

Soft Ferrites

P cores and accessories

PRODUCT OVERVIEW AND TYPE NUMBER STRUCTURE

Product overview P cores

CORE TYPE	V _e (mm ³)	A _e (mm ²)	MASS (g)
P9/5	126	10.1	0.8
P11/7	251	16.2	1.8
P11/7/I	309	19.0	1.9
P14/8	495	25.1	3.2
P14/18/I	628	29.9	3.5
P18/11	1120	43.3	6.0
P18/11/I	1270	47.5	7
P22/13	2000	63.4	12
P22/13/I	2460	73.4	13
P26/16	3530	93.9	20
P26/16/I	4370	110	21
P30/19	6190	137	34
P36/22	10700	202	54
P42/29	18200	265	104
P66/56	88200	717	550

• In accordance with IEC 62317, part 2.

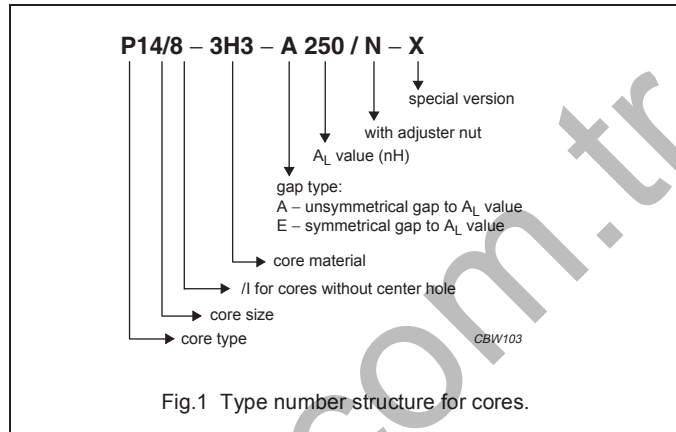


Fig.1 Type number structure for cores.

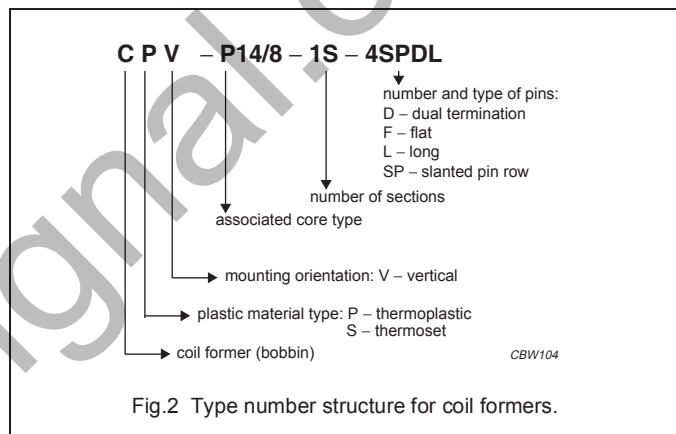


Fig.2 Type number structure for coil formers.

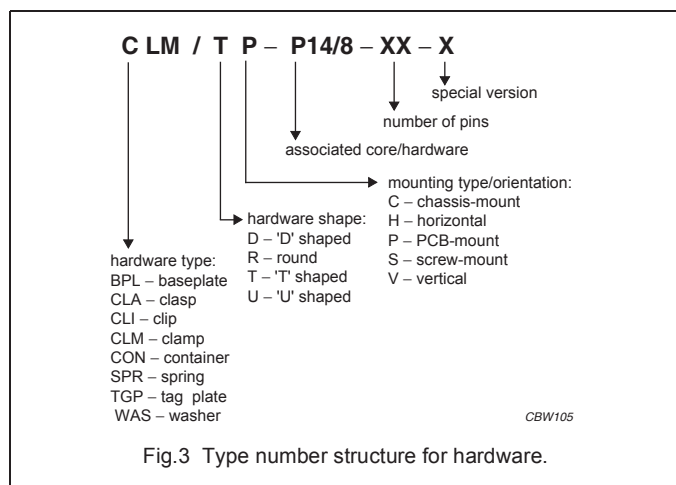
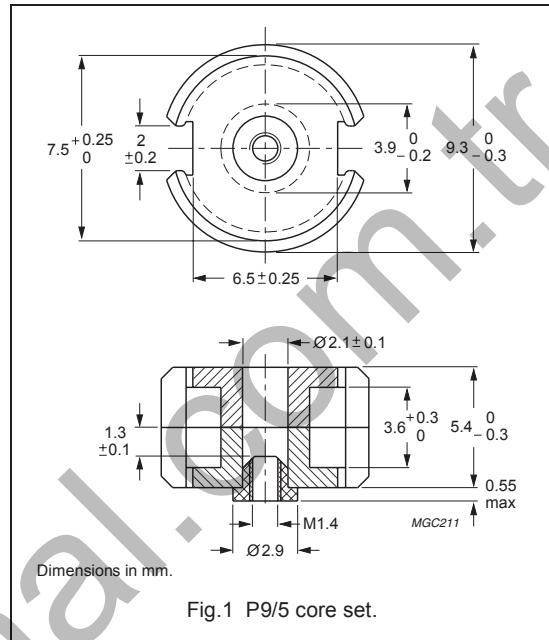


Fig.3 Type number structure for hardware.

CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	1.24	mm ⁻¹
V_e	effective volume	126	mm ³
l_e	effective length	12.5	mm
A_e	effective area	10.1	mm ²
A_{min}	minimum area	7.9	mm ²
m	mass of set	≈ 0.8	g



Core sets for filter applications

Clamping force for A_L measurements, 25 ± 5 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER (WITH NUT)	TYPE NUMBER (WITHOUT NUT)
3D3 ^{sup}	40 ± 3%	≈ 39	≈ 410	P9/5-3D3-E40/N	P9/5-3D3-E40
	63 ± 3%	≈ 62	≈ 230	P9/5-3D3-A63/N	P9/5-3D3-A63
	630 ± 25%	≈ 620	≈ 0	–	P9/5-3D3
3H3 ^{sup}	40 ± 3%	≈ 39	≈ 430	P9/5-3H3-E40/N	P9/5-3H3-E40
	63 ± 3%	≈ 62	≈ 250	P9/5-3H3-A63/N	P9/5-3H3-A63
	1100 ± 25%	≈ 1080	≈ 0	–	P9/5-3H3

Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 10 ± 5 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C81	1350 ± 25%	≈ 1200	≈ 0	P9/5-3C81
3C91 ^{des}	1350 ± 25%	≈ 1200	≈ 0	P9/5-3C91
3F3	1100 ± 25%	≈ 1080	≈ 0	P9/5-3F3

Core sets of high permeability gradesClamping force for A_L measurements, 25 ± 5 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3E27	2300 $\pm 25\%$	≈ 2020	≈ 0	P9/5-3E27

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; B̂ = 200 mT; T = 100 °C	f = 100 kHz; B̂ = 100 mT; T = 100 °C	f = 100 kHz; B̂ = 200 mT; T = 100 °C	f = 400 kHz; B̂ = 50 mT; T = 100 °C
3C81	≥ 320	≤ 0.035	–	–	–
3C91	≥ 315	–	$\leq 0.008^{(1)}$	$\leq 0.06^{(1)}$	–
3F3	≥ 315	–	≤ 0.015	–	≤ 0.03

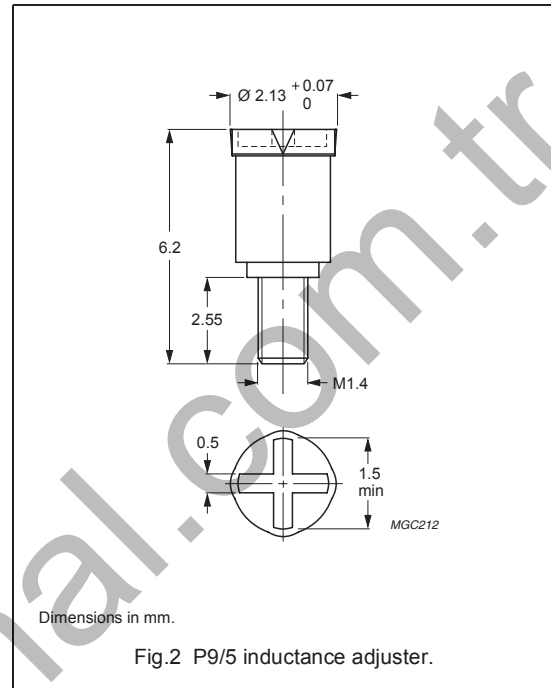
Note

1. Measured at 60 °C.

INDUCTANCE ADJUSTERS

General data

ITEM	SPECIFICATION
Material of head and thread	polypropylene (PP), glass fibre reinforced
Maximum operating temperature	125 °C



Inductance adjuster selection chart ^{sup} (applies to all types)

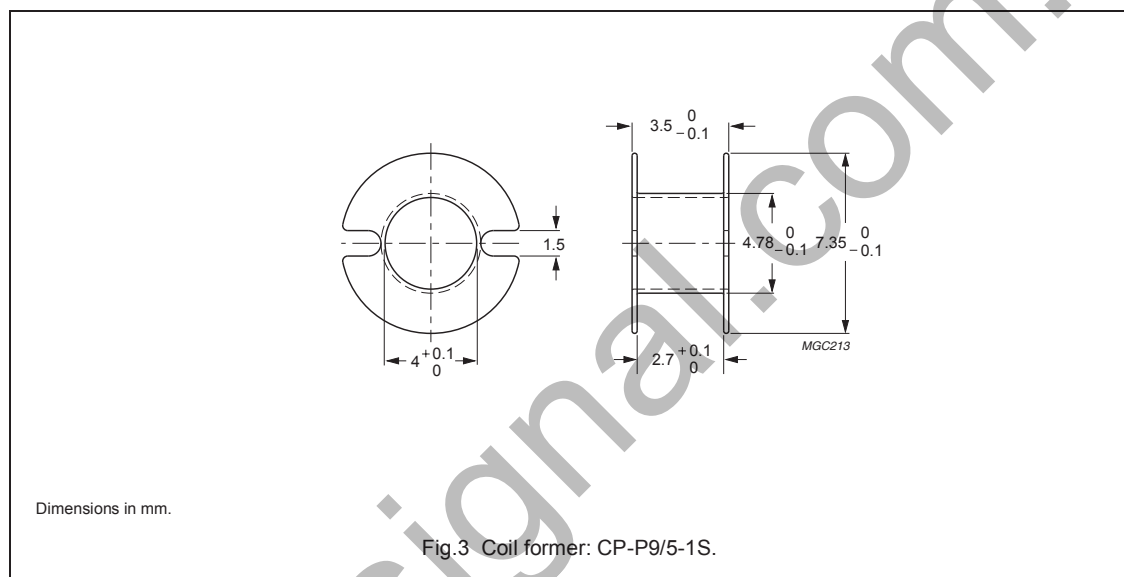
GRADE	A _L (nH)	TYPES FOR LOW ADJUSTMENT	ΔL/L ⁽¹⁾	TYPES FOR MEDIUM ADJUSTMENT	ΔL/L ⁽¹⁾	TYPES FOR HIGH ADJUSTMENT	ΔL/L ⁽¹⁾
3D3	40	-	-	ADJ-P9/P11-YELLOW	11	-	-
	63	-	-	-	18	ADJ-P9/P11-BROWN	31

Note

1. Maximum adjustment range.

COIL FORMERS**General data for coil former CP-P9/5-1S**

PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephthalate (PBT), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E45329 (R)
Maximum operating temperature	155 °C, "IEC 60085", class F

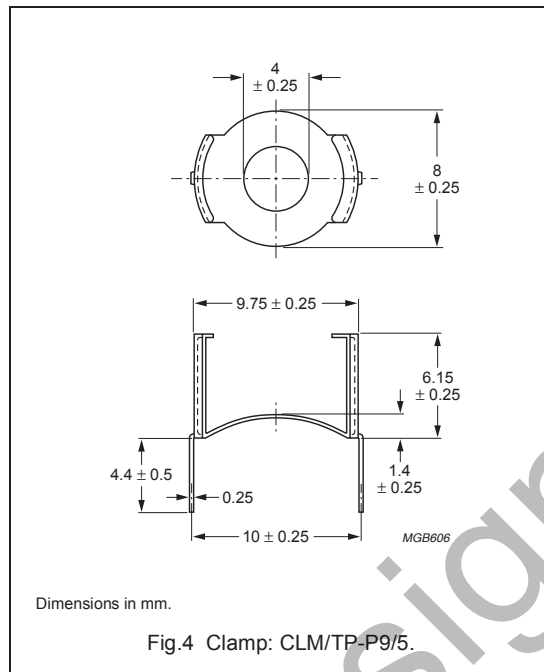
**Winding data and area product for coil former CP-P9/5-1S**

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	3.1	2.5	18.9	31.3	CP-P9/5-1S

MOUNTING PARTS

General data

ITEM	REMARKS	FIGURE	TYPE NUMBER
Clamp	spring steel, tin plated	4	CLM/TP-P9/5



CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.956	mm ⁻¹
V_e	effective volume	251	mm ³
l_e	effective length	15.5	mm
A_e	effective area	16.2	mm ²
A_{min}	minimum area	13.2	mm ²
m	mass of set	≈ 1.8	g

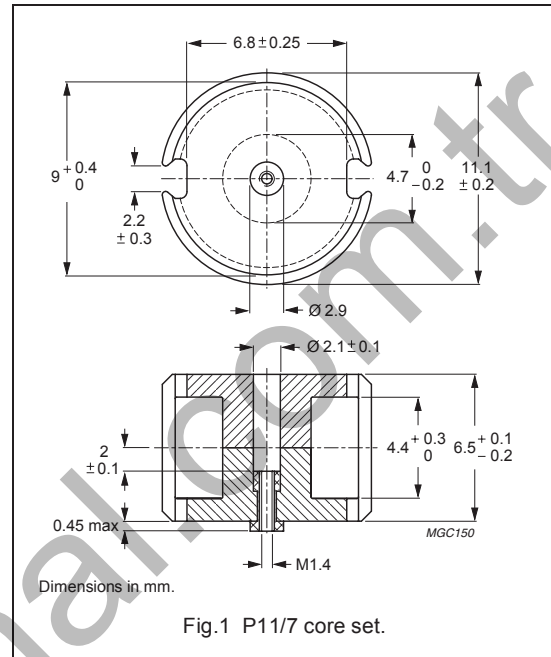


Fig.1 P11/7 core set.

Core sets for filter applications

Clamping force for A_L measurements, 35 ± 10 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER (WITH NUT)	TYPE NUMBER (WITHOUT NUT)
3D3 ^{sup}	16 ± 3%	≈ 12	≈ 2210	P11/7-3D3-E16/N	P11/7-3D3-E16
	25 ± 3%	≈ 19	≈ 1280	P11/7-3D3-E25/N	P11/7-3D3-E25
	40 ± 3%	≈ 31	≈ 710	P11/7-3D3-E40/N	P11/7-3D3-E40
	63 ± 3%	≈ 48	≈ 400	P11/7-3D3-E63/N	P11/7-3D3-E63
	100 ± 3%	≈ 76	≈ 220	P11/7-3D3-A100/N	P11/7-3D3-A100
	800 ± 25%	≈ 610	≈ 0	–	P11/7-3D3
3H3 ^{sup}	160 ± 3%	≈ 122	≈ 140	P11/7-3H3-A160/N	P11/7-3H3-A160
	250 ± 3%	≈ 190	≈ 80	P11/7-3H3-A250/N	P11/7-3H3-A250
	1650 ± 25%	≈ 1260	≈ 0	–	P11/7-3H3

Core sets for general purpose transformers and power applicationsClamping force for A_L measurements, 35 ± 10 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C81	100 $\pm 3\%$	≈ 76	≈ 240	P11/7-3C81-A100
	160 $\pm 3\%$	≈ 122	≈ 140	P11/7-3C81-A160
	250 $\pm 3\%$	≈ 190	≈ 85	P11/7-3C81-A250
	2050 $\pm 25\%$	≈ 1560	≈ 0	P11/7-3C81
3C91 <small>des</small>	2050 $\pm 25\%$	≈ 1560	≈ 0	P11/7-3C91
3F3	100 $\pm 3\%$	≈ 76	≈ 240	P11/7-3F3-A100
	160 $\pm 3\%$	≈ 122	≈ 140	P11/7-3F3-A160
	250 $\pm 5\%$	≈ 190	≈ 80	P11/7-3F3-A250
	1650 $\pm 25\%$	≈ 1260	≈ 0	P11/7-3F3

Core sets of high permeability gradesClamping force for A_L measurements, 35 ± 10 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3E27	3400 $\pm 25\%$	≈ 2600	≈ 0	P11/7-3E27

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; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥ 320	≤ 0.05	–	–	–
3C91	≥ 315	–	$\leq 0.015^{(1)}$	$\leq 0.12^{(1)}$	–
3F3	≥ 315	–	≤ 0.03	–	≤ 0.05

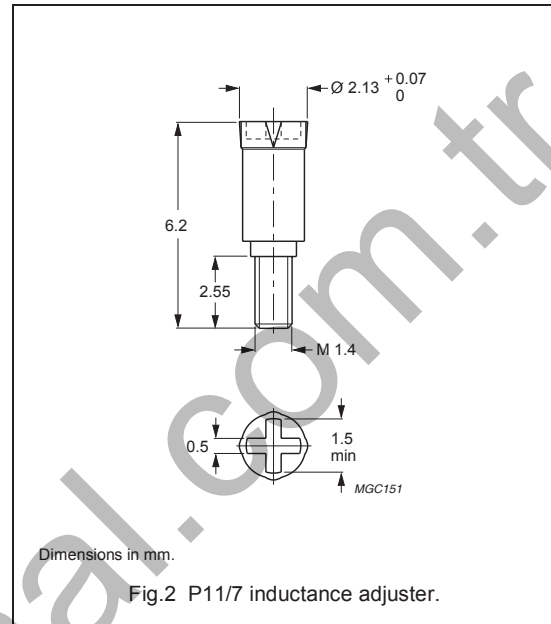
Note

1. Measured at 60 °C.

INDUCTANCE ADJUSTERS

General data

PARAMETER	SPECIFICATION
Material of head and thread	polypropylene (PP), glass fibre reinforced
Maximum operating temperature	125 °C



Inductance adjuster selection chart^{sup} (applies to all types)

GRADE	A _L (nH)	TYPES FOR LOW ADJUSTMENT	ΔL/L ⁽¹⁾	TYPES FOR MEDIUM ADJUSTMENT	ΔL/L ⁽¹⁾	TYPES FOR HIGH ADJUSTMENT	ΔL/L ⁽¹⁾
3H3	100	–	–	ADJ-P9/P11-YELLOW	13	ADJ-P9/P11-BROWN	24
	160	ADJ-P9/P11-YELLOW	8	ADJ-P9/P11-BROWN	15	ADJ-P9/P11-GREY	22
	250	ADJ-P9/P11-BROWN	9	ADJ-P9/P11-GREY	14	–	–
3D3	16	–	–	ADJ-P9/P11-YELLOW	19	–	–
	25	–	–	–	–	ADJ-P9/P11-YELLOW	30
	40	–	–	–	–	ADJ-P9/P11-YELLOW	24
	63	–	–	ADJ-P9/P11-YELLOW	18	–	–
	100	–	–	ADJ-P9/P11-YELLOW	11	–	–

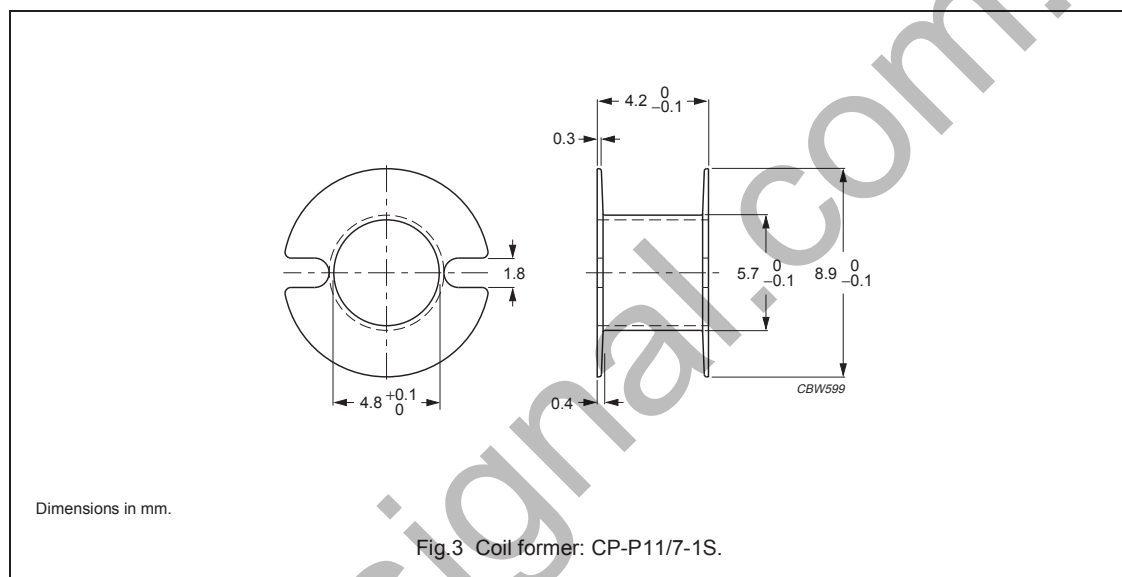
Note

1. Maximum adjustment range.

COIL FORMERS

General data CP-P11/7-1S coil former

PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephthalate (PBT), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E45329 (R)
Maximum operating temperature	155 °C, "IEC 60085", class F

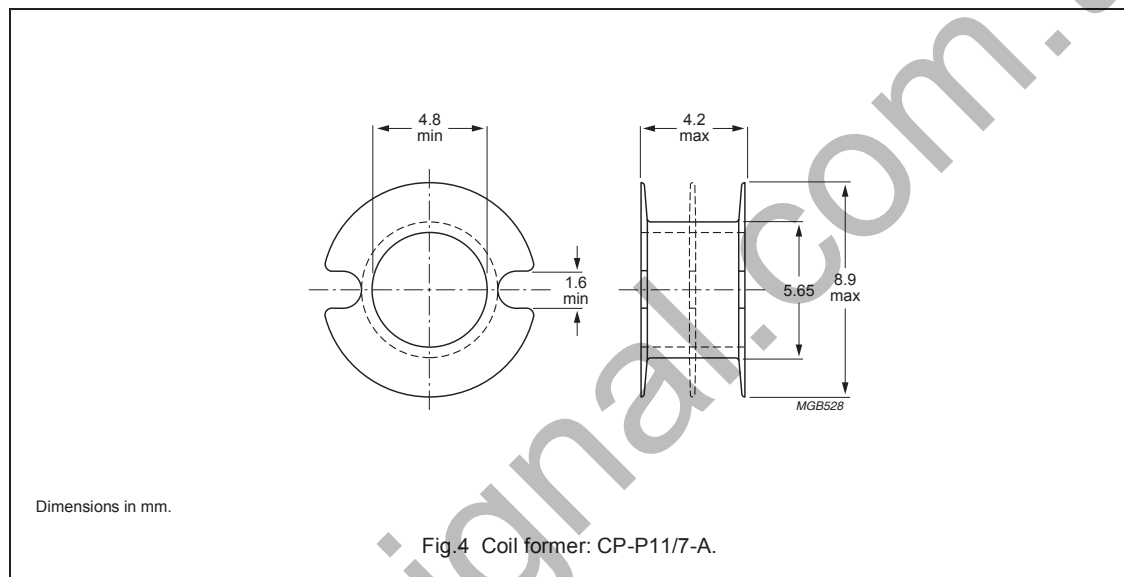


Winding data and area product for CP-P11/7-1S coil former

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	4.8	3.1	22.6	77.8	CP-P11/7-1S

General data for CP-P11/7-A coil former

PARAMETER	SPECIFICATION
Coil former material	acetal (POM), glass reinforced, flame retardant in accordance with "UL 94-HB"; UL file number E66288(R)
Maximum operating temperature	105 °C



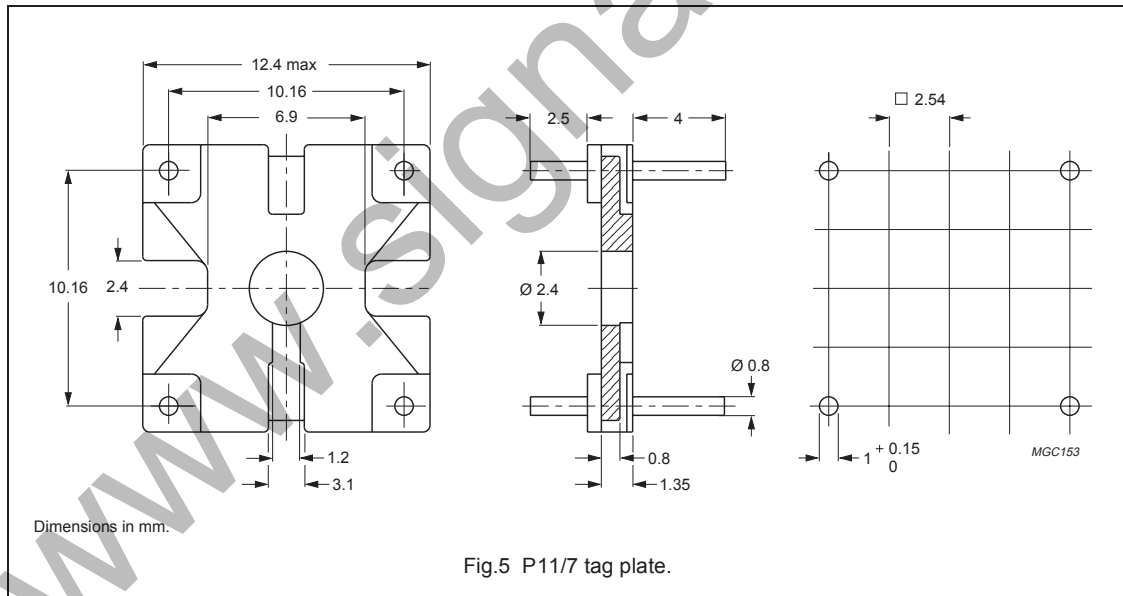
Winding data and area product for CP-P11/7-A coil former

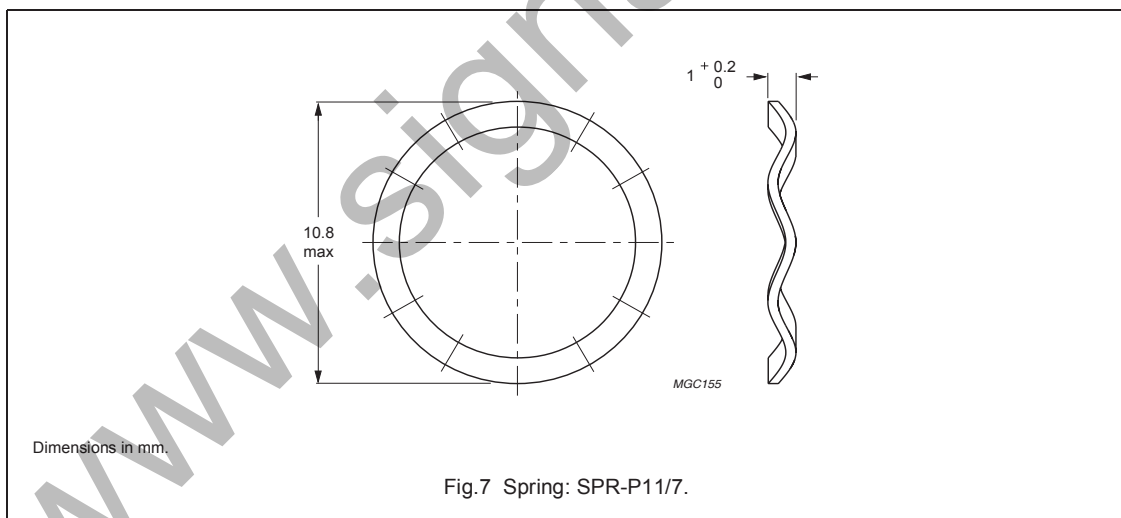
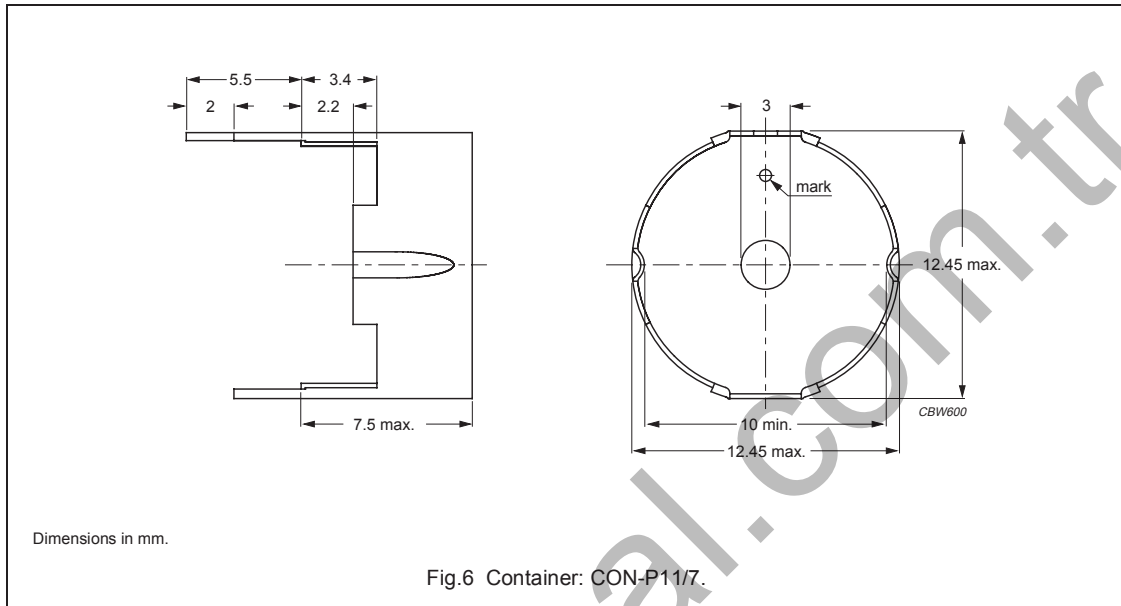
NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	4.77	3.42	22.7	77.3	CP-P11/7-1S-A
2	2 x 2.00	2 x 1.52	22.7	2 x 32.4	CP-P11/7-2S-A
3	3 x 1.16	3 x 0.91	22.7	3 x 18.8	CP-P11/7-3S-A

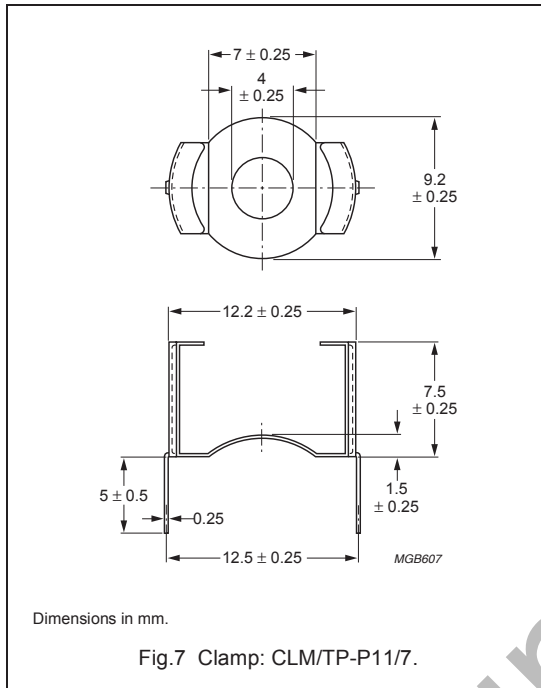
MOUNTING PARTS

General data

ITEM	REMARKS	FIGURE	TYPE NUMBER
Tag plate	material: phenolformaldehyde (PF), glass reinforced	5	TGP-P11/7-C
	flame retardant: in accordance with "UL 94V-0"; file number E41429		
	maximum operating temperature: 180 °C, "IEC 60085", class H		
	pins : copper-tin alloy (CuSn), tin (Sn) plated		
	resistance to soldering heat in accordance with "IEC 60068-2-20", Part 2, Test Tb, method 1B: 350 °C, 3.5 s		
	solderability in accordance with "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s		
Container	copper-zinc alloy (CuZn), tin (Sn) plated	6	CON-P11/7
	earth pins: presoldered		
Spring	CrNi-steel	7	SPR-P11/7
	spring force: ≈35 N when mounted		
Clamp	spring steel, tin-plated	7	CLM/TP-P11/7



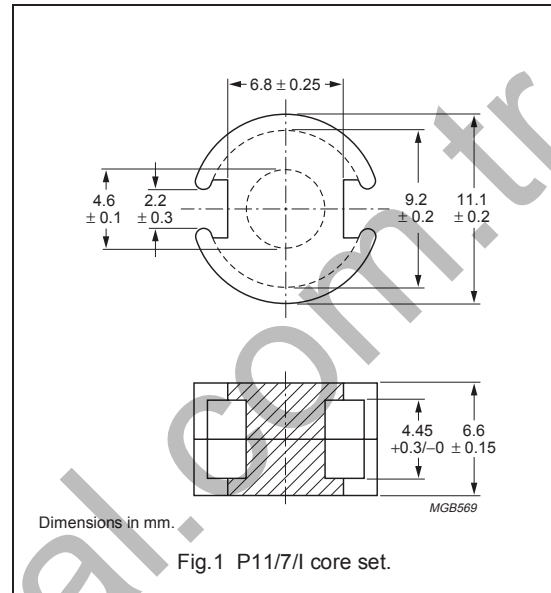




CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.860	mm ⁻¹
V_e	effective volume	309	mm ³
l_e	effective length	16.3	mm
A_e	effective area	19.0	mm ²
A_{min}	minimum area	13.7	mm ²
m	mass of set	≈ 1.9	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 10 ± 5 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C81	63 ± 3%	≈ 43	≈ 500	P11/7/I-3C81-A63
	100 ± 3%	≈ 68	≈ 290	P11/7/I-3C81-A100
	160 ± 3%	≈ 109	≈ 170	P11/7/I-3C81-A160
	250 ± 5%	≈ 171	≈ 100	P11/7/I-3C81-A250
	315 ± 5%	≈ 215	≈ 75	P11/7/I-3C81-A315
	2100 ± 25%	≈ 1430	≈ 0	P11/7/I-3C81
3C91 <small>des</small>	2100 ± 25%	≈ 1430	≈ 0	P11/7/I-3C91
3F3	63 ± 3%	≈ 43	≈ 500	P11/7/I-3F3-A63
	100 ± 3%	≈ 68	≈ 290	P11/7/I-3F3-A100
	160 ± 3%	≈ 109	≈ 170	P11/7/I-3F3-A160
	250 ± 5%	≈ 171	≈ 100	P11/7/I-3F3-A250
	315 ± 5%	≈ 215	≈ 75	P11/7/I-3F3-A315
	1750 ± 25%	≈ 1195	≈ 0	P11/7/I-3F3

P cores and accessories

P11/7/I

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; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥320	≤ 0.07	–	–	–
3C91	≥315	–	≤ 0.016 ⁽¹⁾	≤ 0.12 ⁽¹⁾	–
3F3	≥315	–	≤ 0.04	–	≤ 0.06

Note

1. Measured at 60 °C.

BOBBINS AND ACCESSORIES

Coil formers, winding data and mounting parts are equal to those of "P11/7", but "area product" is different.

Winding data and area product (for P11/7/I) for CP-P11/7-1S coil former

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	4.8	3.1	22.6	91.2	CP-P11/7-1S

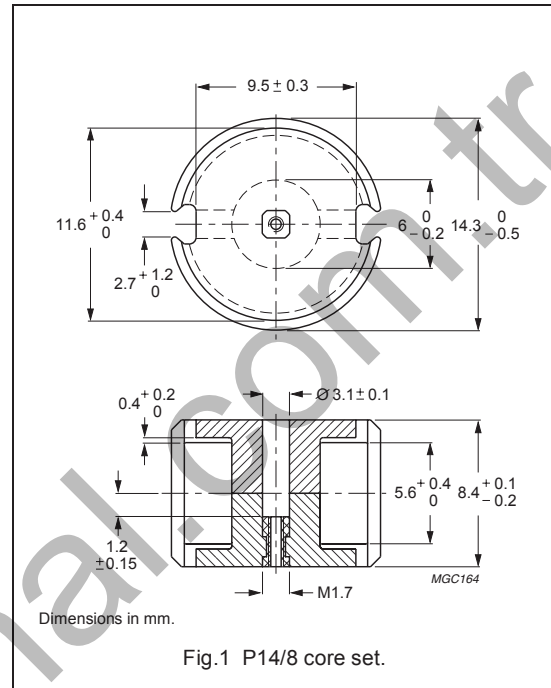
Winding data and area product (for P11/7/I) for CP-P11/7-A coil former

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	4.77	3.42	22.7	90.6	CP-P11/7-1S-A
2	2 × 2.00	2 × 1.52	22.7	2 × 38.0	CP-P11/7-2S-A
3	3 × 1.16	3 × 0.91	22.7	3 × 22.0	CP-P11/7-3S-A

CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.789	mm ⁻¹
V_e	effective volume	495	mm ³
l_e	effective length	19.8	mm
A_e	effective area	25.1	mm ²
A_{min}	minimum area	19.8	mm ²
m	mass of set	≈ 3.2	g



Core sets for filter applications

Clamping force for A_L measurements, 60 ±20 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER (WITH NUT)	TYPE NUMBER (WITHOUT NUT)
3D3 ^{sup}	40 ± 3%	≈ 25	≈ 1170	P14/8-3D3-E40/N	P14/8-3D3-E40
	63 ± 3%	≈ 40	≈ 650	P14/8-3D3-E63/N	P14/8-3D3-E63
	100 ± 3%	≈ 63	≈ 360	P14/8-3D3-E100/N	P14/8-3D3-E100
	1000 ± 25%	≈ 630	≈ 0	–	P14/8-3D3
3H3 ^{sup}	160 ± 3%	≈ 100	≈ 220	P14/8-3H3-A160/N	P14/8-3H3-A160
	250 ± 3%	≈ 157	≈ 130	P14/8-3H3-A250/N	P14/8-3H3-A250
	315 ± 3%	≈ 198	≈ 100	P14/8-3H3-A315/N	P14/8-3H3-A315
	400 ± 3%	≈ 251	≈ 75	P14/8-3H3-A400/N	P14/8-3H3-A400
	2150 ± 25%	≈ 1350	≈ 0	–	P14/8-3H3

Core sets for general purpose transformers and power applicationsClamping force for A_L measurements, 60 ± 20 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C81	$63 \pm 3\%$	≈ 40	≈ 680	P14/8-3C81-E63
	$100 \pm 3\%$	≈ 63	≈ 390	P14/8-3C81-A100
	$160 \pm 3\%$	≈ 100	≈ 220	P14/8-3C81-A160
	$250 \pm 3\%$	≈ 157	≈ 130	P14/8-3C81-A250
	$315 \pm 3\%$	≈ 198	≈ 100	P14/8-3C81-A315
	$2800 \pm 25\%$	≈ 1760	≈ 0	P14/8-3C81
3C91 <small>des</small>	$2800 \pm 25\%$	≈ 1760	≈ 0	P14/8-3C91
3F3	$63 \pm 3\%$	≈ 40	≈ 680	P14/8-3F3-E63
	$100 \pm 3\%$	≈ 63	≈ 390	P14/8-3F3-A100
	$160 \pm 3\%$	≈ 100	≈ 220	P14/8-3F3-A160
	$250 \pm 3\%$	≈ 157	≈ 130	P14/8-3F3-A250
	$315 \pm 3\%$	≈ 198	≈ 100	P14/8-3F3-A315
	$2000 \pm 25\%$	≈ 1260	≈ 0	P14/8-3F3

Core sets of high permeability gradesClamping force for A_L measurements, 60 ± 20 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3E27	$5750 \pm 25\%$	≈ 3610	≈ 0	P14/8-3E27

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; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥ 320	≤ 0.1	–	–	–
3C91	≥ 315	–	$\leq 0.03^{(1)}$	$\leq 0.22^{(1)}$	–
3F3	≥ 315	–	≤ 0.06	–	≤ 0.1

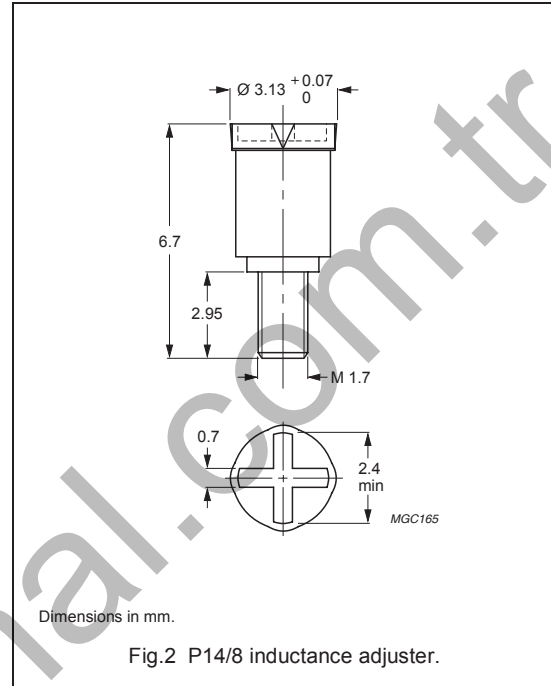
Note

1. Measured at 60 °C.

INDUCTANCE ADJUSTERS

General data

PARAMETER	SPECIFICATION
Material of head and thread	polypropylene (PP), glass fibre reinforced
Maximum operating temperature	125 °C



Inductance adjuster selection chart^{sup} (applies to all types)

GRADE	A _L (nH)	TYPES FOR LOW ADJUSTMENT	ΔL/L ⁽¹⁾	TYPES FOR MEDIUM ADJUSTMENT	ΔL/L ⁽¹⁾	TYPES FOR HIGH ADJUSTMENT	ΔL/L ⁽¹⁾
3H3	100	-	-	ADJ-P14-ORANGE	14	-	-
	160	-	-	ADJ-P14-WHITE	17	ADJ-P14-BROWN	24
	250	ADJ-P14-WHITE	10	ADJ-P14-BROWN	15	-	-
	315	ADJ-P14-WHITE	8	-	-	-	-
	400	ADJ-P14-BROWN	9	-	-	-	-
	630	ADJ-P14-BROWN	4	-	-	-	-
3D3	40	-	-	-	-	ADJ-P14-ORANGE	24
	63	-	-	-	-	ADJ-P14-ORANGE	20
	100	ADJ-P14-ORANGE	11	-	-	-	-

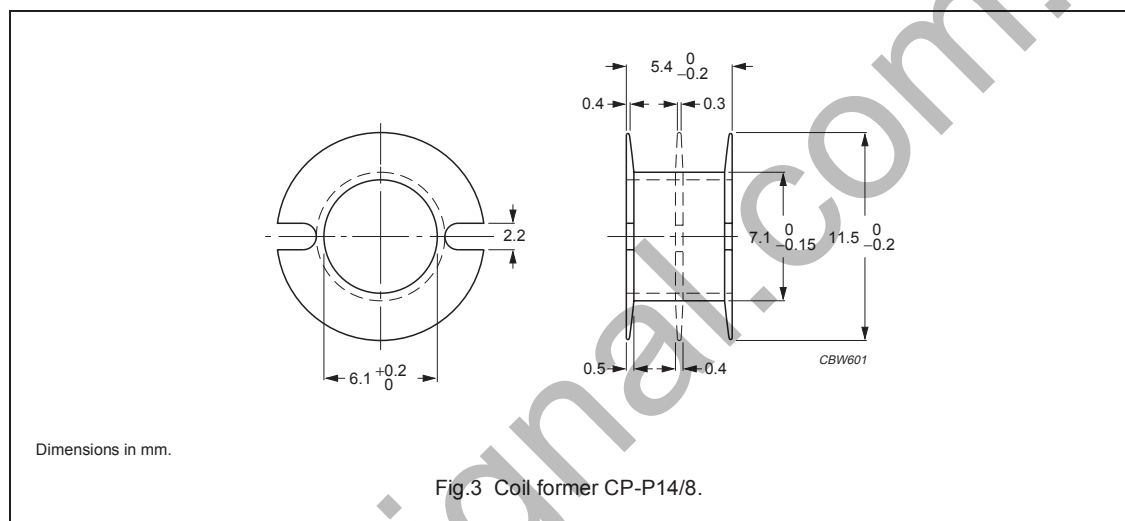
Note

1. Maximum adjustment range.

COIL FORMERS

General data for CP-P14/8 coil former

PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephthalate (PBT), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E45329 (R)
Maximum operating temperature	155 °C, "IEC 60085", class F

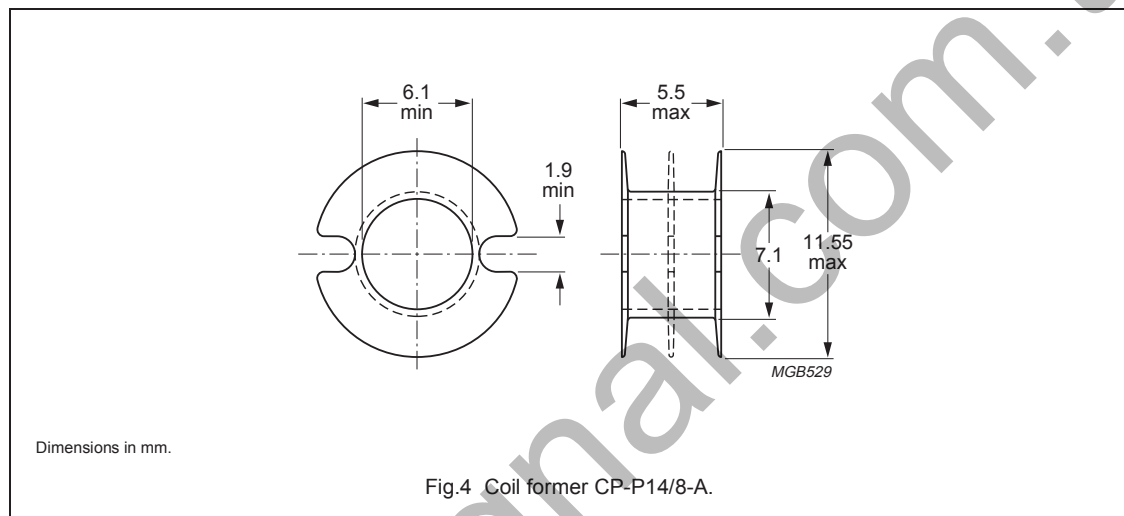


Winding data and area product for CP-P14/8 coil former

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	8.8	4.1	28.9	221	CP-P14/8-1S
2	2 x 4.0	2 x 1.85	28.9	2 x 100	CP-P14/8-2S

General data for CP-P14/8-A coil former

PARAMETER	SPECIFICATION
Coil former material	acetal (POM), glass reinforced, flame retardant in accordance with "UL 94-HB"; UL file number E66288(R)
Maximum operating temperature	155 °C, "IEC 60085", class F

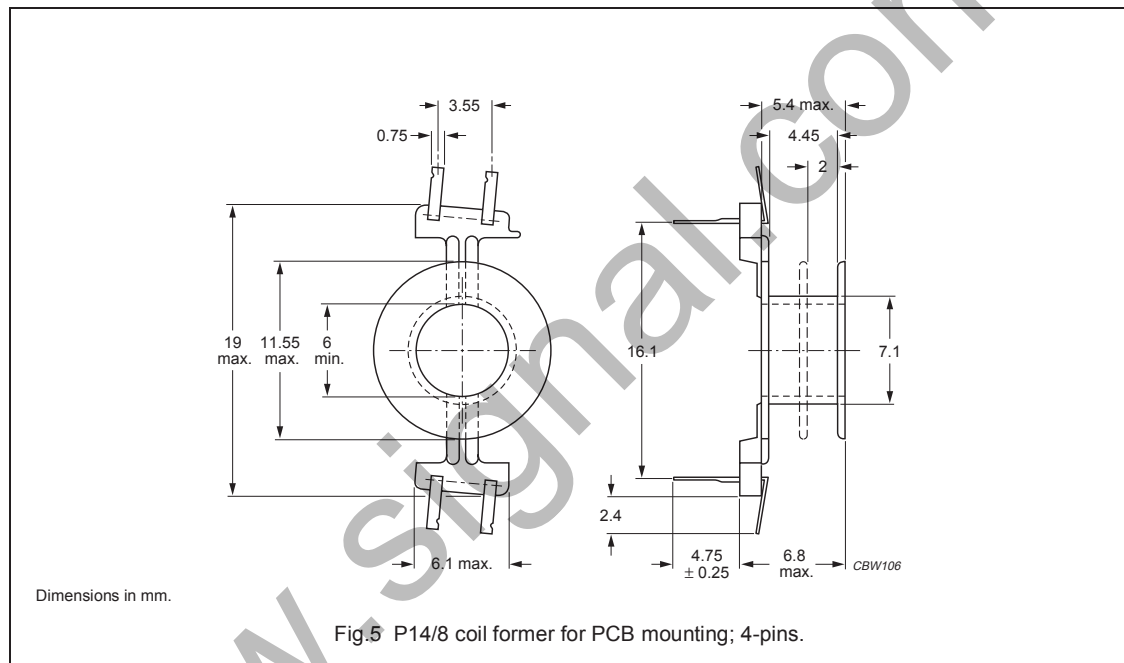


Winding data and area product for CP-P14/8-A coil former

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	9.4	4.5	29.0	236	CP-P14/8-1S-A
2	2 x 4.32	2 x 2.0	29.0	2 x 108	CP-P14/8-2S-A
3	3 x 2.19	3 x 1.2	29.0	3 x 55.0	CP-P14/8-3S-A

General data 4-pins P14/8 coil former for PCB mounting

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938(M)
Maximum operating temperature	130 °C, "IEC 60085", class B
Pin material	copper-zinc alloy (CuZn), tin (Sn) plated
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, 235 °C, 2 s

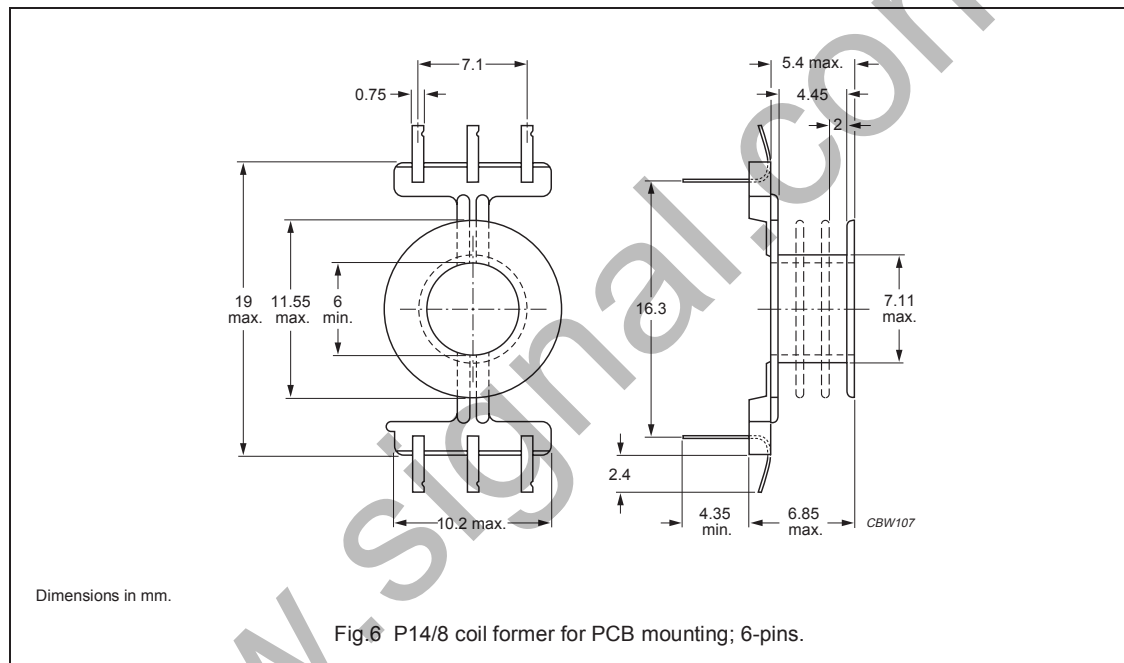


Winding data and area product for 4-pins P14/8 coil former for PCB mounting

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	8.65	4.4	29.0	4.75	217	CPV-P14/8-1S-4SPD
1	8.65	4.4	29.0	6.8	217	CPV-P14/8-1S-4SPDL
2	2 x 3.87	2 x 2.0	29.0	4.75	2 x 97.1	CPV-P14/8-2S-4SPD
2	2 x 3.87	2 x 2.0	29.0	6.8	2 x 97.1	CPV-P14/8-2S-4SPDL

General data 6-pins P14/8 coil former for PCB mounting

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938(M)
Maximum operating temperature	130 °C, "IEC 60085", class B
Pin material	copper-zinc alloy (CuZn), tin (Sn) plated
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, 235 °C, 2 s



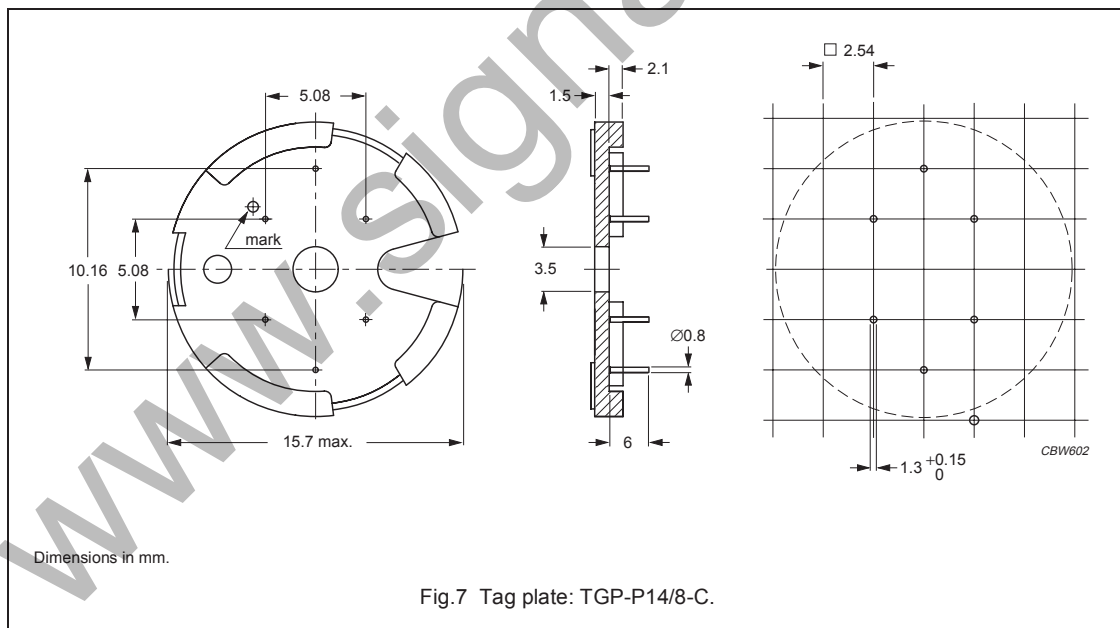
Winding data and area product for 6-pins P14/8 coil former for PCB mounting

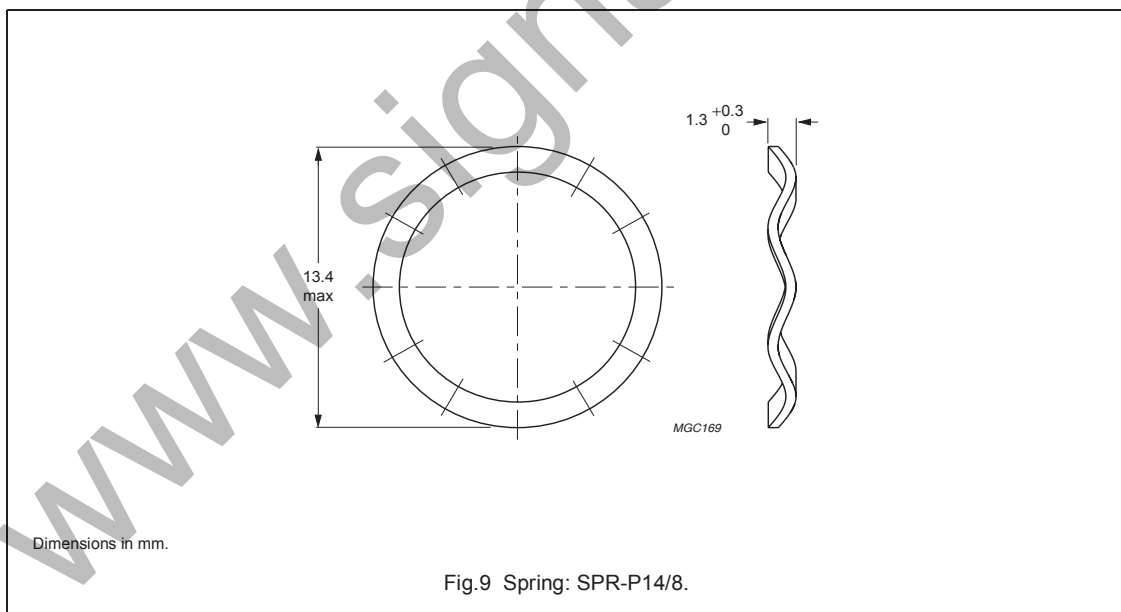
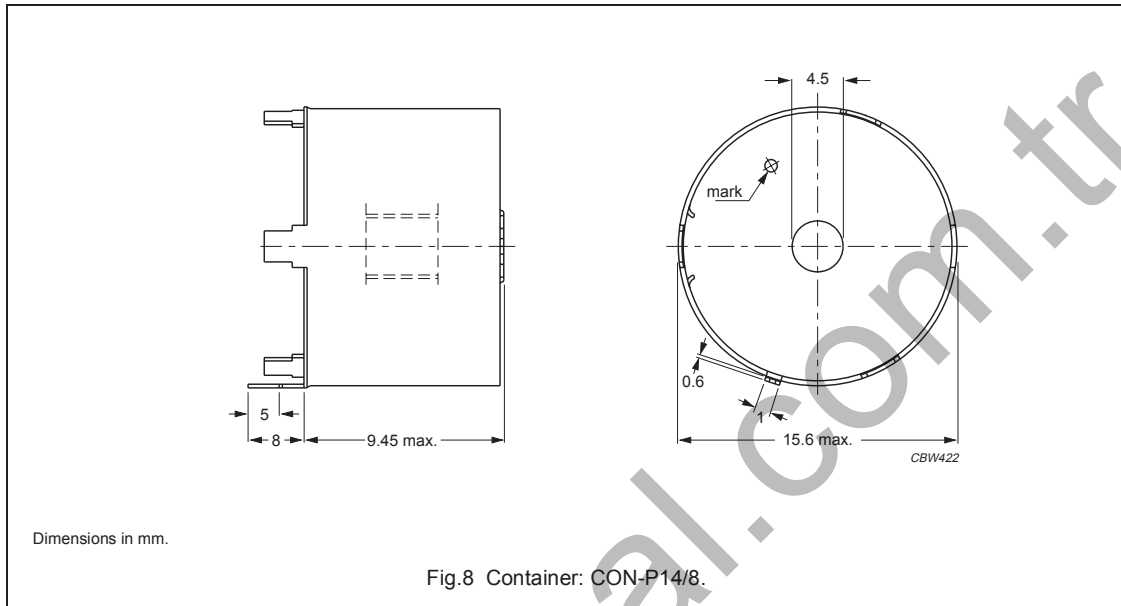
NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	8.65	4.4	29.0	4.4	217	CPV-P14/8-1S-6PD
1	8.65	4.4	29.0	6.8	217	CPV-P14/8-1S-6PDL
2	2 x 3.87	2 x 2.0	29.0	4.4	2 x 97.1	CPV-P14/8-2S-6PD
2	2 x 3.87	2 x 2.0	29.0	6.8	2 x 97.1	CPV-P14/8-2S-6PDL

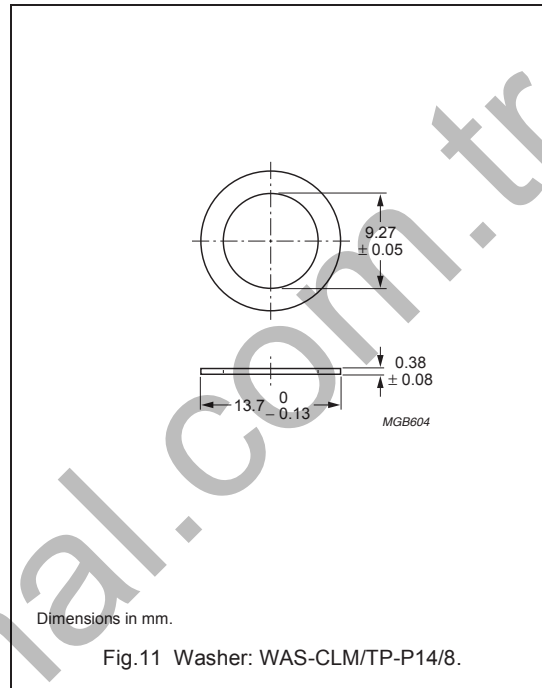
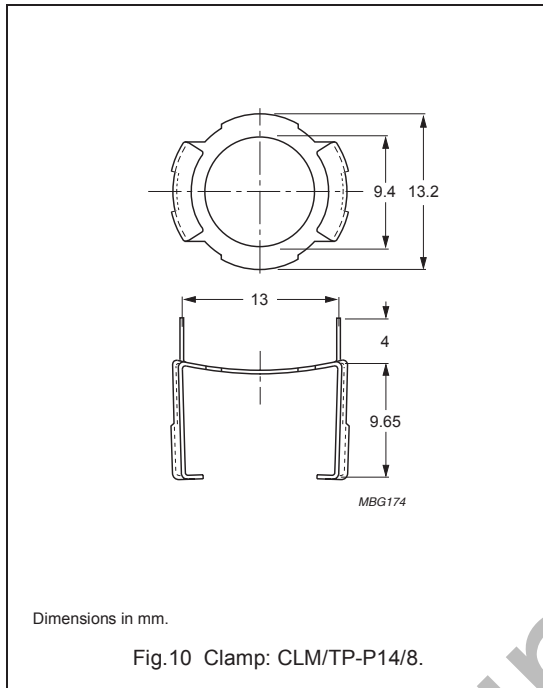
MOUNTING PARTS

General data for mounting parts

ITEM	REMARKS	FIGURE	TYPE NUMBER
Tag plate	material: phenolformaldehyde (PF), glass reinforced	7	TGP-P14/8-C
	flame retardant: in accordance with "UL 94V-0"; UL file number E41429		
	maximum operating temperature: 180 °C, "IEC 60085", class H		
	pins: copper-tin alloy (CuSn), tin (Sn) plated		
	resistance to soldering heat in accordance with "IEC 60068-2-20", Part 2, Test Tb, method 1B: 350 °C, 3.5 s		
	solderability in accordance with "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s		
Container	copper-zinc alloy (CuZn), tin (Sn) plated	8	CON-P14/8
	earth pins: presoldered		
Spring	CrNi-steel	9	SPR-P14/8
	spring force: ≈60 N when mounted		
Clamp	spring steel, tin-plated	10	CLM/TP-P14/8
Washer	phenolformaldehyde (PF)	11	WAS-CLM/TP-P14/8



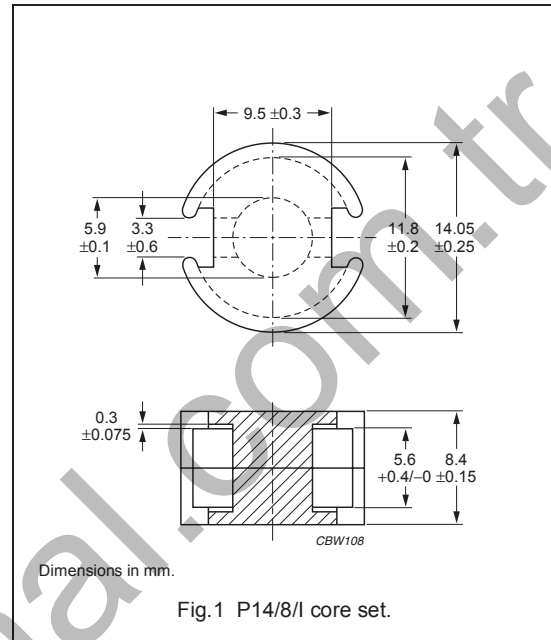




CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.700	mm ⁻¹
V_e	effective volume	628	mm ³
l_e	effective length	21.0	mm
A_e	effective area	29.9	mm ²
A_{min}	minimum area	23.6	mm ²
m	mass of set	≈ 3.5	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 15 ± 5 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μ m)	TYPE NUMBER
3C81	100 ± 3%	≈ 56	≈ 470	P14/8/I-3C81-A100
	160 ± 3%	≈ 89	≈ 270	P14/8/I-3C81-A160
	250 ± 3%	≈ 140	≈ 160	P14/8/I-3C81-A250
	315 ± 5%	≈ 176	≈ 120	P14/8/I-3C81-A315
	400 ± 5%	≈ 224	≈ 95	P14/8/I-3C81-A400
	2900 ± 25%	≈ 1620	≈ 0	P14/8/I-3C81
3C91 <small>des</small>	2900 ± 25%	≈ 1620	≈ 0	P14/8/I-3C91
3F3	100 ± 3%	≈ 56	≈ 470	P14/8/I-3F3-A100
	160 ± 3%	≈ 89	≈ 270	P14/8/I-3F3-A160
	250 ± 3%	≈ 140	≈ 160	P14/8/I-3F3-A250
	315 ± 5%	≈ 176	≈ 120	P14/8/I-3F3-A315
	400 ± 5%	≈ 224	≈ 95	P14/8/I-3F3-A400
	2400 ± 25%	≈ 1340	≈ 0	P14/8/I-3F3

P cores and accessories

P14/8/I

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; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥320	≤0.15	–	–	–
3C91	≥315	–	≤0.032 ⁽¹⁾	≤0.24 ⁽¹⁾	–
3F3	≥315	–	≤0.07	–	≤0.12

Note

1. Measured at 60 °C.

BOBBINS AND ACCESSORIES

Coil formers, winding data and mounting parts are equal to those of "P14/8", but "area product" is different.

Winding data and area product (for P14/8/I) for CP-P14/8 coil former

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	8.8	4.1	28.9	263	CP-P14/8-1S
2	2 x 4.0	2 x 1.85	28.9	2 x 120	CP-P14/8-2S

Winding data and area product (for P14/8/I) for CP-P14/8-A coil former

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	9.4	4.5	29.0	281	CP-P14/8-1S-A
2	2 x 4.32	2 x 2.0	29.0	2 x 129	CP-P14/8-2S-A
3	3 x 2.19	3 x 1.2	29.0	3 x 65.5	CP-P14/8-3S-A

Winding data and area product (for P14/8/I) for 4-pins P14/8 coil former for PCB mounting

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	8.65	4.4	29.0	4.4	259	CPV-P14/8-1S-4SPD
1	8.65	4.4	29.0	6.8	259	CPV-P14/8-1S-4SPDL
2	2 x 3.87	2 x 2.0	29.0	4.4	2 x 116	CPV-P14/8-2S-4SPD
2	2 x 3.87	2 x 2.0	29.0	6.8	2 x 116	CPV-P14/8-2S-4SPDL

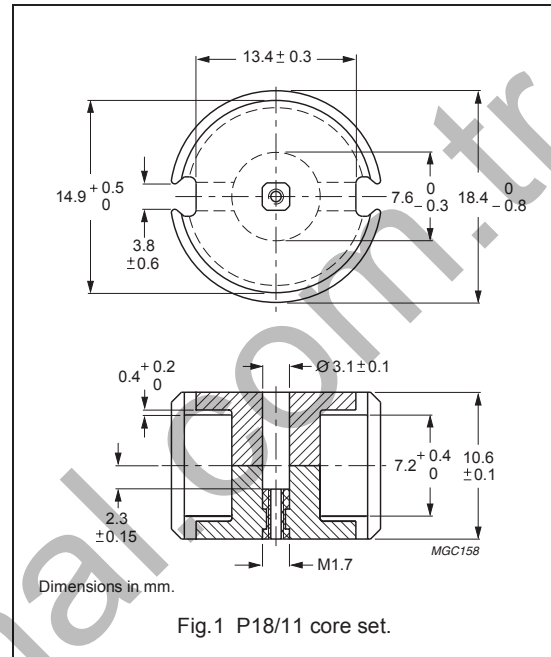
Winding data and area product (for P14/8/I) for 6-pins P14/8 coil former for PCB mounting

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	8.65	4.4	29.0	4.4	259	CPV-P14/8-1S-6PD
1	8.65	4.4	29.0	6.8	259	CPV-P14/8-1S-6PDL
2	2 × 3.87	2 × 2.0	29.0	4.4	2 × 116	CPV-P14/8-2S-6PD
2	2 × 3.87	2 × 2.0	29.0	6.8	2 × 116	CPV-P14/8-2S-6PDL

CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.597	mm ⁻¹
V_e	effective volume	1120	mm ³
l_e	effective length	25.8	mm
A_e	effective area	43.3	mm ²
A_{min}	minimum area	36.0	mm ²
m	mass of set	≈6.0	g



Core sets for filter applications

Clamping force for A_L measurements, 80 ±20 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER (WITH NUT)	TYPE NUMBER (WITHOUT NUT)
3D3 ^{sup}	63 ±3%	≈ 30	≈ 1210	P18/11-3D3-E63/N	P18/11-3D3-E63
	100 ±3%	≈ 47	≈ 670	P18/11-3D3-E100/N	P18/11-3D3-E100
	160 ±3%	≈ 76	≈ 370	P18/11-3D3-E160/N	P18/11-3D3-E160
	1400 ±25%	≈ 665	≈ 0	–	P18/11-3D3
3H3 ^{sup}	160 ±3%	≈ 76	≈ 400	P18/11-3H3-E160/N	P18/11-3H3-E160
	250 ±3%	≈ 119	≈ 240	P18/11-3H3-A250/N	P18/11-3H3-A250
	315 ±3%	≈ 149	≈ 180	P18/11-3H3-A315/N	P18/11-3H3-A315
	400 ±3%	≈ 190	≈ 140	P18/11-3H3-A400/N	P18/11-3H3-A400
	630 ±5%	≈ 299	≈ 80	P18/11-3H3-A630/N	P18/11-3H3-A630
	3100 ±25%	≈ 1470	≈ 0	–	P18/11-3H3

P cores and accessories

P18/11

Core sets for general purpose transformers and power applicationsClamping force for A_L measurements, 80 ± 20 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C81	100 $\pm 3\%$	≈ 47	≈ 710	P18/11-3C81-E100
	160 $\pm 3\%$	≈ 76	≈ 400	P18/11-3C81-A160
	250 $\pm 3\%$	≈ 119	≈ 240	P18/11-3C81-A250
	315 $\pm 3\%$	≈ 149	≈ 180	P18/11-3C81-A315
	400 $\pm 3\%$	≈ 190	≈ 140	P18/11-3C81-A400
	4000 $\pm 25\%$	≈ 1900	≈ 0	P18/11-3C81
3C91 <small>des</small>	4000 $\pm 25\%$	≈ 1900	≈ 0	P18/11-3C91
3F3	100 $\pm 3\%$	≈ 47	≈ 710	P18/11-3F3-E100
	160 $\pm 3\%$	≈ 76	≈ 400	P18/11-3F3-A160
	250 $\pm 3\%$	≈ 119	≈ 240	P18/11-3F3-A250
	315 $\pm 3\%$	≈ 149	≈ 180	P18/11-3F3-A315
	400 $\pm 3\%$	≈ 190	≈ 140	P18/11-3F3-A400
	2850 $\pm 25\%$	≈ 1350	≈ 0	P18/11-3F3

Core sets of high permeability gradesClamping force for A_L measurements, 60 ± 20 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3E27	7500 $\pm 25\%$	≈ 3560	≈ 0	P18/11-3E27

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; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥ 320	≤ 0.26	–	–	–
3C91	≥ 315	–	$\leq 0.07^{(1)}$	$\leq 0.45^{(1)}$	–
3F3	≥ 315	–	≤ 0.13	–	≤ 0.22

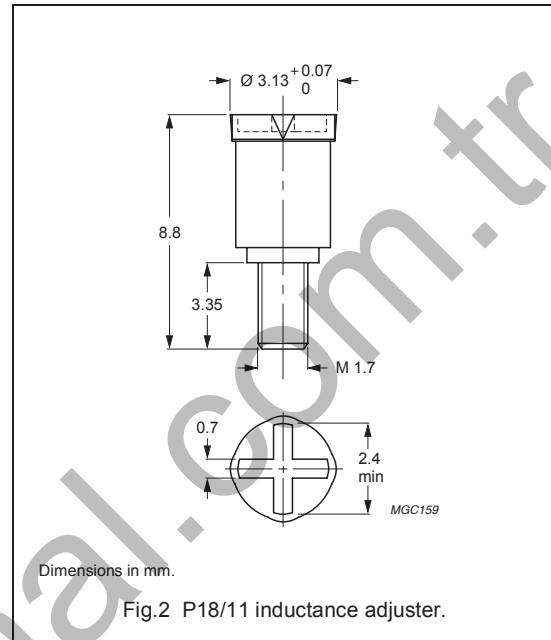
Note

1. Measured at 60 °C.

INDUCTANCE ADJUSTERS

General data

ITEM	SPECIFICATION
Material of head and thread	polypropylene (PP), glass fibre reinforced
Maximum operating temperature	125 °C



Inductance adjuster selection chart ^{sup} (applies to all types)

GRADE	A _L (nH)	TYPES FOR LOW ADJUSTMENT	ΔL/L ⁽¹⁾	types for medium adjustment	ΔL/L ⁽¹⁾	TYPES FOR HIGH ADJUSTMENT	ΔL/L ⁽¹⁾
3H3	63	–	–	ADJ-P18-YELLOW	16	–	–
	100	–	–	–	–	ADJ-P18-BROWN	42
	160	ADJ-P18-YELLOW	9	ADJ-P18-RED	18	ADJ-P18-BROWN	28
	250	ADJ-P18-RED	11	ADJ-P18-WHITE	14	ADJ-P18-BROWN	18
	315	ADJ-P18-RED	8	ADJ-P18-BROWN	14	ADJ-P18-VIOLET	20
	400	ADJ-P18-WHITE	8	ADJ-P18-VIOLET	16	–	–
	630	ADJ-P18-VIOLET	8	–	–	–	–
	1000	ADJ-P18-VIOLET	5	–	–	–	–
	1250	–	–	–	–	–	–
3D3	40	–	–	–	–	ADJ-P18-YELLOW	19
	63	–	–	ADJ-P18-YELLOW	17	–	–
	100	–	–	–	–	ADJ-P18-RED	26
	160	–	–	ADJ-P18-RED	15	–	–

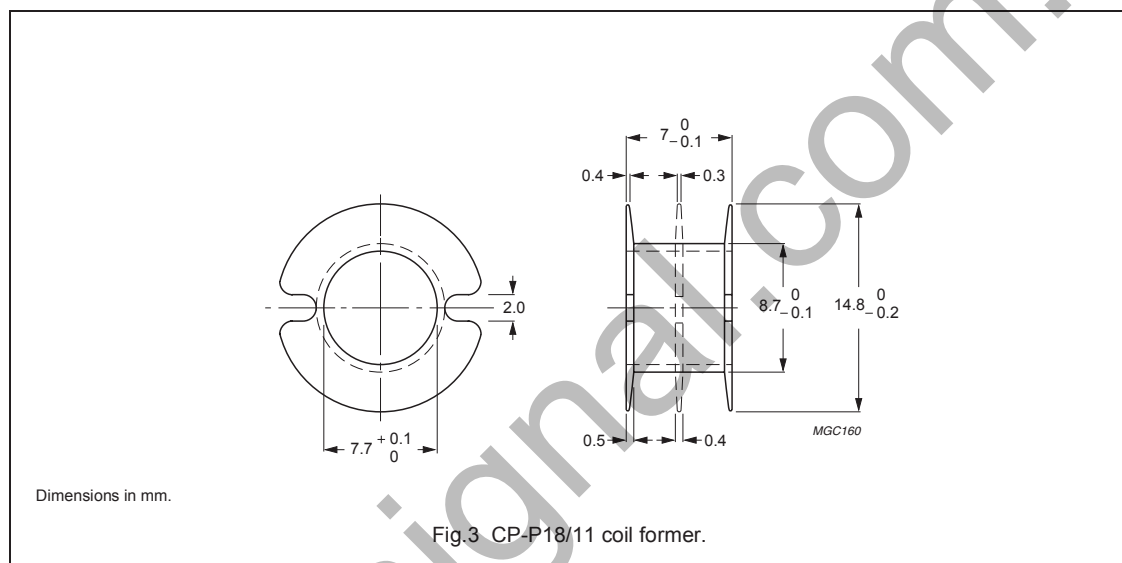
Note

1. Maximum adjustment range.

COIL FORMERS

General data CP-P18/11

PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephthalate (PBT), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E45329 (R)
Maximum operating temperature	155 °C, "IEC 60085", class F

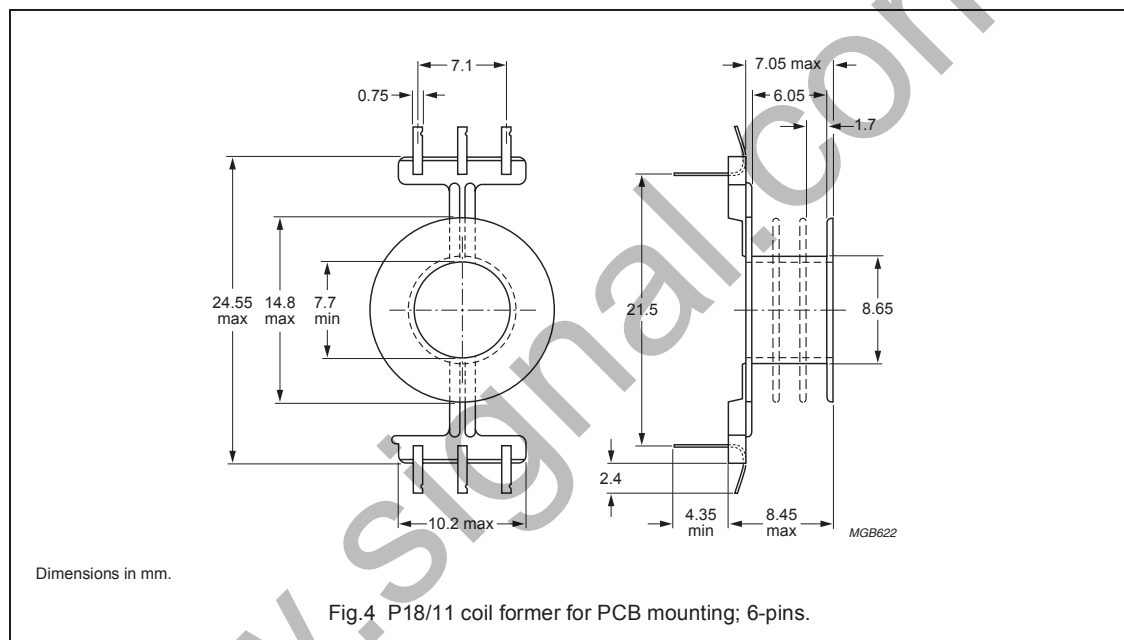


Winding data and area product for CP-P18/11 coil former

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	17.1	5.7	36.6	740	CP-P18/11-1S
2	2 x 7.95	2 x 2.65	36.6	2 x 344	CP-P18/11-2S
3	3 x 4.95	3 x 1.6	36.6	3 x 214	CP-P18/11-3S

General data 6-pins P18/11 coil former for PCB mounting

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938(M)
Maximum operating temperature	130 °C, "IEC 60085", class B
Pin material	copper-zinc alloy (CuZn), tin (Sn) plated
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, 235 °C, 2 s



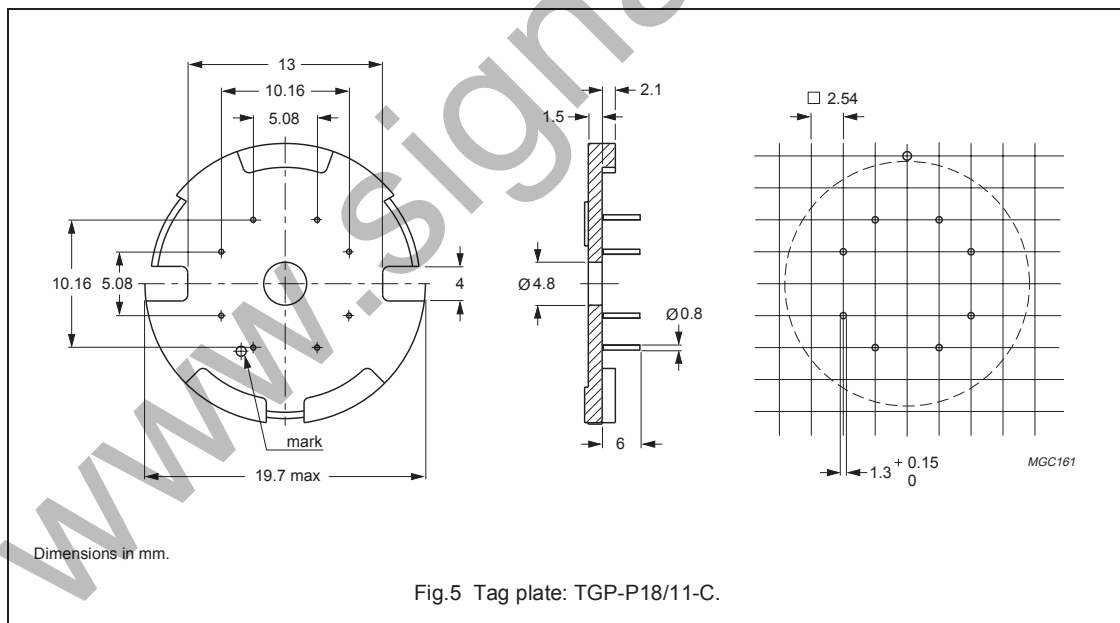
Winding data and area product for 6-pins P18/11 coil former for PCB mounting

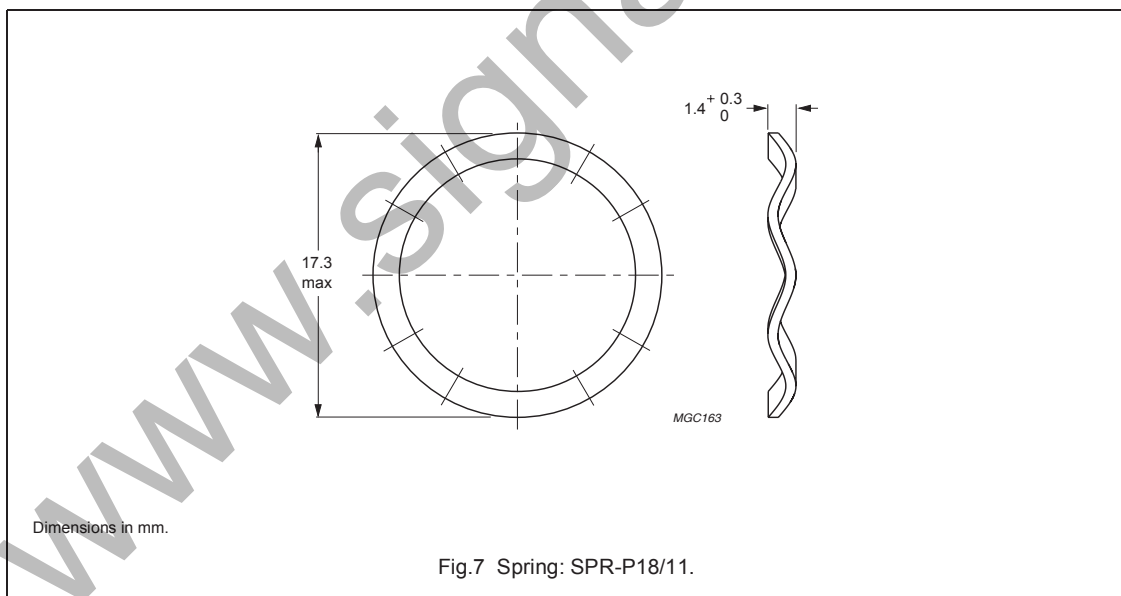
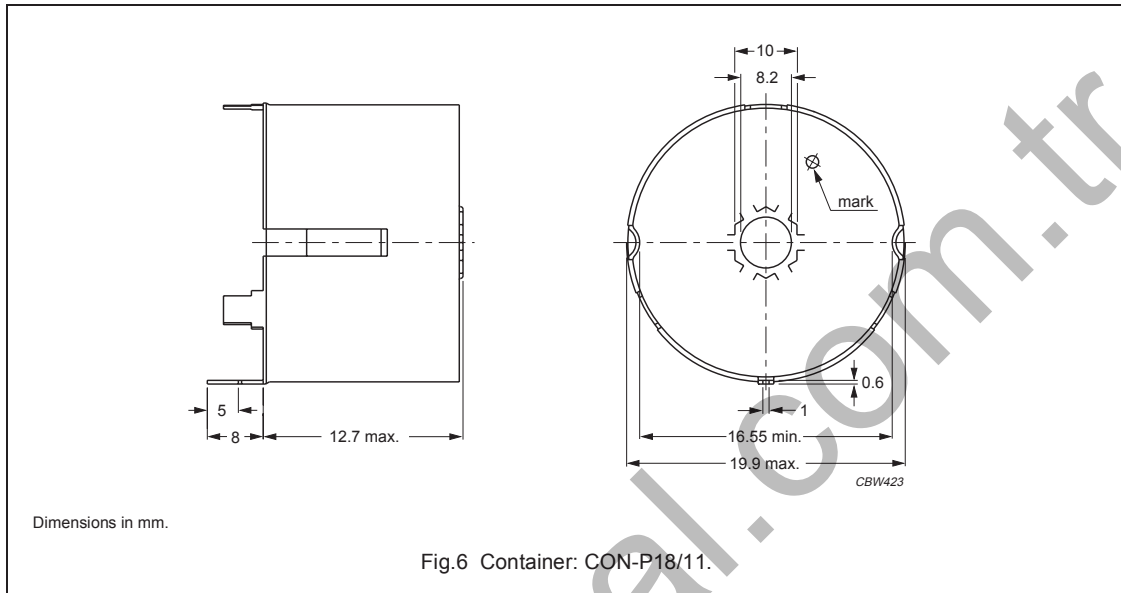
NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	16.8	6.0	36.7	4.4	727	CPV-P18/11-1S-6PD
1	16.8	6.0	36.7	6.8	727	CPV-P18/11-1S-6PDL
2	2 x 7.61	2 x 2.8	36.7	4.4	2 x 330	CPV-P18/11-2S-6PD
2	2 x 7.61	2 x 2.8	36.7	6.8	2 x 330	CPV-P18/11-2S-6PDL
3	3 x 4.58	3 x 1.7	36.7	4.4	3 x 198	CPV-P18/11-3S-6PD
3	3 x 4.58	3 x 1.7	36.7	6.8	3 x 198	CPV-P18/11-3S-6PDL

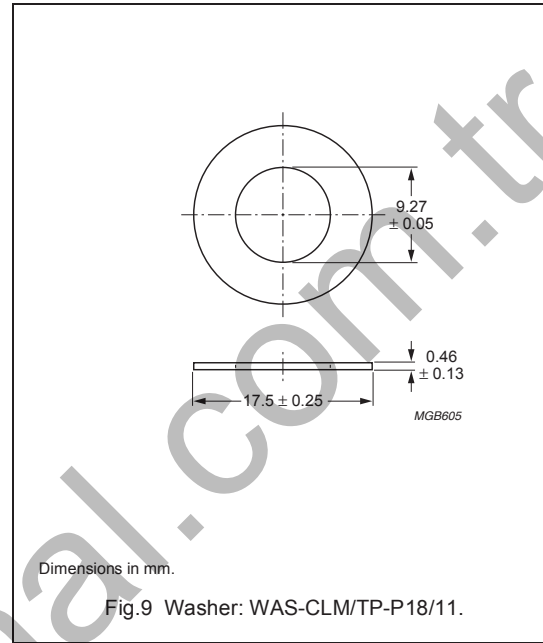
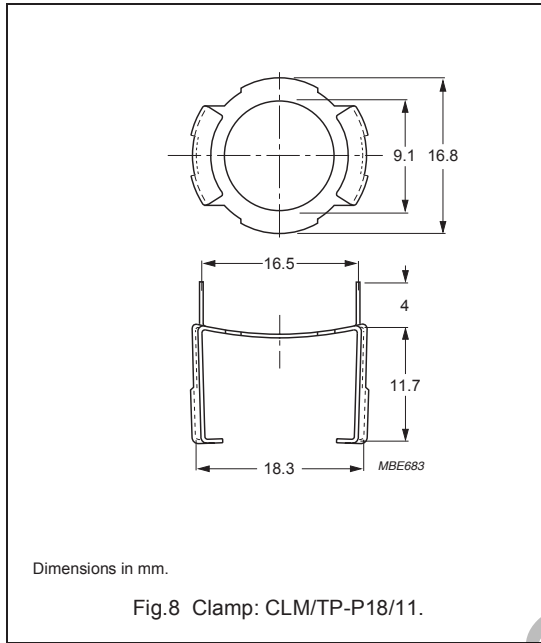
MOUNTING PARTS

General data for mounting parts

ITEM	REMARKS	FIGURE	TYPE NUMBER
Tag plate	material: phenolformaldehyde (PF), glass reinforced	5	TGP-P18/11-C
	flame retardant: in accordance with "UL 94V-0"; UL file number E41429		
	maximum operating temperature: 180 °C, "IEC 60085", class H		
	pins: copper-tin alloy (CuSn), tin (Sn) plated		
	resistance to soldering heat in accordance with "IEC 60068-2-20", Part 2, Test Tb, method 1B: 350 °C, 3.5 s		
	solderability in accordance with "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s		
Container	copper-zinc alloy (CuZn), tin (Sn) plated	6	CON-P18/11
	earth pins: presoldered		
Spring	CrNi-steel	7	SPR-P18/11
	spring force: ≈100 N when mounted		
Clamp	spring steel, tin-plated	8	CLM/TP-P18/11
Washer	phenolformaldehyde (PF)	9	WAS-CLM/TP-P18/11



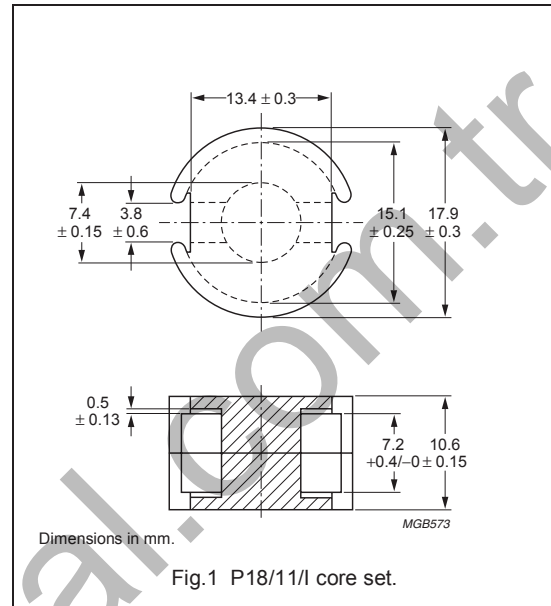




CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.560	mm ⁻¹
V_e	effective volume	1270	mm ³
l_e	effective length	26.7	mm
A_e	effective area	47.5	mm ²
A_{min}	minimum area	37.5	mm ²
m	mass of set	≈ 7	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 30 ± 10 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C81	160 ± 3%	≈ 72	≈ 450	P18/11/I-3C81-A160
	250 ± 3%	≈ 112	≈ 260	P18/11/I-3C81-A250
	315 ± 3%	≈ 141	≈ 200	P18/11/I-3C81-A315
	400 ± 3%	≈ 179	≈ 150	P18/11/I-3C81-A400
	630 ± 5%	≈ 282	≈ 90	P18/11/I-3C81-A630
	4200 ± 25%	≈ 1880	≈ 0	P18/11/I-3C81
3C91 <small>des</small>	4200 ± 25%	≈ 1880	≈ 0	P18/11/I-3C91
3F3	160 ± 3%	≈ 72	≈ 450	P18/11/I-3F3-A160
	250 ± 3%	≈ 112	≈ 260	P18/11/I-3F3-A250
	315 ± 3%	≈ 141	≈ 200	P18/11/I-3F3-A315
	400 ± 3%	≈ 179	≈ 150	P18/11/I-3F3-A400
	630 ± 5%	≈ 282	≈ 90	P18/11/I-3F3-A630
	3110 ± 25%	≈ 1390	≈ 0	P18/11/I-3F3

P cores and accessories

P18/11/I

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; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥320	≤0.3	–	–	–
3C91	≥315	–	≤0.08 ⁽¹⁾	≤0.5 ⁽¹⁾	–
3F3	≥315	–	≤0.14	–	≤0.24

Note

1. Measured at 60 °C.

BOBBINS AND ACCESSORIES

Coil formers, winding data and mounting parts are equal to those of "P18/11", but "area product" is different.

Winding data and area product (for P18/11/I) for CP-P18/11 coil former

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	17.1	5.7	36.6	812	CP-P18/11-1S
2	2 × 7.95	2 × 2.65	36.6	2 x 378	CP-P18/11-2S
3	3 × 4.95	3 × 1.6	36.6	3 x 235	CP-P18/11-3S

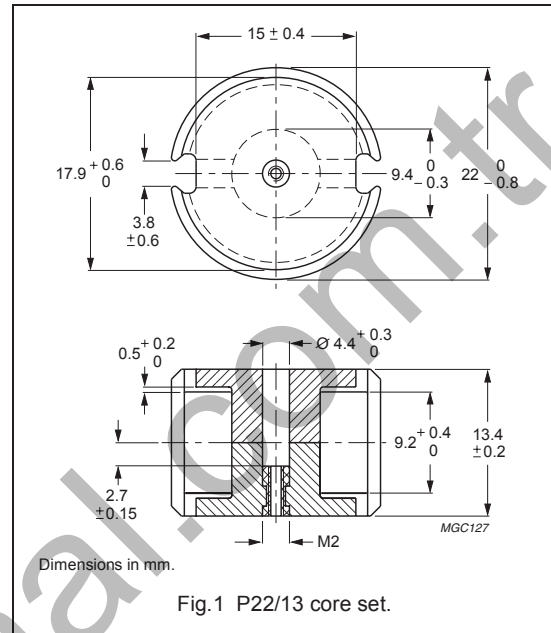
Winding data and area product (for P18/11/I) for 6-pins P18/11 coil former for PCB mounting

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	16.8	6.0	36.7	4.4	798	CPV-P18/11-1S-6PD
1	16.8	6.0	36.7	6.8	798	CPV-P18/11-1S-6PDL
2	2 × 7.61	2 × 2.8	36.7	4.4	2 x 361	CPV-P18/11-2S-6PD
2	2 × 7.61	2 × 2.8	36.7	6.8	2 x 361	CPV-P18/11-2S-6PDL
3	3 × 4.58	3 × 1.7	36.7	4.4	3 x 218	CPV-P18/11-3S-6PD
3	3 × 4.58	3 × 1.7	36.7	6.8	3 x 218	CPV-P18/11-3S-6PDL

CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.497	mm ⁻¹
V_e	effective volume	2000	mm ³
l_e	effective length	31.5	mm
A_e	effective area	63.4	mm ²
A_{min}	minimum area	50.9	mm ²
m	mass of set	≈ 12	g



Core sets for filter applications

Clamping force for A_L measurements, 140 ± 30 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER (WITH NUT)	TYPE NUMBER (WITHOUT NUT)
3D3 ^{sup}	40 ± 3%	≈ 16	≈ 3360	P22/13-3D3-E40/N	P22/13-3D3-E40
	63 ± 3%	≈ 25	≈ 1890	P22/13-3D3-E63/N	P22/13-3D3-E63
	100 ± 3%	≈ 40	≈ 1040	P22/13-3D3-E100/N	P22/13-3D3-E100
	160 ± 3%	≈ 63	≈ 570	P22/13-3D3-E160/N	P22/13-3D3-E160
	1700 ± 25%	≈ 670	≈ 0	—	P22/13-3D3
3H3 ^{sup}	160 ± 3%	≈ 64	≈ 610	P22/13-3H3-E160/N	P22/13-3H3-E160
	250 ± 3%	≈ 100	≈ 360	P22/13-3H3-E250/N	P22/13-3H3-E250
	315 ± 3%	≈ 125	≈ 270	P22/13-3H3-E315/N	P22/13-3H3-E315
	400 ± 3%	≈ 158	≈ 210	P22/13-3H3-A400/N	P22/13-3H3-A400
	630 ± 3%	≈ 249	≈ 120	P22/13-3H3-A630/N	P22/13-3H3-A630
	3900 ± 25%	≈ 1540	≈ 0	—	P22/13-3H3

Core sets for general purpose transformers and power applicationsClamping force for A_L measurements, 140 ± 30 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C81	$160 \pm 3\%$	≈ 63	≈ 610	P22/13-3C81-A160
	$250 \pm 3\%$	≈ 99	≈ 360	P22/13-3C81-A250
	$315 \pm 3\%$	≈ 125	≈ 280	P22/13-3C81-A315
	$400 \pm 3\%$	≈ 158	≈ 210	P22/13-3C81-A400
	$630 \pm 3\%$	≈ 249	≈ 120	P22/13-3C81-A630
	$5200 \pm 25\%$	≈ 2060	≈ 0	P22/13-3C81
3C91 <small>des</small>	$5200 \pm 25\%$	≈ 2060	≈ 0	P22/13-3C91
3F3	$160 \pm 3\%$	≈ 63	≈ 610	P22/13-3F3-A160
	$250 \pm 3\%$	≈ 99	≈ 360	P22/13-3F3-A250
	$315 \pm 3\%$	≈ 125	≈ 280	P22/13-3F3-A315
	$400 \pm 3\%$	≈ 158	≈ 210	P22/13-3F3-A400
	$630 \pm 3\%$	≈ 249	≈ 120	P22/13-3F3-A630
	$3550 \pm 25\%$	≈ 1410	≈ 0	P22/13-3F3

Core sets of high permeability gradesClamping force for A_L measurements, 140 ± 30 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3E27	$9250 \pm 25\%$	≈ 3660	≈ 0	P22/13-3E27

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; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥ 320	≤ 0.46	–	–	–
3C91	≥ 315	–	$\leq 0.12^{(1)}$	$\leq 0.9^{(1)}$	–
3F3	≥ 315	–	≤ 0.22	–	≤ 0.4

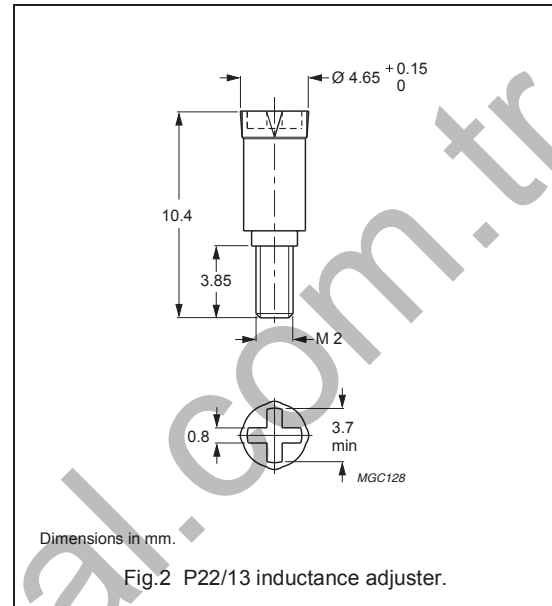
Note

1. Measured at 60 °C.

INDUCTANCE ADJUSTERS

General data

PARAMETER	SPECIFICATION
Material of head and thread	polypropylene (PP), glass fibre reinforced
Maximum operating temperature	125 °C



Inductance adjuster selection chart ^{sup} (applies to all types)

GRADE	A _L (nH)	TYPES FOR LOW ADJUSTMENT	ΔL/L (1)	TYPES FOR MEDIUM ADJUSTMENT	ΔL/L (1)	TYPES FOR HIGH ADJUSTMENT	ΔL/L (1)
3H3	100	–	–	ADJ-P22/RM8-RED	16	ADJ-P22/RM8-ORANGE	21
	160	ADJ-P22/RM8-RED	11	ADJ-P22/RM8-ORANGE	17	ADJ-P22/RM8-WHITE	27
	250	ADJ-P22/RM8-ORANGE	10	ADJ-P22/RM8-WHITE	18	–	–
	315	ADJ-P22/RM8-ORANGE	7	–	–	ADJ-P22/RM8-BROWN	22
	400	ADJ-P22/RM8-WHITE	11	ADJ-P22/RM8-BROWN	17	ADJ-P22/RM8-BLACK	30
	630	ADJ-P22/RM8-BROWN	10	ADJ-P22/RM8-BLACK	18	–	–
	1000	ADJ-P22/RM8-BROWN	6	ADJ-P22/RM8-BLACK	12	–	–
	1250	ADJ-P22/RM8-BROWN	4	ADJ-P22/RM8-BLACK	7	–	–
3D3	40	–	–	–	–	ADJ-P22/RM8-ORANGE	27
	63	–	–	–	–	ADJ-P22/RM8-ORANGE	26
	100	–	–	ADJ-P22/RM8-RED	16	ADJ-P22/RM8-ORANGE	23
	160	ADJ-P22/RM8-RED	10	ADJ-P22/RM8-ORANGE	15	–	–

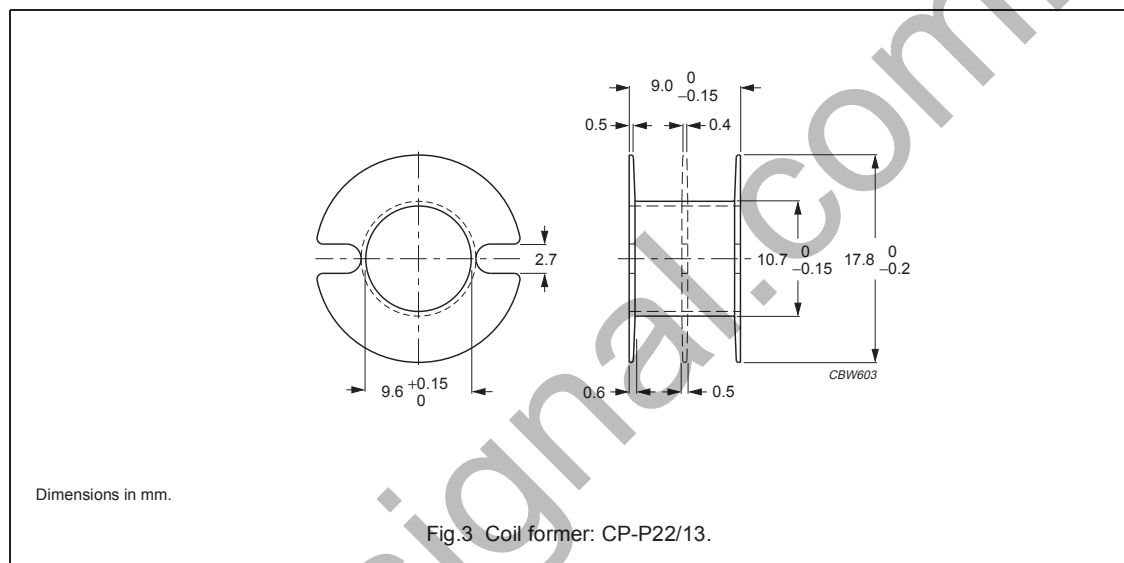
Note

1. Maximum adjustment range.

COIL FORMERS

General data CP-P22/13 coil former

PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephthalate (PBT), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E45329 (R)
Maximum operating temperature	155 °C, "IEC 60085", class F



Winding data and area product for CP-P22/13 coil former

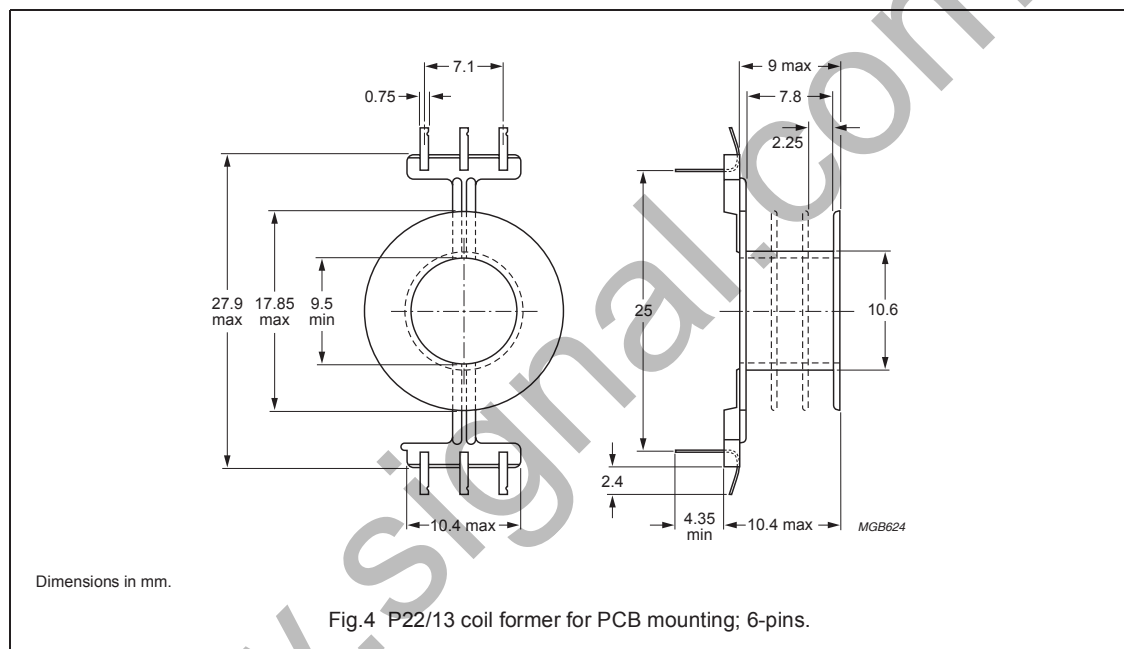
NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	26.2	7.5	44.5	1660	CP-P22/13-1S
2	2 x 12.2	2 x 3.45	44.5	2 x 773	CP-P22/13-2S
3	3 x 7.6	3 x 2.1	44.5	3 x 482	CP-P22/13-3S

P cores and accessories

P22/13

General data 6-pins P22/13 coil former for PCB mounting

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938(M)
Maximum operating temperature	130 °C, "IEC 60085", class B
Pin material	copper-zinc alloy (CuZn), tin (Sn) plated
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, 235 °C, 2 s



Winding data and area product for 6-pins P22/13 coil former for PCB mounting

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	MINIMUM LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	25.2	7.8	44.5	4.4	1600	CPV-P22/13-1S-6PD
1	25.2	7.8	44.5	6.8	1600	CPV-P22/13-1S-6PDL
2	2 x 11.7	2 x 3.6	44.5	4.4	2 x 742	CPV-P22/13-2S-6PD
2	2 x 11.7	2 x 3.6	44.5	6.8	2 x 742	CPV-P22/13-2S-6PDL
3	3 x 7.03	3 x 2.2	44.5	4.4	3 x 446	CPV-P22/13-3S-6PD ⁽¹⁾
3	3 x 7.03	3 x 2.2	44.5	6.8	3 x 446	CPV-P22/13-3S-6PDL ⁽¹⁾

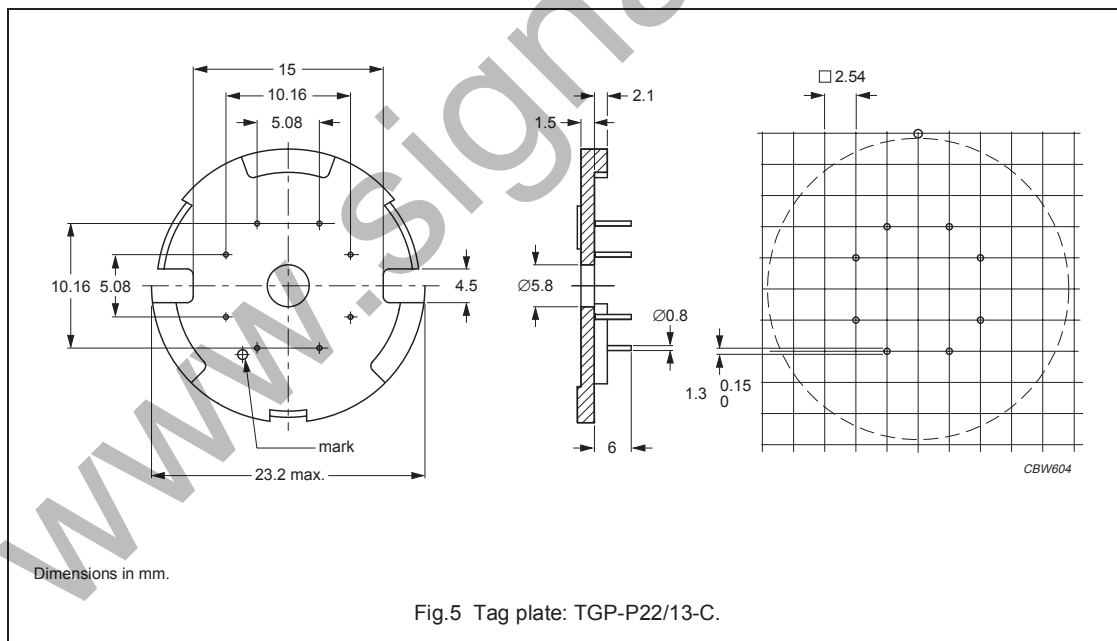
Note

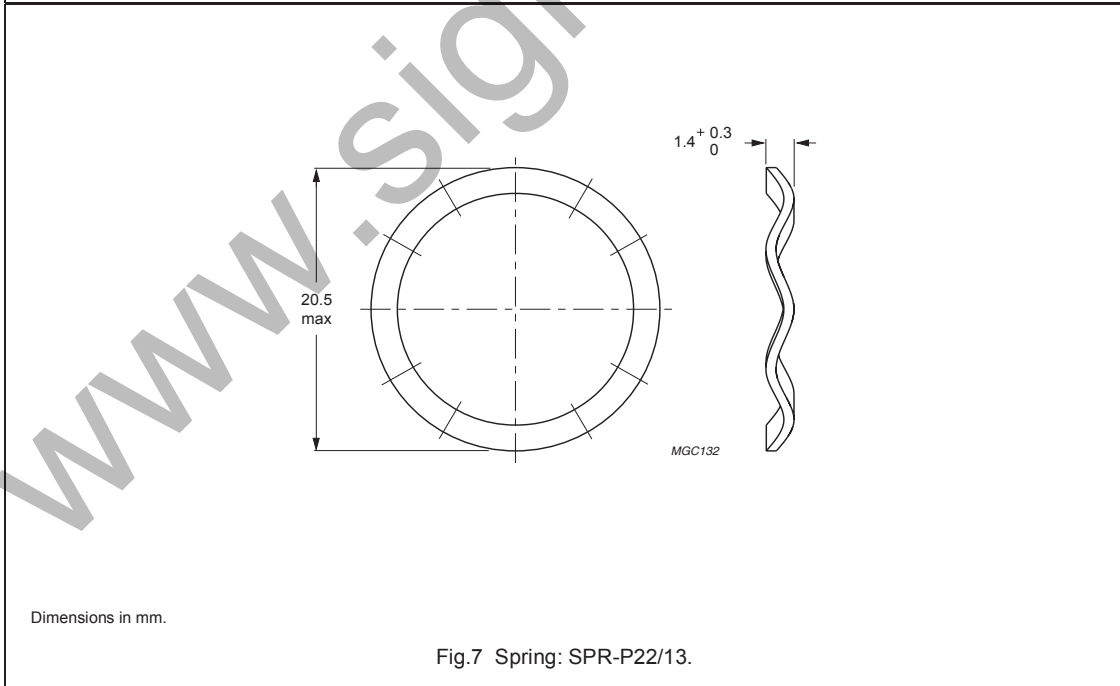
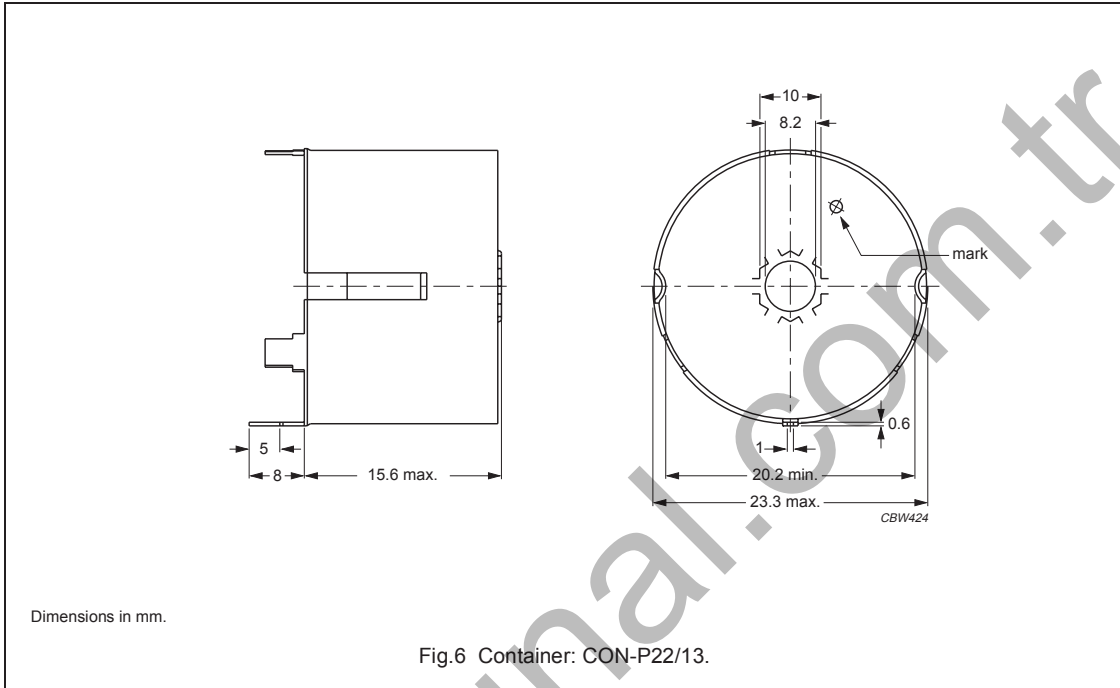
1. In accordance with "UL 94-HB".

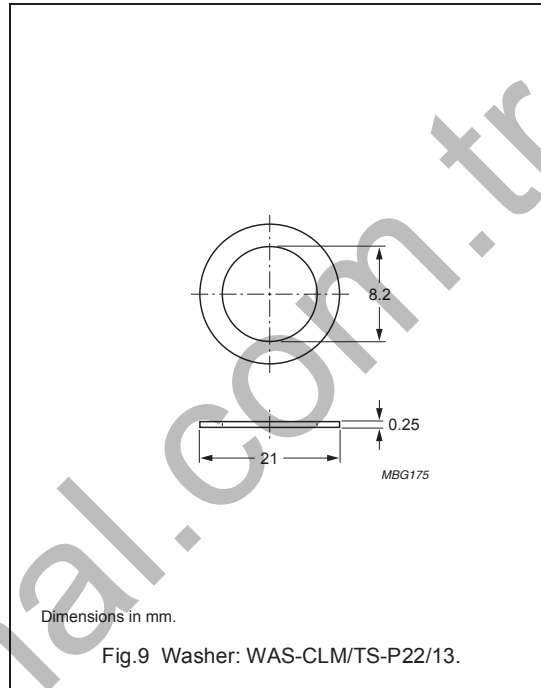
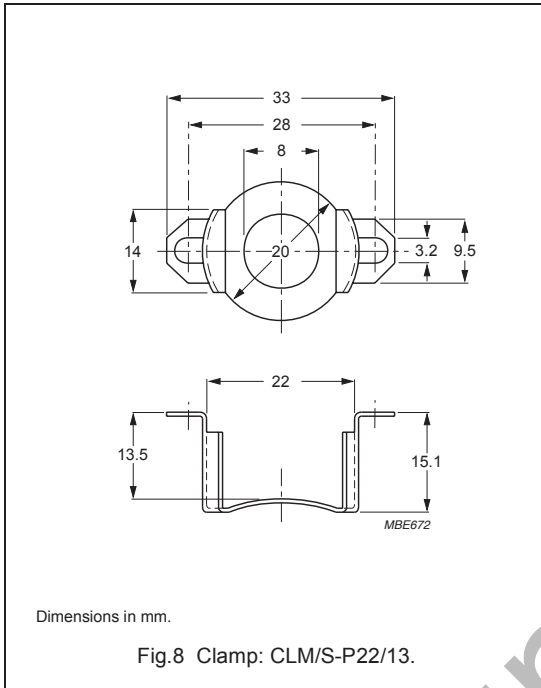
MOUNTING PARTS

General data and ordering information

ITEM	REMARKS	FIGURE	TYPE NUMBER
Tag plate	material: phenolformaldehyde (PF), glass reinforced	5	TGP-P22/13-C
	flame retardant: in accordance with "UL 94V-0"; UL file number E41429		
	maximum operating temperature: 180 °C, "IEC 60085", class H		
	pins: copper-tin alloy (CuSn), tin (Sn) plated		
	resistance to soldering heat in accordance with "IEC 60068-2-20", Part 2, Test Tb, method 1B: 350 °C, 3.5 s		
	solderability in accordance with "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s		
Container	copper-zinc alloy (CuZn), tin (Sn) plated	6	CON-P22/13
	earth pins: presoldered		
Spring	CrNi-steel	7	SPR-P22/13
	spring force: ≈140 N when mounted		
Clamp	spring steel, tin-plated	8	CLM/TS-P22/13
Washer	phenolformaldehyde (PF)	9	WAS-CLM/TS-P22/13



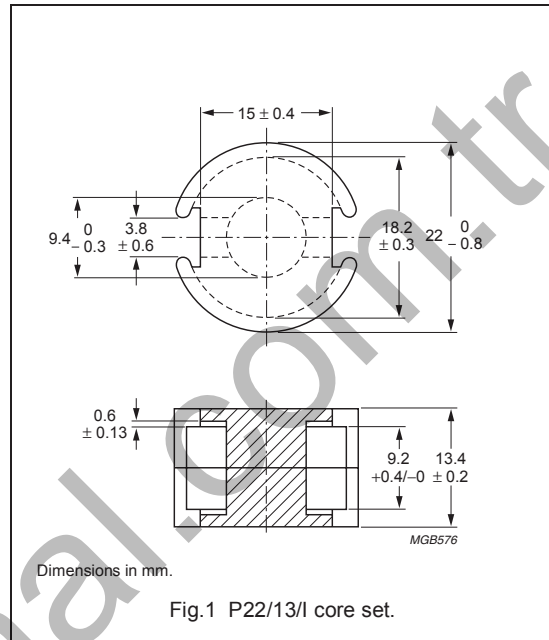




CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.450	mm ⁻¹
V_e	effective volume	2460	mm ³
l_e	effective length	33.3	mm
A_e	effective area	73.4	mm ²
A_{min}	minimum area	58.1	mm ²
m	mass of set	≈ 13	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 40 ± 10 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μ m)	TYPE NUMBER
3C81	250 ± 3%	≈ 90	≈ 420	P22/13/I-3C81-A250
	315 ± 3%	≈ 114	≈ 320	P22/13/I-3C81-A315
	400 ± 3%	≈ 144	≈ 250	P22/13/I-3C81-A400
	630 ± 3%	≈ 227	≈ 145	P22/13/I-3C81-A630
	1000 ± 5%	≈ 361	≈ 85	P22/13/I-3C81-A1000
	5330 ± 25%	≈ 1920	≈ 0	P22/13/I-3C81
3C91 <small>des</small>	5330 ± 25%	≈ 1920	≈ 0	P22/13/I-3C91
3F3	250 ± 3%	≈ 90	≈ 420	P22/13/I-3F3-A250
	315 ± 3%	≈ 114	≈ 320	P22/13/I-3F3-A315
	400 ± 3%	≈ 144	≈ 250	P22/13/I-3F3-A400
	630 ± 3%	≈ 227	≈ 145	P22/13/I-3F3-A630
	1000 ± 5%	≈ 361	≈ 85	P22/13/I-3F3-A1000
	4070 ± 25%	≈ 1470	≈ 0	P22/13/I-3F3

P cores and accessories

P22/13/I

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; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥320	≤ 0.57	–	–	–
3C91	≥315	–	≤ 0.13 ⁽¹⁾	≤ 0.92 ⁽¹⁾	–
3F3	≥315	–	≤ 0.27	–	≤ 0.47

Note

1. Measured at 60 °C.

BOBBINS AND ACCESSORIES

Coil formers, winding data and mounting parts are equal to those of "P22/13", but "area product" is different.

Winding data and area product (for P22/13/I) for CP-P22/13 coil former

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	26.2	7.5	44.5	1920	CP-P22/13-1S
2	2 × 12.2	2 × 3.45	44.5	2 × 895	CP-P22/13-2S
3	3 × 7.6	3 × 2.1	44.5	3 × 558	CP-P22/13-3S

Winding data and area product (for P22/13/I) for 6-pins P22/13 coil former for PCB mounting

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	MINIMUM LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	25.2	7.8	44.5	4.4	1850	CPV-P22/13-1S-6PD
1	25.2	7.8	44.5	6.8	1850	CPV-P22/13-1S-6PDL
2	2 × 11.7	2 × 3.6	44.5	4.4	2 × 859	CPV-P22/13-2S-6PD
2	2 × 11.7	2 × 3.6	44.5	6.8	2 × 859	CPV-P22/13-2S-6PDL
3	3 × 7.03	3 × 2.2	44.5	4.4	3 × 516	CPV-P22/13-3S-6PD ⁽¹⁾
3	3 × 7.03	3 × 2.2	44.5	6.8	3 × 516	CPV-P22/13-3S-6PDL ⁽¹⁾

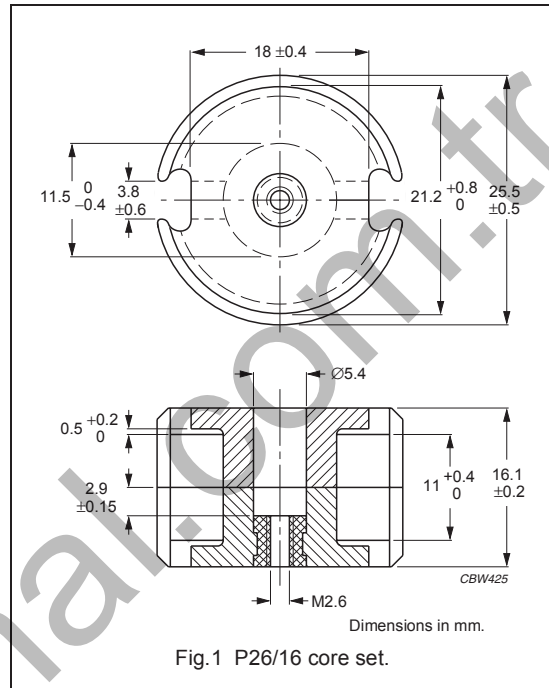
Note

1. In accordance with "UL 94-HB".

CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.400	mm ⁻¹
V_e	effective volume	3530	mm ³
l_e	effective length	37.6	mm
A_e	effective area	93.9	mm ²
A_{min}	minimum area	77.4	mm ²
m	mass of set	≈20	g



Core sets for filter applications

Clamping force for A_L measurements, 200 ± 50 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER (WITH NUT)	TYPE NUMBER (WITHOUT NUT)
3D3 ^{sup}	100 ± 3%	≈ 32	≈ 1630	P26/16-3D3-E100/N	P26/16-3D3-E100
	160 ± 3%	≈ 51	≈ 890	P26/16-3D3-E160/N	P26/16-3D3-E160
	250 ± 3%	≈ 80	≈ 510	P26/16-3D3-E250/N	P26/16-3D3-E250
	2150 ± 25%	≈ 685	≈ 0	–	P26/16-3D3
3H3 ^{sup}	160 ± 3%	≈ 51	≈ 940	P26/16-3H3-E160/N	P26/16-3H3-E160
	250 ± 3%	≈ 80	≈ 550	P26/16-3H3-E250/N	P26/16-3H3-E250
	315 ± 3%	≈ 100	≈ 420	P26/16-3H3-E315/N	P26/16-3H3-E315
	400 ± 3%	≈ 127	≈ 310	P26/16-3H3-E400/N	P26/16-3H3-E400
	630 ± 3%	≈ 201	≈ 180	P26/16-3H3-A630/N	P26/16-3H3-A630
	5000 ± 25%	≈ 1590	≈ 0	–	P26/16-3H3

Core sets for general purpose transformers and power applicationsClamping force for A_L measurements, 200 ± 50 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C81	160 $\pm 3\%$	≈ 51	≈ 950	P26/16-3C81-E160
	250 $\pm 3\%$	≈ 80	≈ 560	P26/16-3C81-A250
	315 $\pm 3\%$	≈ 100	≈ 420	P26/16-3C81-A315
	400 $\pm 3\%$	≈ 127	≈ 320	P26/16-3C81-A400
	630 $\pm 3\%$	≈ 200	≈ 190	P26/16-3C81-A630
	6700 $\pm 25\%$	≈ 2130	≈ 0	P26/16-3C81
3C91 <small>des</small>	6700 $\pm 25\%$	≈ 2130	≈ 0	P26/16-3C91
3F3	160 $\pm 3\%$	≈ 51	≈ 950	P26/16-3F3-E160
	250 $\pm 3\%$	≈ 80	≈ 560	P26/16-3F3-A250
	315 $\pm 3\%$	≈ 100	≈ 420	P26/16-3F3-A315
	400 $\pm 3\%$	≈ 127	≈ 320	P26/16-3F3-A400
	630 $\pm 3\%$	≈ 200	≈ 190	P26/16-3F3-A630
	4600 $\pm 25\%$	≈ 1470	≈ 0	P26/16-3F3

Core sets of high permeability gradesClamping force for A_L measurements, 200 ± 50 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3E27	12000 $\pm 25\%$	≈ 3820	≈ 0	P26/16-3E27

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; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥ 320	≤ 0.82	–	–	–
3C91	≥ 315	–	$\leq 0.21^{(1)}$	$\leq 1.6^{(1)}$	–
3F3	≥ 315	–	≤ 0.4	–	≤ 0.65

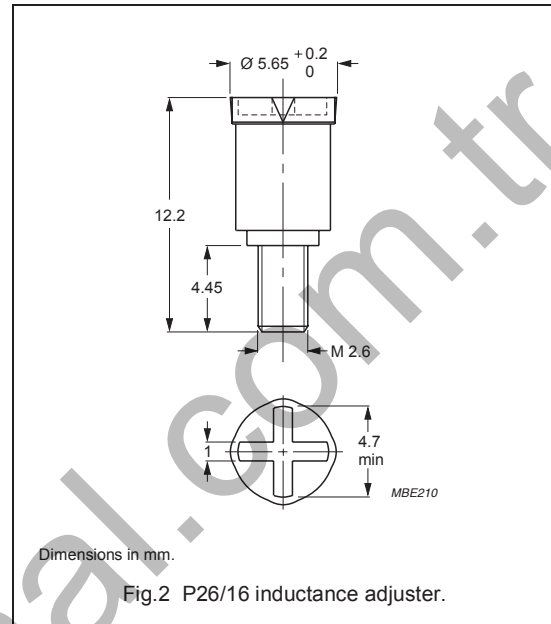
Note

1. Measured at 60 °C.

INDUCTANCE ADJUSTERS

General data

PARAMETER	SPECIFICATION
Material of head and thread	polypropylene (PP), glass fibre reinforced
Maximum operating temperature	125 °C



Inductance adjuster selection chart ^{sup} (applies to all types)

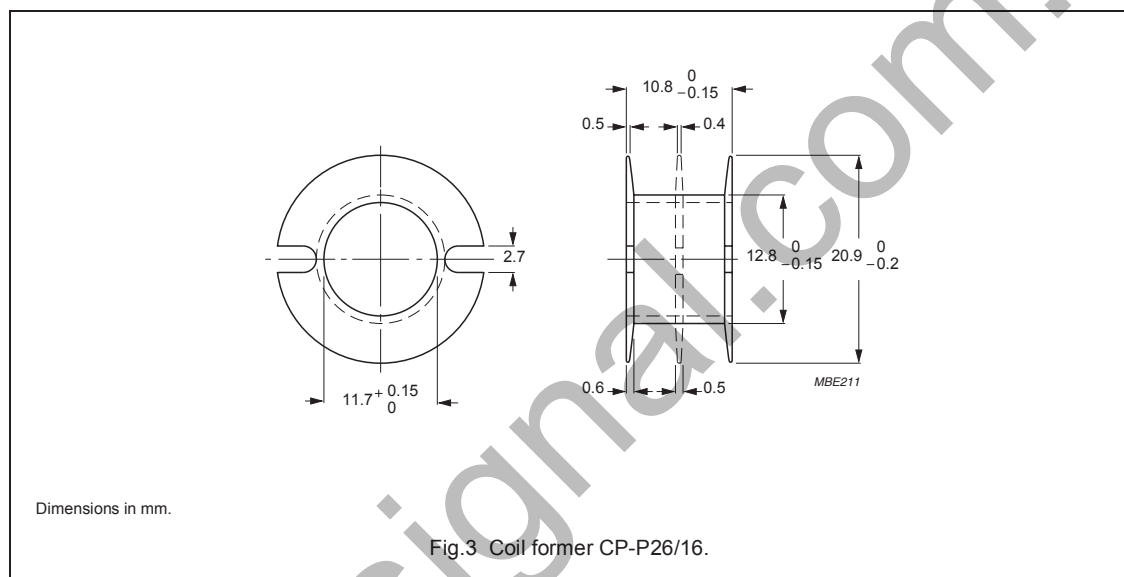
GRADE	A _L (nH)	TYPES FOR LOW ADJUSTMENT	ΔL/L ⁽¹⁾	TYPES FOR MEDIUM ADJUSTMENT	ΔL/L ⁽¹⁾	TYPES FOR HIGH ADJUSTMENT	ΔL/L ⁽¹⁾
3H3	63	–	–	–	–	ADJ-P26-RED	25
	100	–	–	–	–	ADJ-P26-RED	22
	160	–	–	ADJ-P26-RED	15	–	–
	250	ADJ-P26-RED	10	–	–	ADJ-P26-BROWN	23
	315	ADJ-P26-RED	8	–	–	ADJ-P26-BROWN	18
	400	ADJ-P26-RED	6	ADJ-P26-BROWN	13	ADJ-P26-GREY	25
	630	ADJ-P26-BROWN	8	ADJ-P26-GREY	16	–	–
	1000	ADJ-P26-BROWN	5	ADJ-P26-GREY	9	–	–
	1600	–	–	ADJ-P26-GREY	5	–	–
3D3	100	–	–	–	–	ADJ-P26-RED	21
	160	–	–	ADJ-P26-RED	14	–	–
	250	ADJ-P26-RED	9	–	–	ADJ-P26-GREY	35
	400	–	8	ADJ-P26-GREY	17	–	–

Note

1. Maximum adjustment range.

COIL FORMERS**General data for CP-P26/16 coil former**

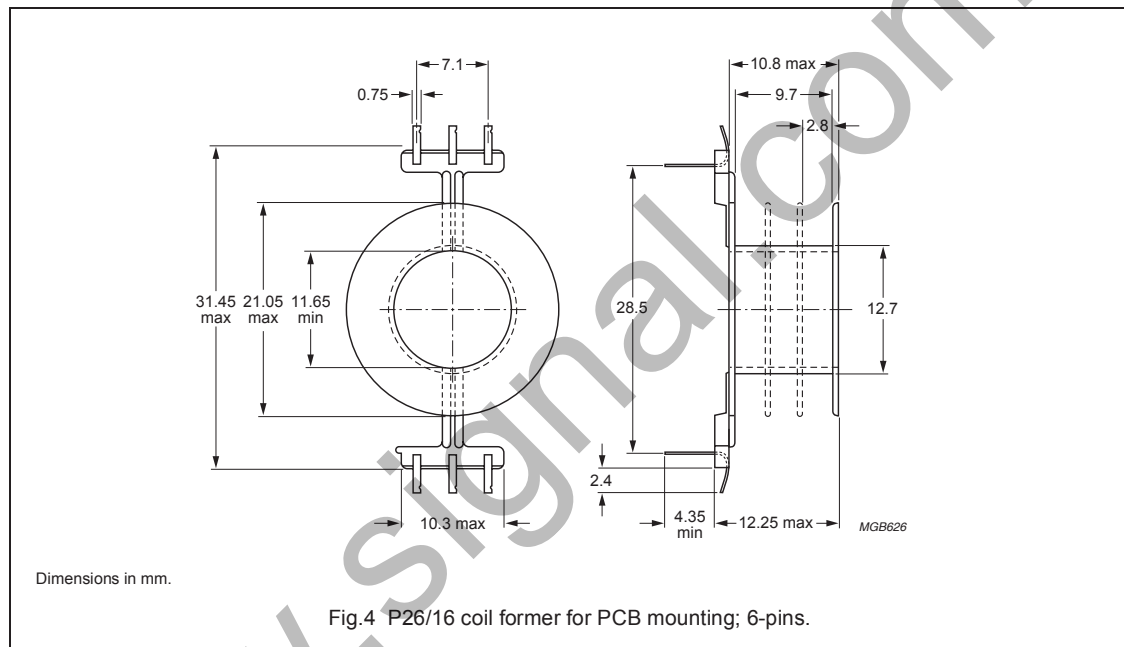
PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephthalate (PBT), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E45329 (R)
Maximum operating temperature	155 °C, "IEC 60085", class F

**Winding data and area product for CP-P26/16 coil former**

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	37.1	9.3	52.6	3480	CP-P26/16-1S
2	2 x 17.5	2 x 4.35	52.6	2 x 1640	CP-P26/16-2S
3	3 x 11	3 x 2.7	52.6	3 x 1030	CP-P26/16-3S

General data 6-pins P26/16 coil former for PCB mounting

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938(M)
Maximum operating temperature	130 °C, "IEC 60085", class B
Pin material	copper-zinc alloy (CuZn), tin (Sn) plated
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, 235 °C, 2 s



Winding data and area product for 6-pins P26/16 coil former for PCB mounting

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	MINIMUM LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	36.7	9.7	52.7	4.4	3450	CPV-P26/16-1S-6PD
1	36.7	9.7	52.7	6.8	3450	CPV-P26/16-1S-6PDL
2	2 x 16.6	2 x 4.5	52.7	4.4	2 x 1560	CPV-P26/16-2S-6PD
2	2 x 16.6	2 x 4.5	52.7	6.8	2 x 1560	CPV-P26/16-2S-6PDL
3	3 x 10.3	3 x 2.8	52.7	4.4	3 x 967	CPV-P26/16-3S-6PD ⁽¹⁾
3	3 x 10.3	3 x 2.8	52.7	6.8	3 x 967	CPV-P26/16-3S-6PDL ⁽¹⁾

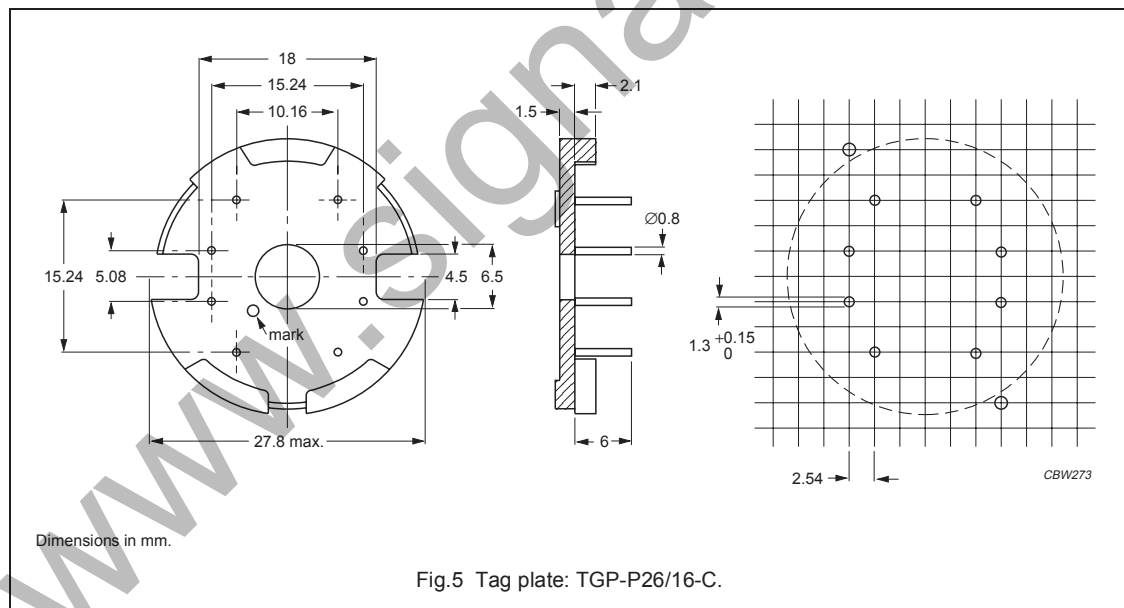
Note

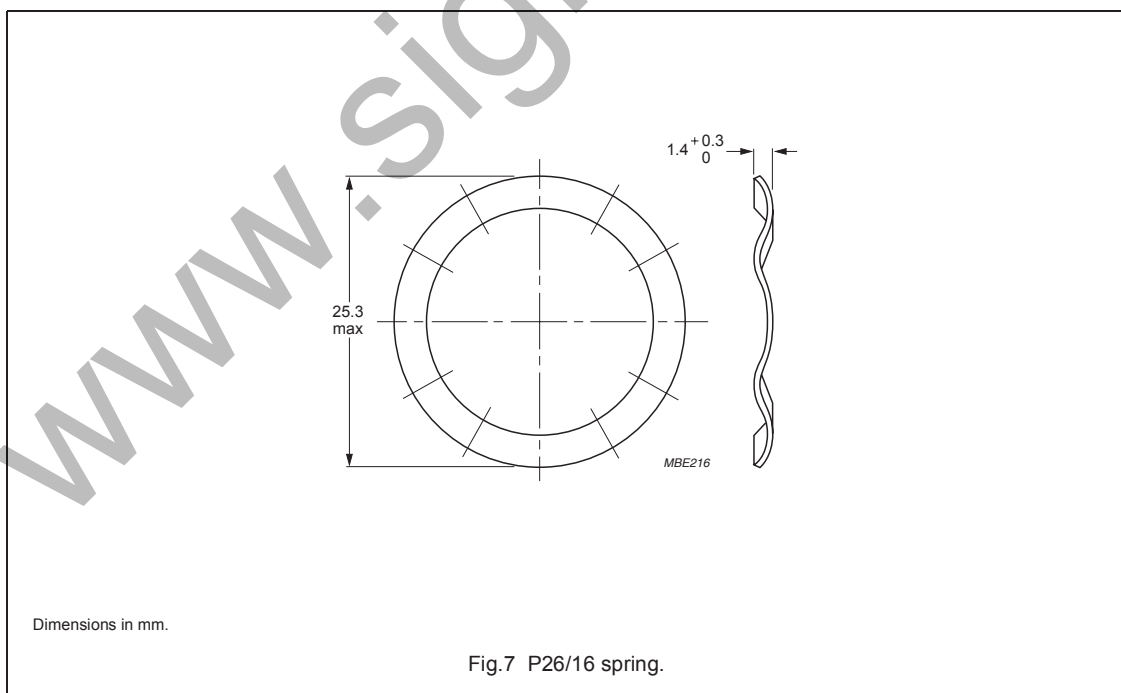
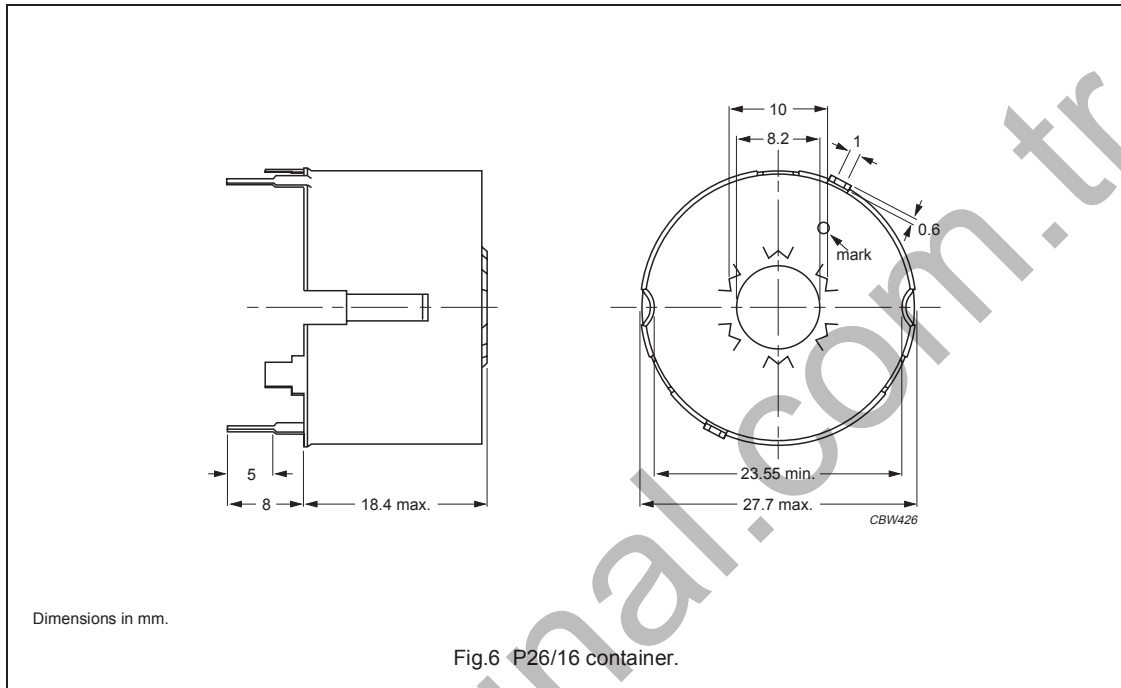
1. In accordance with "UL 94-HB".

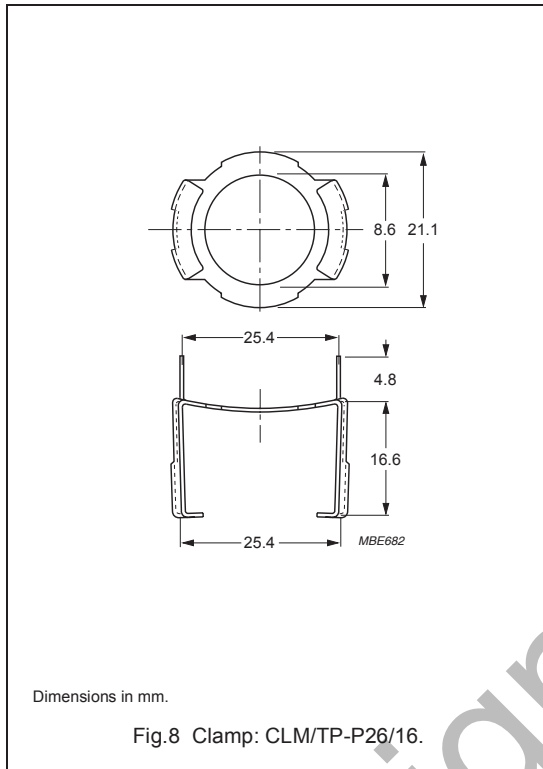
MOUNTING PARTS

General data

ITEM	REMARKS	FIGURE	TYPE NUMBER
Tag plate	material: phenolformaldehyde (PF), glass reinforced	5	TGP-P26/16-C
	flame retardant: in accordance with "UL 94V-0"; UL file number E41429		
	maximum operating temperature: 180 °C, "IEC 60085", class H		
	pins: copper-tin alloy (CuSn), tin (Sn) plated		
	resistance to soldering heat in accordance with "IEC 60068-2-20", Part 2, Test Tb, method 1B: 350 °C, 3.5 s		
	solderability in accordance with "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s		
Container	copper-zinc alloy, tin (Sn) plated	6	CON-P26/16
	earth pins: presoldered		
Spring	CrNi-steel	7	SPR-P26/16
	spring force: ≈200 N when mounted		
Clamp	spring steel, tin-plated	8	CLM/TP-P26/16







CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.360	mm ⁻¹
V_e	effective volume	4370	mm ³
l_e	effective length	39.6	mm
A_e	effective area	110	mm ²
A_{min}	minimum area	87.0	mm ²
m	mass of set	≈ 21	g

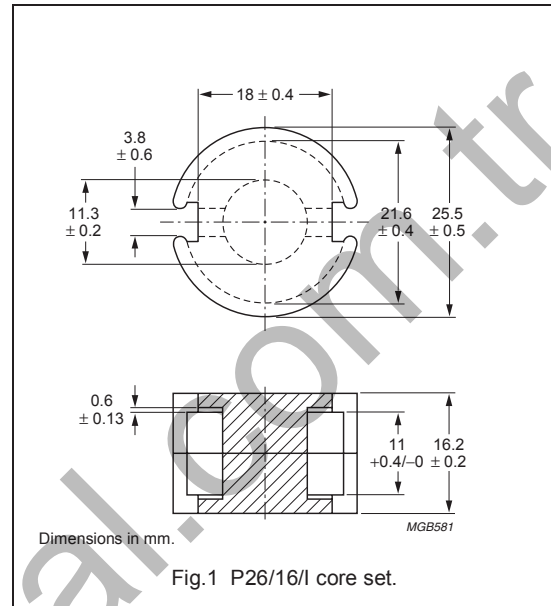


Fig.1 P26/16/I core set.

Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 50 ± 20 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3C81	250 ± 3%	≈ 72	≈ 660	P26/16/I-3C81-E250
	315 ± 3%	≈ 90	≈ 500	P26/16/I-3C81-A315
	400 ± 3%	≈ 115	≈ 380	P26/16/I-3C81-A400
	630 ± 3%	≈ 180	≈ 230	P26/16/I-3C81-A630
	1000 ± 3%	≈ 286	≈ 130	P26/16/I-3C81-A1000
	7000 ± 25%	≈ 2010	≈ 0	P26/16/I-3C81
3C91 <small>des</small>	7000 ± 25%	≈ 2010	≈ 0	P26/16/I-3C91
3F3	250 ± 3%	≈ 72	≈ 660	P26/16/I-3F3-E250
	315 ± 3%	≈ 90	≈ 500	P26/16/I-3F3-A315
	400 ± 3%	≈ 115	≈ 380	P26/16/I-3F3-A400
	630 ± 3%	≈ 180	≈ 230	P26/16/I-3F3-A630
	1000 ± 3%	≈ 286	≈ 130	P26/16/I-3F3-A1000
	5250 ± 25%	≈ 1505	≈ 0	P26/16/I-3F3

P cores and accessories

P26/16/I

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; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥320	≤ 1.0	–	–	–
3C91	≥315	–	≤ 0.22 ⁽¹⁾	≤ 1.6 ⁽¹⁾	–
3F3	≥315	–	≤ 0.48	–	≤ 0.83

Note

1. Measured at 60 °C.

BOBBINS AND ACCESSORIES

Coil formers, winding data and mounting parts are equal to those of "P26/16", but "area product" is different.

Winding data and area product (for P26/16/I) for CP-P26/16 coil former

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	37.1	9.3	52.6	4080	CP-P26/16-1S
2	2 × 17.5	2 × 4.35	52.6	2 × 1925	CP-P26/16-2S
3	3 × 11	3 × 2.7	52.6	3 × 1210	CP-P26/16-3S

Winding data and area product (for P26/16/I) for 6-pins P26/16 coil former for PCB mounting

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	MINIMUM LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	36.7	9.7	52.7	4.4	4040	CPV-P26/16-1S-6PD
1	36.7	9.7	52.7	6.8	4040	CPV-P26/16-1S-6PDL
2	2 × 16.6	2 × 4.5	52.7	4.4	2 × 1830	CPV-P26/16-2S-6PD
2	2 × 16.6	2 × 4.5	52.7	6.8	2 × 1830	CPV-P26/16-2S-6PDL
3	3 × 10.3	3 × 2.8	52.7	4.4	3 × 1130	CPV-P26/16-3S-6PD ⁽¹⁾
3	3 × 10.3	3 × 2.8	52.7	6.8	3 × 1130	CPV-P26/16-3S-6PDL ⁽¹⁾

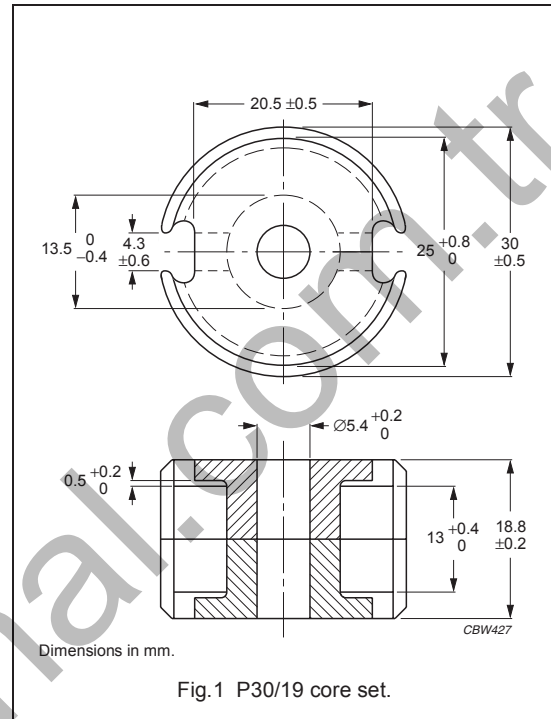
Note

1. In accordance with "UL 94-HB".

CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.330	mm ⁻¹
V_e	effective volume	6 190	mm ³
l_e	effective length	45.2	mm
A_e	effective area	137	mm ²
A_{min}	minimum area	116	mm ²
m	mass of set	≈ 34	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 250 ± 50 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μ m)	TYPE NUMBER
3C81	250 ± 3%	≈ 66	≈ 840	P30/19-3C81-E250
	315 ± 3%	≈ 83	≈ 640	P30/19-3C81-A315
	400 ± 3%	≈ 105	≈ 480	P30/19-3C81-A400
	630 ± 3%	≈ 165	≈ 290	P30/19-3C81-A630
	1000 ± 3%	≈ 263	≈ 170	P30/19-3C81-A1000
	8300 ± 25%	≈ 2180	≈ 0	P30/19-3C81
3C91 <small>des</small>	8300 ± 25%	≈ 2180	≈ 0	P30/19-3C91
3F3	250 ± 3%	≈ 66	≈ 840	P30/19-3F3-E250
	315 ± 3%	≈ 83	≈ 640	P30/19-3F3-A315
	400 ± 3%	≈ 105	≈ 480	P30/19-3F3-A400
	630 ± 3%	≈ 165	≈ 290	P30/19-3F3-A630
	1000 ± 3%	≈ 263	≈ 170	P30/19-3F3-A1000
	5750 ± 25%	≈ 1510	≈ 0	P30/19-3F3

Core sets of high permeability gradesClamping force for A_L measurements, 250 ± 50 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3E27	$15100 \pm 25\%$	≈ 3960	≈ 0	P30/19-3E27

Properties of core sets under power conditions

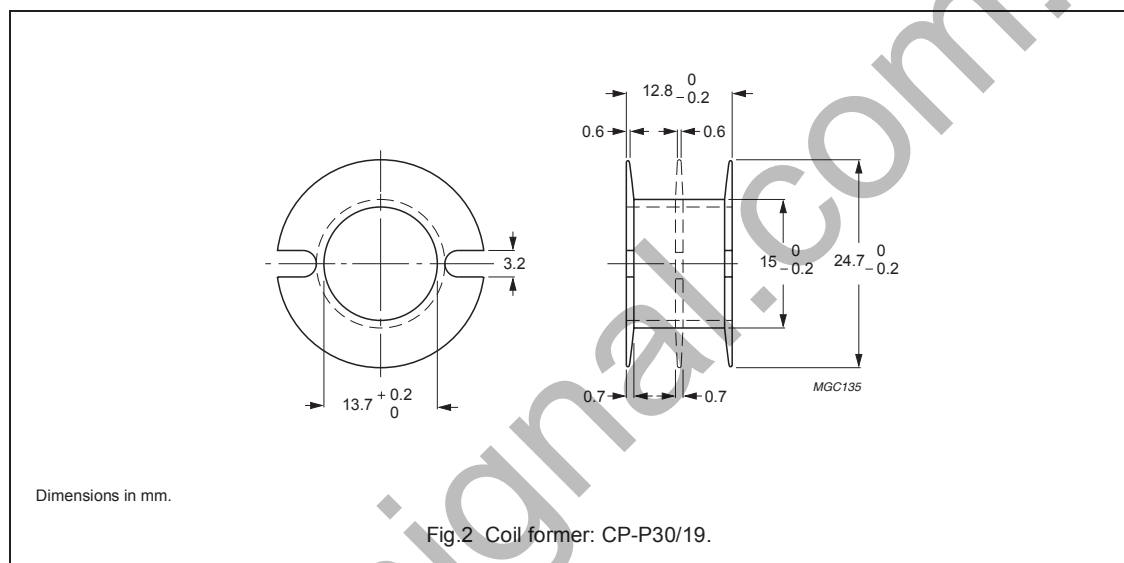
GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 25 kHz; B̂ = 200 mT; T = 100 °C	f = 100 kHz; B̂ = 100 mT; T = 100 °C	f = 100 kHz; B̂ = 200 mT; T = 100 °C	f = 400 kHz; B̂ = 50 mT; T = 100 °C
3C81	≥ 320	≤ 1.43	–	–	–
3C91	≥ 315	–	$\leq 0.37^{(1)}$	$\leq 2.6^{(1)}$	–
3F3	≥ 315	–	≤ 0.7	–	≤ 1.2

Note

1. Measured at 60 °C.

COIL FORMERS**General data CP-P30/19 coil former**

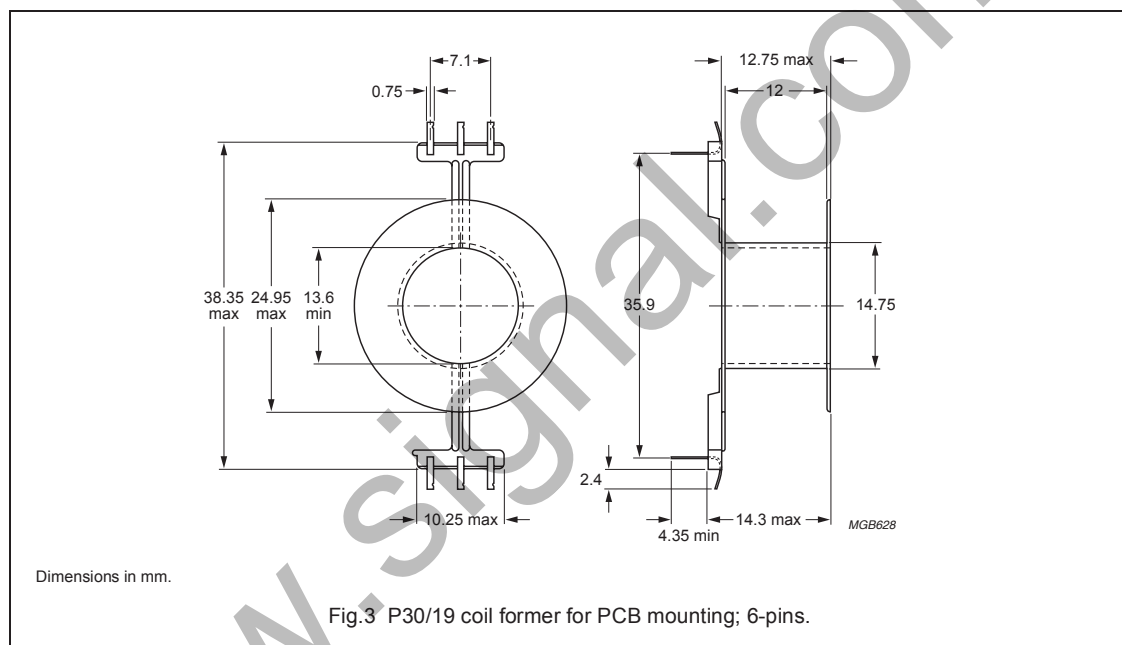
PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephthalate (PBT), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E45329 (R)
Maximum operating temperature	155 °C, "IEC 60085", class F

**Winding data and area product for P30/19 coil former**

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	53.2	11.1	62	7290	CP-P30/19-1S
2	2 x 24.9	2 x 5.15	62	2 x 3410	CP-P30/19-2S
3	3 x 15.5	3 x 3.2	62	3 x 2120	CP-P30/19-3S

General data 6-pins P30/19 coil former for PCB mounting

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with "UL 94-HB"; UL file number E41938(M)
Maximum operating temperature	130 °C, "IEC 60085", class B
Pin material	copper-zinc alloy (CuZn), tin (Sn) plated
Resistance to soldering heat	"IEC 60068-2-20", Part 1, Test Tb, method 1B, 350 °C, 3.5 s. For connection of wire to pins: 430 °C, 2 seconds
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1, 235 °C, 2 s



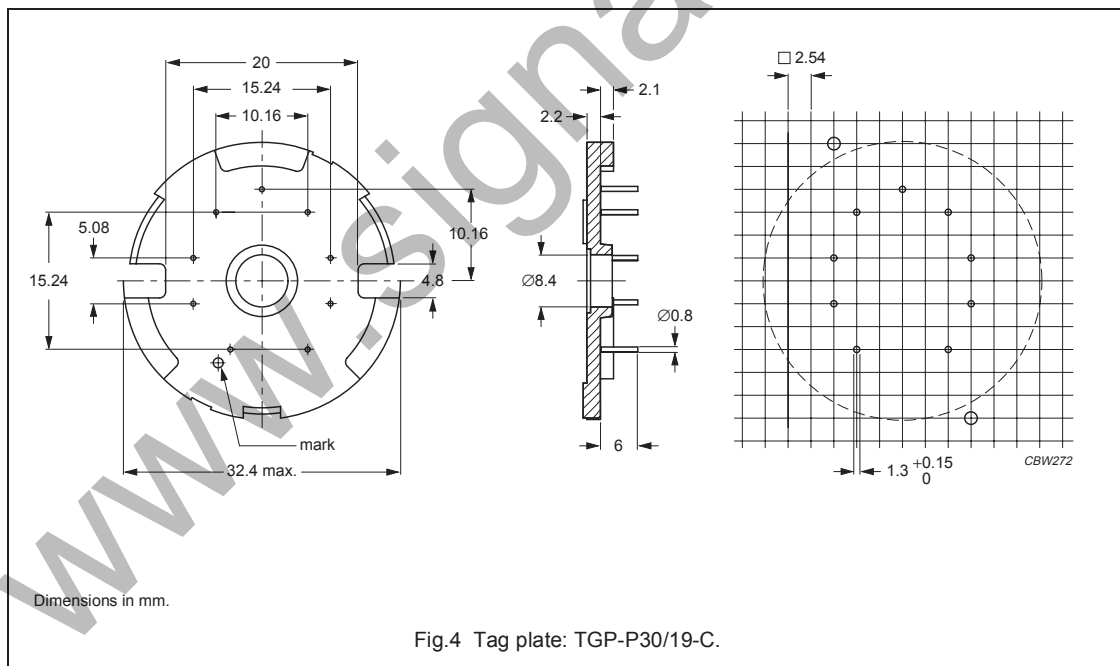
Winding data and area product for 6-pins P30/19 coil former for PCB mounting

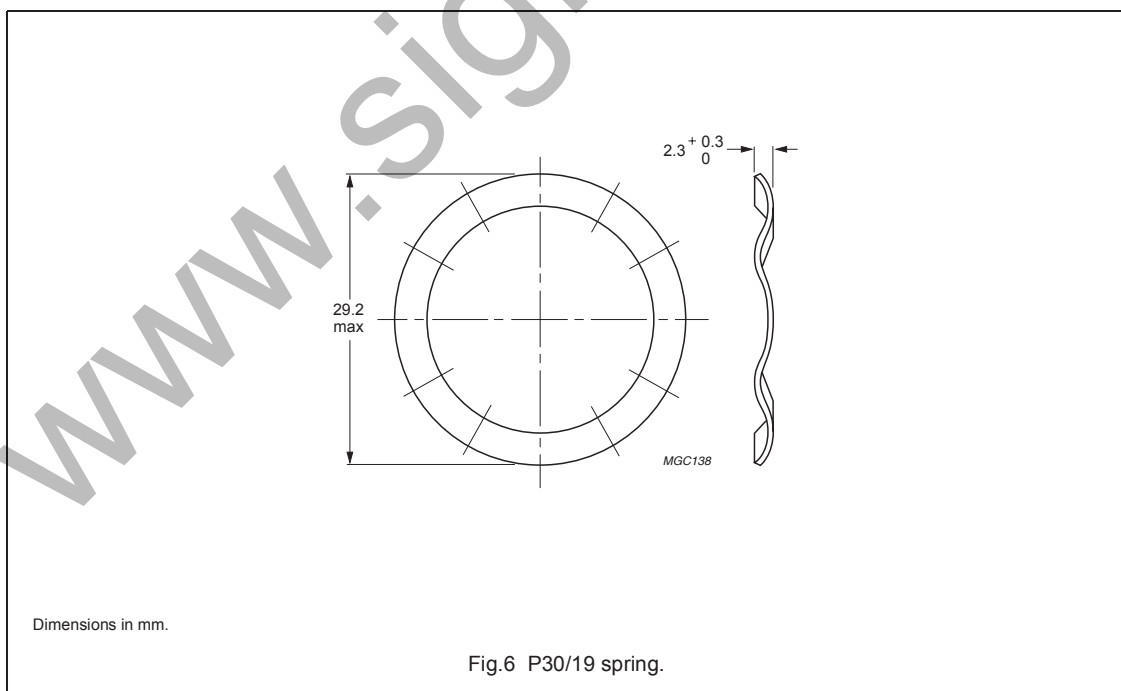
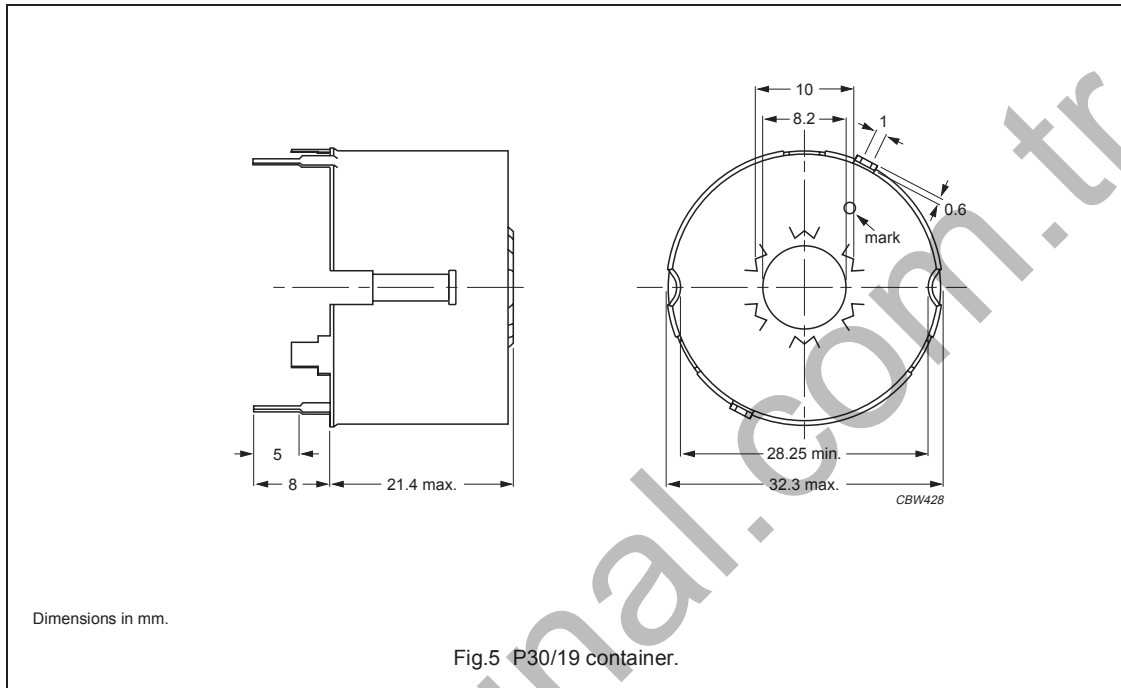
NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	MINIMUM LENGTH OF PINS (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	55.2	12.8	62.2	4.4	7560	CPV-P30/19-1S-6PD
1	55.2	12.8	62.2	6.8	7560	CPV-P30/19-1S-6PDL

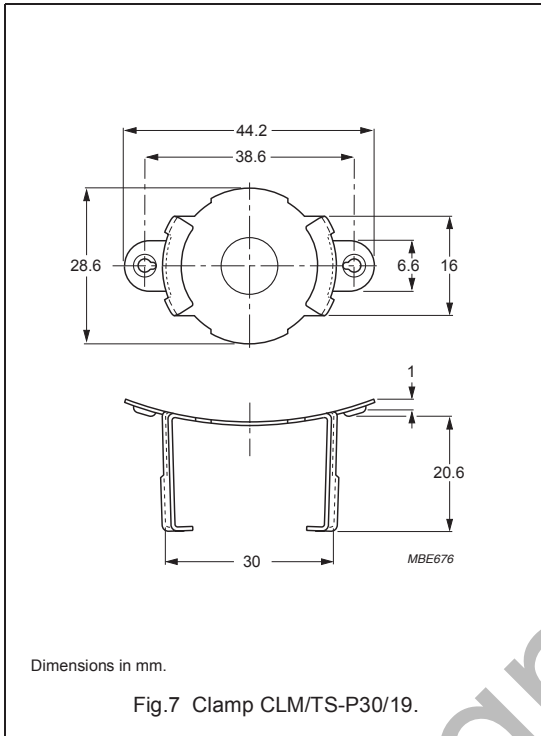
MOUNTING PARTS

General data and ordering information

ITEM	REMARKS	FIGURE	TYPE NUMBER
Tag plate	material: phenolformaldehyde (PF), glass reinforced	4	TGP-P30/19-C
	flame retardant: in accordance with "UL 94V-0"; UL file number E41429		
	maximum operating temperature: 180 °C, "IEC 60085", class H		
	pins: copper-tin alloy (CuSn), tin (Sn) plated		
	resistance to soldering heat in accordance with "IEC 60068-2-20", Part 2, Test Tb, method 1B: 350 °C, 3.5 s		
	solderability in accordance with "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s		
Container	copper-zinc alloy (CuZn), tin (Sn) plated	5	CON-P30/19
	earth pins: presoldered		
Spring	CrNi-steel	6	SPR-P30/19
	spring force: ≈250 N when mounted		
Clamp	spring steel, tin-plated	7	CLM/TS-P30/19





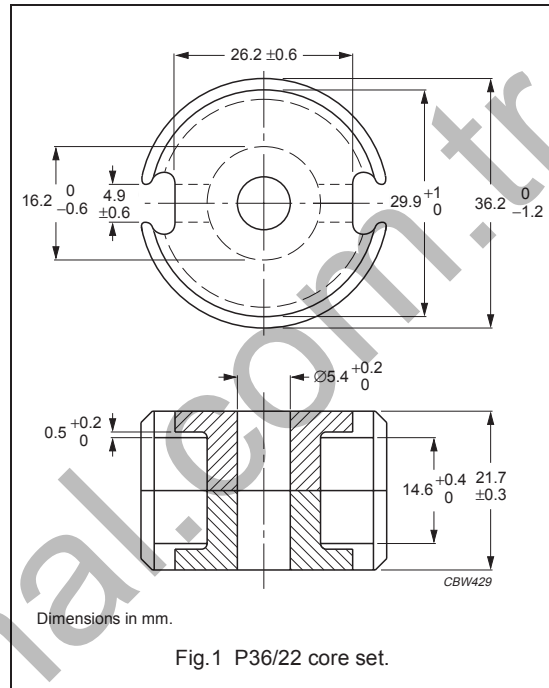


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CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.264	mm ⁻¹
V_e	effective volume	10700	mm ³
l_e	effective length	53.2	mm
A_e	effective area	202	mm ²
A_{min}	minimum area	172	mm ²
m	mass of set	≈ 54	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 350 ± 50 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3C81	315 ± 3%	≈ 66	≈ 970	P36/22-3C81-E315
	400 ± 3%	≈ 84	≈ 730	P36/22-3C81-E400
	630 ± 3%	≈ 132	≈ 430	P36/22-3C81-A630
	1000 ± 3%	≈ 210	≈ 250	P36/22-3C81-A1000
	1600 ± 5%	≈ 335	≈ 150	P36/22-3C81-A1600
10800 ± 25%	≈ 2260	≈ 0	P36/22-3C81	
3C91 <small>des</small>	10800 ± 25%	≈ 2260	≈ 0	P36/22-3C91
3F3	250 ± 3%	≈ 52	≈ 1340	P36/22-3F3-E250
	315 ± 3%	≈ 66	≈ 970	P36/22-3F3-E315
	400 ± 3%	≈ 84	≈ 730	P36/22-3F3-E400
	630 ± 3%	≈ 132	≈ 430	P36/22-3F3-A630
	1000 ± 3%	≈ 210	≈ 250	P36/22-3F3-A1000
	1600 ± 5%	≈ 335	≈ 150	P36/22-3F3-A1600
	7350 ± 25%	≈ 1540	≈ 0	P36/22-3F3

Core sets of high permeability gradesClamping force for A_L measurements, 350 ± 50 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3E27	$17500 \pm 25\%$	≈ 3670	≈ 0	P36/22-3E27

Properties of core sets under power conditions

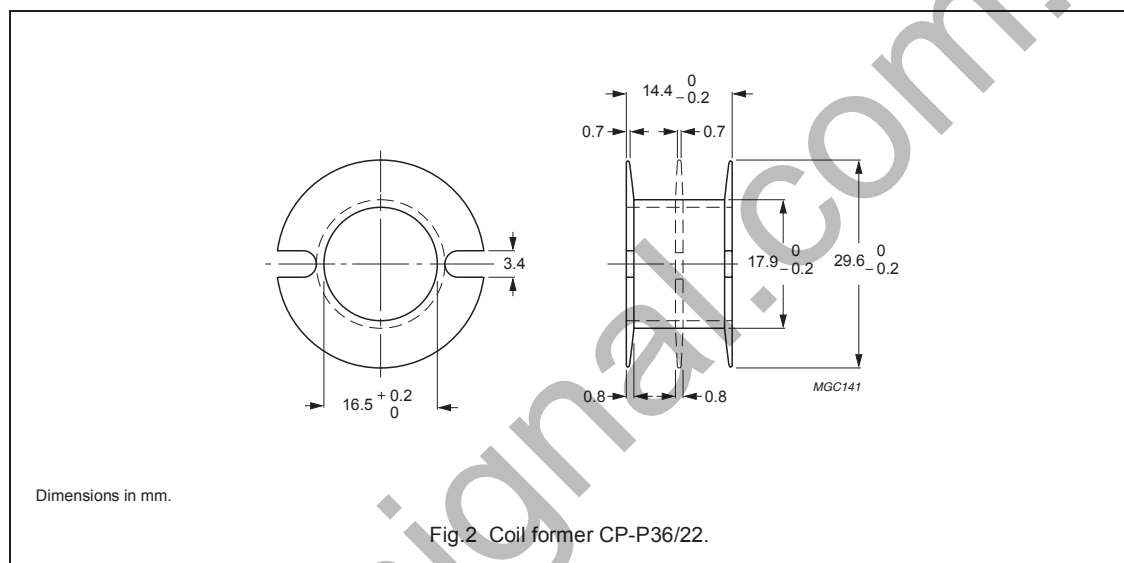
GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 25 kHz; B̂ = 200 mT; T = 100 °C	f = 100 kHz; B̂ = 100 mT; T = 100 °C	f = 100 kHz; B̂ = 200 mT; T = 100 °C	f = 400 kHz; B̂ = 50 mT; T = 100 °C
3C81	≥ 320	≤ 2.5	–	–	–
3C91	≥ 315	–	$\leq 0.6^{(1)}$	$\leq 4.5^{(1)}$	–
3F3	≥ 315	–	≤ 1.2	–	≤ 2.0

Note

1. Measured at 60 °C.

COIL FORMERS**General data for coil former CP-P36/22**

PARAMETER	SPECIFICATION
Coil former material	polybutyleneterephthalate (PBT), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E45329 (R)
Maximum operating temperature	155 °C, "IEC 60085", class F

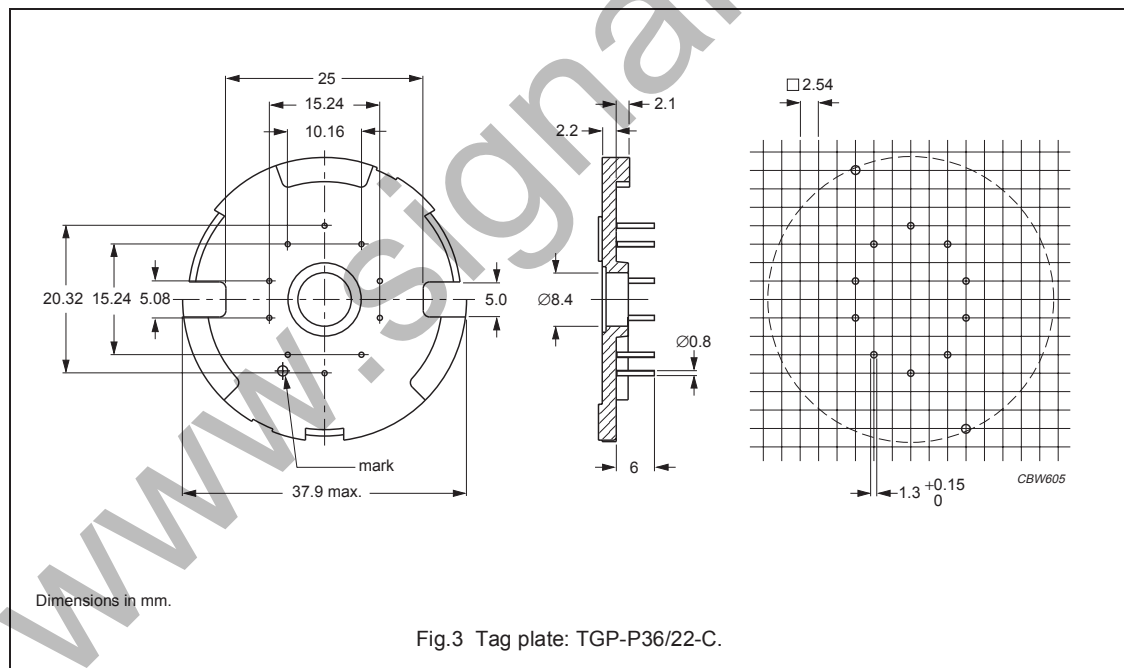
**Winding data and area product for coil former CP-P36/22**

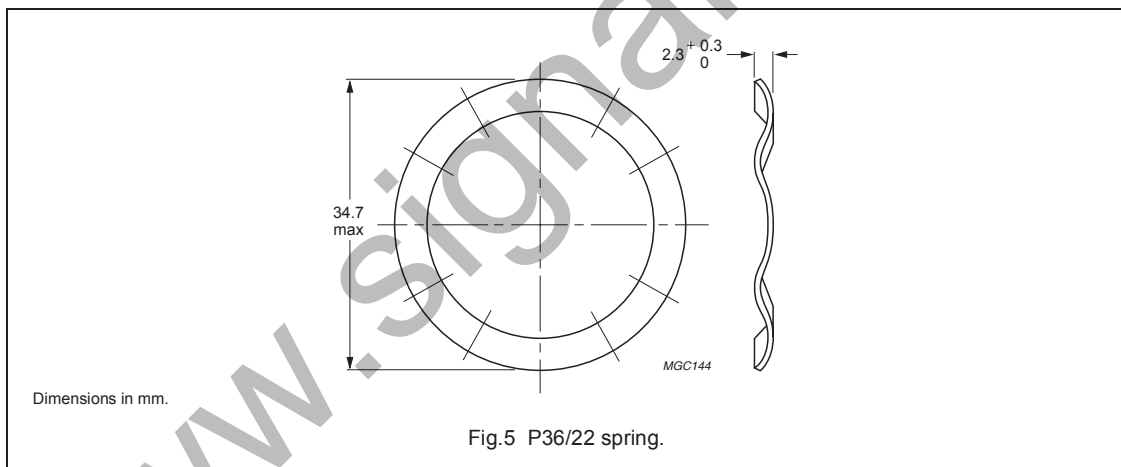
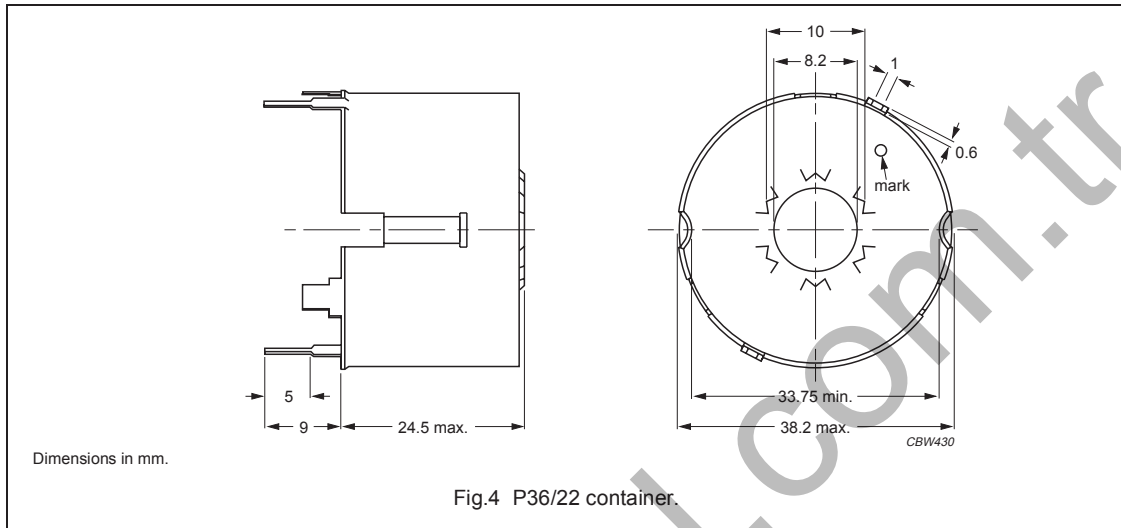
NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	72.4	12.5	74.3	14600	CP-P36/22-1S
2	2 x 33.9	2 x 5.8	74.3	2 x 6850	CP-P36/22-2S
3	3 x 21.0	3 x 3.6	74.3	3 x 4240	CP-P36/22-3S

MOUNTING PARTS

General data and ordering information

ITEM	REMARKS	FIGURE	TYPE NUMBER
Tag plate	material: phenolformaldehyde (PF), glass reinforced	3	TGP-P36/22-C
	flame retardant: in accordance with "UL 94V-0"; UL file number E41429		
	maximum operating temperature: 180 °C, "IEC 60085", class H		
	pins: copper-tin alloy (CuSn), tin (Sn) plated		
	resistance to soldering heat in accordance with "IEC 60068-2-20", Part 2, Test Tb, method 1B: 350 °C, 3.5 s		
	solderability in accordance with "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s		
Container	copper-zinc alloy (CuZn), tin (Sn) plated	4	CON-P36/22
	earth pins: presoldered		
Spring	CrNi-steel	5	SPR-P36/22
	spring force: ≈350 N when mounted		

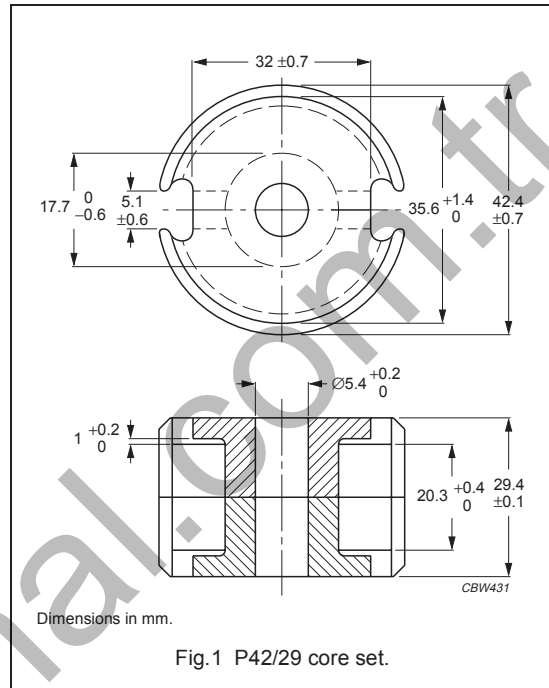




CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.259	mm ⁻¹
V_e	effective volume	18200	mm ³
l_e	effective length	68.6	mm
A_e	effective area	265	mm ²
A_{min}	minimum area	214	mm ²
m	mass of set	≈104	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 550 ± 100 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3C81	315 ± 3%	≈ 65	≈ 1320	P42/29-3C81-E315
	400 ± 3%	≈ 82	≈ 990	P42/29-3C81-E400
	630 ± 3%	≈ 130	≈ 580	P42/29-3C81-A630
	1000 ± 3%	≈ 206	≈ 340	P42/29-3C81-A1000
	1600 ± 5%	≈ 330	≈ 190	P42/29-3C81-A1600
	11500 ± 25%	≈ 2370	≈ 0	P42/29-3C81
3C91 <small>des</small>	11500 ± 25%	≈ 2370	≈ 0	P42/29-3C91
3F3	315 ± 3%	≈ 65	≈ 1320	P42/29-3F3-E315
	400 ± 3%	≈ 82	≈ 990	P42/29-3F3-E400
	630 ± 3%	≈ 130	≈ 580	P42/29-3F3-A630
	1000 ± 3%	≈ 206	≈ 340	P42/29-3F3-A1000
	1600 ± 5%	≈ 330	≈ 190	P42/29-3F3-A1600
	7700 ± 25%	≈ 1590	≈ 0	P42/29-3F3

Core sets of high permeability gradesClamping force for A_L measurements, 550 ± 100 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3E27	$19000 \pm 25\%$	≈ 3910	≈ 0	P42/29-3E27

Properties of core sets under power conditions

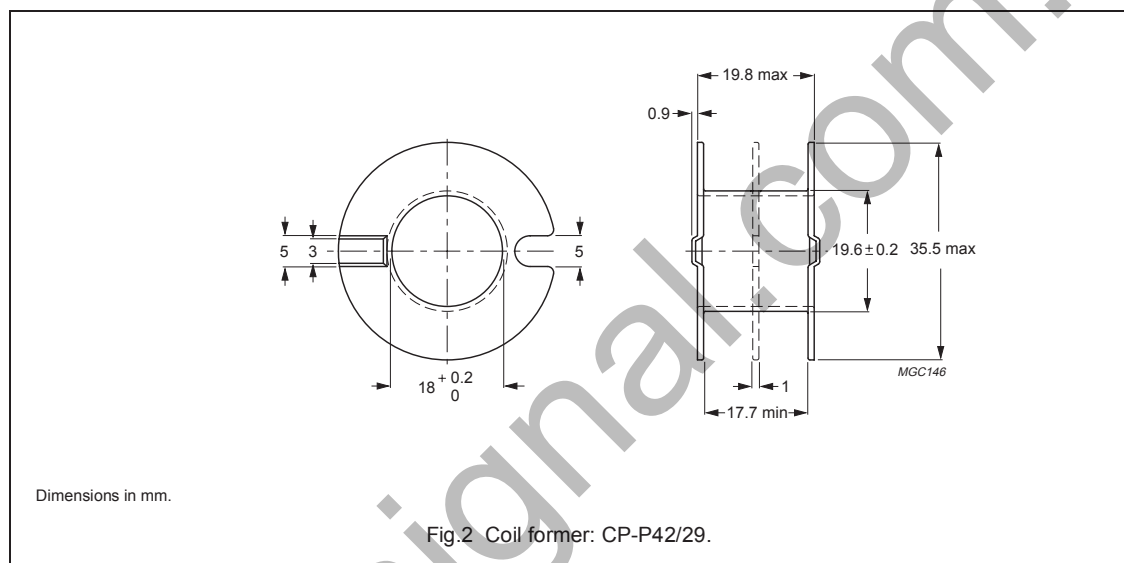
GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 25 kHz; B̂ = 200 mT; T = 100 °C	f = 100 kHz; B̂ = 100 mT; T = 100 °C	f = 100 kHz; B̂ = 200 mT; T = 100 °C	f = 400 kHz; B̂ = 50 mT; T = 100 °C
3C81	≥ 320	≤ 4.2	–	–	–
3C91	≥ 315	–	$\leq 0.9^{(1)}$	$\leq 7.0^{(1)}$	–
3F3	≥ 315	–	≤ 2.0	–	≤ 3.5

Note

1. Measured at 60 °C.

COIL FORMERS**General data CP-P42/29 coil former**

PARAMETER	SPECIFICATION
Coil former material	polyamide (PA6.6), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938
Maximum operating temperature	130 °C, "IEC 60085", class B

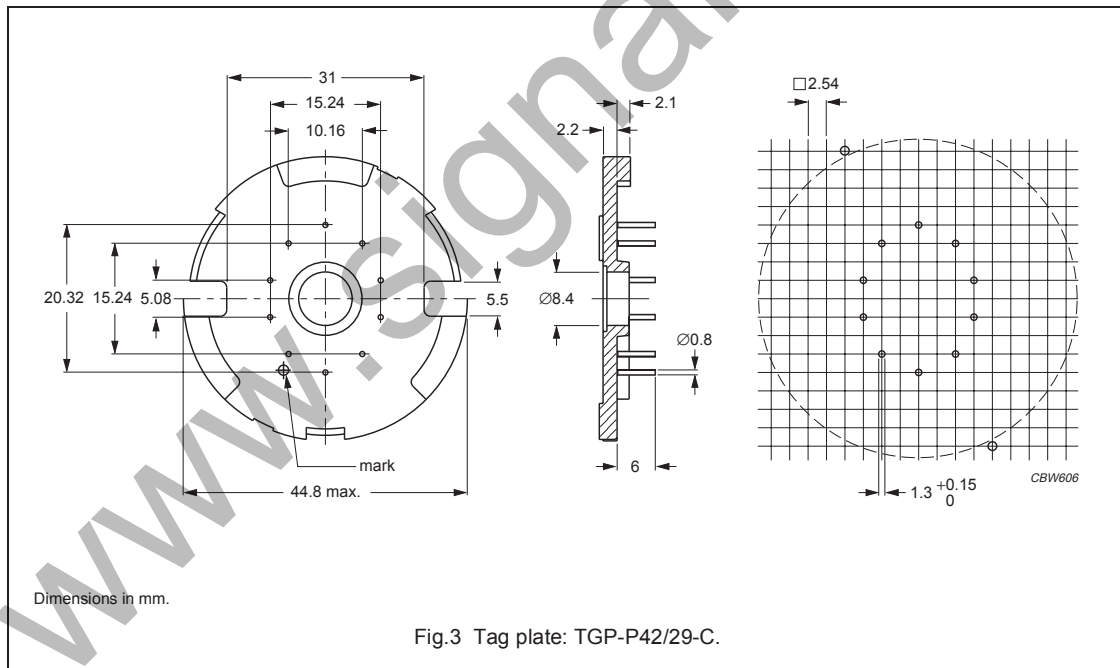
**Winding data and area product for CP-P42/29 coil former**

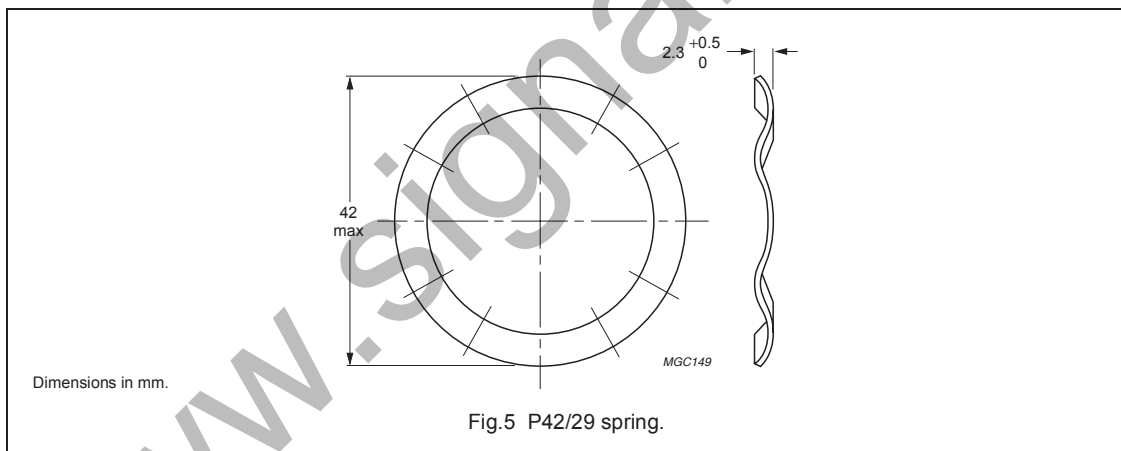
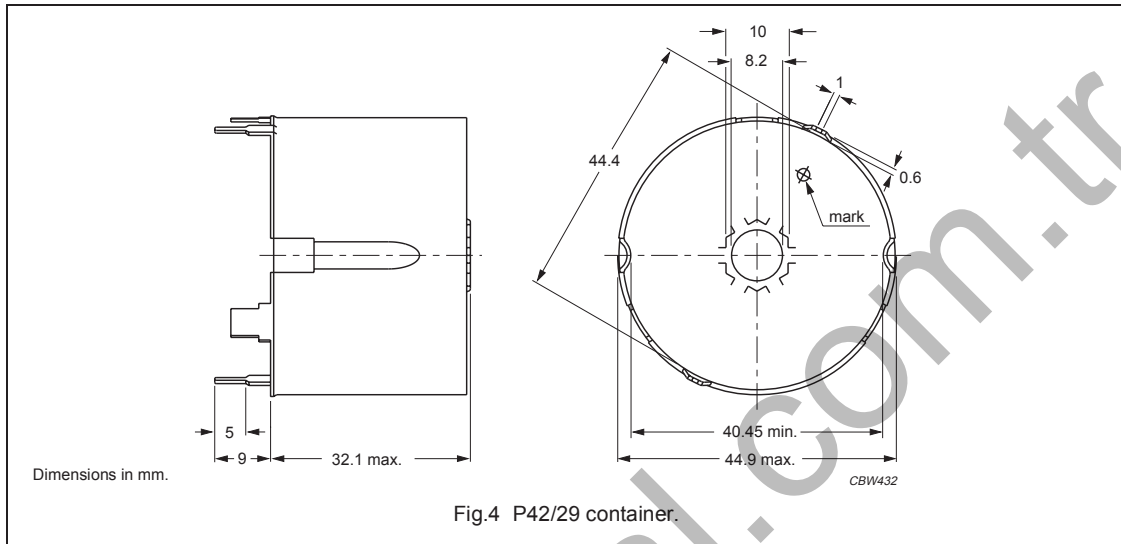
NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
1	140	17.8	86	37100	CP-P42/29-1S-C
2	2 x 63	2 x 8	86	2 x 16700	CP-P42/29-2S-C

MOUNTING PARTS

General data and ordering information

ITEM	REMARKS	FIGURE	TYPE NUMBER
Tag plate	material: phenolformaldehyde (PF), glass reinforced	3	TGP-P42/29-C
	flame retardant: in accordance with "UL 94V-0"; UL file number E41429		
	maximum operating temperature: 180 °C, "IEC 60085", class H		
	pins: copper-tin alloy (CuSn), tin (Sn) plated		
	resistance to soldering heat in accordance with "IEC 60068-2-20", Part 2, Test Tb, method 1B: 350 °C, 3.5 s		
Container	solderability in accordance with "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s	4	CON-P42/29
	copper-zinc alloy (CuZn), tin (Sn) plated earth pins: presoldered		
Spring	CrNi-steel	5	SPR-P42/29
	spring force: ≈350 N when mounted		

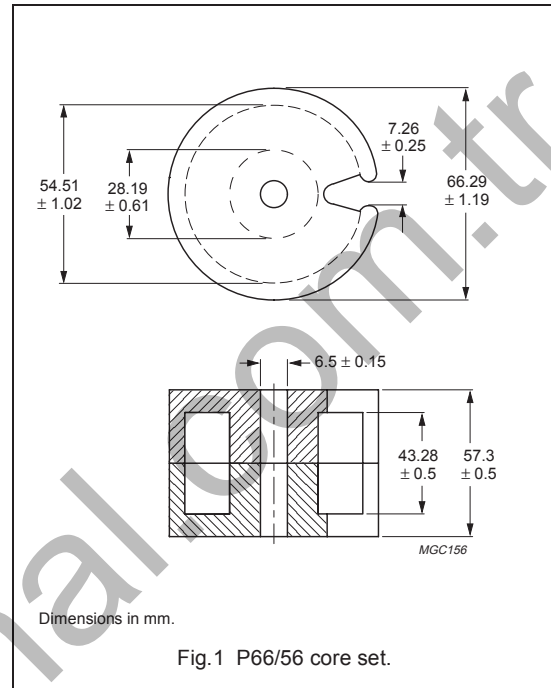




CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.172	mm ⁻¹
V_e	effective volume	88200	mm ³
l_e	effective length	123	mm
A_e	effective area	717	mm ²
A_{min}	minimum area	591	mm ²
m	mass of set	≈ 550	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 1000 ±300 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μ m)	TYPE NUMBER
3C81	18200 ±25%	≈ 2490	≈ 0	P66/56-3C81
3C91 <small>des</small>	18200 ±25%	≈ 2490	≈ 0	P66/56-3C91
3F3	12350 ±25%	≈ 1690	≈ 0	P66/56-3F3

Properties of core sets under power conditions

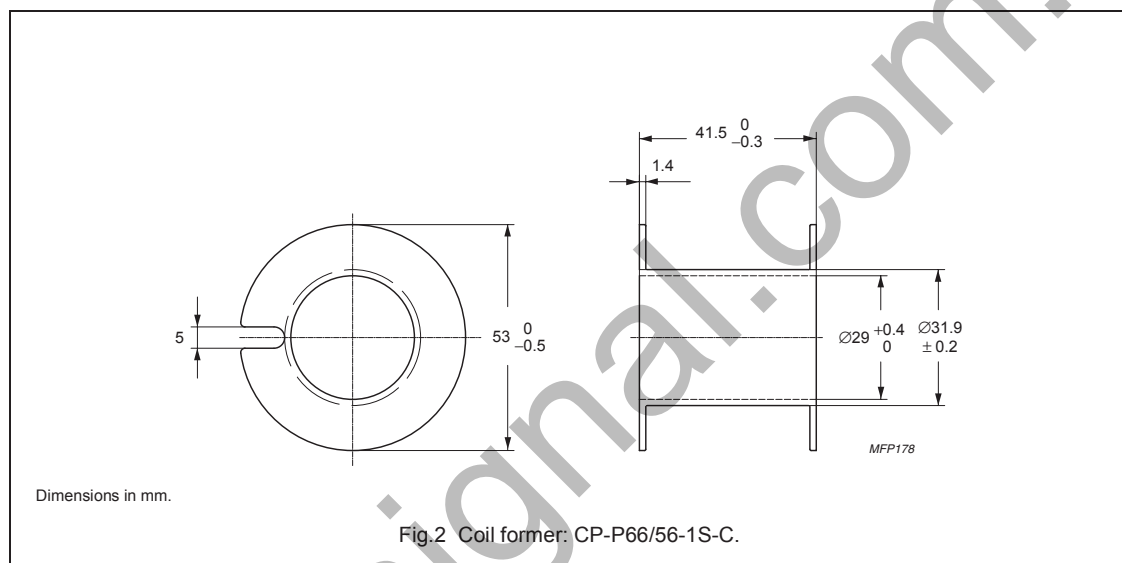
GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 25 kHz; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	≥320	≤ 25	–	–	–
3C91	≥315	–	≤ 4.7 ⁽¹⁾	≤ 33 ⁽¹⁾	–
3F3	≥315	–	≤ 10	–	≤ 20

Note

1. Measured at 60 °C.

COIL FORMERS**General data CP-P66/56 coil former**

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E59481
Maximum operating temperature	180 °C, "IEC 60085", class H

**Winding data for CP-P66/56 coil former**

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	400	38.4	130	CP-P66/56-1S-C