

# DATA SHEET

**IIC10P-14/4**

**IIC10-14/4**

**Integrated inductive components**

Product specification  
File under Ferrite Ceramics, MA01

1999 Dec 23

Integrated inductive components

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Effective core parameters

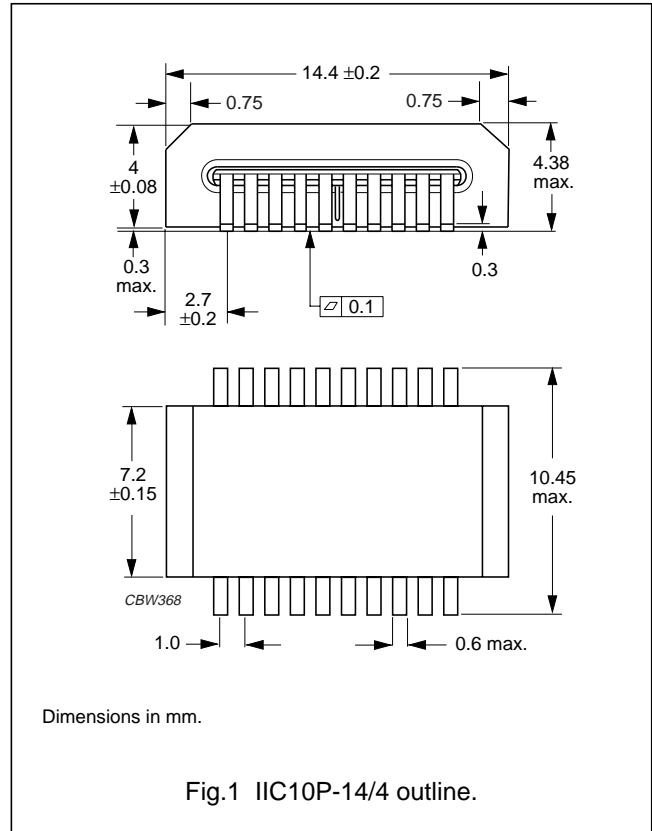
SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(I/A)$	core factor (C1)	2.47	mm <sup>-1</sup>
$V_e$	effective volume	338	mm <sup>3</sup>
$l_e$	effective length	28.9	mm
$A_e$	effective area	11.7	mm <sup>2</sup>
m	mass of core half	≈1.85	g

FEATURES

- Inductive SMD component that looks like a standard IC.
- Windings are completed by PCB tracks.
- Suitable for reflow soldering.
- Partial air gap to resist saturation.
- Number of turns can be adapted by track layout.

APPLICATIONS

- Power inductor
- Output choke
- EMI choke with bias current.



IICs with partial air gap for use as power inductors

GRADE	L (μH) FOR 10 TURNS NO BIAS CURRENT			L (μH) FOR 10 TURNS WITH A BIAS CURRENT OF 1 A			TYPE NUMBER
	f = 100 kHz; T = 25 °C	f = 500 kHz; T = 25 °C	f = 1 MHz; T = 25 °C	f = 100 kHz; T = 25 °C	f = 500 kHz; T = 25 °C	f = 1 MHz; T = 25 °C	
3C30	92 ±25%	–	–	≥5	–	–	IIC10P-14/4-3C30
3F4	–	–	45 ±25%	–	–	≥5	IIC10P-14/4-3F4
3F35	–	70 ±25%	–	–	≥5	–	IIC10P-14/4-3F35

IICs with partial air gap under power conditions

GRADE	CORE LOSS (mW)			TYPE NUMBER
	f = 100 kHz; B̂ = 100 mT; T = 100 °C	f = 500 kHz; B̂ = 50 mT; T = 100 °C	f = 1 MHz; B̂ = 30 mT; T = 100 °C	
3C30	≤30	–	–	IIC10P-14/4-3C30
3F4	–	–	≤70	IIC10P-14/4-3F4
3F35	–	≤40	–	IIC10P-14/4-3F35

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Effective core parameters

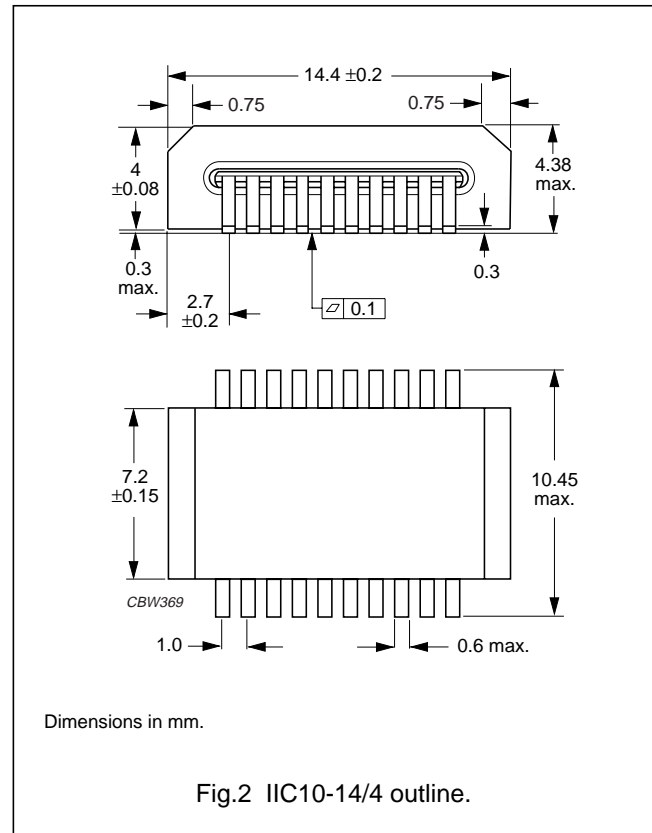
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FEATURES

- Inductive SMD component that looks like a standard IC.
- Windings are completed by PCB tracks.
- Suitable for reflow soldering.
- Several magnetic functions, depending on track layout.

APPLICATIONS

- Common-mode choke
- Mutli-line choke
- Power transformers
- Signal transformers
- Saturable inductor.



IICs for use as transformer or common-mode chokes

GRADE	$A_L$ (nH) at			CORE LOSS (mW)		TYPE NUMBER
	f = 10 kHz; T = 25 °C	f = 500 kHz; T = 25 °C	f = 1 MHz; T = 25 °C	f = 500 kHz; $\hat{B} = 50$ mT; T = 100 °C	f = 1 MHz; $\hat{B} = 30$ mT; T = 100 °C	
3F4	–	–	450 ±25%	–	≤70	IIC10-14/4-3F4
3E6	6000 ±30%	–	–	–	–	IIC10-14/4-3E6
3F35	–	700 ±25%	–	≤40	–	IIC10-14/4-3F35

IIC for use as a common-mode choke or multi-line choke

GRADE	$ Z $ Ω for 1 turn at f = 100 MHz; T = 25 °C <sup>(1)</sup>	TYPE NUMBER
3S4	≈35	IIC10-14/4-3S4

Note

1. Minimum value,  $|Z|_{\min}$  is –20%.

IIC with rectangular hysteresis loop for use in magnetic regulators

GRADE	E·t product (V·μs) at		TYPE NUMBER
	f = 100 kHz; H = 800 A/m; T = 100 °C; $I_{\text{reset}} = 70$ mA; 10 turns	f = 100 kHz; H = 800 A/m; T = 100 °C; $I_{\text{reset}} = 0$ mA; 10 turns	
3R1	≥33	≤12	IIC10-14/4-3R1

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**GENERAL DATA****R<sub>dc</sub>**

≈65 mΩ (25 °C) and ≈85 mΩ (100 °C) for 10 turns including 20 solder joints (assuming 70 μm Cu PCB tracks).

**Leadframe material**

Copper, plated with tin-lead alloy SnPb (85/15).

**Solderability**

Compatible with reflow soldering, "IEC 60068-2-58, part 2, test Ta, method 1".

**Moulding material**

Liquid crystal polymer (LCP), flame retardant in accordance with "UL 94V-0".

**Isolation voltage**

>500 V (DC) between leads and between leads and ferrite core.

**Isolation resistance**

>100 MΩ between leads.

**Inter winding capacitance**

2 windings of 5 turns:

unifilar ≈5 pF

bifilar ≈10 pF.

(depending on track layout; see Figs 1 and 2)

**Leakage inductance**

2 windings of 5 turns:

unifilar ≈1.8 μH

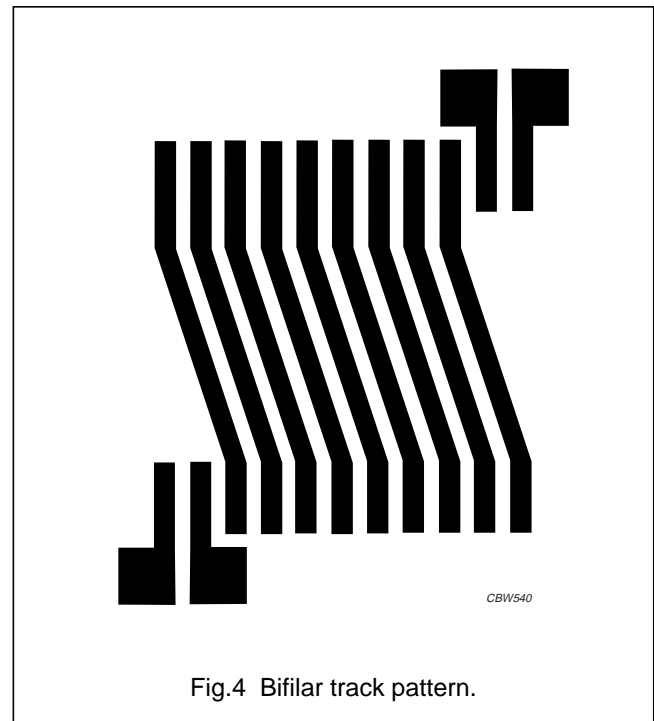
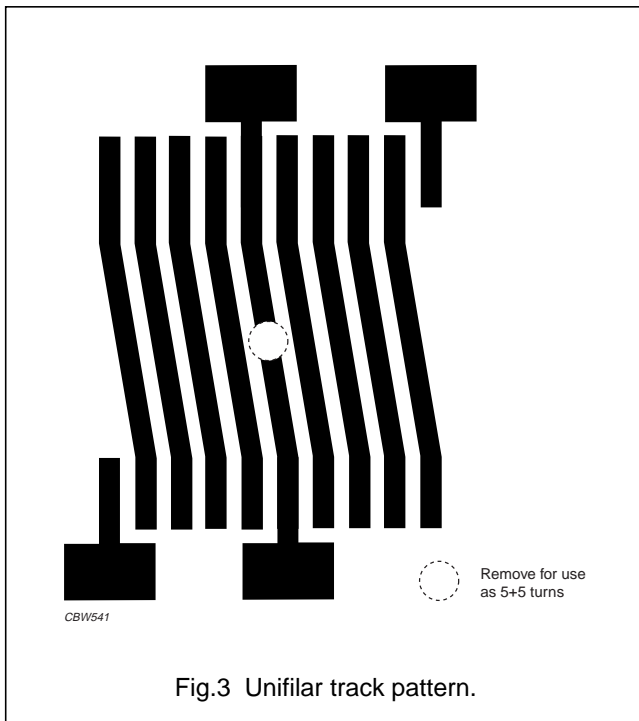
bifilar ≈0.2 μH.

**Maximum continuous current (DC)**

4 A (depending on copper track thickness on PCB).

**Maximum peak current**

10 A.

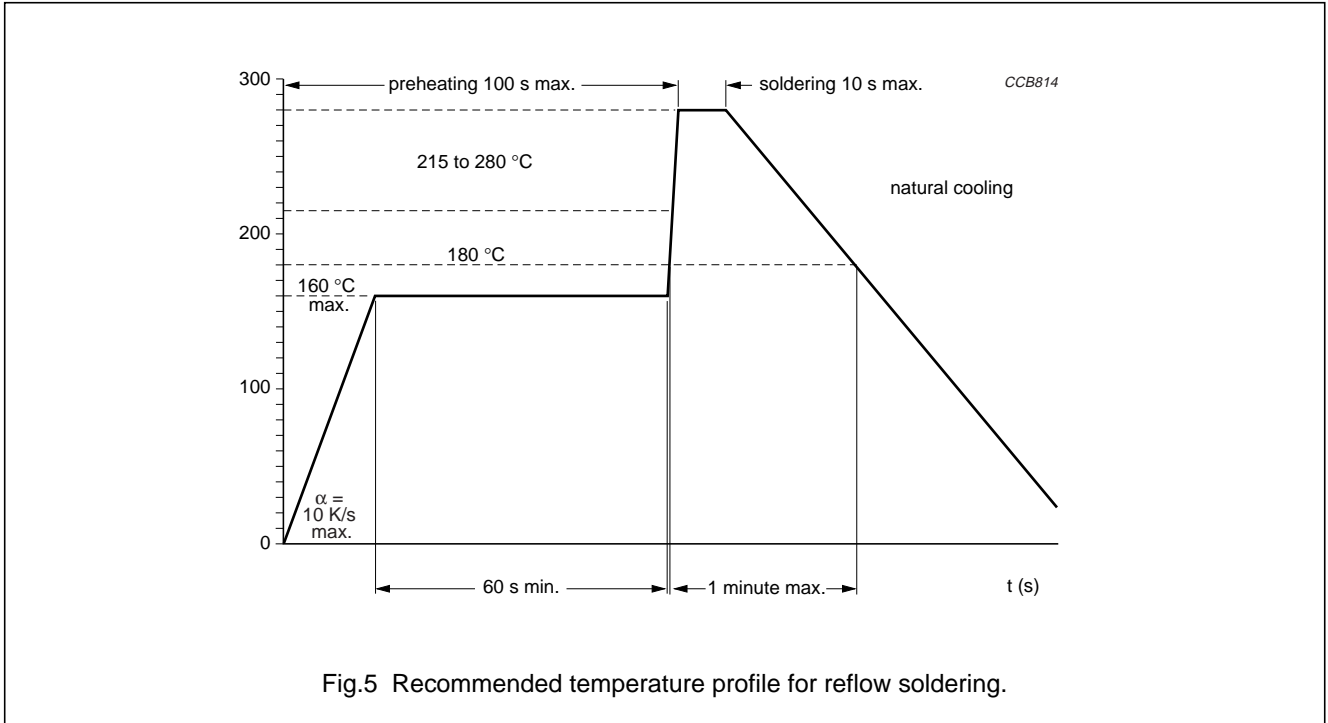


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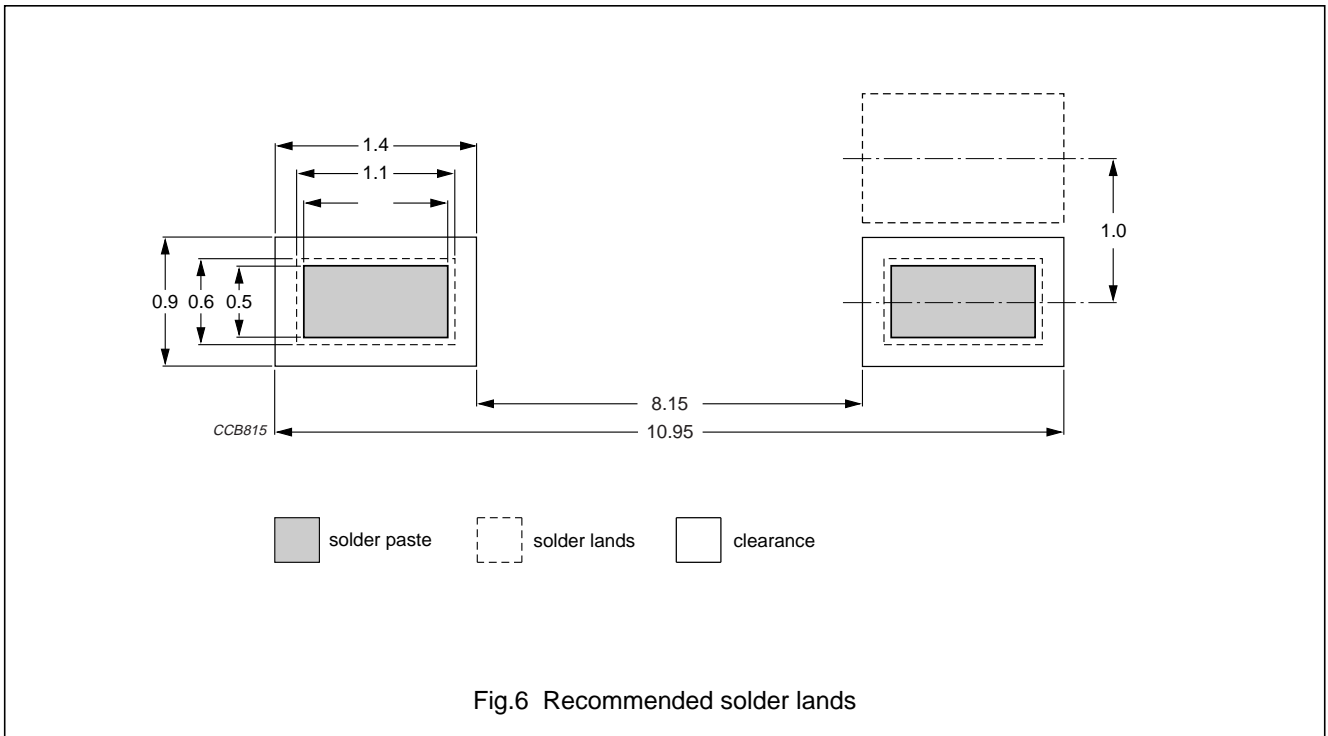
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**MOUNTING**

**Soldering information**



**RECOMMENDED SOLDER LANDS**



## Integrated inductive components

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## PACKAGING

## Tape and reel specifications

All tape and reel specifications are in accordance with the second edition of "IEC 60286-3". Basic dimensions are given in Figs 7 and 8, and Table 1.

## Blister tape

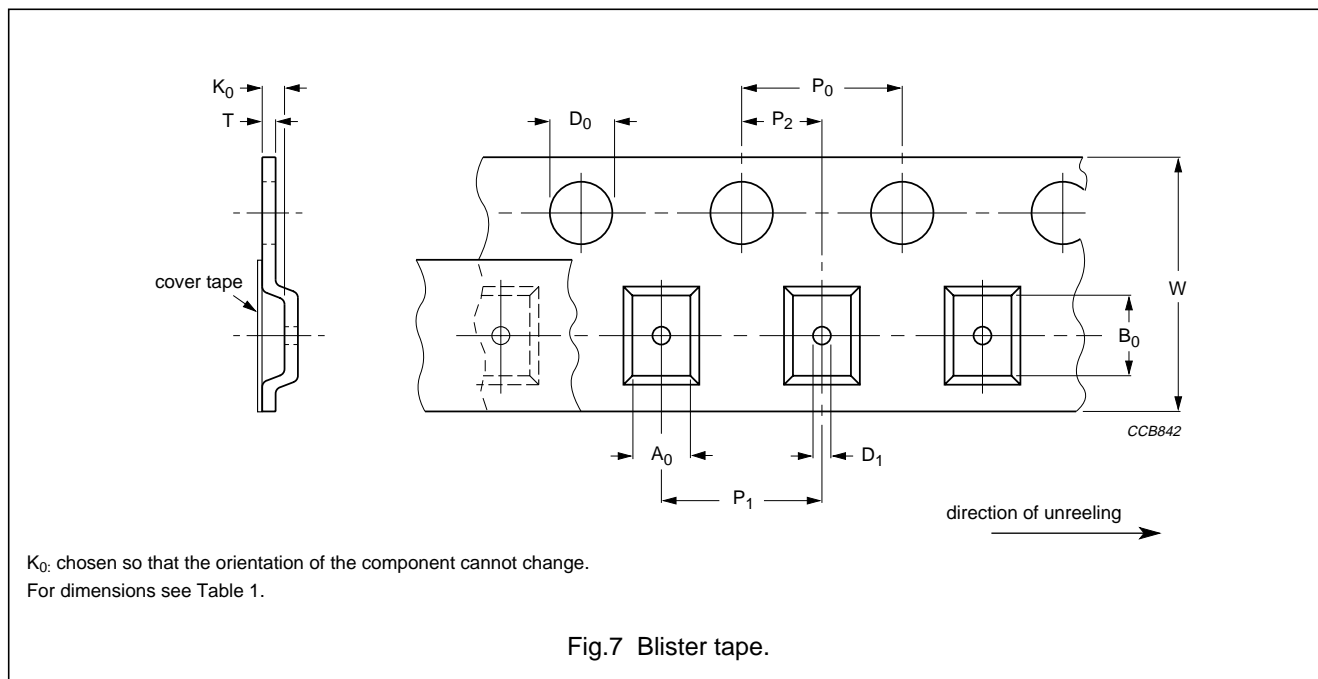


Table 1 Dimensions of blister tape; see Fig.7

SYMBOL	DIMENSIONS	TOL.	UNIT
$A_0$	10.6	$\pm 0.1$	mm
$B_0$	14.75	$\pm 0.1$	mm
$K_0$	4.75	$\pm 0.1$	mm
$W$	24	$\pm 0.3$	mm
$D_0$	1.5	$\pm 0.1$	mm
$D_1$	1.5	$\pm 0.25$	mm
$P_0$ ; note 1	4	$\pm 0.1$	mm
$P_1$	12	$\pm 0.1$	mm
$P_2$	6	$\pm 0.1$	mm
$T$	0.3	$\pm 0.1$	mm

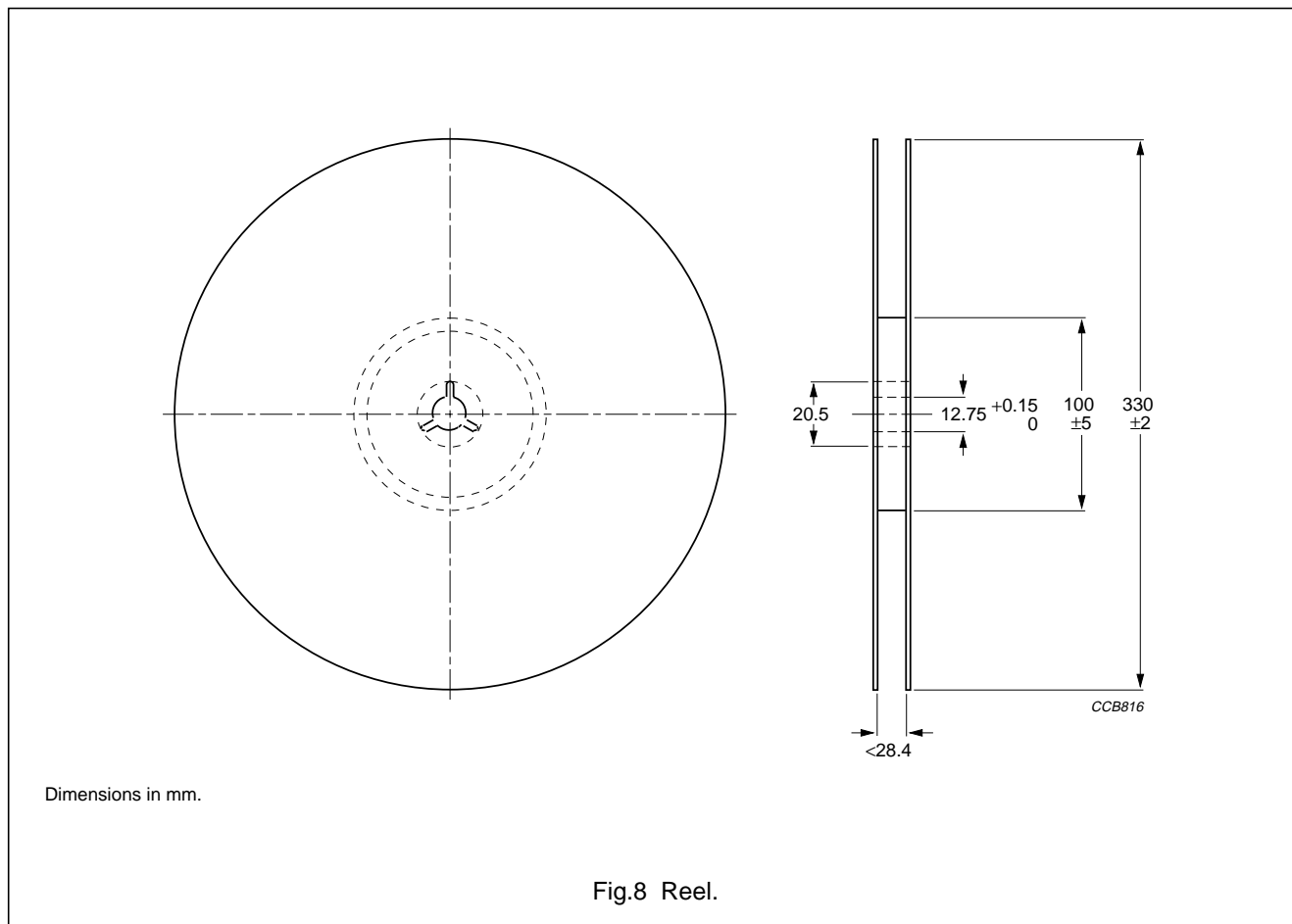
## Note

1.  $P_0$  pitch tolerance over any 10 pitches is  $\pm 0.2$  mm.

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## Reel specifications



## Packaging quantities

IICs are delivered taped and reeled in quantities of 1000 units.

## Storage requirements

These storage requirements should be observed in order to ensure the soldering of the exposed electrode:

- Maximum ambient temperature shall not exceed 40 °C. Storage temperature higher than 40 °C could result in the deformation of packaging materials.
- Maximum relative humidity recommended for storage is 70% RH. High humidity with high temperature can accelerate the oxidation of the tin-lead plating on the termination and reduce the solderability of the components.
- Products shall not be stored in environments with the presence of harmful gases containing sulfur or chlorine.