

# 一体成型功率电感

## *Data Sheet*



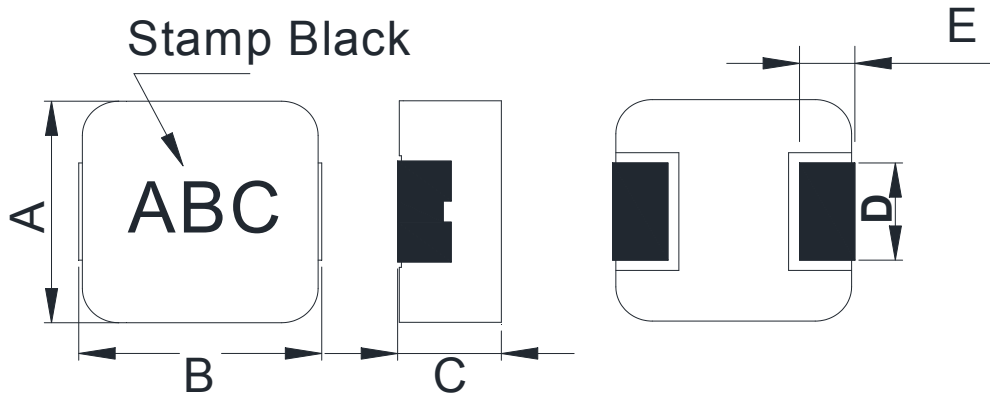
## \*SPECIFICATION\*

|        |      |      | AMENDMENT RECORD |         |         |         |
|--------|------|------|------------------|---------|---------|---------|
| SYMBOL | DATE | PAGE | CONTENTS         | DWN. BY | CHK. BY | APP. BY |
|        |      |      |                  | 叶枫      | 李林      | 谢东      |
|        |      |      |                  |         |         |         |

# \*SPECIFICATION\*

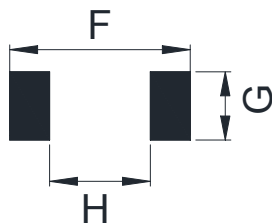
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|          |                | D0420HP-1R5MT |          | 2024-11-20 | --            | 01   | 1/5     |

## 1. DIMENSIONS (UNIT : mm)



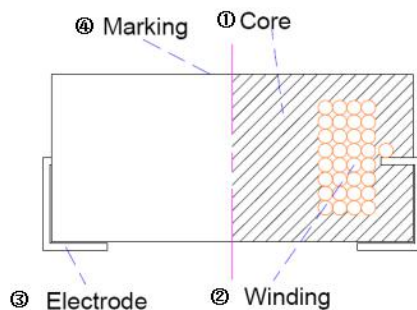
| A        | B        | C        | D        | E        |
|----------|----------|----------|----------|----------|
| 4.1±0.25 | 4.6±0.2. | 2.0 Max. | 1.5±0.30 | 1.0±0.50 |

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



|   |          |
|---|----------|
| F | 5.2 Ref. |
| G | 2.5 Ref. |
| H | 2.2 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                                               |

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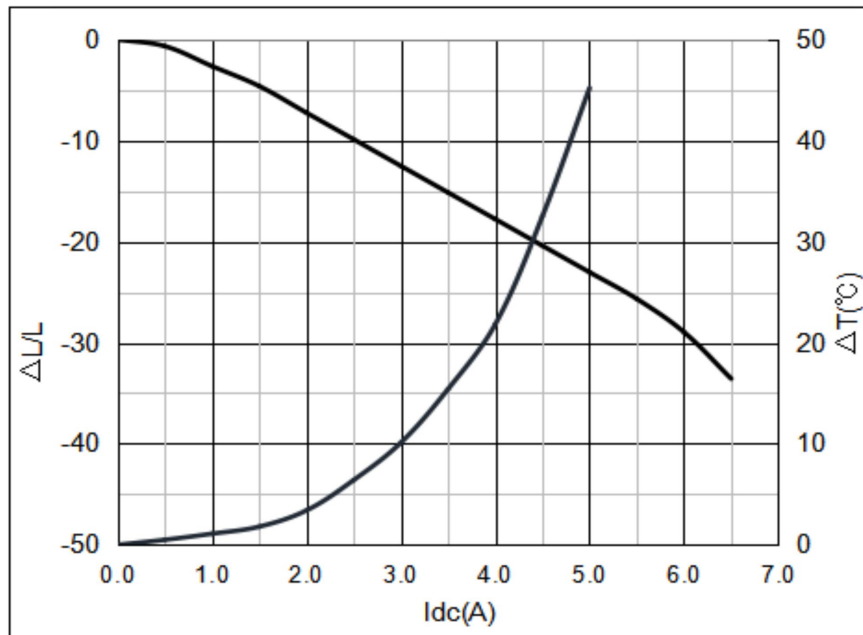
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## 4.CHARACTERISTICS

| No. | P/N.          | Inductance<br>( $\mu$ H) | Stamp | D.C.R.<br>(m $\Omega$ )<br>Max. | Saturation<br>Current<br>(A) |     | Temperature rise<br>current( $\Delta T \leq 40^\circ\text{C}$ )<br>(A). |     |
|-----|---------------|--------------------------|-------|---------------------------------|------------------------------|-----|-------------------------------------------------------------------------|-----|
|     |               |                          |       |                                 | Typ                          | MAX | Typ                                                                     | MAX |
| 01  | D0420HP-1R5MT | 1.5 $\pm$ 20%            | 1R5   | 46                              | 6.0                          | 5.0 | 4.0                                                                     | 3.5 |

- \* Testing instrument: Inductance HP 4284A or equivalent at 100KHz /1V..  
D.C.R : TH2512B or equivalent. ( $T_a = 25^\circ\text{C}$ )  
Saturation current: WK 3260B+3265B or equivalent.
- \* Saturation Current ( $I_{sat}$ ) will cause L0 to drop approximately 30% from its value without current.  
( $T_a = 25^\circ\text{C}$ )
- \* The temperature rise current value is the DC current value having temperature increase up to approximately  $40^\circ\text{C}$  ( $T_a = 25^\circ\text{C}$ )
- \* Absolute maximum voltage 30VDC

1R5 DC Bias & Temperature Characteristics



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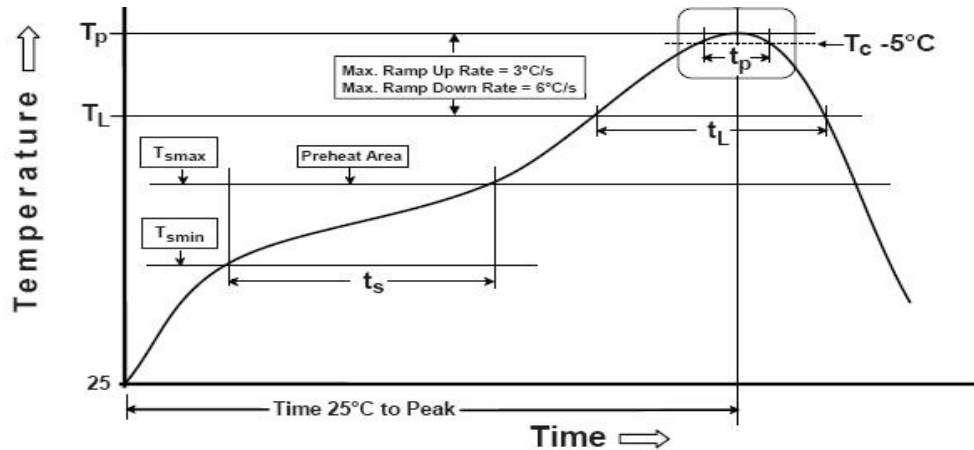
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|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                  | D0420HP-1R5MT                                                                                                                                 |                                                                                    | 2024-11-20 | --            | 01   | 3/5     |
| <b>5.GENERAL CHARACTERISTICS</b><br>* STANDARD TESTING CONDITIONS:<br>UNLESS OTHERWISE SPECIFIED, THE STANDARD RANGE OF ATMOSPHERIC CONDITIONS FOR MEASUREMENTS AND TESTS ARE AS FOLLOWS: AMBIENT TEMPERATURE: 15℃~35℃.<br>RELATIVE HUMIDITY : 25% ~85%. AIR PRESSURE : 86kPa ~106kPa.<br>IF THERE IS ANY DOUBT ABOUT THE RESULTS, MEASUREMENT SHALL BE MADE WITHIN THE FOLLOWING LIMITS: AMBIENT TEMPERATURE: 20℃±1℃. RELATIVE HUMIDITY: 63% ~67%.<br>AIR PRESSURE : 86kPa ~106kPa. |                                                  |                                                                                                                                               |                                                                                    |            |               |      |         |
| No.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ITEMS                                            | CONDITIONS                                                                                                                                    | SPECIFICATION                                                                      |            |               |      |         |
| 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | OPERATION TEMPERATURE<br><br>STORAGE TEMPERATURE |                                                                                                                                               | -40 ~ + 125℃<br>(INCLUDING COIL TEMPERATURE RISE)<br>-40 ~ + 125℃                  |            |               |      |         |
| 2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    | TEMPERATURE COEFFICIENT                          | -30 ~ +105℃                                                                                                                                   | 0 ~ 2000 ppm/℃                                                                     |            |               |      |         |
| 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 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℃ 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℃±2℃<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℃ FOR 30 MINUTES, -40℃ 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 STORAGE TEST                    | TEMPERATURE: 125℃±2℃<br>DURATION: 96±4 HOURS                                                                                                  |                                                                                    |            |               |      |         |
| 10                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | LOW TEMPERATURE STORAGE TEST                     | TEMPERATURE: -40℃±3℃<br>DURATION: 96±4 HOURS.                                                                                                 |                                                                                    |            |               |      |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                  |                                                                                                                                               |                                                                                    |            |               |      |         |
| APPROVAL                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | CHECK                                            | DESIGN                                                                                                                                        |                                                                                    |            |               |      |         |
|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                                  |                                                                                                                                               |                                                                                    |            |               |      |         |

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### 6. 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                           |

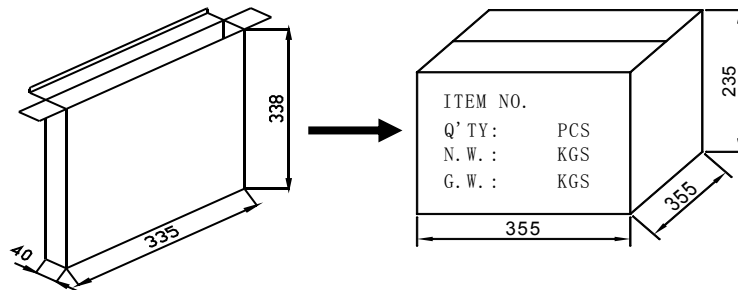
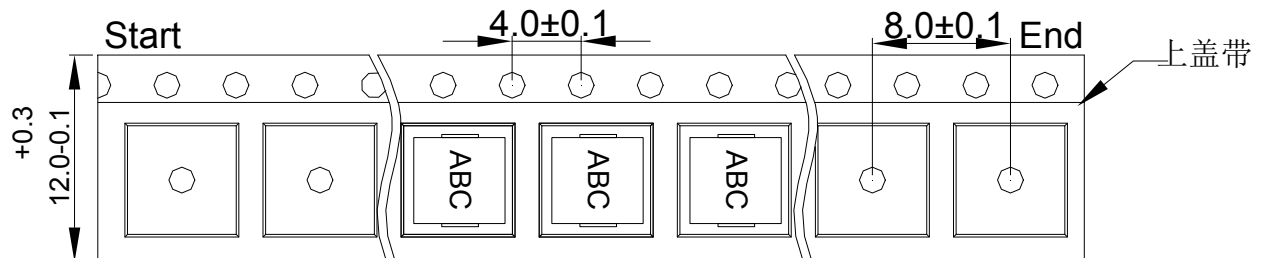
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## 7. PACKING

REFER TO STANDARD PACKING DRAWING. 3000PCS/R



|      |          |
|------|----------|
| REEL | 3000PCS  |
| BOX  | 30000PCS |

## 8. NOTE

SOLDERING TIN PERIOD OF VALIDITY: SIX MONTHS

STORAGE TEMPERATURE: 25°C±5°C

COMPARATIVELY HUMIDITY: 35%--70%

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