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| <b>SMD Power Inductor</b> | <b>HPC(CF)-Series</b> |
|---------------------------|-----------------------|

| <b>ECN HISTORY LIST</b> |          |             |          |         |       |
|-------------------------|----------|-------------|----------|---------|-------|
| REV                     | DATE     | DESCRIPTION | APPROVED | CHECKED | DRAWN |
| 1.0                     | 16/01/08 | 新發行         | 楊祥忠      | 詹偉特     | 何秦芝   |
|                         |          |             |          |         |       |
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| 備<br>註                  |          |             |          |         |       |

**SMD Power Inductor**

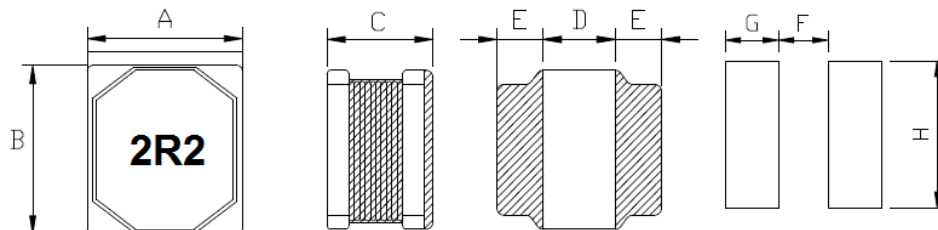
**HPC(CF)-Series**

**1. Features**

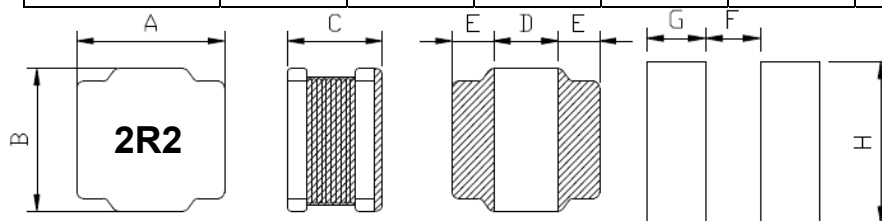
1. This specification applies Low Profile Power Inductors.
2. 100% Lead(Pb) & Halogen-Free and RoHS compliant.



**2. Dimension**

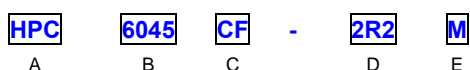


| Series    | A(mm)   | B(mm)   | C(mm)  | D(mm)   | E(mm)    | F(mm) | G(mm) | H(mm) |
|-----------|---------|---------|--------|---------|----------|-------|-------|-------|
| HPC4018CF | 4.0±0.2 | 4.0±0.2 | 1.8Max | 1.6±0.3 | 1.2±0.3  | 1.5   | 1.3   | 3.7   |
| HPC4030CF | 4.0±0.2 | 4.0±0.2 | 3.0Max | 1.3±0.3 | 1.35±0.3 | 1.3   | 1.35  | 3.7   |
| HPC5040CF | 5.0±0.2 | 5.0±0.2 | 4.0Max | 2.0±0.3 | 1.5±0.3  | 1.8   | 1.6   | 4.2   |
| HPC6020CF | 6.0±0.3 | 6.0±0.3 | 2.0Max | 2.7±0.3 | 1.65±0.3 | 2.4   | 1.8   | 5.7   |



| Series    | A(mm)   | B(mm)   | C(mm)  | D(mm)   | E(mm)   | F(mm) | G(mm) | H(mm) |
|-----------|---------|---------|--------|---------|---------|-------|-------|-------|
| HPC5020CF | 5.0±0.2 | 5.0±0.2 | 2.1Max | 1.4±0.3 | 1.8±0.3 | 1.4   | 1.8   | 4.2   |
| HPC6028CF | 6.0±0.3 | 6.0±0.3 | 2.8Max | 2.6±0.3 | 1.7±0.3 | 2.4   | 1.8   | 5.7   |
| HPC6045CF | 6.0±0.3 | 6.0±0.3 | 4.7Max | 2.6±0.3 | 1.7±0.3 | 2.4   | 1.8   | 5.7   |
| HPC8040CF | 8.0±0.3 | 8.0±0.3 | 4.2Max | 3.8±0.3 | 2.1±0.3 | 3.8   | 2.2   | 7.5   |

**3. Part Numbering**



- A: Series
  - B: Dimension
  - C: Type
  - D: Inductance
  - E: Inductance Tolerance
- A/B\*C
- 2R2=2.20uh 100=10uh,101=100uh,102=1000uh  
 M=±20%,Y=±30%.  
 marking Color: Black,

## 4. Specification

| Part Number    | Inductance<br>L0 (uH)<br>@ 0 A | Tolerance  | DCR( $\Omega$ )<br>$\pm 30\%$ . | Isat(A)<br>Max | Irms(A)<br>Max | SRF<br>(MHz)<br>min |
|----------------|--------------------------------|------------|---------------------------------|----------------|----------------|---------------------|
| HPC4018CF-1R0Y | 1.0                            | $\pm 30\%$ | 0.025                           | 4.20           | 2.09           | 80                  |
| HPC4018CF-1R5Y | 1.5                            | $\pm 30\%$ | 0.030                           | 3.35           | 1.80           | 65                  |
| HPC4018CF-2R2M | 2.2                            | $\pm 20\%$ | 0.045                           | 2.70           | 1.65           | 52                  |
| HPC4018CF-3R3M | 3.3                            | $\pm 20\%$ | 0.070                           | 2.45           | 1.23           | 44                  |
| HPC4018CF-4R7M | 4.7                            | $\pm 20\%$ | 0.090                           | 1.70           | 1.20           | 34                  |
| HPC4018CF-6R8M | 6.8                            | $\pm 20\%$ | 0.110                           | 1.45           | 1.03           | 29                  |
| HPC4018CF-100M | 10                             | $\pm 20\%$ | 0.180                           | 1.30           | 0.84           | 24                  |
| HPC4018CF-150M | 15                             | $\pm 20\%$ | 0.250                           | 0.94           | 0.65           | 19                  |
| HPC4018CF-220M | 22                             | $\pm 20\%$ | 0.360                           | 0.80           | 0.59           | 16                  |
| HPC4018CF-330M | 33                             | $\pm 20\%$ | 0.530                           | 0.56           | 0.49           | 12                  |
| HPC4018CF-470M | 47                             | $\pm 20\%$ | 0.650                           | 0.57           | 0.42           | 10                  |
| HPC4018CF-680M | 68                             | $\pm 20\%$ | 1.000                           | 0.47           | 0.32           | 8.3                 |
| HPC4018CF-101M | 100                            | $\pm 20\%$ | 1.750                           | 0.40           | 0.25           | 6.5                 |
| HPC4018CF-151M | 150                            | $\pm 20\%$ | 2.500                           | 0.31           | 0.22           | 5.5                 |
| HPC4018CF-221M | 220                            | $\pm 20\%$ | 4.000                           | 0.27           | 0.17           | 4.0                 |

Note:

- 1.All test data referenced to 25°C ambient , Ls:100KHz/1V.
- 2.Isat: DC current at which the inductance drops approximate 30% from its value without current;
- 3.Irms: DC current that causes the temperature rise ( $\Delta T = 40^\circ\text{C}$ ) from 25°C ambient.

| Part Number    | Inductance<br>L0 (uH)<br>@ 0 A | Tolerance  | DCR( $\Omega$ )<br>$\pm 30\%$ | Isat(A)<br>Max | Irms(A)<br>Max | SRF<br>(MHz)<br>min |
|----------------|--------------------------------|------------|-------------------------------|----------------|----------------|---------------------|
| HPC4030CF-1R0Y | 1.0                            | $\pm 30\%$ | 0.016                         | 5.26           | 4.15           | 70                  |
| HPC4030CF-1R2Y | 1.2                            | $\pm 30\%$ | 0.018                         | 5.8            | 3.82           | 80                  |
| HPC4030CF-1R5Y | 1.5                            | $\pm 30\%$ | 0.020                         | 4.84           | 3.34           | 62                  |
| HPC4030CF-1R8Y | 1.8                            | $\pm 30\%$ | 0.028                         | 4.80           | 3.00           | 60                  |
| HPC4030CF-2R2Y | 2.2                            | $\pm 30\%$ | 0.030                         | 4.40           | 2.95           | 52                  |
| HPC4030CF-3R3M | 3.3                            | $\pm 20\%$ | 0.040                         | 3.30           | 2.40           | 38                  |
| HPC4030CF-4R7M | 4.7                            | $\pm 20\%$ | 0.060                         | 2.90           | 2.00           | 31                  |
| HPC4030CF-5R6M | 5.6                            | $\pm 20\%$ | 0.065                         | 2.60           | 1.95           | 30                  |
| HPC4030CF-6R8M | 6.8                            | $\pm 20\%$ | 0.090                         | 2.75           | 1.60           | 24                  |
| HPC4030CF-8R2M | 8.2                            | $\pm 20\%$ | 0.090                         | 2.10           | 1.60           | 26                  |
| HPC4030CF-100M | 10.0                           | $\pm 20\%$ | 0.100                         | 1.95           | 1.50           | 21                  |
| HPC4030CF-120M | 12.0                           | $\pm 20\%$ | 0.135                         | 1.70           | 1.30           | 18                  |
| HPC4030CF-150M | 15.0                           | $\pm 20\%$ | 0.190                         | 1.65           | 1.11           | 16                  |
| HPC4030CF-180M | 18.0                           | $\pm 20\%$ | 0.200                         | 1.40           | 1.10           | 10                  |
| HPC4030CF-220M | 22.0                           | $\pm 20\%$ | 0.225                         | 1.30           | 1.00           | 10                  |
| HPC4030CF-330M | 33.0                           | $\pm 20\%$ | 0.330                         | 1.10           | 0.84           | 10                  |
| HPC4030CF-390M | 39.0                           | $\pm 20\%$ | 0.435                         | 1.03           | 0.73           | 10                  |
| HPC4030CF-470M | 47.0                           | $\pm 20\%$ | 0.445                         | 0.95           | 0.72           | 8.4                 |
| HPC4030CF-560M | 56.0                           | $\pm 20\%$ | 0.555                         | 0.85           | 0.65           | 8.4                 |
| HPC4030CF-680M | 68.0                           | $\pm 20\%$ | 0.868                         | 0.72           | 0.52           | 7                   |
| HPC4030CF-820M | 82.0                           | $\pm 20\%$ | 1.060                         | 0.66           | 0.47           | 5.6                 |
| HPC4030CF-101M | 100                            | $\pm 20\%$ | 1.150                         | 0.60           | 0.45           | 5.6                 |
| HPC4030CF-121M | 120                            | $\pm 20\%$ | 1.350                         | 0.55           | 0.42           | 5.4                 |
| HPC4030CF-151M | 150                            | $\pm 20\%$ | 1.800                         | 0.50           | 0.3            | 4                   |
| HPC4030CF-221M | 220                            | $\pm 20\%$ | 2.500                         | 0.40           | 0.35           | 4.2                 |
| HPC4030CF-331M | 330                            | $\pm 20\%$ | 4.000                         | 0.30           | 0.25           | 6.8                 |
| HPC4030CF-471M | 470                            | $\pm 20\%$ | 7.200                         | 0.30           | 0.20           | 2                   |
| HPC4030CF-681M | 680                            | $\pm 20\%$ | 7.580                         | 0.19           | 0.14           | 1.2                 |

## Note:

1. All test data referenced to 25°C ambient, Ls:100KHz/1V.
2. Isat: DC current at which the inductance drops approximate 30% from its value without current;
3. Irms: DC current that causes the temperature rise ( $\Delta T = 40^\circ\text{C}$ ) from 25°C ambient.

| Part Number     | Inductance<br>L0 (uH)<br>@ 0 A | Tolerance  | DCR( $\Omega$ )<br>$\pm 30\%$ . | Isat(A)<br>Max | Irms(A)<br>Max | SRF<br>(MHz)<br>min |
|-----------------|--------------------------------|------------|---------------------------------|----------------|----------------|---------------------|
| HPC5020CF-1R0Y  | 1.0                            | $\pm 30\%$ | 0.020                           | 4.10           | 3.80           | 114                 |
| HPC5020CF-1R5Y  | 1.5                            | $\pm 30\%$ | 0.030                           | 4.10           | 3.20           | 68                  |
| HPC5020CF-2R2Y  | 2.2                            | $\pm 30\%$ | 0.040                           | 3.20           | 2.70           | 57                  |
| HPC5020CF-3R3Y  | 3.3                            | $\pm 30\%$ | 0.050                           | 2.55           | 2.30           | 46                  |
| HPC5020CF-4R7M  | 4.7                            | $\pm 20\%$ | 0.057                           | 2.50           | 2.20           | 37                  |
| HPC5020CF-6R8M  | 6.8                            | $\pm 20\%$ | 0.083                           | 2.05           | 1.80           | 30                  |
| HPC5020CF-8R2M  | 8.2                            | $\pm 20\%$ | 0.098                           | 1.85           | 1.65           | 26                  |
| HPC5020CF-100M  | 10.0                           | $\pm 20\%$ | 0.120                           | 1.70           | 1.55           | 24                  |
| HPC5020CF-120M  | 12.0                           | $\pm 20\%$ | 0.140                           | 1.50           | 1.40           | 22                  |
| HPC5020CF-150M  | 15.0                           | $\pm 20\%$ | 0.165                           | 1.35           | 1.25           | 20                  |
| HPC5020CF-180M  | 18.0                           | $\pm 20\%$ | 0.200                           | 1.25           | 1.15           | 16                  |
| HPC5020CF-220M- | 22.0                           | $\pm 20\%$ | 0.250                           | 1.15           | 1.10           | 14                  |
| HPC5020CF-330M  | 33.0                           | $\pm 20\%$ | 0.400                           | 0.92           | 0.90           | 10                  |
| HPC5020CF-470M  | 47.0                           | $\pm 20\%$ | 0.580                           | 0.77           | 0.75           | 7                   |
| HPC5020CF-680M  | 68.0                           | $\pm 20\%$ | 0.740                           | 0.65           | 0.64           | 6                   |
| HPC5020CF-820M  | 82.0                           | $\pm 20\%$ | 0.965                           | 0.65           | 0.50           | 6                   |
| HPC5020CF-101M  | 100                            | $\pm 20\%$ | 1.100                           | 0.53           | 0.40           | 6                   |

## Note:

- 1.All test data referenced to 25°C ambient , Ls:100KHz/1V.
- 2.Isat: DC current at which the inductance drops approximate 30% from its value without current;
- 3.Irms: DC current that causes the temperature rise ( $\Delta T = 40^\circ\text{C}$ ) from 25°C ambient.

| Part Number    | Inductance<br>L0 (uH)<br>@ 0 A | Tolerance  | DCR( $\Omega$ )<br>$\pm 30\%$ . | Isat(A)<br>Max | Irms(A)<br>Max | SRF<br>(MHz)<br>min |
|----------------|--------------------------------|------------|---------------------------------|----------------|----------------|---------------------|
| HPC5040CF-1R0Y | 1.0                            | $\pm 30\%$ | 0.012                           | 7.35           | 4.90           | 117                 |
| HPC5040CF-1R2Y | 1.2                            | $\pm 30\%$ | 0.016                           | 6.50           | 4.15           | 110                 |
| HPC5040CF-1R5Y | 1.5                            | $\pm 30\%$ | 0.018                           | 6.30           | 4.00           | 86                  |
| HPC5040CF-2R2Y | 2.2                            | $\pm 30\%$ | 0.019                           | 4.90           | 3.80           | 50                  |
| HPC5040CF-2R7Y | 2.7                            | $\pm 30\%$ | 0.022                           | 4.30           | 3.60           | 37                  |
| HPC5040CF-3R3Y | 3.3                            | $\pm 30\%$ | 0.024                           | 3.95           | 3.40           | 32                  |
| HPC5040CF-3R9Y | 3.9                            | $\pm 30\%$ | 0.027                           | 3.55           | 3.20           | 29                  |
| HPC5040CF-4R7M | 4.7                            | $\pm 20\%$ | 0.032                           | 3.50           | 3.00           | 28                  |
| HPC5040CF-5R6M | 5.6                            | $\pm 20\%$ | 0.035                           | 3.00           | 2.80           | 27                  |
| HPC5040CF-6R8M | 6.8                            | $\pm 20\%$ | 0.043                           | 2.90           | 2.50           | 21                  |
| HPC5040CF-100M | 10.0                           | $\pm 20\%$ | 0.064                           | 2.35           | 2.10           | 18                  |
| HPC5040CF-150M | 15.0                           | $\pm 20\%$ | 0.086                           | 2.00           | 2.00           | 13                  |
| HPC5040CF-220M | 22.0                           | $\pm 20\%$ | 0.129                           | 1.60           | 1.50           | 11                  |
| HPC5040CF-330M | 33.0                           | $\pm 20\%$ | 0.188                           | 1.30           | 1.20           | 9.1                 |
| HPC5040CF-470M | 47.0                           | $\pm 20\%$ | 0.272                           | 1.10           | 1.00           | 6.7                 |
| HPC5040CF-680M | 68.0                           | $\pm 20\%$ | 0.400                           | 0.90           | 0.80           | 5.7                 |
| HPC5040CF-101M | 100                            | $\pm 20\%$ | 0.560                           | 0.75           | 0.70           | 4.7                 |
| HPC5040CF-151M | 150                            | $\pm 20\%$ | 0.750                           | 0.65           | 0.60           | 5                   |
| HPC5040CF-221M | 220                            | $\pm 20\%$ | 1.280                           | 0.40           | 0.38           | 3                   |
| HPC5040CF-102M | 1000                           | $\pm 20\%$ | 6.200                           | 0.25           | 0.25           | 2                   |
| HPC5040CF-222M | 2200                           | $\pm 20\%$ | 13.000                          | 0.10           | 0.10           | 2                   |

## Note:

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- 3.Irms: DC current that causes the temperature rise ( $\Delta T = 40^\circ\text{C}$ ) from 25°C ambient.

| Part Number    | Inductance<br>L0 (uH)<br>@ 0 A | Tolerance  | DCR( $\Omega$ )<br>$\pm 30\%$ . | Isat(A)<br>Max | Irms(A)<br>Max | SRF<br>(MHz)<br>min |
|----------------|--------------------------------|------------|---------------------------------|----------------|----------------|---------------------|
| HPC6020CF-R50Y | 0.50                           | $\pm 30\%$ | 0.014                           | 4.50           | 3.30           | 120                 |
| HPC6020CF-R68Y | 0.68                           | $\pm 30\%$ | 0.017                           | 6.55           | 3.80           | 115                 |
| HPC6020CF-R82Y | 0.82                           | $\pm 30\%$ | 0.017                           | 5.30           | 3.80           | 110                 |
| HPC6020CF-1R0Y | 1.0                            | $\pm 30\%$ | 0.020                           | 4.15           | 3.50           | 100                 |
| HPC6020CF-1R2Y | 1.2                            | $\pm 30\%$ | 0.022                           | 5.90           | 3.20           | 88                  |
| HPC6020CF-1R5Y | 1.5                            | $\pm 30\%$ | 0.022                           | 4.25           | 3.20           | 79                  |
| HPC6020CF-1R8Y | 1.8                            | $\pm 30\%$ | 0.028                           | 4.85           | 2.75           | 68                  |
| HPC6020CF-2R2Y | 2.2                            | $\pm 30\%$ | 0.028                           | 3.75           | 2.75           | 61                  |
| HPC6020CF-2R7Y | 2.7                            | $\pm 30\%$ | 0.035                           | 3.90           | 2.60           | 56                  |
| HPC6020CF-3R3Y | 3.3                            | $\pm 30\%$ | 0.035                           | 3.15           | 2.60           | 51                  |
| HPC6020CF-3R9Y | 3.9                            | $\pm 30\%$ | 0.049                           | 3.25           | 2.10           | 45                  |
| HPC6020CF-4R7M | 4.7                            | $\pm 20\%$ | 0.058                           | 3.00           | 2.00           | 41                  |
| HPC6020CF-5R6M | 5.6                            | $\pm 20\%$ | 0.058                           | 2.40           | 1.90           | 36                  |
| HPC6020CF-6R8M | 6.8                            | $\pm 20\%$ | 0.079                           | 2.20           | 1.80           | 31                  |
| HPC6020CF-8R2M | 8.2                            | $\pm 20\%$ | 0.105                           | 2.10           | 1.40           | 27                  |
| HPC6020CF-100M | 10.0                           | $\pm 20\%$ | 0.105                           | 1.75           | 1.40           | 27                  |
| HPC6020CF-120M | 12.0                           | $\pm 20\%$ | 0.120                           | 1.45           | 1.30           | 25                  |
| HPC6020CF-150M | 15.0                           | $\pm 20\%$ | 0.145                           | 1.20           | 1.20           | 21                  |
| HPC6020CF-180M | 18.0                           | $\pm 20\%$ | 0.180                           | 1.20           | 1.08           | 18                  |
| HPC6020CF-220M | 22.0                           | $\pm 20\%$ | 0.204                           | 1.05           | 1.00           | 16                  |
| HPC6020CF-330M | 33.0                           | $\pm 20\%$ | 0.300                           | 0.95           | 0.84           | 11                  |
| HPC6020CF-470M | 47.0                           | $\pm 20\%$ | 0.430                           | 0.70           | 0.80           | 10                  |

## Note:

- 1.All test data referenced to 25°C ambient , Ls:100KHz/1V.
- 2.Isat: DC current at which the inductance drops approximate 30% from its value without current;
- 3.Irms: DC current that causes the temperature rise ( $\Delta T = 40^\circ\text{C}$ ) from 25°C ambient.

| Part Number    | Inductance<br>L0 (uH)<br>@ 0 A | Tolerance  | DCR( $\Omega$ )<br>$\pm 30\%$ . | Isat(A)<br>Max | Irms(A)<br>Max |
|----------------|--------------------------------|------------|---------------------------------|----------------|----------------|
| HPC6028CF-1R0Y | 1.00                           | $\pm 30\%$ | 0.012                           | 5.75           | 5.20           |
| HP6028CF-1R5Y  | 1.50                           | $\pm 30\%$ | 0.015                           | 6.00           | 4.58           |
| HP6028CF-2R2Y  | 2.20                           | $\pm 30\%$ | 0.020                           | 5.10           | 3.75           |
| HP6028CF-2R7Y  | 2.70                           | $\pm 30\%$ | 0.020                           | 3.80           | 3.75           |
| HP6028CF-3R3Y  | 3.30                           | $\pm 30\%$ | 0.025                           | 4.15           | 3.48           |
| HP6028CF-4R7M  | 4.70                           | $\pm 20\%$ | 0.030                           | 3.00           | 3.08           |
| HP6028CF-5R1M  | 5.10                           | $\pm 20\%$ | 0.043                           | 3.20           | 2.60           |
| HP6028CF-6R2M  | 6.20                           | $\pm 20\%$ | 0.047                           | 3.05           | 2.40           |
| HP6028CF-6R8M  | 6.80                           | $\pm 20\%$ | 0.047                           | 2.60           | 2.40           |
| HP6028CF-8R2M  | 8.2                            | $\pm 20\%$ | 0.055                           | 2.30           | 2.25           |
| HP6028CF-9R1M  | 9.10                           | $\pm 20\%$ | 0.074                           | 2.55           | 2.15           |
| HP6028CF-100M  | 10.0                           | $\pm 20\%$ | 0.072                           | 2.04           | 1.95           |
| HP6028CF-120M  | 12.0                           | $\pm 20\%$ | 0.080                           | 1.80           | 1.85           |
| HP6028CF-150M  | 15.0                           | $\pm 20\%$ | 0.125                           | 1.75           | 1.45           |
| HP6028CF-180M  | 18.0                           | $\pm 20\%$ | 0.120                           | 1.52           | 1.45           |
| HP6028CF-220M  | 22.0                           | $\pm 20\%$ | 0.140                           | 1.45           | 1.40           |
| HP6028CF-270M  | 27.0                           | $\pm 20\%$ | 0.155                           | 1.50           | 1.32           |
| HP6028CF-330M  | 33.0                           | $\pm 20\%$ | 0.185                           | 1.35           | 1.22           |
| HP6028CF-360M  | 36.0                           | $\pm 20\%$ | 0.215                           | 1.25           | 1.13           |
| HP6028CF-390M  | 39.0                           | $\pm 20\%$ | 0.225                           | 1.25           | 1.10           |
| HP6028CF-470M  | 47.0                           | $\pm 20\%$ | 0.315                           | 1.15           | 1.06           |
| HP6028CF-680M  | 68.0                           | $\pm 20\%$ | 0.360                           | 0.80           | 0.86           |
| HP6028CF-750M  | 75.0                           | $\pm 20\%$ | 0.410                           | 0.90           | 0.81           |
| HP6028CF-820M  | 82.0                           | $\pm 20\%$ | 0.500                           | 0.80           | 0.70           |
| HP6028CF-101M  | 100.0                          | $\pm 20\%$ | 0.500                           | 0.65           | 0.70           |
| HP6028CF-102M  | 1000.0                         | $\pm 20\%$ | 5.800                           | 0.18           | 0.20           |

## Note:

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- 3.Irms: DC current that causes the temperature rise ( $\Delta T = 40^\circ\text{C}$ ) from 25°C ambient.



| Part Number    | Inductance<br>L0 (uH)<br>@ 0 A | Tolerance  | DCR( $\Omega$ )<br>$\pm 30\%$ . | Isat(A)<br>Max | Irms(A)<br>Max | SRF(MHz)<br>min |
|----------------|--------------------------------|------------|---------------------------------|----------------|----------------|-----------------|
| HPC6045CF-R82Y | 0.82                           | $\pm 30\%$ | 0.008                           | 10.35          | 5.90           | 140             |
| HPC6045CF-1R0Y | 1.00                           | $\pm 30\%$ | 0.011                           | 9.85           | 5.14           | 100             |
| HPC6045CF-1R2Y | 1.20                           | $\pm 30\%$ | 0.010                           | 8.35           | 5.40           | 100             |
| HPC6045CF-1R5Y | 1.50                           | $\pm 30\%$ | 0.012                           | 8.80           | 4.95           | 65              |
| HPC6045CF-1R8Y | 1.80                           | $\pm 30\%$ | 0.012                           | 7.60           | 4.95           | 74              |
| HPC6045CF-2R2Y | 2.20                           | $\pm 30\%$ | 0.014                           | 6.75           | 4.60           | 52              |
| HPC6045CF-3R3Y | 3.30                           | $\pm 30\%$ | 0.024                           | 5.90           | 3.70           | 32              |
| HPC6045CF-4R7M | 4.70                           | $\pm 20\%$ | 0.031                           | 4.97           | 3.30           | 24              |
| HPC6045CF-5R6M | 5.60                           | $\pm 20\%$ | 0.034                           | 4.15           | 3.15           | 23              |
| HPC6045CF-6R8M | 6.80                           | $\pm 20\%$ | 0.031                           | 3.90           | 3.00           | 20              |
| HPC6045CF-8R2M | 8.20                           | $\pm 20\%$ | 0.043                           | 3.90           | 2.60           | 21              |
| HPC6045CF-100M | 10.0                           | $\pm 20\%$ | 0.048                           | 3.20           | 2.45           | 15              |
| HPC6045CF-120M | 12.0                           | $\pm 20\%$ | 0.058                           | 2.80           | 2.20           | 13              |
| HPC6045CF-150M | 15.0                           | $\pm 20\%$ | 0.068                           | 2.50           | 2.05           | 12              |
| HPC6045CF-180M | 18.0                           | $\pm 20\%$ | 0.081                           | 2.20           | 1.85           | 10              |
| HPC6045CF-220M | 22.0                           | $\pm 20\%$ | 0.089                           | 2.05           | 1.80           | 10              |
| HPC6045CF-270M | 27.0                           | $\pm 20\%$ | 0.102                           | 1.90           | 1.65           | 9.2             |
| HPC6045CF-330M | 33.0                           | $\pm 20\%$ | 0.137                           | 1.65           | 1.45           | 7.8             |
| HPC6045CF-390M | 39.0                           | $\pm 20\%$ | 0.180                           | 1.50           | 1.25           | 7.8             |
| HPC6045CF-470M | 47.0                           | $\pm 20\%$ | 0.200                           | 1.40           | 1.20           | 6.4             |
| HPC6045CF-510M | 51.0                           | $\pm 20\%$ | 0.207                           | 1.35           | 1.15           | 6.4             |
| HPC6045CF-560M | 56.0                           | $\pm 20\%$ | 0.221                           | 1.30           | 1.10           | 6.4             |
| HPC6045CF-620M | 62.0                           | $\pm 20\%$ | 0.235                           | 1.25           | 1.10           | 6.4             |
| HPC6045CF-680M | 68.0                           | $\pm 20\%$ | 0.289                           | 1.20           | 1.00           | 6.4             |
| HPC6045CF-750M | 75.0                           | $\pm 20\%$ | 0.305                           | 1.15           | 0.95           | 5.0             |
| HPC6045CF-820M | 82.0                           | $\pm 20\%$ | 0.341                           | 1.05           | 0.90           | 4.9             |
| HPC6045CF-910M | 91.0                           | $\pm 20\%$ | 0.359                           | 1.00           | 0.85           | 4.9             |
| HPC6045CF-101M | 100                            | $\pm 20\%$ | 0.433                           | 0.95           | 0.80           | 4.2             |
| HPC6045CF-121M | 120                            | $\pm 20\%$ | 0.484                           | 0.85           | 0.77           | 4.2             |
| HPC6045CF-151M | 150                            | $\pm 20\%$ | 0.580                           | 0.80           | 0.70           | 4.2             |
| HPC6045CF-221M | 220                            | $\pm 20\%$ | 0.834                           | 0.70           | 0.59           | 3.5             |
| HPC6045CF-331M | 330                            | $\pm 20\%$ | 1.270                           | 0.57           | 0.57           | 2.8             |
| HPC6045CF-471M | 470                            | $\pm 20\%$ | 1.800                           | 0.50           | 0.42           | 2               |
| HPC6045CF-681M | 680                            | $\pm 20\%$ | 2.500                           | 0.42           | 0.33           | 1.7             |
| HPC6045CF-102M | 1000                           | $\pm 20\%$ | 4.500                           | 0.30           | 0.30           | 1.4             |
| HPC6045CF-152M | 1500                           | $\pm 20\%$ | 6.500                           | 0.24           | 0.21           | 0.8             |

## Note:

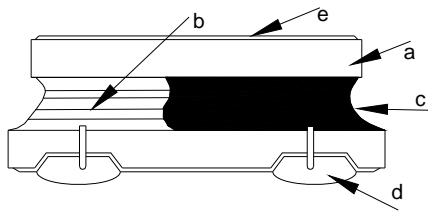
- 1.All test data referenced to 25°C ambient , Ls:100KHz/1V.
- 2.Isat: DC current at which the inductance drops approximate 30% from its value without current;
- 3.Irms: DC current that causes the temperature rise ( $\Delta T = 40^\circ\text{C}$ ) from 25°C ambient.

| Part Number    | Inductance<br>L0 (uH)<br>@ 0 A | Tolerance  | DCR( $\Omega$ )<br>$\pm 30\%$ . | Isat(A)<br>Max | Irms(A)<br>Max | SRF(MHz)<br>min |
|----------------|--------------------------------|------------|---------------------------------|----------------|----------------|-----------------|
| HPC8040CF-R82Y | 0.82                           | $\pm 30\%$ | 0.008                           | 13.80          | 6.30           | 94              |
| HPC8040CF-1R0Y | 1.00                           | $\pm 30\%$ | 0.008                           | 9.85           | 6.30           | 89              |
| HPC8040CF-1R5Y | 1.50                           | $\pm 30\%$ | 0.010                           | 8.15           | 5.65           | 67              |
| HPC8040CF-2R2Y | 2.20                           | $\pm 30\%$ | 0.012                           | 7.10           | 5.15           | 41              |
| HPC8040CF-3R3M | 3.30                           | $\pm 20\%$ | 0.017                           | 6.50           | 4.40           | 27              |
| HPC8040CF-4R7M | 4.70                           | $\pm 20\%$ | 0.019                           | 5.90           | 4.10           | 24              |
| HPC8040CF-6R8M | 6.80                           | $\pm 20\%$ | 0.024                           | 4.55           | 3.60           | 20              |
| HPC8040CF-8R2M | 8.20                           | $\pm 20\%$ | 0.026                           | 4.20           | 3.45           | 17              |
| HPC8040CF-100M | 10.0                           | $\pm 20\%$ | 0.042                           | 3.60           | 3.30           | 15              |
| HPC8040CF-150M | 15.0                           | $\pm 20\%$ | 0.047                           | 2.95           | 2.60           | 12              |
| HPC8040CF-180M | 18.0                           | $\pm 20\%$ | 0.053                           | 2.70           | 2.40           | 11              |
| HPC8040CF-220M | 22.0                           | $\pm 20\%$ | 0.069                           | 2.40           | 2.10           | 9.5             |
| HPC8040CF-330M | 33.0                           | $\pm 20\%$ | 0.097                           | 2.05           | 1.80           | 7.8             |
| HPC8040CF-390M | 39.0                           | $\pm 20\%$ | 0.107                           | 1.95           | 1.70           | 7.8             |
| HPC8040CF-470M | 47.0                           | $\pm 20\%$ | 0.136                           | 1.75           | 1.55           | 6.4             |
| HPC8040CF-560M | 56.0                           | $\pm 20\%$ | 0.148                           | 1.55           | 1.45           | 6.4             |
| HPC8040CF-680M | 68.0                           | $\pm 20\%$ | 0.196                           | 1.45           | 1.25           | 4.9             |
| HPC8040CF-820M | 82.0                           | $\pm 20\%$ | 0.225                           | 1.30           | 1.15           | 5.9             |
| HPC8040CF-910M | 91.0                           | $\pm 20\%$ | 0.272                           | 1.20           | 1.05           | 4.9             |
| HPC8040CF-101M | 100                            | $\pm 20\%$ | 0.290                           | 1.15           | 1.00           | 4.2             |
| HPC8040CF-121M | 120                            | $\pm 20\%$ | 0.334                           | 1.05           | 0.95           | 3.5             |
| HPC8040CF-151M | 150                            | $\pm 20\%$ | 0.410                           | 1.10           | 0.85           | 3.5             |
| HPC8040CF-221M | 220                            | $\pm 20\%$ | 0.599                           | 0.85           | 0.80           | 3.5             |
| HPC8040CF-331M | 330                            | $\pm 20\%$ | 0.889                           | 0.68           | 0.64           | 2.8             |

## Note:

- 1.All test data referenced to 25°C ambient , Ls:100KHz/1V.
- 2.Isat: DC current at which the inductance drops approximate 30% from its value without current;
- 3.Irms: DC current that causes the temperature rise ( $\Delta T = 40^\circ\text{C}$ ) from 25°C ambient.

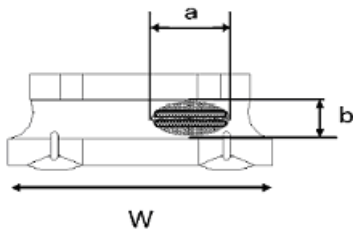
**5. Material List**



| NO | Items  | Materials           |
|----|--------|---------------------|
| a  | Core   | Ferrite Core        |
| b  | Wire   | Copper Wire         |
| c  | Glue   | Epoxy with magnetic |
| d  | Solder | Ag/Ni/Sn            |
| e  | ink    | Halogen-free ketone |

**Void appearance tolerance Limit**

Size of voids occurring to coating resin is specified below.

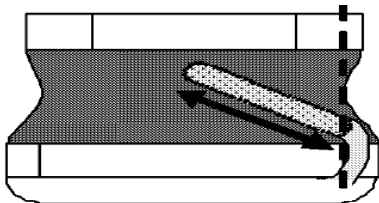


Appearance of exposed wire tolerance limit :

1. Width direction ( dimension a ) : Acceptable when  $a \leq w/2$   
Nonconforming when  $a > w/2$
2. Length direction ( dimension b ) : Dimension b is not specified.
3. The total area of exposed wire occurring to each sides is not greater than 50% of coating resin area, and is acceptable.

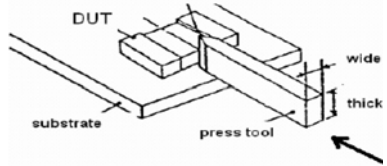
**External appearance criterion for exposed wire**

Exposed end of the winding wire at the secondary side should be 2mm and below.



## 6. Reliability and Test Condition

| Item                               | Performance  | Test Condition   |
|------------------------------------|--|--|
| Operating temperature              | -40~+125°C (Including self - temperature rise)   |  |
| Storage temperature                | -40~+125°C (on board)  |  |
| <b>Electrical Performance Test</b> |  |  |
| Inductance                         | Refer to standard electrical characteristics list.   | HP4284A,CH11025,CH3302,CH1320,CH1320S<br>LCR Meter.  |
| DCR                                |  | CH16502,Agilent33420A Micro-Ohm Meter.   |
| Saturation Current (Isat)          | Approximately $\Delta L30\%$   | Saturation DC Current (Isat) will cause L0 to drop $\Delta L(\%)$  |
| Heat Rated Current (Irms)          | $\Delta T40^{\circ}\text{C}$   | Heat Rated Current (Irms) will cause the coil temperature rise $\Delta T(^{\circ}\text{C})$ without core loss.<br>1. Applied the allowed DC current.<br>2. Temperature measured by digital surface thermometer   |
| <b>Reliability Test</b>            |  |  |
| Life Test                          | Appearance : No damage.<br>Inductance : within $\pm 10\%$ of initial value<br>Q : Shall not exceed the specification value.<br>RDC : within $\pm 15\%$ of initial value and shall not exceed the specification value | Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles)<br>Temperature : 125 $\pm 2^{\circ}\text{C}$ (Inductor)<br>Applied current : rated current<br>Duration : 1000 $\pm 12$ hrs<br>Measured at room temperature after placing for 24 $\pm 2$ hrs   |
| Load Humidity                      |  | Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles)<br>Humidity : 85 $\pm 2\%$ R.H,<br>Temperature : 85 $\pm 2^{\circ}\text{C}$<br>Duration : 1000hrs Min. with 100% rated current<br>Measured at room temperature after placing for 24 $\pm 2$ hrs   |
| Moisture Resistance                |  | Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles)<br>1. Baked at 50 $\pm 2^{\circ}\text{C}$ for 25hrs, measured at room temperature after placing for 4 hrs.<br>2. Raise temperature to 65 $\pm 2^{\circ}\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25 $\pm 2^{\circ}\text{C}$ in 2.5hrs.<br>3. Raise temperature to 65 $\pm 2^{\circ}\text{C}$ 90-100%RH in 2.5hrs, and keep 3 hours, cool down to 25 $\pm 2^{\circ}\text{C}$ in 2.5hrs,keep at 25 $\pm 2^{\circ}\text{C}$ for 2 hrs then keep at -10 $\pm 2^{\circ}\text{C}$ for 3 hrs<br>4. Keep at 25 $\pm 2^{\circ}\text{C}$ 80-100%RH for 15min and vibrate at the frequency of 10 to 55 Hz to 10 Hz, measure at room temperature after placing for 1~2 hrs. |
| Thermal shock                      |  | Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles)<br>Condition for 1 cycle<br>Step1 : -40 $\pm 2^{\circ}\text{C}$ 30 $\pm 5$ min<br>Step2 : 25 $\pm 2^{\circ}\text{C}$ $\leq 0.5$ min<br>Step3 : 125 $\pm 2^{\circ}\text{C}$ 30 $\pm 5$ min<br>Number of cycles : 500<br>Measured at room temperature after placing for 24 $\pm 2$ hrs  |
| Vibration                          |  | Oscillation Frequency: 10 ~ 2K ~ 10Hz for 20 minutes<br>Equipment : Vibration checker<br>Total Amplitude:1.52mm $\pm 10\%$<br>Testing Time : 12 hours(20 minutes, 12 cycles each of 3 orientations).   |

| Item                         | Performance   | Test Condition  |                  |                            |                            |                     |                            |                |    |    |           |      |      |    |    |           |      |
|------------------------------|---|---|------------------|----------------------------|----------------------------|---------------------|----------------------------|----------------|----|----|-----------|------|------|----|----|-----------|------|
| Shock                        | Appearance : No damage.<br>Inductance : within±10% of initial value<br>Q : Shall not exceed the specification value.<br>RDC : within ±15% of initial value and shall not exceed the specification value | <table border="1"> <thead> <tr> <th>Type</th> <th>Peak value (g's)</th> <th>Normal duration (D) (ms)</th> <th>Wave form</th> <th>Velocity change (Vi)ft/sec</th> </tr> </thead> <tbody> <tr> <td>SMD</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> <tr> <td>Lead</td> <td>50</td> <td>11</td> <td>Half-sine</td> <td>11.3</td> </tr> </tbody> </table>  | Type             | Peak value (g's)           | Normal duration (D) (ms)   | Wave form           | Velocity change (Vi)ft/sec | SMD            | 50 | 11 | Half-sine | 11.3 | Lead | 50 | 11 | Half-sine | 11.3 |
| Type                         | Peak value (g's)  | Normal duration (D) (ms)  | Wave form        | Velocity change (Vi)ft/sec |                            |                     |                            |                |    |    |           |      |      |    |    |           |      |
| SMD                          | 50  | 11  | Half-sine        | 11.3                       |                            |                     |                            |                |    |    |           |      |      |    |    |           |      |
| Lead                         | 50  | 11  | Half-sine        | 11.3                       |                            |                     |                            |                |    |    |           |      |      |    |    |           |      |
| Bending                      |   | Shall be mounted on a FR4 substrate of the following dimensions: >=0805:40x100x1.2mm<br><0805:40x100x0.8mm<br>Bending depth: >=0805:1.2mm<br><0805:0.8mm<br>duration of 10 sec.   |                  |                            |                            |                     |                            |                |    |    |           |      |      |    |    |           |      |
| Solderability                | More than 95% of the terminal electrode should be covered with solder.  | Preheat: 150°C,60sec.<br>Solder: Sn96.5% Ag3% Cu0.5%<br>Temperature: 245±5°C.<br>Flux for lead free: Rosin. 9.5%.<br>Dip time: 4±1sec.<br>Depth: completely cover the termination   |                  |                            |                            |                     |                            |                |    |    |           |      |      |    |    |           |      |
| Resistance to Soldering Heat |   | Number of heat cycles: 1<br><br><table border="1"> <thead> <tr> <th>Temperature (°C)</th> <th>Time(s)</th> <th>Temperature ramp/immersion</th> </tr> </thead> <tbody> <tr> <td>260 ±5(solder temp)</td> <td>10 ±1</td> <td>25mm/s ±6 mm/s</td> </tr> </tbody> </table>  | Temperature (°C) | Time(s)                    | Temperature ramp/immersion | 260 ±5(solder temp) | 10 ±1                      | 25mm/s ±6 mm/s |    |    |           |      |      |    |    |           |      |
| Temperature (°C)             | Time(s)   | Temperature ramp/immersion  |                  |                            |                            |                     |                            |                |    |    |           |      |      |    |    |           |      |
| 260 ±5(solder temp)          | 10 ±1   | 25mm/s ±6 mm/s  |                  |                            |                            |                     |                            |                |    |    |           |      |      |    |    |           |      |
| Terminal Strength            | Appearance : No damage.<br>Inductance : within±10% of initial value<br>Q : Shall not exceed the specification value.<br>RDC : within ±15% of initial value and shall not exceed the specification value | Preconditioning: Run through IR reflow for 2 times.( IPC/JEDEC J-STD-020DClassification Reflow Profiles<br>With the component mounted on a PCB with the device to be tested, apply a force (>0805:1kg , <=0805:0.5kg)to the side of a device being tested. This force shall be applied for 60 +1 seconds. Also the force shall be applied gradually as not to apply a shock to the component being tested.<br><br> |                  |                            |                            |                     |                            |                |    |    |           |      |      |    |    |           |      |

## 7. 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. TAI-TECH 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.

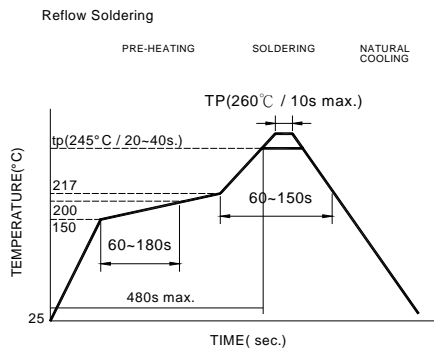
### (2) Solder re-flow:

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

### (3) Soldering Iron:

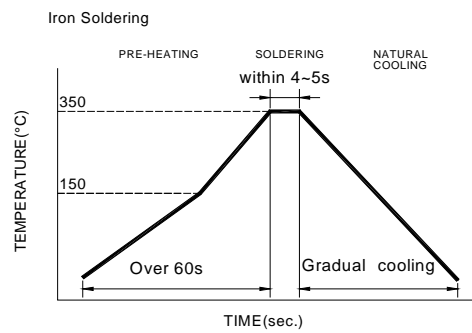
Products attachment with a soldering iron is discouraged due to the inherent process control limitations. In the event that a soldering iron must be employed the following precautions are recommended.

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



Reflow times: 3 times max.

Fig.1

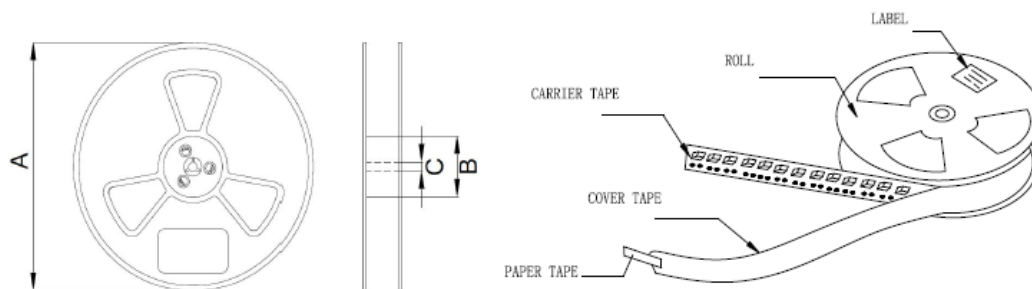


Iron Soldering times: 1 times max.

Fig.2

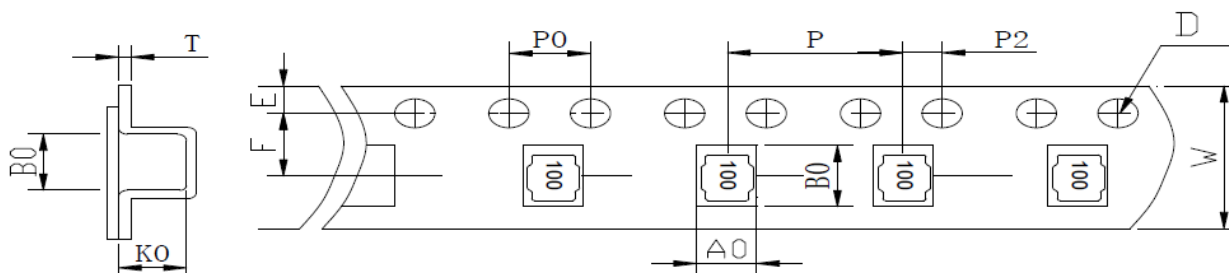
## 8. Packaging Information

### (1) Reel Dimension



| Type    | A(mm) | B(mm) | C(mm) |
|---------|-------|-------|-------|
| HPC4018 | 330   | 100   | 13    |
| HPC4030 | 330   | 100   | 13    |
| HPC5020 | 330   | 100   | 13    |
| HPC5040 | 330   | 100   | 13    |
| HPC6020 | 330   | 100   | 13    |
| HPC6028 | 330   | 100   | 13    |
| HPC6045 | 330   | 100   | 13    |
| HPC8040 | 330   | 100   | 13    |

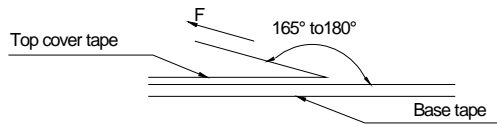
### (2) Tape Dimension



| Series | Size | W(mm) | Ao(mm) | Bo(mm) | Ko(mm) | D(mm) | F(mm) | E(mm) | P (mm) | P0(mm) | P2(mm) | T(mm) |
|--------|------|-------|--------|--------|--------|-------|-------|-------|--------|--------|--------|-------|
| HPC    | 4018 | 12.0  | 4.3    | 4.3    | 2.2    | 1.5   | 5.5   | 1.75  | 8.0    | 4.0    | 2.0    | 0.3   |
| HPC    | 4030 | 12.0  | 4.3    | 4.3    | 3.4    | 1.5   | 5.5   | 1.75  | 8.0    | 4.0    | 2.0    | 0.3   |
| HPC    | 5020 | 12.0  | 5.4    | 5.4    | 2.4    | 1.5   | 5.5   | 1.75  | 8.0    | 4.0    | 2.0    | 0.3   |
| HPC    | 5040 | 12.0  | 5.4    | 5.4    | 4.4    | 1.5   | 5.5   | 1.75  | 8.0    | 4.0    | 2.0    | 0.3   |
| HPC    | 6020 | 16.0  | 6.4    | 6.4    | 2.4    | 1.5   | 7.5   | 1.75  | 8.0    | 4.0    | 2.0    | 0.35  |
| HPC    | 6028 | 16.0  | 6.4    | 6.4    | 3.2    | 1.5   | 7.5   | 1.75  | 8.0    | 4.0    | 2.0    | 0.35  |
| HPC    | 6045 | 16.0  | 6.4    | 6.4    | 4.8    | 1.5   | 7.5   | 1.75  | 8.0    | 4.0    | 2.0    | 0.35  |
| HPC    | 8040 | 16.0  | 8.4    | 8.4    | 4.4    | 1.5   | 7.5   | 1.75  | 12.0   | 4.0    | 2.0    | 0.35  |

### (3) Packaging Quantity

| HPC      | 4018 | 4030 | 5020 | 5040 | 6020 | 6028 | 6045 | 8040 |
|----------|------|------|------|------|------|------|------|------|
| PCS/Reel | 3000 | 2000 | 2000 | 1500 | 2500 | 2000 | 1500 | 1000 |

**(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 standard).

| Room Temp.<br>(°C) | Room Humidity<br>(%) | Room atm<br>(hPa) | Tearing Speed<br>mm/min |
|--------------------|----------------------|-------------------|-------------------------|
| 5~35               | 45~85                | 860~1060          | 300                     |

**Application Notice**

- Storage Conditions (component level)
  - To maintain the solderability of terminal electrodes:
    1. TAI-TECH products meet IPC/JEDEC J-STD-020D standard-MSL, level 1.
    2. Temperature and humidity conditions: Less than 40°C 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.



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