / Reel	Inner box	Carton	A	B	C	D	E	F	G
HPI1608	2000	6000	12000	16.5	100	13±0.2	330	7.5	16	8
HPI3316	1000	2000	4000	24.5	100	13±0.2	330	11.5	24	12
HPI3340	225	450	900	24.5	100	13±0.2	330	11.5	24	12
HPI5022	250	700	1400	32.5	100	13±0.2	330	15.5	32	20