



德砚电子

DE YAN DIAN ZI

# 一体成型功率电感

## *Data Sheet*

**RoHS**



**ISO 9001**  
质量管理体系认证



**ISO 14001**  
环境管理体系认证

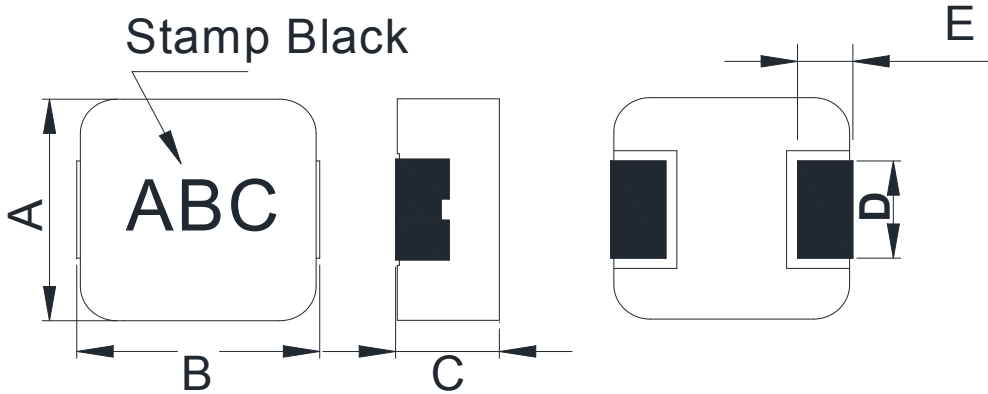
Shenzhen Deyan Electronics Co., Ltd



# \*SPECIFICATION\*

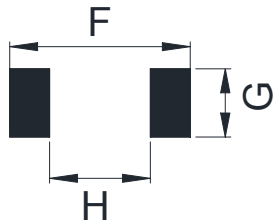
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|          |                | D1040HP-4R7MT |          | 2024-05-07 | --            | 01   | 1/5     |

## 1. DIMENSIONS (UNIT : mm)



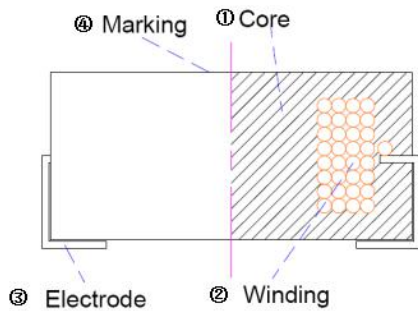
| A        | B        | C        | D       | E       |
|----------|----------|----------|---------|---------|
| 10.1±0.3 | 11.0±0.6 | 4.0 Max. | 3.0±0.5 | 2.5±0.5 |

## 2. RECOMMENDED LAND PATTERN (UNIT: mm)



|   |           |
|---|-----------|
| F | 13.0 Ref. |
| G | 4.0 Ref.  |
| H | 6.0 Ref.  |

## 3. STRUCTURE



| No. | PARTS     | MATERIAL  |
|-----|-----------|---|
| ①   | CORE      | Alloy powder                                      |
| ②   | WIRE      | Self bonding polyamide-imide enameled Copper Wire |
| ③   | ELECTRODE | Cu  |
| ④   | MARKING   | INK   |

| APPROVAL | CHECK | DESIGN |  |
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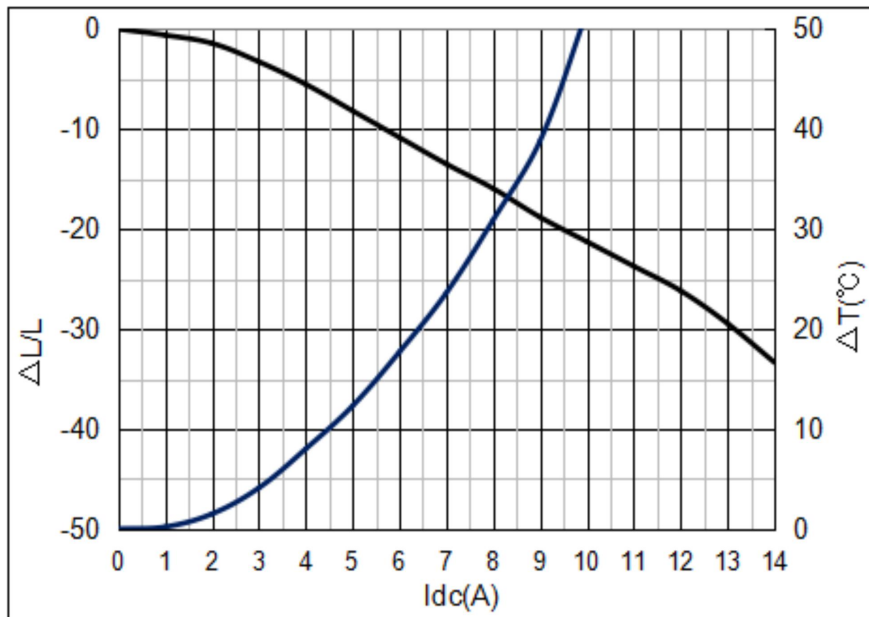
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## 4.CHARACTERISTICS

| No. | P/N.          | Inductance (μH) | Stamp | D.C.R. (mΩ) Max. | Saturation Current (A) |     | Temperature rise current(ΔT≦40℃) (A). |     |
|-----|---------------|-----------------|-------|------------------|------------------------|-----|---------------------------------------|-----|
|     |               |                 |       |                  | Typ                    | MAX | Typ                                   | MAX |
| 01  | D1040HP-4R7MT | 4.7±20%         | 4R7   | 16.5             | 12                     | 10  | 9                                     | 7.5 |

- \* Testing instrument: Inductance HP 4284A or equivalent at 100KHz /1V..  
D.C.R : TH2512B or equivalent. (Ta= 25℃)  
Saturation current: WK 3260B+3265B or equivalent.
- \* Saturation current: indicates the current when the inductance decrease to approximately 70% of initial value. (Ta=25℃)
- \* The temperature rise current value is the DC current value having temperature increase up to approximately 40℃(Ta=25℃)
- \* Absolute maximum voltage 30VDC

4R7 DC Bias & Temperature Characteristics



| APPROVAL | CHECK | DESIGN |  |
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## 5. GENERAL CHARACTERISTICS

\* STANDARD TESTING CONDITIONS:

UNLESS OTHERWISE SPECIFIED, THE STANDARD RANGE OF ATMOSPHERIC CONDITIONS FOR MEASUREMENTS AND TESTS ARE AS FOLLOWS: AMBIENT TEMPERATURE: 15°C~35°C.

RELATIVE HUMIDITY : 25% ~85%. AIR PRESSURE : 86kPa ~106kPa.

IF THERE IS ANY DOUBT ABOUT THE RESULTS, MEASUREMENT SHALL BE MADE WITHIN THE FOLLOWING LIMITS: AMBIENT TEMPERATURE: 20°C±1°C. RELATIVE HUMIDITY: 63% ~67%.

AIR PRESSURE : 86kPa ~106kPa.

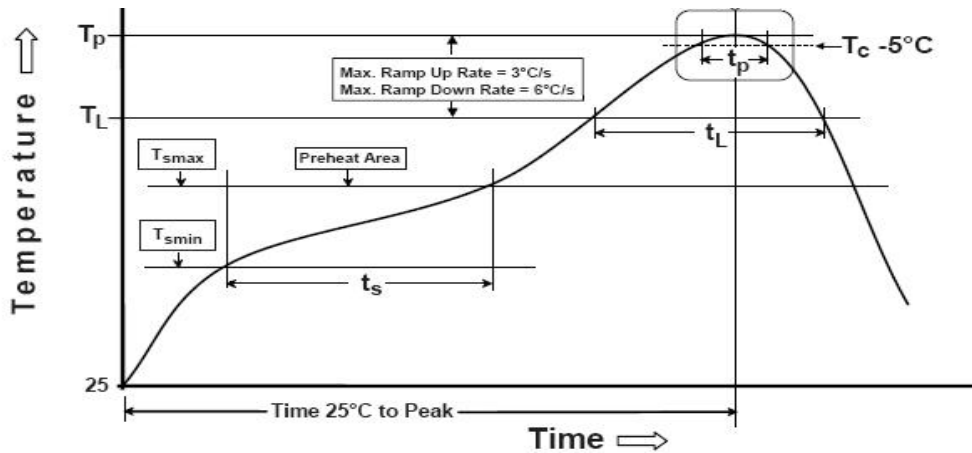
| No. | ITEMS  | CONDITIONS  | SPECIFICATION  |
|-----|--|---|--|
| 1   | OPERATION TEMPERATURE<br><br>STORAGE TEMPERATURE |   | -40 ~ + 125°C<br>(INCLUDING COIL TEMPERATURE RISE)<br>-40 ~ + 125°C                |
| 2   | TEMPERATURE<br>COEFFICIENT                       | -30 ~ +105°C  | 0 ~ 2000 ppm/°C  |
| 3   | FIXING STRENGTH                                  | SAMPLE IS PUSHED IN THREE DIRECTIONS OF X, Y AND Z WITH FORCE OF 5. 0N FOR 10±5 SECONDS. AFTER SOLDERING BETWEEN COPPER PLATE AND ELECTRODES. | NO ELECTRODE DETACHMENT.   |
| 4   | RESISTANCE TO SOLDERING<br>HEAT TEST             | REFER TO THE SPEC "STD-001NP".  | NO MECHANICAL BREAKAGE.<br>DEVIATION RELATIVE TO INITIAL VALUE:<br>L: WITHIN ±10%  |
| 5   | SOLDERABILITY TEST                               | IMMERSE THE ELECTRODE IN FLUX FOR 5 SECONDS. THEN DIP THE ELECTRODE INTO A SOLDERING BATH OF 245±5°C FOR 2±0.5 SECONDS.                       | OVER 95% OF THE SURFACE BEING IMMersed SHALL BE COVERED WITH NEW SOLDER UNIFORMLY. |
| 6   | VIBRATION TEST                                   | AMPLITUDE: 1.5mm P-P<br>FREQUENCY:10~55~10Hz (1 MINUTE PER CYCLE)<br>DURATION: 1 HOUR IN EACH OF X, Y, Z AXIS.                                | DEVIATION RELATIVE TO INITIAL VALUE:<br>L: WITHIN ±10%                             |
| 7   | HUMIDITY TEST                                    | TEMPERATURE: 40°C±2°C<br>HUMIDITY: 90%~95%RH<br>DURATION: 96±4 HOURS.   | DEVIATION RELATIVE TO INITIAL VALUE:<br>L: WITHIN ±10%                             |
| 8   | THERMAL SHOCK TEST                               | 20 CYCLES OF +105°C FOR 30 MINUTES, -40°C FOR 30 MINUTES. CHARACTERISTICS ARE MEASURED AFTER THE AMBIENT AIR EXPOSURE OF 1 HOUR               | DEVIATION RELATIVE TO INITIAL VALUE:<br>L: WITHIN ±10%                             |
| 9   | HIGH TEMPERATURE<br>STORAGE TEST                 | TEMPERATURE: 125°C±2°C<br>DURATION: 96±4 HOURS  |  |
| 10  | LOW TEMPERATURE<br>STORAGE TEST                  | TEMPERATURE: -40°C±3°C<br>DURATION: 96±4 HOURS.   |  |

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**. Reflow profile for SMT components**



**Reflow is referred to standard IPC/ JEDEC J-STD-020D**

|   |   |                      |
|---|---|----------------------|
| Profile Feature   |   | Lead(Pb) Free solder |
| Preheat and soak  | ·temperature Min.(T <sub>smin</sub> )                           | 150°C                |
|   | ·temperature Max.(T <sub>smax</sub> )                           | 200°C                |
|   | ·time(T <sub>smin</sub> to T <sub>smax</sub> )(t <sub>s</sub> ) | 60-120 Seconds       |
| Average ramp up rate T <sub>smax</sub> to T <sub>p</sub>  |   | 3°C/Second Max.      |
| Liquidous temperature (T <sub>L</sub> )   |   | 217 °C               |
| Time (T <sub>L</sub> ) maintained above T <sub>L</sub>  |   | 60-150 seconds       |
| Peak package body temperature (T <sub>p</sub> )   |   | <b>Table2</b>        |
| Time (t <sub>p</sub> )* within 5 °C of the specified classification temperature (T <sub>c</sub> ) |   | 30* seconds          |
| Average Ramp-down rate (T <sub>p</sub> to T <sub>L</sub> )  |   | 6 °C/second max      |
| Time 25 °C to peak temperature  |   | 8 minutes max.       |

**Table2. Pb-Free Process - Classification Temperatures (T<sub>c</sub>)**

| Package Thickness | Volume mm <sup>3</sup><br><350 | Volume mm <sup>3</sup><br>350~2000 | Volume mm <sup>3</sup><br>>2000 |
|-------------------|--------------------------------|------------------------------------|---------------------------------|
| <1.6 mm           | 260°C                          | 260°C                              | 260°C                           |
| 1.6mm- 2.5mm      | 260°C                          | 250°C                              | 245°C                           |
| >2.5 mm           | 250°C                          | 245°C                              | 245°C                           |

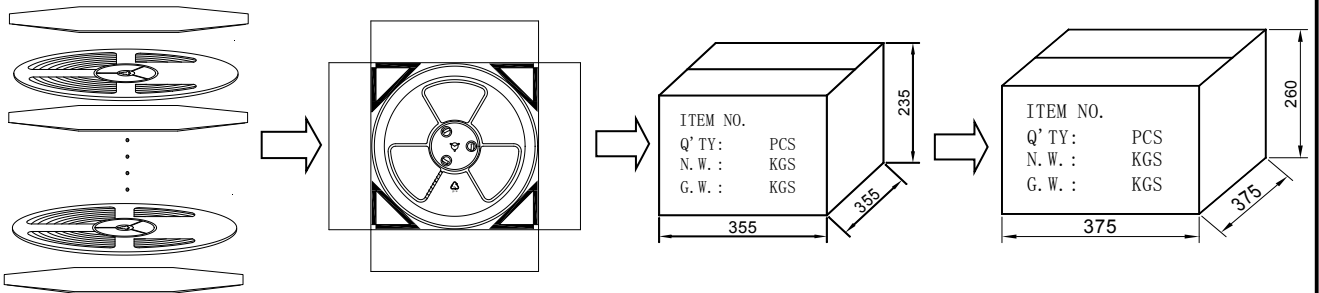
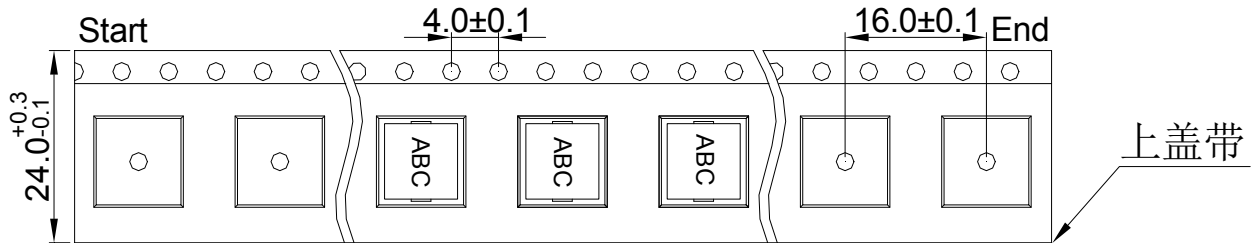
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## 7. PACKING

REFER TO STANDARD PACKING DRAWING. 500PCS/R



|      |         |
|------|---------|
| REEL | 500PCS  |
| BOX  | 3000PCS |

## 8. NOTE

SOLDERING TIN PERIOD OF VALIDITY: SIX MONTHS  
 STORAGE TEMPERATURE: 25°C±5°C  
 COMPARATIVELY HUMIDITY: 35%--70%

| APPROVAL | CHECK | DESIGN |  |
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