SMD Power Inductor

TMPC1205HP-Serise-D

ECN HISTORY LIST

REV	DATE	DESCRIPTION	APPROVED	CHECKED	DRAWN
1.0	12/02/08	新發行	張龍旺	羅宜春	李芳
備注					

SMD Power Inductor

TMPC1205HP-Serise-D

1. Features

1. Carbonyl Powder.
2. Compact design.
3. High current，low DCR，high efficiency.
4. Very low acoustic noise and very low leakage flux noise.
5. High reliability.
6. 100% Lead(Pb)-Free and RoHS compliant.

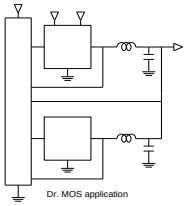
Halogen-free

Pb-free

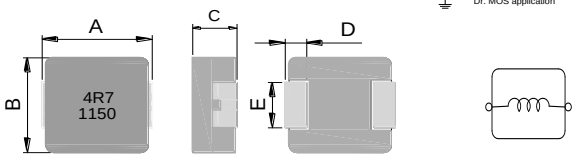
2. Applications

Note PC power system，incl. IMVP-6

DC/DC converter .

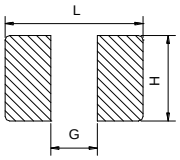


3. Dimensions



Series	A(mm)	B(mm)	C(mm)	D(mm)	E(mm)
TMPC1205HP	13.5±0.5	12.5±0.3	4.8±0.2	2.3±0.3	4.7±0.3

Recommend PC Board Pattern



L(mm)	G(mm)	H(mm)
14.2	8.0	5.0

4. Part Numbering

TMPC	1205	HP	-	4R7	MG	-	D
A	B	C		D	E		F

A: Series
B: Dimension — BxC
C: Type — HP:H:Carbonyl Powder,P:PAD broaden.
D: Inductance — 4R7=4.70uH
E: Inductance Tolerance — M=±20%
F: 印 D/C — 印字:黑色.4R7 及 D/C 1150 (11 年,50 週期)(依實際生產日期而定)

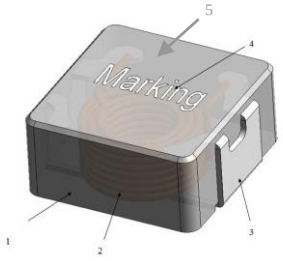
5. Specification

Part Number	Inductance L0 (uH)±20% @ 0 A	I rms (A) Typ.	I sat (A) Typ.	DCR (mΩ) Typ. @25℃	DCR (mΩ) Max. @25℃
TMPC1205HP-R33MG-D	0.33	42	80	0.7	0.9
TMPC1205HP-R47MG-D	0.47	38	65	0.86	1.1
TMPC1205HP-R56MG-D	0.56	36	55	1.0	1.5
TMPC1205HP-R68MG-D	0.68	34	54	1.4	1.7
TMPC1205HP-1R0MG-D	1.00	29	50	1.85	2.5
TMPC1205HP-1R5MG-D	1.50	27	48	2.8	3.3
TMPC1205HP-1R8MG-D	1.80	21	40	4.0	4.9
TMPC1205HP-2R2MG-D	2.20	20	32	4.2	5.5
TMPC1205HP-3R3MG-D	3.30	15	32	6.8	9.2
TMPC1205HP-4R7MG-D	4.70	12	27	11.4	15.0
TMPC1205HP-5R6MG-D	5.60	11.5	22	12.3	16.5
TMPC1205HP-6R8MG-D	6.80	11	21	14.5	18.5
TMPC1205HP-8R2MG-D	8.20	9.5	18	16.8	22.5
TMPC1205HP-100MG-D	10.0	9.0	16	21.4	25.5
TMPC1205HP-180MG-D	18.0	7.5	11	40	45

Note:

1. Test frequency : L : 100KHz /1.0V;
2. All test data referenced to 25℃ ambient.
3. Testing Instrument : L/Q: HP4284A,CH11025,CH3302,CH1320 ,CH1320S LCR METER / Rdc:CH16502,Agilent33420A MICRO OHMMETER.
4. Heat Rated Current (Irms) will cause the coil temperature rise approximately △t of 40℃(keep 1min.).
5. Saturation Current (Isat) will cause L0 to drop 20% typical. (keep quickly).
6. The part temperature (ambient + temp rise) should not exceed 125℃under worst case operating conditions.Circuit design,component,PCB trace size and thickness,airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.
7. Special inquiries besides the above common used types can be met on your requirement.

6. Material List



NO	Items	Materials
1	Core	Carbonyl Powder.
2	Wire	Polyester Wire or equivalent.
3	Solder Plating	100% Pb free solder
4	Ink	Halogen-free ketone
5	paint	Epoxy resin

7. Reliability and Test Condition

Item	Performance	Test Condition
Operating temperature	-40~+125℃	
Storage temperature and Humidity range	-10~+40℃,50~60%RH (Product without taping)	
Electrical Performance Test		
Inductance	Refer to standard electrical characteristics list.	HP4284A,CH11025,CH3302,CH1320,CH1320S LCR Meter.
DCR		CH16502,Agilent33420A Micro-Ohm Meter.
Saturation Current (Isat)	△L20% typical.	Saturation DC Current (Isat) will cause L0 to drop △L(%)(keep quickly).
Heat Rated Current (Irms)	Approximately △T≦40℃	Heat Rated Current (Irms) will cause the coil temperature rise △T(℃) without core loss. 1.Applied the allowed DC current(keep 1 min.). 2.Temperature measured by digital surface thermometer
Reliability Test		
High Temperature Exposure Test	Electric specifications should be satisfied	Temperature:125±2℃ Duration:1000±12hrs. Measured at room temperature after placing for 2 to 3hrs. (MIL-PRF-27)
Low Temperature Life Test		Temperature:-40±2℃ Duration:500±12hrs. Measured at room temperature after placing for 2 to 3hrs.
Biased Humidity Test		Humidity:85±3%RH. Temperature:85±2℃ Duration:1000±12hrs. Measured at room temperature after placing for 2 to 3hrs (AEC-Q200-REV C)
Thermal shock test		Condition for 1 cycle Step1:-40+0 / -2℃ 15±1 min. Step2:Room temperature within ≦0.2 min. Step3:+125+2 / -0℃ 15±1min. Number of cycles:300 Measured at room temperature after placing for 2 to 3 hrs. (AEC-Q200-REV C)
Vibration test		Frequency: 10-2000-10Hz for 20 min. Amplitude: Parts mounted within 2" from any secure point. Directions and times: X, Y, Z directions for 20 min. This cycle shall be performed 12 times in each of three mutually perpendicular directions (Total 12hours). (MIL-STD-202 Method 204 D Test condition B)
Reflow test		Pre-heat：150±5℃ Duration：5 minutes Temperature：260±5℃，20~40 seconds (IPC/JEDEC J-STD-020C)
Solder test	Terminals should be covered by over 95% solder on visual inspection	After dip into flux，dip into solder 235±5℃，4±1seconds Flux 、solder for lead free (ANSI /J-STD-002C Method B)

8. Soldering and Mounting

(1) Soldering

Mildly activated rosin fluxes are preferred. The minimum amount of solder can lead to damage from the stresses caused by the difference in coefficients of expansion between solder, chip and substrate. TAIPAQ terminations are suitable for re-flow soldering systems. If hand soldering cannot be avoided, the preferred technique is the utilization of hot air soldering tools.

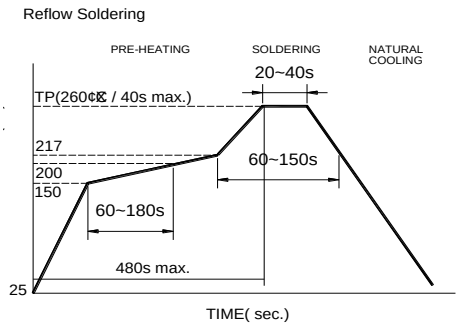
(2) Solder re-flow:

Recommended temperature profiles for re-flow soldering in Figure 1.

(3) Soldering Iron:

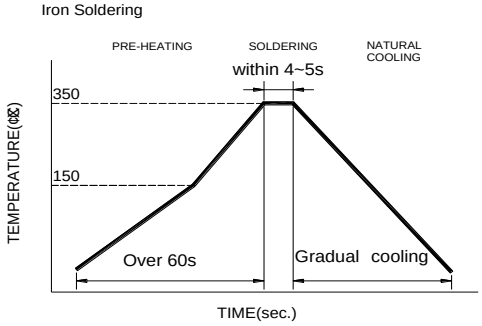
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

- Preheat circuit and products to 150℃
- Never contact the ceramic with the iron tip
- Use a 20 watt soldering iron with tip diameter of 1.0mm
- 355℃ tip temperature (max)
- 1.0mm tip diameter (max)
- Limit soldering time to 4~5sec.



Reflow times: 3 times max.

Fig.1

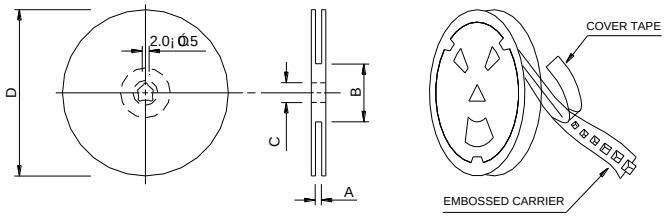


Iron Soldering times: 1 times max.

Fig.2

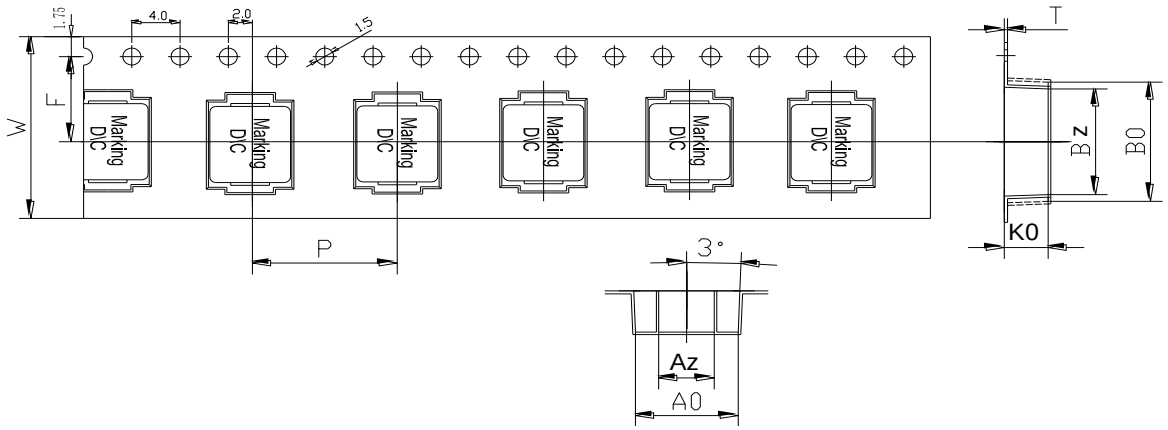
9. Packaging Information

(1) Reel Dimension



Type	A(mm)	B(mm)	C(mm)	D(mm)
13"x24mm	24.0±0.5	100±2	13.5±0.5	330

(2) Tape Dimension

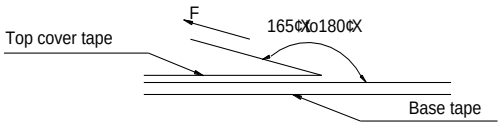


Series	Size	Bo(mm)	Bz(mm)	Ao(mm)	Az(mm)	Ko(mm)	P(mm)	W(mm)	F(mm)	t(mm)
TMPC	1205	14.1±0.1	13.0±0.1	12.9±0.1	7.0±0.1	5.5±0.1	16.0±0.1	24±0.3	11.5±0.1	0.35±0.05

(3) Packaging Quantity

TMPC	1205
Chip / Reel	500
Inner box	**1000**
Carton	**4000**

(4) Tearing Off Force



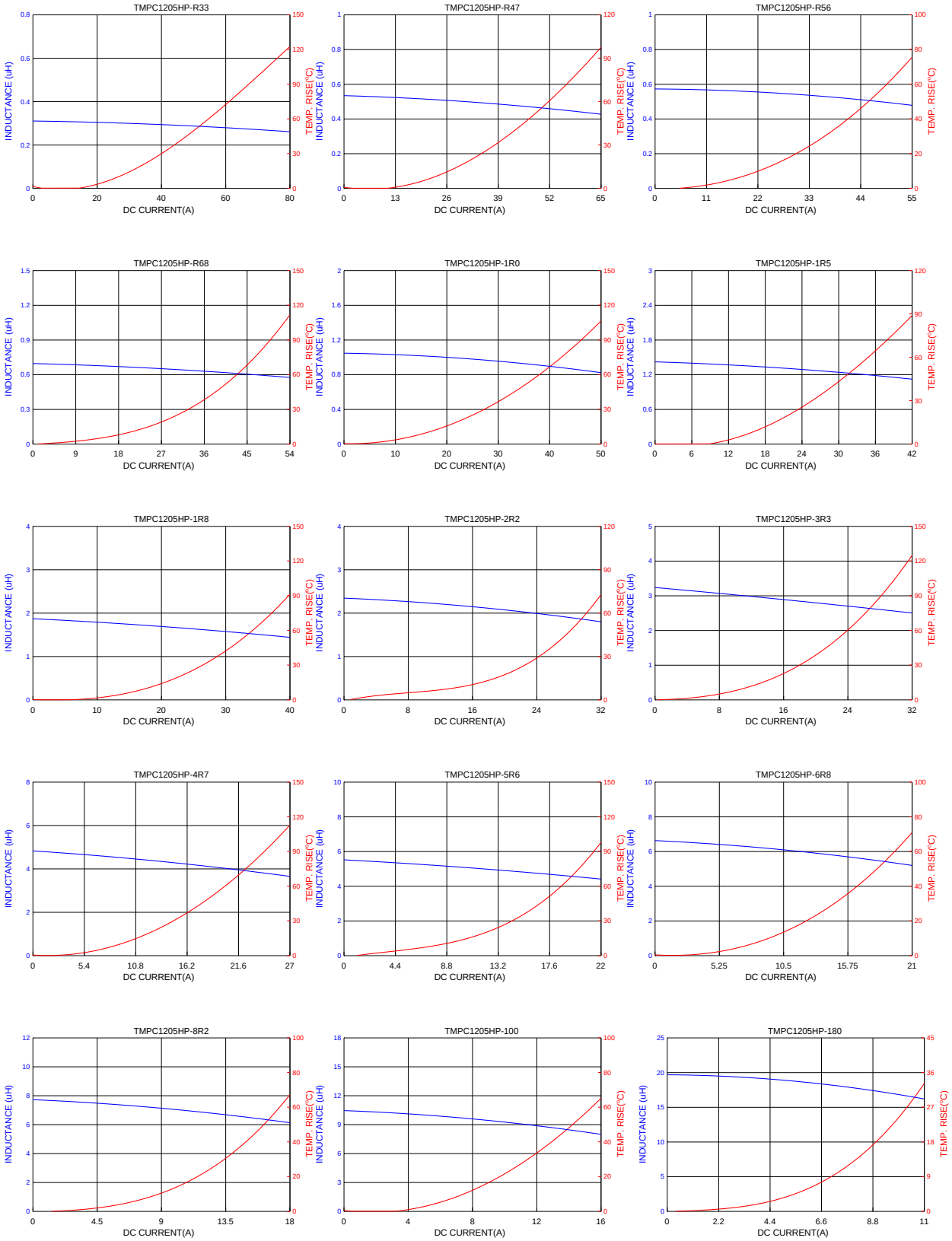
The force for tearing off cover tape is 10 to 130 grams in the arrow direction under the following conditions(referenced ANSI/EIA-481-C-2003 of 4.11 stadnard).

Room Temp. (℃)	Room Humidity (%)	Room atm (hPa)	Tearing Speed mm/min
5~35	45~85	860~1060	300

Application Notice

- Storage Conditions
  To maintain the solderability of terminal electrodes:
  1. TAIPAQ products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
  2. Temperature and humidity conditions: Less than 40℃ and 60% RH.
  3. Recommended products should be used within 12 months form the time of delivery.
  4. The packaging material should be kept where no chlorine or sulfur exists in the air.
- Transportation
  1. Products should be handled with care to avoid damage or contamination from perspiration and skin oils.
  2. The use of tweezers or vacuum pick up is strongly recommended for individual components.
  3. Bulk handling should ensure that abrasion and mechanical shock are minimized.

10. Typical Performance Curves



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