

# DATA SHEET

## **RM10/I** RM cores and accessories

Product specification  
Supersedes data of 1997 Nov 21  
File under Ferrite Ceramics, MA01

2000 Apr 20

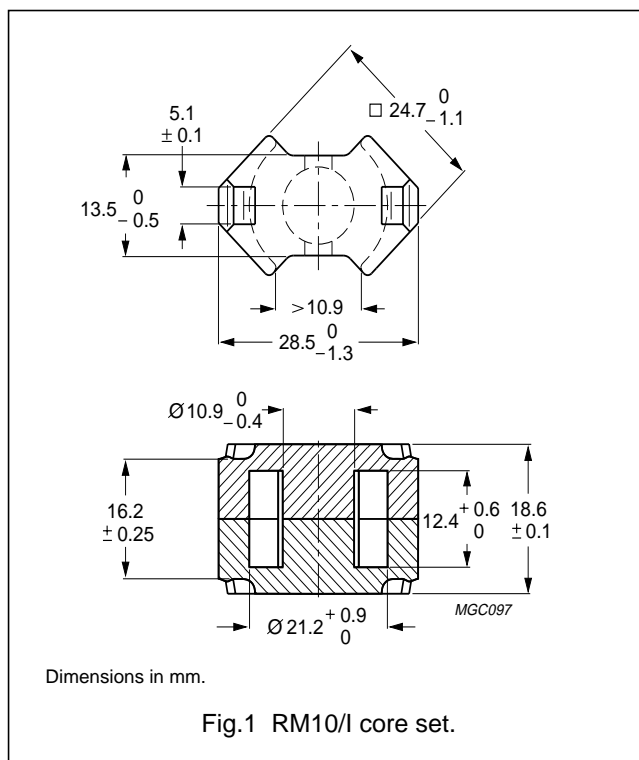
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CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(I/A)$	core factor (C1)	0.462	mm <sup>-1</sup>
$V_e$	effective volume	4310	mm <sup>3</sup>
$l_e$	effective length	44.6	mm
$A_e$	effective area	96.6	mm <sup>2</sup>
$A_{min}$	minimum area	89.1	mm <sup>2</sup>
m	mass of set	≈22	g



Core sets for general purpose transformers and power applications

Clamping force for  $A_L$  measurements, 60 ±20 N.

GRADE	$A_L$ (nH)	$\mu_e$	AIR GAP (μm)	TYPE NUMBER
3C81	160 ±3%	≈59	≈900	RM10/I-3C81-E160
	250 ±3%	≈92	≈500	RM10/I-3C81-A250
	315 ±3%	≈116	≈400	RM10/I-3C81-A315
	400 ±3%	≈147	≈300	RM10/I-3C81-A400
	630 ±3%	≈232	≈150	RM10/I-3C81-A630
	5400 ±25%	≈2000	≈0	RM10/I-3C81
3C90	160 ±3%	≈59	≈900	RM10/I-3C90-A160
	250 ±3%	≈92	≈500	RM10/I-3C90-A250
	315 ±3%	≈116	≈400	RM10/I-3C90-A315
	400 ±3%	≈147	≈300	RM10/I-3C90-A400
	630 ±3%	≈232	≈150	RM10/I-3C90-A630
	4950 ±25%	≈1820	≈0	RM10/I-3C90
3C91 <b>prot</b>	5400 ±25%	≈2000	≈0	RM10/I-3C91
3C94 <b>des</b>	160 ±3%	≈59	≈900	RM10/I-3C94-A160
	250 ±3%	≈92	≈500	RM10/I-3C94-A250
	315 ±3%	≈116	≈400	RM10/I-3C94-A315
	400 ±3%	≈147	≈300	RM10/I-3C94-A400
	630 ±3%	≈232	≈150	RM10/I-3C94-A630
	4950 ±25%	≈1820	≈0	RM10/I-3C94

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GRADE	$A_L$ (nH)	$\mu_e$	AIR GAP ( $\mu\text{m}$ )	TYPE NUMBER
3C96 <sup>prot</sup>	4400 $\pm$ 25%	$\approx$ 1820	$\approx$ 0	RM10/I-3C96
3D3 <sup>des</sup>	315 $\pm$ 3%	$\approx$ 116	$\approx$ 400	RM10/I-3D3-A315
	400 $\pm$ 5%	$\approx$ 147	$\approx$ 300	RM10/I-3D3-A400
	630 $\pm$ 8%	$\approx$ 232	$\approx$ 150	RM10/I-3D3-A630
	1900 $\pm$ 25%	$\approx$ 700	$\approx$ 0	RM10/I-3D3
3F3 <sup>des</sup>	160 $\pm$ 3%	$\approx$ 59	$\approx$ 900	RM10/I-3F3-A160
	250 $\pm$ 3%	$\approx$ 92	$\approx$ 500	RM10/I-3F3-A250
	315 $\pm$ 3%	$\approx$ 116	$\approx$ 400	RM10/I-3F3-A315
	400 $\pm$ 3%	$\approx$ 147	$\approx$ 300	RM10/I-3F3-A400
	630 $\pm$ 3%	$\approx$ 232	$\approx$ 150	RM10/I-3F3-A630
	4050 $\pm$ 25%	$\approx$ 1490	$\approx$ 0	RM10/I-3F3
3H3 <sup>des</sup>	400 $\pm$ 3%	$\approx$ 147	$\approx$ 300	RM10/I-3H3-A400
	630 $\pm$ 3%	$\approx$ 232	$\approx$ 150	RM10/I-3H3-A630
	1000 $\pm$ 10%	$\approx$ 368	$\approx$ 120	RM10/I-3H3-A1000
	4400 $\pm$ 25%	$\approx$ 1620	$\approx$ 0	RM10/I-3H3

## Core sets of high permeability grades

Clamping force for AL measurements, 60  $\pm$ 20 N.

GRADE	$A_L^0$ (nH)	$\mu_e$	TYPE NUMBER
3E1 <sup>sup</sup>	8000 $\pm$ 25%	$\approx$ 2900	RM10/I-3E1
3E27	10700 $\pm$ 25%	$\approx$ 3880	RM10/I-3E27
3E4 <sup>sup</sup>	11000 +40/-30%	$\approx$ 4040	RM10/I-3E4
3E5	16000 +40/-30%	$\approx$ 5900	RM10/I-3E5

## Properties of core sets under power conditions

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 25 kHz; $\hat{B}$ = 200 mT; T = 100 °C	f = 100 kHz; $\hat{B}$ = 100 mT; T = 100 °C	f = 100 kHz; $\hat{B}$ = 200 mT; T = 100 °C	f = 400 kHz; $\hat{B}$ = 50 mT; T = 100 °C
3C81	$\geq$ 315	$\leq$ 1.0	–	–	–
3C90	$\geq$ 320	$\leq$ 0.52	$\leq$ 0.55	–	–
3C91	$\geq$ 315	–	$\approx$ 0.50	$\approx$ 2.6	–
3C94	$\geq$ 320	–	$\leq$ 0.41	$\approx$ 1.9	$\approx$ 0.9
3C96	$\geq$ 320	–	$\approx$ 0.3	$\approx$ 1.4	$\approx$ 0.65
3F3	$\geq$ 315	–	$\leq$ 0.48	–	$\leq$ 0.82

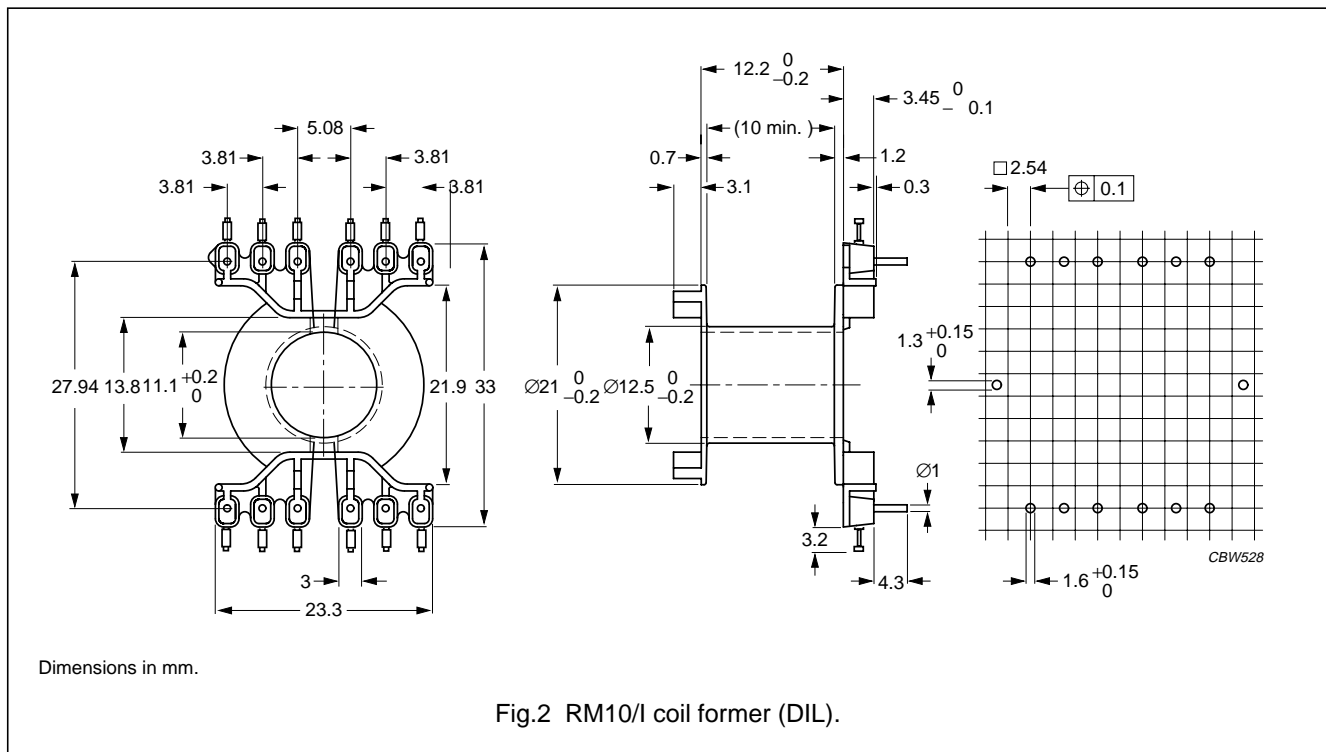
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COIL FORMER

General data

PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephthalate (PBT), glass-reinforced, flame retardant in accordance with UL 94V-0; UL file number E45329(R)
Pin material	copper-tin alloy (CuSn), tin-lead alloy (SnPb) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1



Winding data for RM10 coil former (DIL)

NUMBER OF SECTIONS	AVERAGE LENGTH OF TURN (mm)	WINDING AREA (mm <sup>2</sup> )	WINDING WIDTH (mm)	TYPE NUMBER
1	52	44.2	10.0	CPV-RM10-1S-12PD

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COIL FORMER

General data

PARAMETER	SPECIFICATION
Coil former material	polyester (UP), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E61040(M)
Pin material	copper-tin alloy (CuSn), tin-lead alloy (SnPb) plated
Maximum operating temperature	180 °C, "IEC 60085", class H
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1

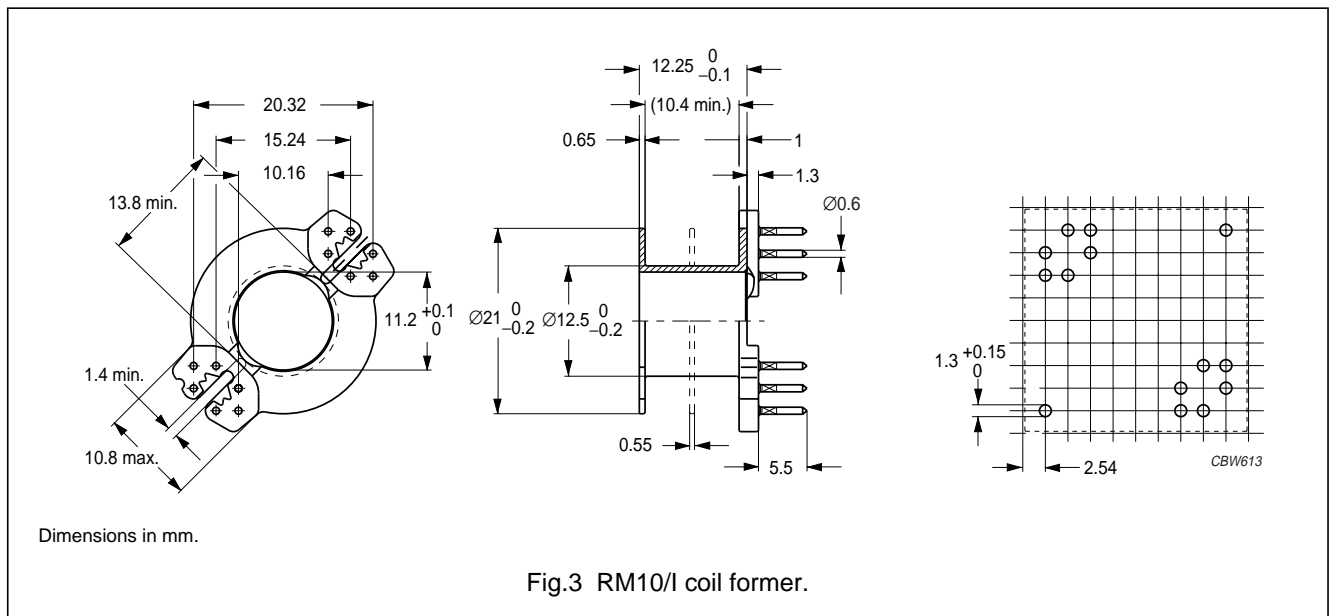


Fig.3 RM10/I coil former.

Winding data for RM10/I coil former

NUMBER OF SECTIONS	NUMBER OF PINS	PIN POSITIONS USED	AVERAGE LENGTH OF TURN (mm)	WINDING AREA (mm <sup>2</sup> )	WINDING WIDTH (mm)	TYPE NUMBER
1	12	all	52.3	42.7	10.3	CSV-RM10-1S-12P

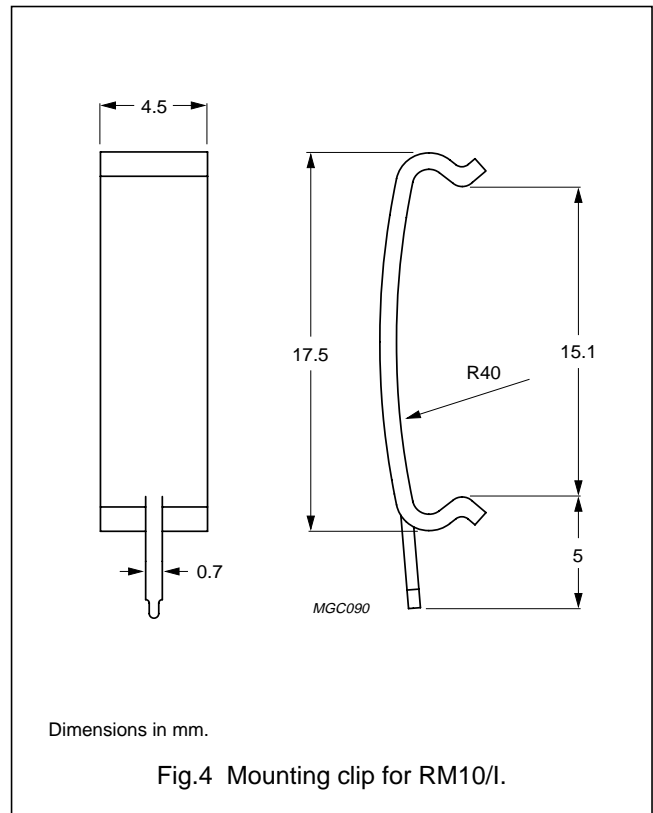
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**MOUNTING PARTS**

**General data**

ITEM	SPECIFICATION
Clamping force	≈30 N
Clip material	stainless steel
Clip plating	tin-lead alloy (SnPb)
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1
Type number	CLI/P-RM10/I



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## DATA SHEET STATUS DEFINITIONS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS
Preliminary specification	Development	This data sheet contains preliminary data. Philips Components reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.
Product specification	Production	This data sheet contains final specifications. Philips Components reserves the right to make changes at any time without notice in order to improve design and supply the best possible product.

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<b>Preferred</b>		These products are recommended for use in current designs and are available via our sales channels.
<b>Support</b>		These products are <b>not</b> recommended for new designs and may not be available through all of our sales channels. Customers are advised to check for availability.