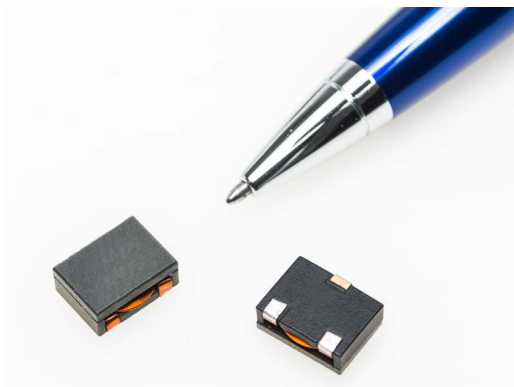


# HCV1206

## High current power inductors



### Product features

- Flat-wire construction
- Low DCR, high efficiency
- Secure 3 terminal mounting
- 12.7 mm x 10.15 mm footprint surface mount package in a 5.1 mm height
- Ferrite core material

### Applications

- Compatible with Picor® Cool-Power® ZVS Buck and Buck-Boost Regulator Families (Picor part number series PI37xx and PI35xx)

### Environmental data

- Storage temperature range (component): -55 °C to +125 °C
- Operating temperature range: -55 °C to +125 °C (ambient plus self-temperature rise)
- Solder reflow temperature: J-STD-020 (latest revision) compliant



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## Product Specifications

| Part Number <sup>4</sup> | OCL <sup>1</sup><br>( $\mu$ H) $\pm 10\%$ | $I_{rms}^2$<br>(A) | $I_{sat}^3$<br>(A) | DCR (m $\Omega$ )<br>@ +20 °C<br>$\pm 10\%$ |
|--------------------------|-------------------------------------------|--------------------|--------------------|---------------------------------------------|
| HCV1206-R42-R            | 0.42                                      | 16                 | 42                 | 3.15                                        |
| HCV1206-R48-R            | 0.48                                      | 16                 | 37                 | 3.15                                        |
| HCV1206-R90-R            | 0.90                                      | 14                 | 28                 | 4.6                                         |
| HCV1206-1R0-R            | 1.0                                       | 14                 | 24.5               | 4.6                                         |
| HCV1206-1R5-R            | 1.5                                       | 12                 | 21                 | 6.0                                         |
| HCV1206-2R0-R            | 2.0                                       | 12                 | 16                 | 6.0                                         |
| HCV1206-3R0-R            | 3.0                                       | 11                 | 13                 | 7.4                                         |

1. Open Circuit Inductance (OCL) Test Parameters: 100 kHz, 0.1 Vrms, 0.0 Adc, +25 °C

2.  $I_{rms}$ : DC current for an approximate temperature rise of 40 °C without core loss. Derating is necessary for AC currents. PCB layout, trace thickness and width, air-flow, and proximity of other heat generating components will affect the temperature rise. It is recommended that the temperature of the part not exceed +125 °C under worst case operating conditions verified in the end application.

3.  $I_{sat}$ : Peak current for approximately 5% rolloff @ +25 °C

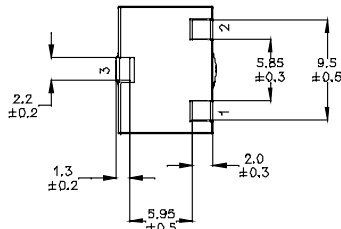
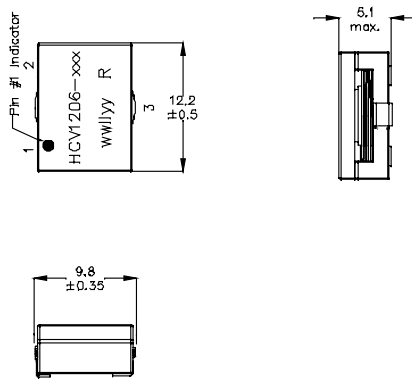
4. Part Number Definition: HCV1206-xxx-R

HCV1206 = Product code and size

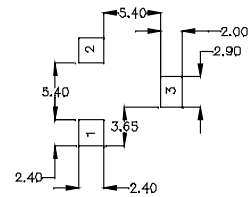
xxx=Inductance value in  $\mu$ H,

-R suffix = RoHS compliant

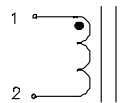
## Dimensions- mm



## Recommended Pad Layout



## Schematic



Part marking: HCV1206-xxx, xxx=inductance value in  $\mu$ H, R=decimal point, wwlllyy= date code, R=revision level

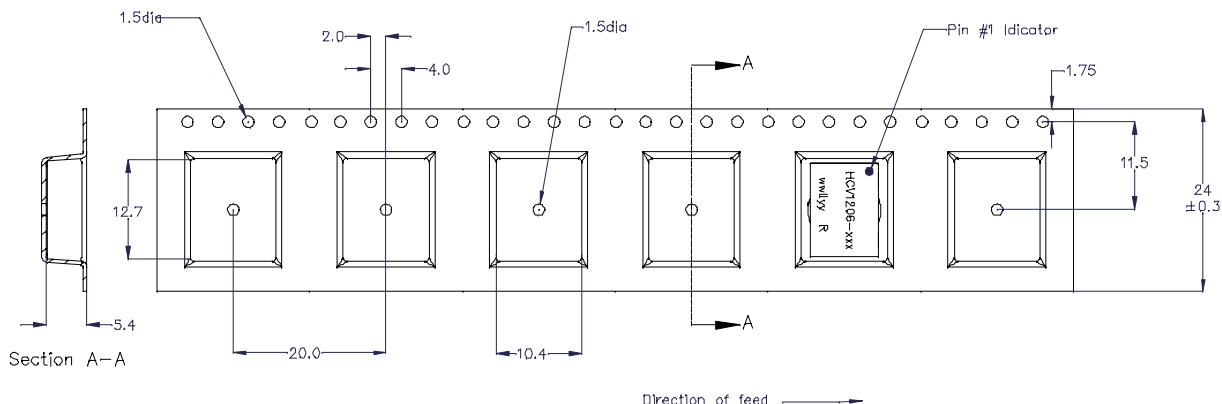
Soldering surfaces to be coplanar within 0.1 millimeters

Pin 3 is for mounting stability. No connection.

Do not route traces or vias underneath the inductor.

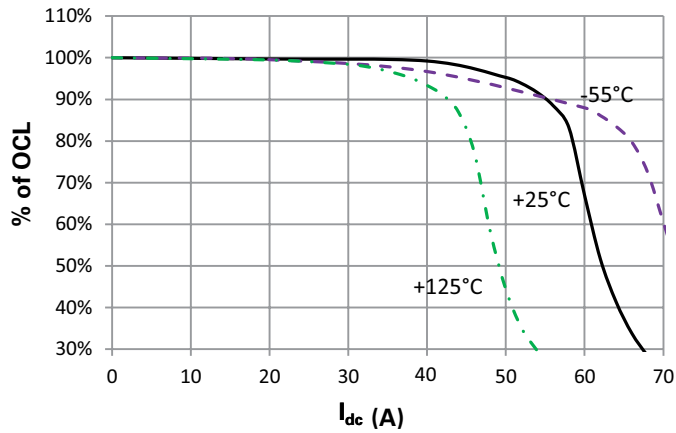
## Packaging information- mm

Supplied in tape and reel packaging, 550 parts per 13" diameter reel

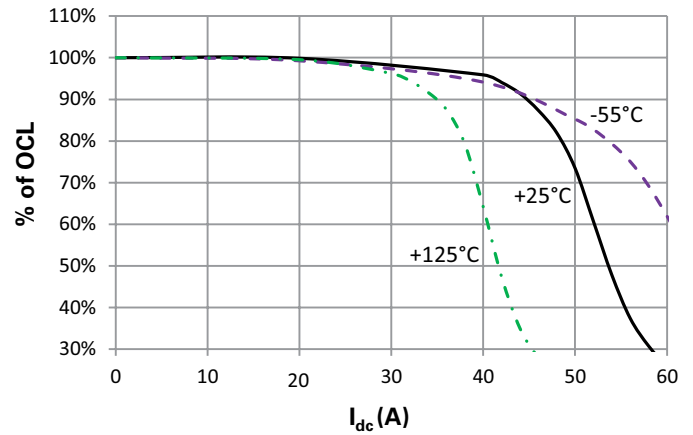


Inductance characteristics

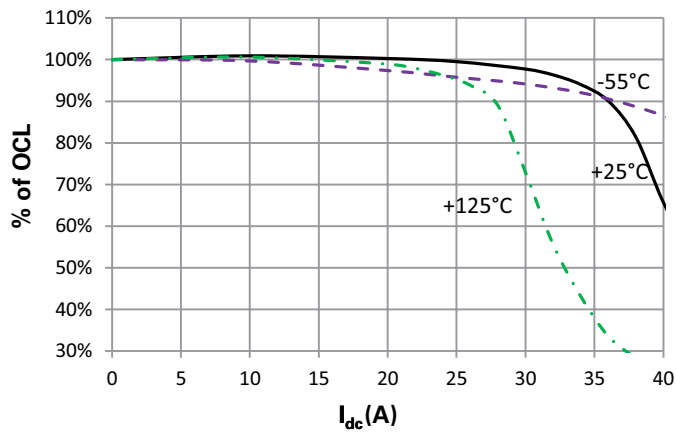
HCV1206-R42-R



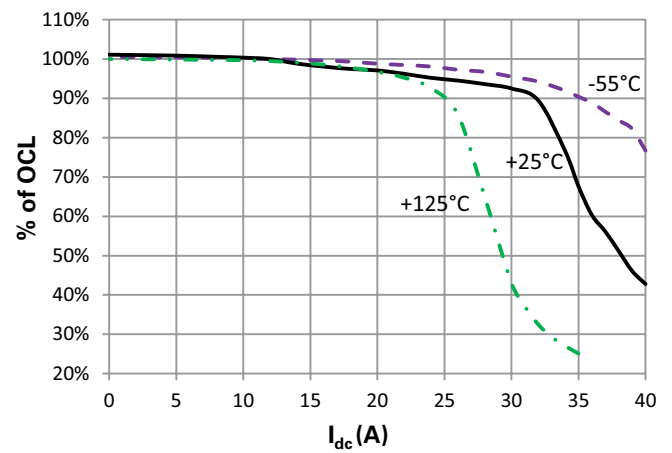
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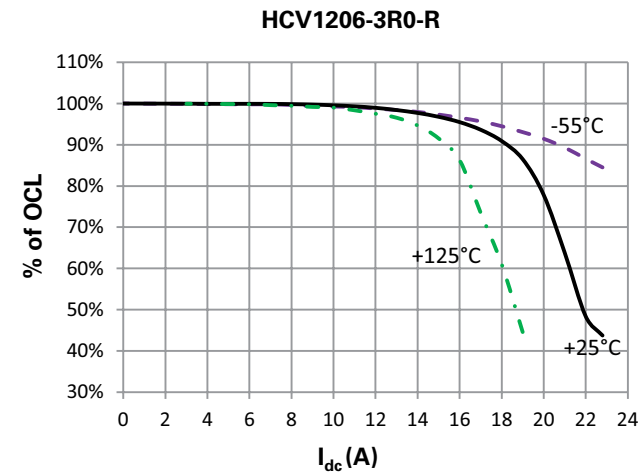
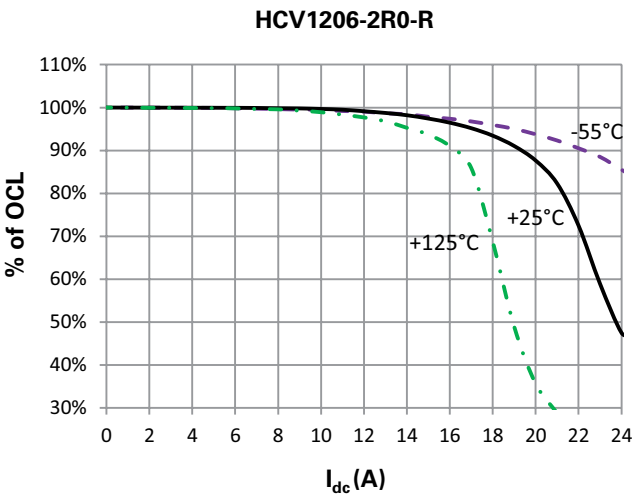
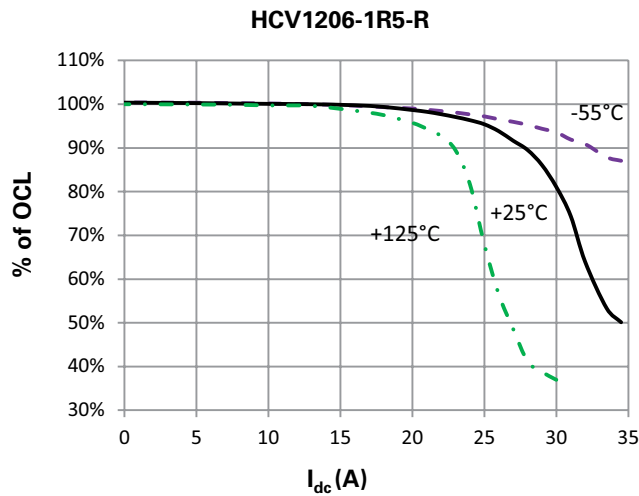
HCV1206-R90-R



HCV1206-1R0-R



Inductance characteristics



## Solder reflow profile

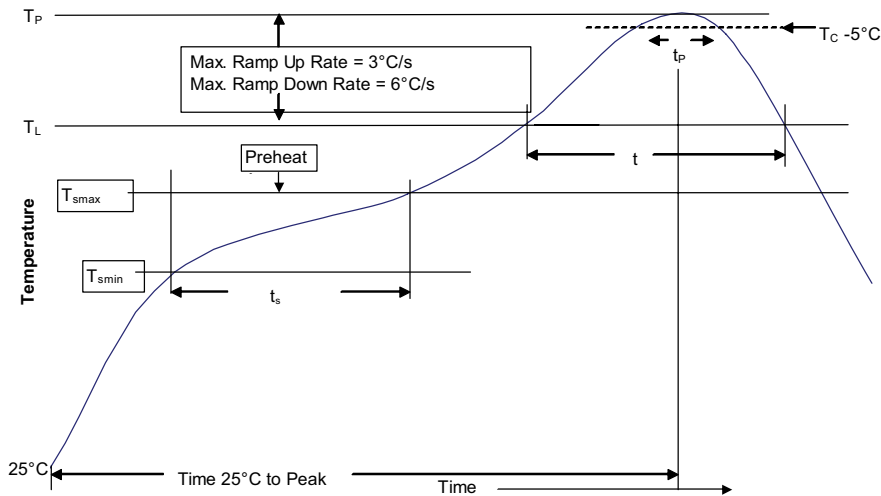


Table 1 - Standard SnPb Solder ( $T_C$ )

| Package Thickness | Volume mm <sup>3</sup> <350 | Volume mm <sup>3</sup> ≥350 |
|-------------------|-----------------------------|-----------------------------|
| <2.5mm)           | 235°C                       | 220°C                       |
| ≥2.5mm            | 220°C                       | 220°C                       |

Table 2 - Lead (Pb) Free Solder ( $T_C$ )

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

## Reference JEDEC J-STD-020

| Profile Feature                                                                    | Standard SnPb Solder | Lead (Pb) Free Solder |
|------------------------------------------------------------------------------------|----------------------|-----------------------|
| Preheat and Soak                                                                   |                      |                       |
| • Temperature min. ( $T_{smin}$ )                                                  | 100°C                | 150°C                 |
| • Temperature max. ( $T_{smax}$ )                                                  | 150°C                | 200°C                 |
| • Time ( $T_{smin}$ to $T_{smax}$ ) ( $t_s$ )                                      | 60-120 Seconds       | 60-120 Seconds        |
| Average ramp up rate $T_{smax}$ to $T_P$                                           | 3°C/ Second Max.     | 3°C/ Second Max.      |
| Liquidous temperature ( $T_L$ )                                                    | 183°C                | 217°C                 |
| Time at liquidous ( $t_L$ )                                                        | 60-150 Seconds       | 60-150 Seconds        |
| Peak package body temperature ( $T_P$ )*                                           | Table 1              | Table 2               |
| Time ( $t_P$ )** within 5 °C of the specified classification temperature ( $T_C$ ) | 20 Seconds**         | 30 Seconds**          |
| Average ramp-down rate ( $T_P$ to $T_{smax}$ )                                     | 6°C/ Second Max.     | 6°C/ Second Max.      |
| Time 25°C to Peak Temperature                                                      | 6 Minutes Max.       | 8 Minutes Max.        |

\* Tolerance for peak profile temperature ( $T_P$ ) is defined as a supplier minimum and a user maximum.

\*\* Tolerance for time at peak profile temperature ( $t_P$ ) is defined as a supplier minimum and a user maximum.

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