

### Features

- The structure is coated with magnetic glue, which greatly reduces the buzzing sound;
- Metallized electrode directly on the ferrite core, strong anti-drop impact, durable;
- Closed magnetic circuit structure design, less magnetic leakage, strong anti-EMI capability;
- The rated current is 30% higher than the conventional power inductor under the same size conditions.

### Applications

- LED lighting
- TV box
- personal computer
- Battery powered devices.
- Base stations
- PDA/notebook/desktop devices

### Product Identification

THWPI  
①

252012  
②

D  
③

1R0  
④

M  
⑤

T  
⑥

- ① Type : THWPI
- ② External Dimensions (L×W×H) [mm]= 252010=2.5\*2.0\*1.2
- ③ Feature Type: Differential
- ④ Nominal Inductance : 1R0=1.0μH
- ⑤ Inductance Tolerance :  
K=±10%  
M=±20%  
N=±30%
- ⑥ Packing T=Tape Carrier Package

## Specifications

| Part Number       | Inductance      | DC Resistance |          | Saturation Current |      | Heat Rating Current |      |
|-------------------|-----------------|---------------|----------|--------------------|------|---------------------|------|
|                   | 1MHz/1V         | Max.          | Typ.     | Max.               | Typ. | Max.                | Typ. |
| Units             | uH              | $\Omega$      | $\Omega$ | A                  | A    | A                   | A    |
| Symbol            | L               | DCR           |          | Isat               |      | Irms                |      |
| THWPI252012DR24MT | $0.24 \pm 20\%$ | 0.023         | 0.019    | 6.50               | 7.80 | 4.05                | 4.70 |
| THWPI252012DR33MT | $0.33 \pm 20\%$ | 0.028         | 0.023    | 5.35               | 6.30 | 3.70                | 4.30 |
| THWPI252012DR47MT | $0.47 \pm 20\%$ | 0.035         | 0.029    | 4.90               | 5.60 | 3.45                | 4.00 |
| THWPI252012DR68MT | $0.68 \pm 20\%$ | 0.045         | 0.039    | 3.80               | 4.50 | 3.15                | 3.60 |
| THWPI252012D1R0MT | $1.0 \pm 20\%$  | 0.054         | 0.048    | 3.60               | 4.20 | 3.00                | 3.40 |
| THWPI252012D1R5MT | $1.5 \pm 20\%$  | 0.078         | 0.060    | 2.90               | 3.50 | 2.40                | 2.80 |
| THWPI252012D2R2MT | $2.2 \pm 20\%$  | 0.120         | 0.100    | 2.60               | 3.00 | 1.90                | 2.15 |
| THWPI252012D3R3MT | $3.3 \pm 20\%$  | 0.215         | 0.175    | 1.70               | 2.10 | 1.50                | 1.80 |
| THWPI252012D4R7MT | $4.7 \pm 20\%$  | 0.260         | 0.225    | 1.60               | 1.90 | 1.25                | 1.45 |
| THWPI252012D6R8MT | $6.8 \pm 20\%$  | 0.366         | 0.305    | 1.20               | 1.40 | 0.95                | 1.10 |
| THWPI252012D100MT | $10 \pm 20\%$   | 0.480         | 0.435    | 1.10               | 1.35 | 0.85                | 1.00 |

Note: 1: Rated current: Isat(max.) or Irms(max.), whichever is smaller;

2: Saturation Current: Max. Value, DC current at which the inductance drops less than 30% from its value without current; Typ. Value, DC current at which the inductance drops 30% from its value without current;

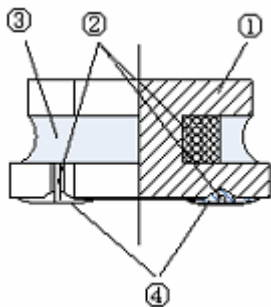
3: Irms: DC current that causes the temperature rise ( $\Delta T$ ) from 20°C ambient.

For Max. Value,  $\Delta T < 40^\circ\text{C}$ ; for Typ. Value,  $\Delta T$  is approximate 40°C.

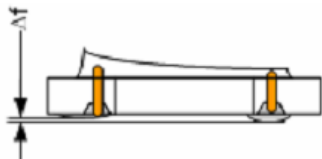
The part temperature (ambient + temp. rise) should not exceed 125°C under worst case operating conditions. Circuit design, component placement, PCB trace size and thickness, airflow and other cooling provisions all affect the part temperature. Part temperature should be verified in the end application.

Structure

The structure of THWPI252012 Series product.

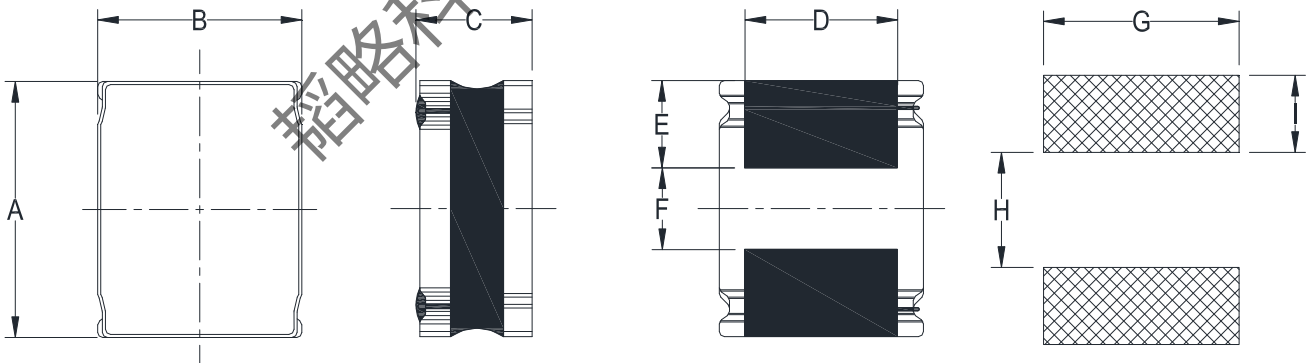


| NO. | Components    | Material                                 |
|-----|---------------|------------------------------------------|
| ①   | Core          | Soft magnetic Metal                      |
| ②   | Wire          | Polyurethane system enameled copper wire |
| ③   | Magnetic Glue | Epoxy resin and magnetic powder          |
| ④   | Electrodes    | AgNiSn or FeNiCu + Sn Alloy              |



Δ f: Clearance between terminal and the surface of plate must be 0.1mm max when coil is placed on a flat plate.

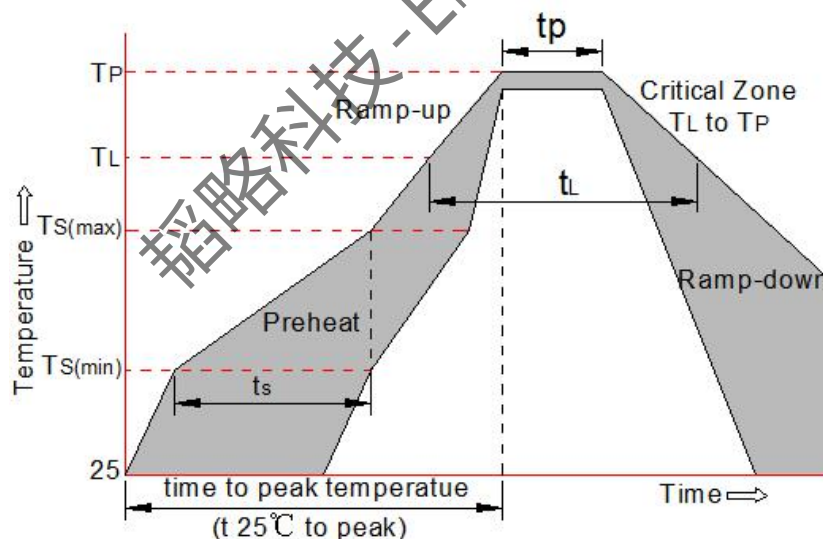
Package Mechanical Data And Suggested Land Pattern



| A        | B         | C       | D       | E        | F        | G   | H   | I    |
|----------|-----------|---------|---------|----------|----------|-----|-----|------|
| 2.5± 0.2 | 2.0 ± 0.3 | 1.26Max | 1.5±0.2 | 0.80±0.2 | 0.80±0.2 | 2.0 | 0.8 | 0.85 |

## Soldering Parameters

| Reflow Condition                                        |                                   | Pb-Free Assembly<br>(see as bellow) |
|---------------------------------------------------------|-----------------------------------|-------------------------------------|
| Pre Heat                                                | -Temperature Min ( $T_{s(min)}$ ) | +150°C                              |
|                                                         | -Temperature Max( $T_{s(max)}$ )  | +200°C                              |
|                                                         | -Time (Min to Max) ( $t_s$ )      | 60-180 secs.                        |
| Average ramp up rate (Liquid us Temp ( $T_L$ ) to peak) |                                   | 3°C/sec. Max                        |
| $T_{s(max)}$ to $T_L$ - Ramp-up Rate                    |                                   | 3°C/sec. Max                        |
| Reflow                                                  | -Temperature( $T_L$ ) (Liquid us) | +217°C                              |
|                                                         | -Temperature( $t_L$ )             | 60-90 secs .                        |
| Peak Temp ( $T_p$ )                                     |                                   | +260(+0/-5)°C                       |
| Time within 5°C of actual Peak Temp ( $t_p$ )           |                                   | 30 secs. Max                        |
| Ramp-down Rate                                          |                                   | 6°C/sec. Max                        |
| Time 25°C to Peak Temp ( $T_p$ )                        |                                   | 8 min. Max                          |
| Do not exceed                                           |                                   | +260°C                              |



## Contact Information

SHENZHEN TOP-FLIGHT TECHNOLOGY CO.,LTD

4th Floor, C Building, Quansen Industrial Park , Bulong Road, Longhua New District, Shenzhen

Tel: 86-755-82908191 Fax: 86-755-82908701 Email:kang@topleve.com

Website: <http://www.topleve.com>