

SMD Unshielded Power Inductors / HPI TYPE

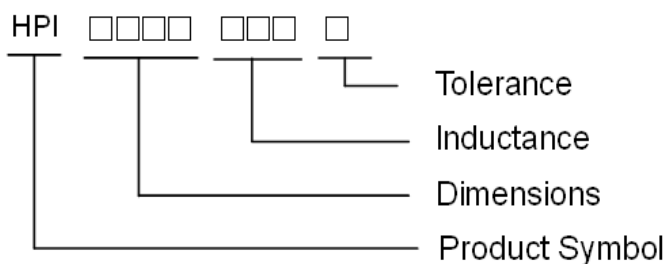
.Features:

- 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:

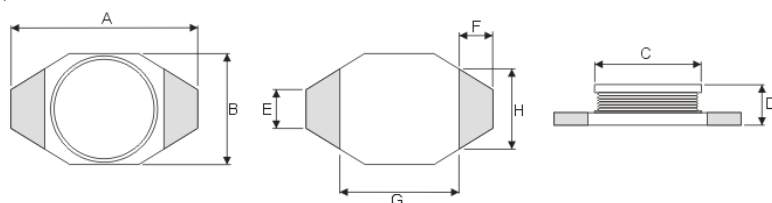
Notebook computers, Step-up and step-down Converters, Flash, Memory programmers, etc.

.Product Identification :

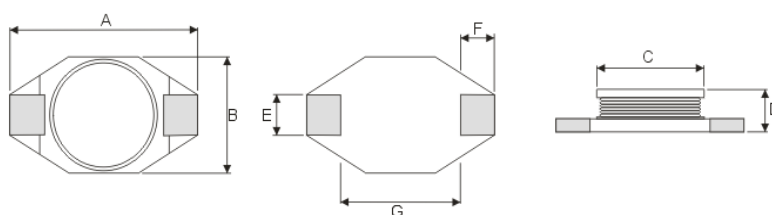


.Shape and Dimension

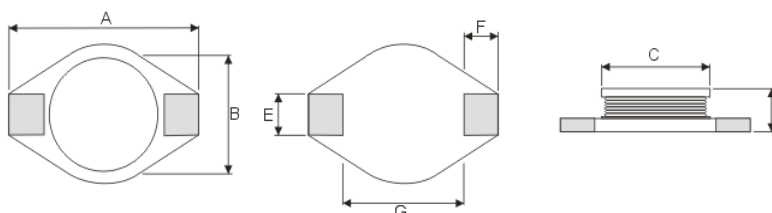
(1) HPI1608



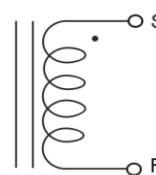
(2) HPI3316 / 3340



(3) HPI5022



.Schematic

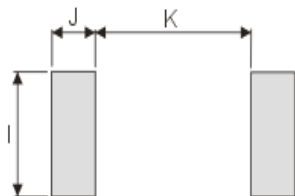


Dimensions in mm

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	—

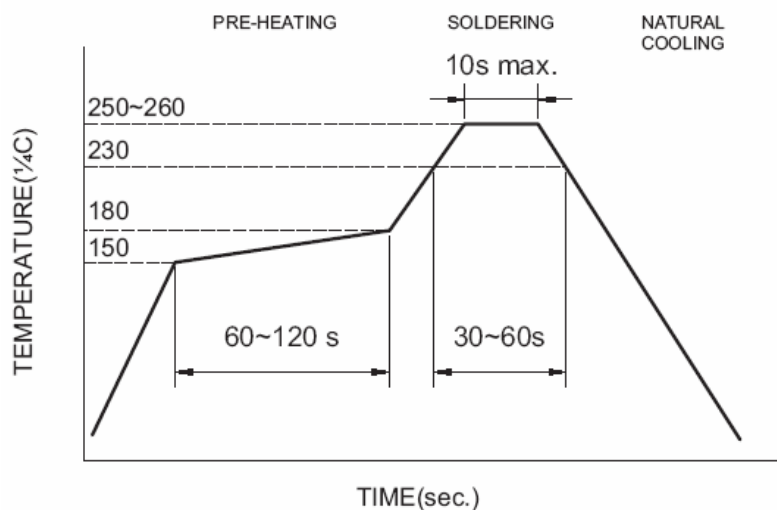
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.Land Patterns for Reflow Soldering



TYPE	I(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)



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. Electrical Characteristics (HPI1608 TYPE)

Part No.	INDUCTANCE (μ H)	Tolerance ($\pm$ %)	IDC (A) Max	DCR (Ω) 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

Electrical Characteristics (HPI3316 TYPE)

Part No.	INDUCTANCE (μ H)	Tolerance ($\pm$ %)	IDC (A) Max	DCR (Ω) 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
HPI3316-152□	1500	20	0.29	5.07	100 KHz
HPI3316-472□	4700	20	0.16	17	100 KHz
HPI3316-682□	6800	20	0.09	20	100 KHz

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Electrical Characteristics (HPI3340 TYPE)

Part No.	INDUCTANCE (μ H)	Tolerance ($\pm$ %)	IDC (A) Max	DCR (Ω) 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
HPI3340-681□	680	20	1.00	1.2	100 KHz
HPI3340-102□	1000	20	0.80	2	100 KHz
HPI3340-472□	4700	20	0.25	12	100 KHz
HPI3340-682□	6800	20	0.25	14	100 KHz

Electrical Characteristics (HPI5022 TYPE)

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

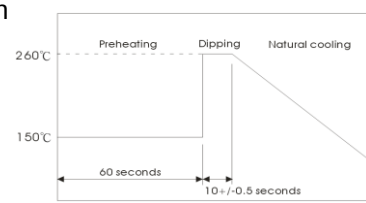
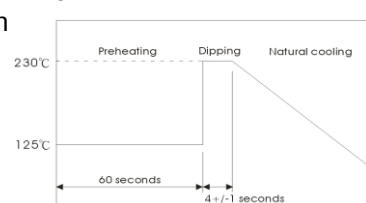
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NOTE:

1. Inductance tested at 100 kHz, 0.1 Vrms, 0 A_{dc} at 4284A (HP) LCR meter or equivalent.
2. I_{sat}: DC current at which the inductance drops 10% (typ) from its value without current.
3. I_{rms}: 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%

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

ITEM	Performance	Test Condition
Operating Temperature 操作溫度	-40~+85°C	
Storage temperature 儲存溫度	-40~+85°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.(Δt) 40度最大	
Electrical Performance Test		
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%

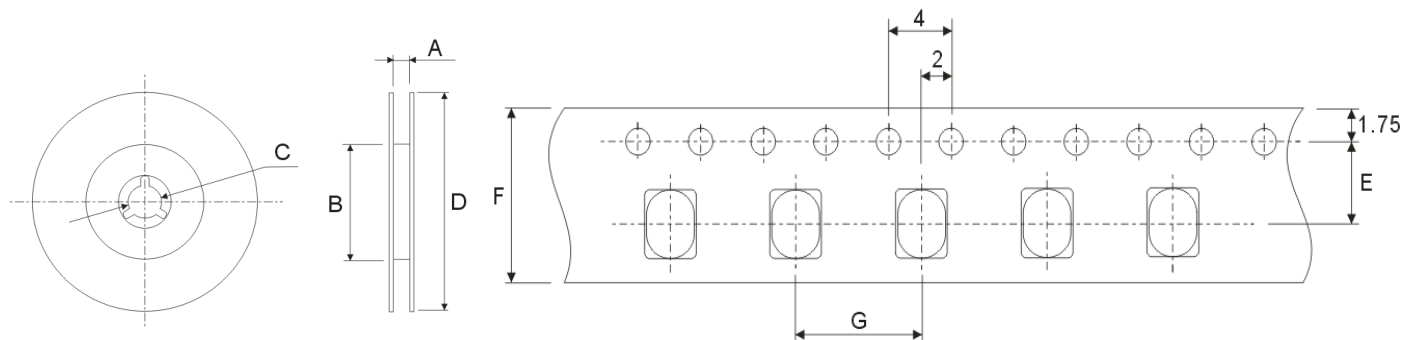
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. Reliability and Test Conditions(可靠性測試條件)

ITEM	Performance	Test Condition															
Thermal shock 熱衝擊試驗	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	Condition for 1 cycle Step1: $-25 \pm 2^\circ\text{C}$, 30 ± 3 min. Step2: Room temperature within 15 min. Step3: $+85 \pm 5^\circ\text{C}$, 30 ± 3 min. Step4: Room temperature within 15 min. Number of cycles: 50 <table border="1"> <thead> <tr> <th>Phase</th><th>Temperature($^\circ\text{C}$)</th><th>Time(min)</th></tr> </thead> <tbody> <tr> <td>1</td><td>$-25 \pm 2^\circ\text{C}$</td><td>30 ± 3</td></tr> <tr> <td>2</td><td>Room Temp.</td><td>15</td></tr> <tr> <td>3</td><td>$+85 \pm 2^\circ\text{C}$</td><td>30 ± 3</td></tr> <tr> <td>4</td><td>Room Temp.</td><td>15</td></tr> </tbody> </table>	Phase	Temperature($^\circ\text{C}$)	Time(min)	1	$-25 \pm 2^\circ\text{C}$	30 ± 3	2	Room Temp.	15	3	$+85 \pm 2^\circ\text{C}$	30 ± 3	4	Room Temp.	15
Phase	Temperature($^\circ\text{C}$)	Time(min)															
1	$-25 \pm 2^\circ\text{C}$	30 ± 3															
2	Room Temp.	15															
3	$+85 \pm 2^\circ\text{C}$	30 ± 3															
4	Room Temp.	15															

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.Packing Specifications



TYPE	Packaging Quantity			Tape and Reel Dimension						
	Pcs / Reel	Inner box	Carton	A	B	C	D	E	F	G
HPI1608	2500	7500	15000	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