



### The history of revision change for the specification

| NAME OF FILE |              | SPECIFICATION OF POWER CHOKE                                                                                                                                                                                                                      |            |           |             |
|--------------|--------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-----------|-------------|
| PART NUMBER  |              | DCYC1350A-T Series                                                                                                                                                                                                                                |            |           |             |
| REV.         | REVISED DATE | Description                                                                                                                                                                                                                                       | APPR.      | CHK.      | ISSU.       |
| A0           | 2021/04/26   | Preliminary Specification                                                                                                                                                                                                                         | Haifei Lou | Bingo Guo | Yaling Li   |
| A1           | 2021/09/13   | Add R36/R50/470,update the parameter of some<br>P/N:1R0:DCR(Max) from 2.42 to 2.2;1R5: DCR(Max) from 3.16 to 3.2;4R7:Irms from 12 to 13;6R8: Irms from 11 to 12;150: Irms from 7 to 7.8, DCR(Max) from 33.4 to 30;330: DCR(Max) from 85.5 to 84 。 | Haifei Lou | Bingo Guo | Dujuan Chen |
| A2           | 2021/12/21   | Update the DCR (Typ) of DCYC1350A-330M: from 74.5 to 55,DCR(max) from 84 to 73 。                                                                                                                                                                  | Haifei Lou | Bingo Guo | Dujuan Chen |
|              |              |                                                                                                                                                                                                                                                   |            |           |             |
|              |              |                                                                                                                                                                                                                                                   |            |           |             |
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|              |              |                                                                                                                                                                                                                                                   |            |           |             |

# Power Choke DCYC1350A-T Series Type

## Features

- High performance (Isat) realized by metal dust core.
- Low profile: Thickness max. 5.0mm
- Low loss realized with low DCR
- 100% lead (Pb) free meet RoHS standard

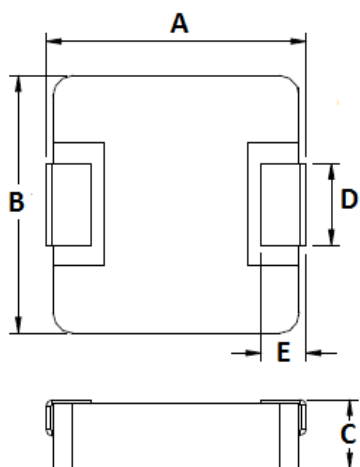
## Application

- DC/DC converter in portable device
- Tablet pc , CPU V core, desktop etc.
- POL & VRMs for server.

## Environmental Data

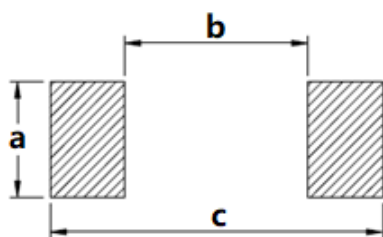
- Storage temperature range (Component): -55 °C to +125 °C
- Operating temperature range: -55 °C to +125 °C (ambient plus self-temperature rise)

## Dimensions



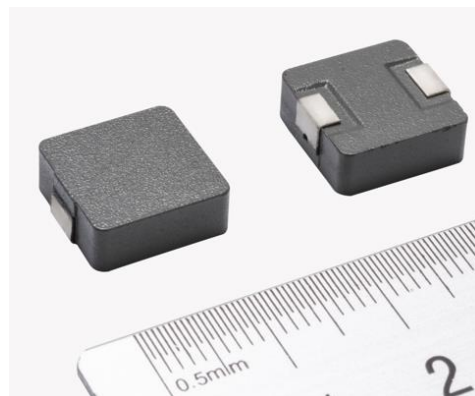
| Code | Dimensions (mm) |
|------|-----------------|
| A    | 13.3±0.5        |
| B    | 12.2±0.3        |
| C    | 5.0max          |
| D    | 4.0±0.5         |
| E    | 2.54±0.3        |

## Recommended Pad Layout



|   |      |
|---|------|
| a | 4.9  |
| b | 7.7  |
| c | 14.2 |

Unit: mm



## Marking



XXX= Inductance value in  $\mu\text{H}$

WW= weekly letter code

Y= Year with letter code

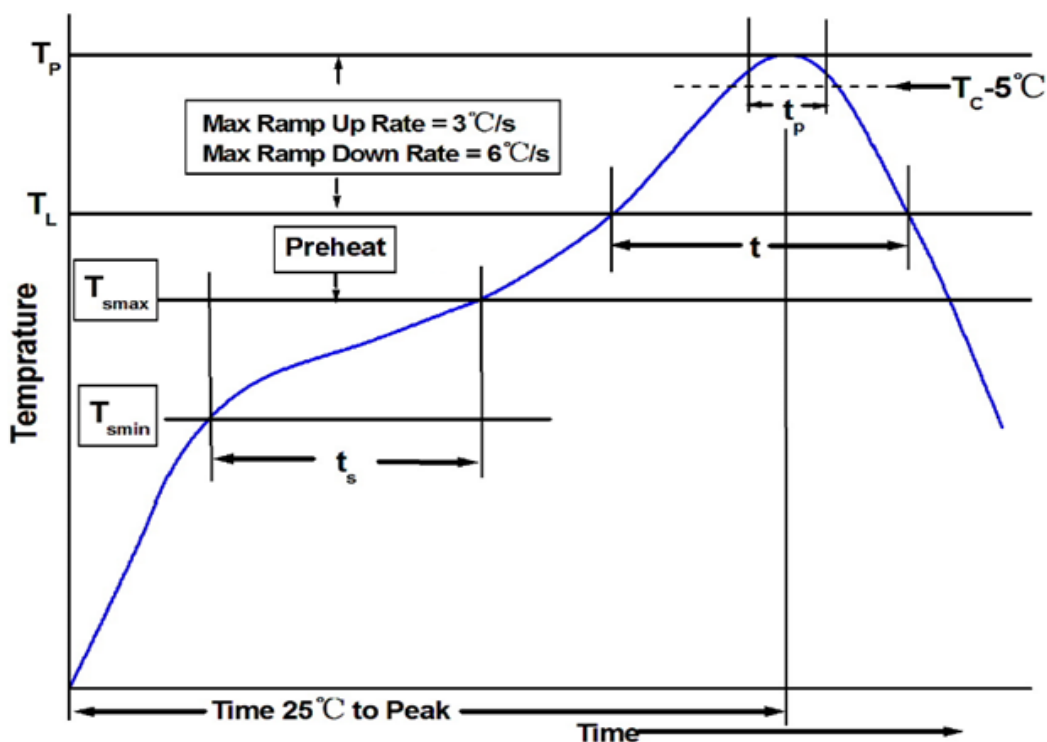
## Specifications

| Part Number <sup>4</sup> | $L_0^1$ ( $\mu\text{H}$ )<br>$\pm 20\%$ | $I_{rms}^2$ (A)<br>max | $I_{sat}^3$ (A)<br>max | DCR (m $\Omega$ ) @ 25°C |      |
|--------------------------|-----------------------------------------|------------------------|------------------------|--------------------------|------|
|                          |                                         |                        |                        | typ                      | max  |
| DCYC1350A-R10M-T         | 0.10                                    | 55.0                   | 118                    | 0.52                     | 0.59 |
| DCYC1350A-R22M-T         | 0.22                                    | 51.0                   | 110                    | 0.63                     | 0.72 |
| DCYC1350A-R33M-T         | 0.33                                    | 42.0                   | 80.0                   | 0.80                     | 0.92 |
| DCYC1350A-R36M-T         | 0.36                                    | 42.0                   | 50.0                   | 0.77                     | 0.85 |
| DCYC1350A-R47M-T         | 0.47                                    | 38.0                   | 65.0                   | 0.80                     | 0.92 |
| DCYC1350A-R50M-T         | 0.50                                    | 38.0                   | 48.0                   | 1.04                     | 1.15 |
| DCYC1350A-R56M-T         | 0.56                                    | 36.0                   | 55.0                   | 1.15                     | 1.33 |
| DCYC1350A-R68M-T         | 0.68                                    | 34.0                   | 54.0                   | 1.15                     | 1.33 |
| DCYC1350A-R82M-T         | 0.82                                    | 31.0                   | 53.0                   | 1.40                     | 1.61 |
| DCYC1350A-1R0M-T         | 1.00                                    | 29.0                   | 50.0                   | 2.10                     | 2.20 |
| DCYC1350A-1R5M-T         | 1.50                                    | 23.0                   | 48.0                   | 2.75                     | 3.20 |
| DCYC1350A-1R8M-T         | 1.80                                    | 21.0                   | 40.0                   | 4.00                     | 4.60 |
| DCYC1350A-2R2M-T         | 2.20                                    | 20.0                   | 32.0                   | 4.60                     | 5.29 |
| DCYC1350A-3R3M-T         | 3.30                                    | 15.0                   | 32.0                   | 7.70                     | 9.20 |
| DCYC1350A-4R7M-T         | 4.70                                    | 13.0                   | 27.0                   | 11.0                     | 12.7 |
| DCYC1350A-5R6M-T         | 5.60                                    | 11.5                   | 22.0                   | 12.0                     | 13.8 |
| DCYC1350A-6R8M-T         | 6.80                                    | 12.0                   | 21.0                   | 13.0                     | 15.0 |
| DCYC1350A-7R8M-T         | 7.80                                    | 10.0                   | 18.5                   | 16.8                     | 19.4 |
| DCYC1350A-8R2M-T         | 8.20                                    | 9.50                   | 18.0                   | 17.5                     | 20.1 |
| DCYC1350A-100M-T         | 10.0                                    | 9.00                   | 16.0                   | 19.0                     | 21.9 |
| DCYC1350A-150M-T         | 15.0                                    | 8.00                   | 13.0                   | 29.0                     | 30.0 |
| DCYC1350A-220M-T         | 22.0                                    | 6.20                   | 10.0                   | 45.0                     | 51.8 |
| DCYC1350A-330M-T         | 33.0                                    | 5.20                   | 8.00                   | 55.0                     | 73.0 |
| DCYC1350A-470M-T         | 47.0                                    | 3.00                   | 5.00                   | 117                      | 130  |

### Note:

- Inductance ( $L_0$ ) Test Parameters: 100kHz, 0.25Vrms, 0.0Adc, +25°C
- $I_{rms}$ : 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
- $I_{sat}$ : DC current for approximately 30% rolloff at +25°C
- Part Number Definition: DCYC1350A-XXXM-T
  - DCYC1350 = Product code and size
  - A= Special optional
  - XXX = Inductance value in  $\mu\text{H}$
  - M = tolerance of inductance
  - T suffix = Internal code
- The rated current as listed is either  $I_{sat}$  or  $I_{rms}$  depending on which value is lower.
- If you require another part number please contact with us.

**Solder reflow profile**



**Table—Lead (Pb) Free Solder(Tc)**

| Package Thickness | Volume <350 mm <sup>3</sup> | Volume: 350~2000 mm <sup>3</sup> | Volume >2000 mm <sup>3</sup> |
|-------------------|-----------------------------|----------------------------------|------------------------------|
| <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 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 ~ 180 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 at liquidous (t <sub>L</sub> )                                                              | 60 ~ 150 Seconds                                                                    |
| Peak package body temperature (T <sub>P</sub> )*                                                 | Table                                                                               |
| 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>smax</sub> )                                    | 6°C / Second Max.                                                                   |
| Time 25°C to Peak Temperature                                                                    | 8 Minutes Max.                                                                      |

\* Tolerance for peak profile temperature (T<sub>p</sub>) is defined as a supplier minimum and a user maximum.

\*\* Tolerance for time at peak profile temperature (t<sub>p</sub>) is defined as a supplier minimum and a user maximum.