

Soft Ferrites

PQ cores and accessories

PRODUCT OVERVIEW AND TYPE NUMBER STRUCTURE

Product overview PQ cores

CORE TYPE	V_e (mm ³)	A_e (mm ²)	MASS (g)
PQ20/16	2330	61.9	13
PQ20/20	2850	62.6	16
PQ26/20	5820	121	30
PQ26/25	6530	120	36
PQ32/20	9440	169	43
PQ32/30	12500	167	57
PQ35/35	16300	190	73
PQ40/40	20500	201	97
PQ50/50	37100	328	195

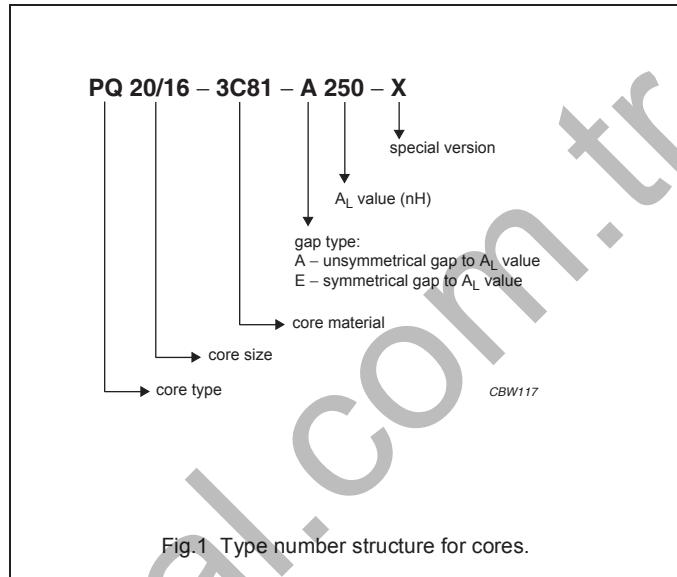


Fig.1 Type number structure for cores.

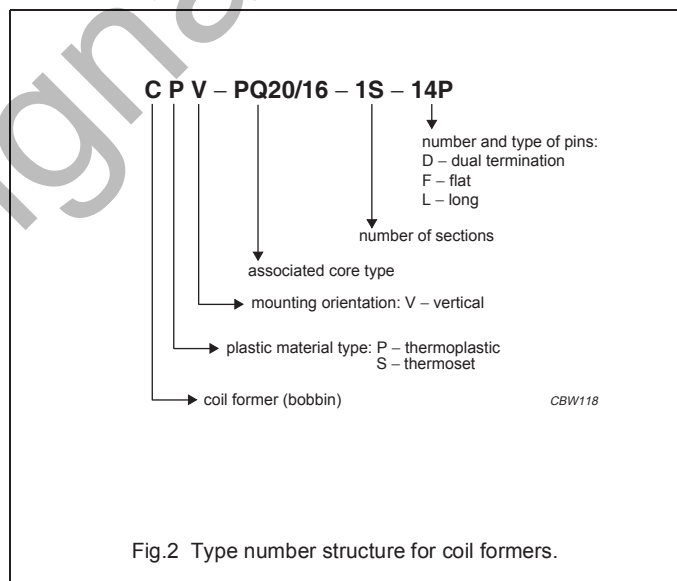


Fig.2 Type number structure for coil formers.

CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.607	mm ⁻¹
V_e	effective volume	2330	mm ³
l_e	effective length	37.6	mm
A_e	effective area	61.9	mm ²
A_{min}	minimum area	59.1	mm ²
m	mass of set	≈ 13	g

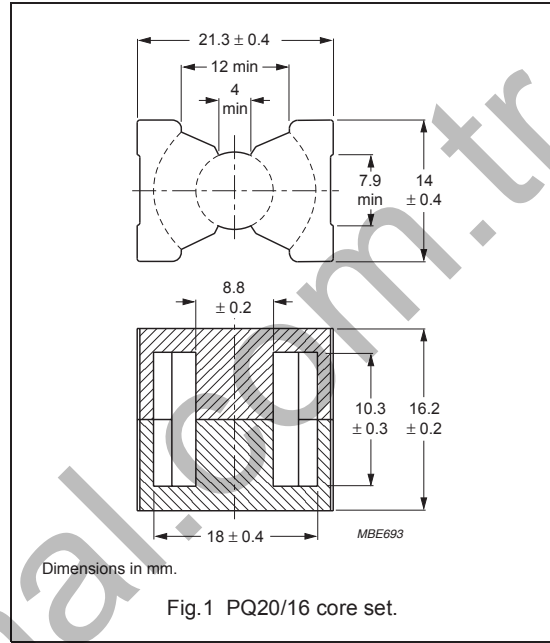


Fig.1 PQ20/16 core set.

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 (μ m)	TYPE NUMBER
3C81	160 ± 3%	≈ 77	≈ 600	PQ20/16-3C81-A160
	250 ± 3%	≈ 121	≈ 350	PQ20/16-3C81-A250
	315 ± 3%	≈ 152	≈ 270	PQ20/16-3C81-A315
	400 ± 3%	≈ 193	≈ 200	PQ20/16-3C81-A400
	630 ± 5%	≈ 305	≈ 120	PQ20/16-3C81-A630
	4080 ± 25%	≈ 1970	≈ 0	PQ20/16-3C81
3C90	160 ± 3%	≈ 77	≈ 600	PQ20/16-3C90-A160
	250 ± 3%	≈ 121	≈ 350	PQ20/16-3C90-A250
	315 ± 3%	≈ 152	≈ 270	PQ20/16-3C90-A315
	400 ± 3%	≈ 193	≈ 200	PQ20/16-3C90-A400
	630 ± 5%	≈ 305	≈ 120	PQ20/16-3C90-A630
	3600 ± 25%	≈ 1740	≈ 0	PQ20/16-3C90
3C91 <small>des</small>	4080 ± 25%	≈ 1970	≈ 0	PQ20/16-3C91
3C94	3600 ± 25%	≈ 1740	≈ 0	PQ20/16-3C94
3C95 <small>des</small>	4080 ± 25%	≈ 1970	≈ 0	PQ20/16-3C95
3C96 <small>des</small>	3250 ± 25%	≈ 1570	≈ 0	PQ20/16-3C96

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3F3	160 \pm 3%	\approx 77	\approx 600	PQ20/16-3F3-A160
	250 \pm 3%	\approx 121	\approx 350	PQ20/16-3F3-A250
	315 \pm 3%	\approx 152	\approx 270	PQ20/16-3F3-A315
	400 \pm 3%	\approx 193	\approx 200	PQ20/16-3F3-A400
	630 \pm 5%	\approx 305	\approx 120	PQ20/16-3F3-A630
	3080 \pm 25%	\approx 1490	\approx 0	PQ20/16-3F3

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 = 25 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C	f = 500 kHz; B = 50 mT; T = 100 °C
3C81	\geq 320	\leq 0.54	–	–	–	–	–
3C90	\geq 320	\leq 0.28	\leq 0.3	–	–	–	–
3C91	\geq 320	–	\leq 0.16 ⁽¹⁾	–	\leq 1.1 ⁽¹⁾	–	–
3C94	\geq 320	–	\leq 0.22	–	\leq 1.4	–	–
3C95	\geq 320	–	–	\leq 1.37	\leq 1.3	–	–
3C96	\geq 340	–	\leq 0.16	–	\leq 1.1	\leq 0.43	\leq 0.9
3F3	\geq 320	–	\leq 0.26	–	–	\leq 0.44	–

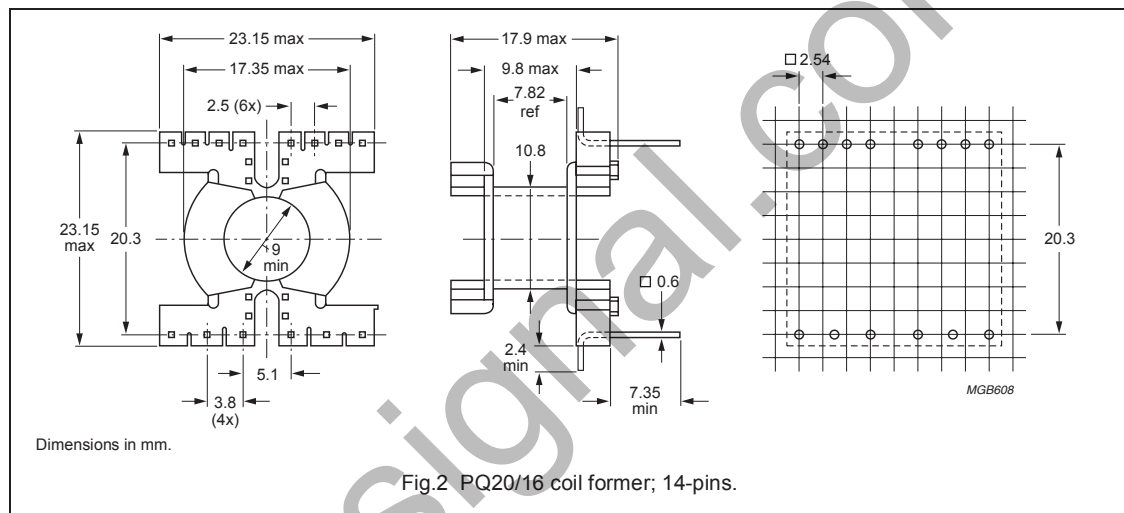
Note

1. Measured at 60 °C.

COIL FORMER

General data 14-pins PQ20/16 coil former

PARAMETER	SPECIFICATION
Coil former material	thermoplastic polyester, glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938
Pin material	copper-tin alloy (CuSn), tin (Sn) 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



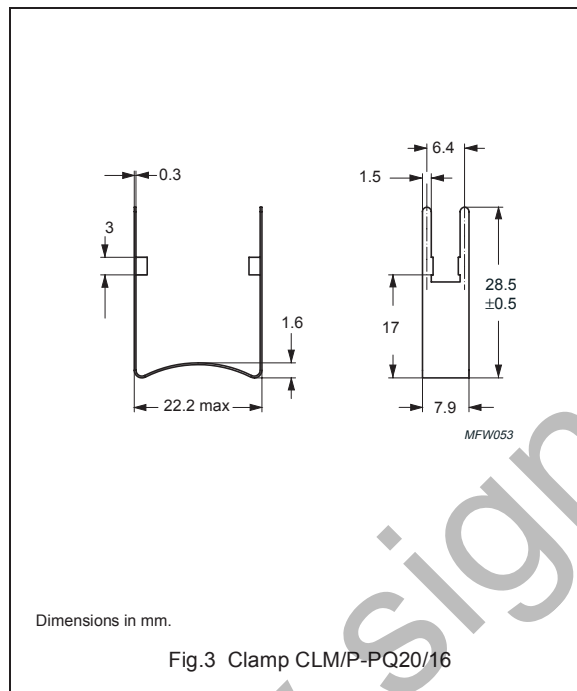
Winding data and area product for 14-pins PQ20/16 coil former

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	23.5	7.95	44.0	1450	CPV-PQ20/16-1S-14P
1	23.5	7.95	44.0	1450	CPV-PQ20/16-1S-14PD

MOUNTING PARTS

General data

ITEM	REMARKS	TYPE NUMBER
Clamp	phosphorbronze, Sn plated, earth pins solderability acc. to "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s	CLM/P-PQ20/16



CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.731	mm ⁻¹
V_e	effective volume	2850	mm ³
l_e	effective length	45.7	mm
A_e	effective area	62.6	mm ²
A_{min}	minimum area	59.1	mm ²
m	mass of set	≈ 16	g

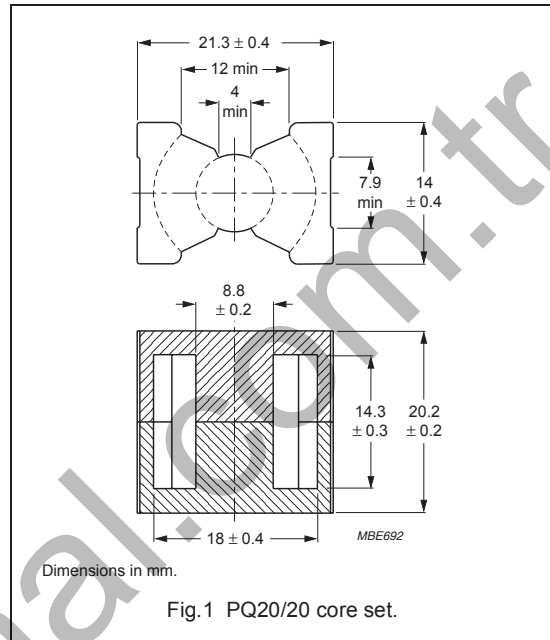


Fig.1 PQ20/20 core set.

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 (μ m)	TYPE NUMBER
3C81	160 ± 3%	≈ 93	≈ 620	PQ20/20-3C81-A160
	250 ± 3%	≈ 145	≈ 360	PQ20/20-3C81-A250
	315 ± 3%	≈ 183	≈ 270	PQ20/20-3C81-A315
	400 ± 3%	≈ 232	≈ 200	PQ20/20-3C81-A400
	630 ± 5%	≈ 366	≈ 120	PQ20/20-3C81-A630
	3580 ± 25%	≈ 2080	≈ 0	PQ20/20-3C81
3C90	160 ± 3%	≈ 93	≈ 620	PQ20/20-3C90-A160
	250 ± 3%	≈ 145	≈ 360	PQ20/20-3C90-A250
	315 ± 3%	≈ 183	≈ 270	PQ20/20-3C90-A315
	400 ± 3%	≈ 232	≈ 200	PQ20/20-3C90-A400
	630 ± 5%	≈ 366	≈ 120	PQ20/20-3C90-A630
	3150 ± 25%	≈ 1830	≈ 0	PQ20/20-3C90
3C91 <small>des</small>	3580 ± 25%	≈ 2080	≈ 0	PQ20/20-3C91
3C94	3150 ± 25%	≈ 1830	≈ 0	PQ20/20-3C94
3C95 <small>des</small>	3580 ± 25%	≈ 2080	≈ 0	PQ20/20-3C95
3C96 <small>des</small>	2820 ± 25%	≈ 1640	≈ 0	PQ20/20-3C96

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3F3	160 \pm 3%	\approx 93	\approx 620	PQ20/20-3F3-A160
	250 \pm 3%	\approx 145	\approx 360	PQ20/20-3F3-A250
	315 \pm 3%	\approx 183	\approx 270	PQ20/20-3F3-A315
	400 \pm 3%	\approx 232	\approx 200	PQ20/20-3F3-A400
	630 \pm 5%	\approx 366	\approx 120	PQ20/20-3F3-A630
	2650 \pm 25%	\approx 1540	\approx 0	PQ20/20-3F3

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 = 25 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C	f = 500 kHz; B = 50 mT; T = 100 °C
3C81	\geq 320	\leq 0.66	–	–	–	–	–
3C90	\geq 320	\leq 0.35	\leq 0.37	–	–	–	–
3C91	\geq 320	–	\leq 0.2 ⁽¹⁾	–	\leq 1.3 ⁽¹⁾	–	–
3C94	\geq 320	–	\leq 0.27	–	\leq 1.7	–	–
3C95	\geq 320	–	–	\leq 1.68	\leq 1.6	–	–
3C96	\geq 340	–	\leq 0.2	–	\leq 1.3	\leq 0.53	\leq 1.1
3F3	\geq 320	–	\leq 0.31	–	–	\leq 0.54	–

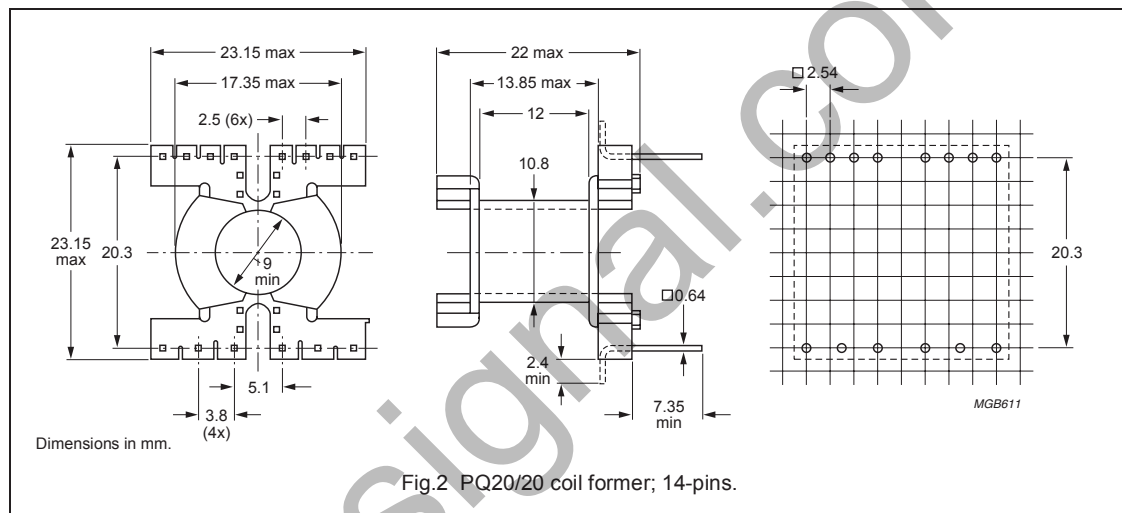
Note

1. Measured at 60 °C.

COIL FORMER

General data 14-pins PQ20/20 coil former

PARAMETER	SPECIFICATION
Coil former material	Polyethylene terephthalate (PET), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938
Pin material	copper-tin alloy (CuSn), tin (Sn) 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



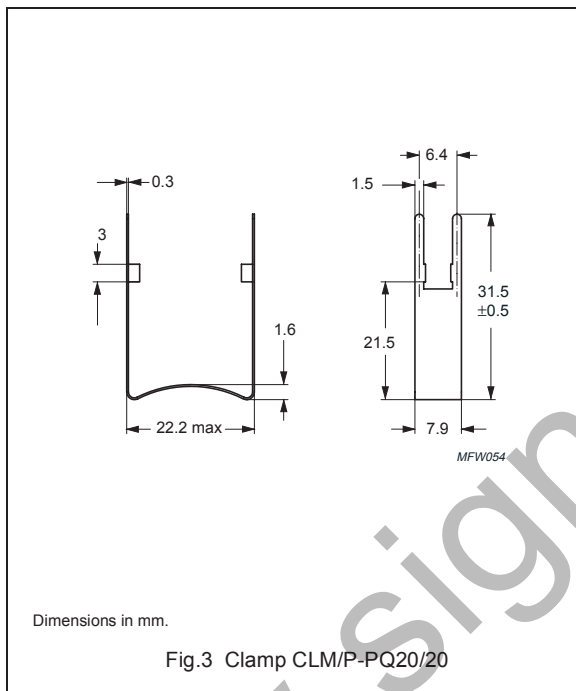
Winding data and area product for 14-pins PQ20/20 coil former

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	36.0	12.0	44.0	2250	CPV-PQ20/20-1S-14P-Z
1	36.0	12.0	44.0	2250	CPV-PQ20/20-1S-14PD-Z

MOUNTING PARTS

General data

ITEM	REMARKS	TYPE NUMBER
Clamp	phosphorbronze, Sn plated, earth pins solderability acc. to "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s	CLM/P-PQ20/20



CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.372	mm ⁻¹
V_e	effective volume	5470	mm ³
l_e	effective length	45.0	mm
A_e	effective area	121	mm ²
A_{min}	minimum area	109	mm ²
m	mass of set	≈ 30	g

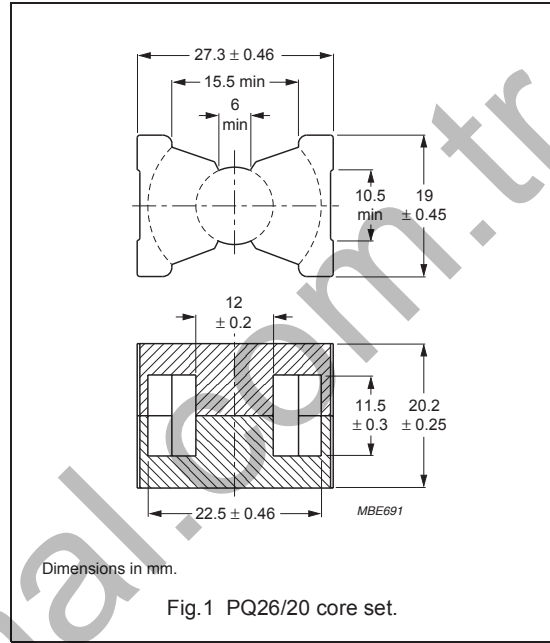


Fig.1 PQ26/20 core set.

Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 60 ± 15 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μ m)	TYPE NUMBER
3C81	250 ± 3%	≈ 74	≈ 730	PQ26/20-3C81-E250
	315 ± 3%	≈ 93	≈ 550	PQ26/20-3C81-A315
	400 ± 3%	≈ 118	≈ 420	PQ26/20-3C81-A400
	630 ± 3%	≈ 186	≈ 250	PQ26/20-3C81-A630
	1000 ± 5%	≈ 296	≈ 140	PQ26/20-3C81-A1000
	7020 ± 25%	≈ 2080	≈ 0	PQ26/20-3C81
3C90	250 ± 3%	≈ 74	≈ 730	PQ26/20-3C90-E250
	315 ± 3%	≈ 93	≈ 550	PQ26/20-3C90-A315
	400 ± 3%	≈ 118	≈ 420	PQ26/20-3C90-A400
	630 ± 3%	≈ 186	≈ 250	PQ26/20-3C90-A630
	1000 ± 5%	≈ 296	≈ 140	PQ26/20-3C90-A1000
	6200 ± 25%	≈ 1640	≈ 0	PQ26/20-3C90
3C91 <small>des</small>	7020 ± 25%	≈ 2080	≈ 0	PQ26/20-3C91
3C94	6200 ± 25%	≈ 1640	≈ 0	PQ26/20-3C94
3C95 <small>des</small>	7020 ± 25%	≈ 2080	≈ 0	PQ26/20-3C95
3C96 <small>des</small>	5530 ± 25%	≈ 1640	≈ 0	PQ26/20-3C96

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3F3	250 \pm 3%	\approx 74	\approx 730	PQ26/20-3F3-E250
	315 \pm 3%	\approx 93	\approx 550	PQ26/20-3F3-A315
	400 \pm 3%	\approx 118	\approx 420	PQ26/20-3F3-A400
	630 \pm 3%	\approx 186	\approx 250	PQ26/20-3F3-A630
	1000 \pm 5%	\approx 296	\approx 140	PQ26/20-3F3-A1000
	5200 \pm 25%	\approx 1540	\approx 0	PQ26/20-3F3

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 = 25 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C
3C81	\geq 320	\leq 1.3	–	–	–	–
3C90	\geq 320	\leq 0.66	\leq 0.7	–	–	–
3C91	\geq 320	–	\leq 0.42 ⁽¹⁾	–	\leq 2.5 ⁽¹⁾	–
3C94	\geq 320	–	\leq 0.52	–	\leq 3.3	–
3C95	\geq 320	–	–	\leq 3.23	\leq 3.06	–
3C96	\geq 340	–	\leq 0.42	–	\leq 2.5	\leq 1.0
3F3	\geq 320	–	\leq 0.64	–	–	\leq 1.1

Properties of core sets under power conditions (continued)

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 500 kHz; B = 50 mT; T = 100 °C	f = 500 kHz; B = 100 mT; T = 100 °C	f = 1 MHz; B = 30 mT; T = 100 °C	f = 3 MHz; B = 10 mT; T = 100 °C
3C81	\geq 320	–	–	–	–
3C90	\geq 320	–	–	–	–
3C91	\geq 320	–	–	–	–
3C94	\geq 320	–	–	–	–
3C95	\geq 320	–	–	–	–
3C96	\geq 340	\leq 2.1	–	–	–
3F3	\geq 320	–	–	–	–

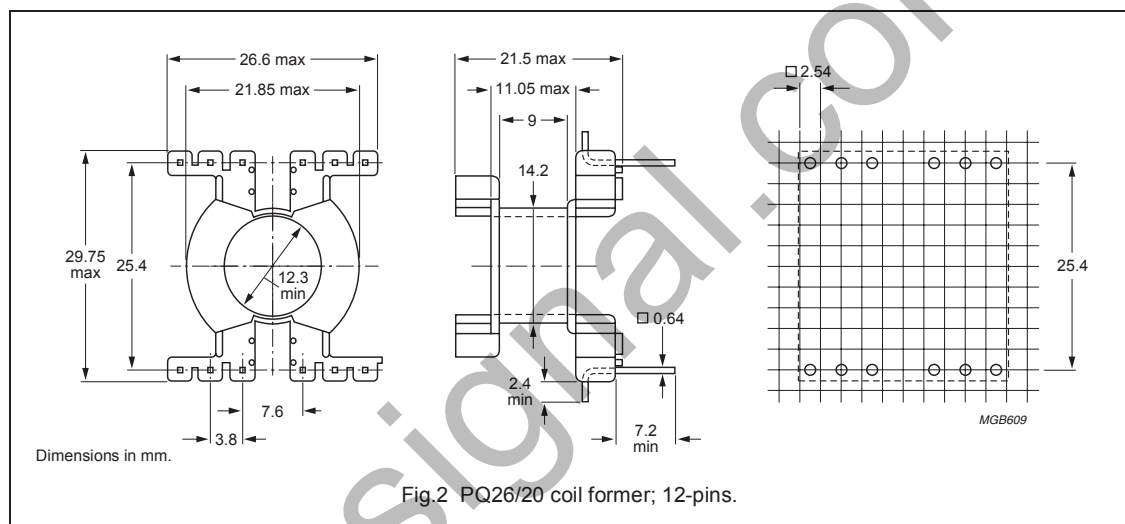
Note

1. Measured at 60 °C.

COIL FORMER

General data 12-pins PQ26/20 coil former

ITEM	SPECIFICATION
Coil former material	Polyethylene terephthalate (PET), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938
Pin material	copper-tin alloy (CuSn), tin (Sn) 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



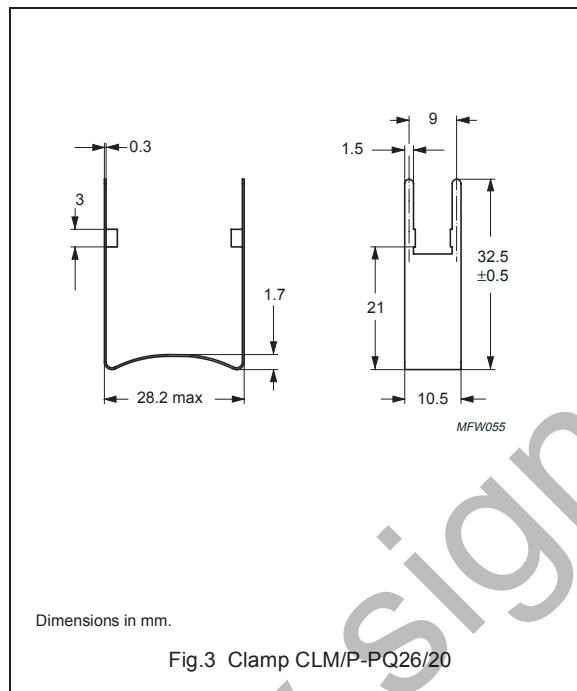
Winding data and area product for 12-pins PQ26/20 coil former

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	31.1	9.0	56.4	3760	CPV-PQ26/20-1S-12P-Z
1	31.1	9.0	56.4	3760	CPV-PQ26/20-1S-12PD-Z

MOUNTING PARTS

General data

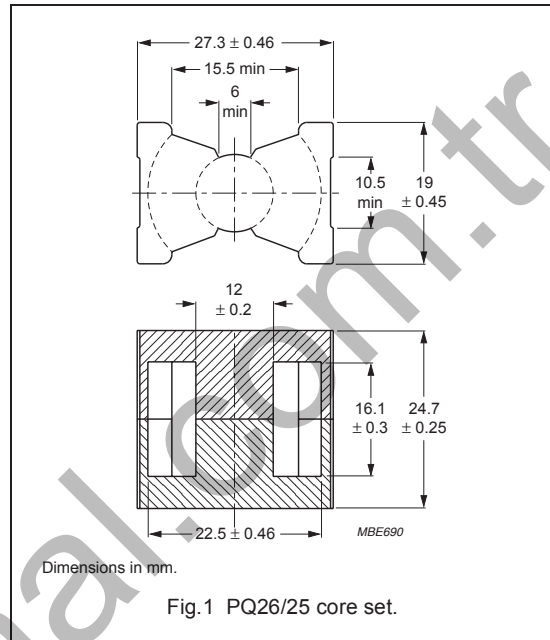
ITEM	REMARKS	TYPE NUMBER
Clamp	phosphorbronze, Sn plated, earth pins solderability acc. to "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s	CLM/P-PQ26/20



CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.451	mm^{-1}
V_e	effective volume	6530	mm^3
l_e	effective length	54.3	mm
A_e	effective area	120	mm^2
A_{min}	minimum area	108	mm^2
m	mass of set	≈ 36	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 60 ± 15 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3C81	250 $\pm 3\%$	≈ 90	≈ 730	PQ26/25-3C81-E250
	315 $\pm 3\%$	≈ 113	≈ 550	PQ26/25-3C81-A315
	400 $\pm 3\%$	≈ 144	≈ 420	PQ26/25-3C81-A400
	630 $\pm 3\%$	≈ 227	≈ 240	PQ26/25-3C81-A630
	1000 $\pm 5\%$	≈ 360	≈ 140	PQ26/25-3C81-A1000
	6010 $\pm 25\%$	≈ 2160	≈ 0	PQ26/25-3C81
3C90	250 $\pm 3\%$	≈ 90	≈ 730	PQ26/25-3C90-E250
	315 $\pm 3\%$	≈ 113	≈ 550	PQ26/25-3C90-A315
	400 $\pm 3\%$	≈ 144	≈ 420	PQ26/25-3C90-A400
	630 $\pm 3\%$	≈ 227	≈ 240	PQ26/25-3C90-A630
	1000 $\pm 5\%$	≈ 360	≈ 140	PQ26/25-3C90-A1000
	5250 $\pm 25\%$	≈ 1890	≈ 0	PQ26/25-3C90
3C91 des	6010 $\pm 25\%$	≈ 2160	≈ 0	PQ26/25-3C91
3C94	5250 $\pm 25\%$	≈ 1890	≈ 0	PQ26/25-3C94
3C95 des	6010 $\pm 25\%$	≈ 2160	≈ 0	PQ26/25-3C95
3C96 des	4700 $\pm 25\%$	≈ 1690	≈ 0	PQ26/25-3C96

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3F3	250 $\pm 3\%$	≈ 90	≈ 730	PQ26/25-3F3-E250
	315 $\pm 3\%$	≈ 113	≈ 550	PQ26/25-3F3-A315
	400 $\pm 3\%$	≈ 144	≈ 420	PQ26/25-3F3-A400
	630 $\pm 3\%$	≈ 227	≈ 240	PQ26/25-3F3-A630
	1000 $\pm 5\%$	≈ 360	≈ 140	PQ26/25-3F3-A1000
	4390 $\pm 25\%$	≈ 1574	≈ 0	PQ26/25-3F3

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 = 25 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C	f = 500 kHz; B = 50 mT; T = 100 °C
3C81	≥ 320	≤ 1.5	–	–	–	–	–
3C90	≥ 320	≤ 0.79	≤ 0.83	–	–	–	–
3C91	≥ 320	–	$\leq 0.5^{(1)}$	–	$\leq 3.2^{(1)}$	–	–
3C94	≥ 320	–	≤ 0.62	–	≤ 4.0	–	–
3C95	≥ 320	–	–	≤ 3.85	≤ 3.66	–	–
3C96	≥ 340	–	≤ 0.5	–	≤ 3.2	≤ 1.15	≤ 2.5
3F3	≥ 320	–	≤ 0.72	–	–	≤ 1.2	–

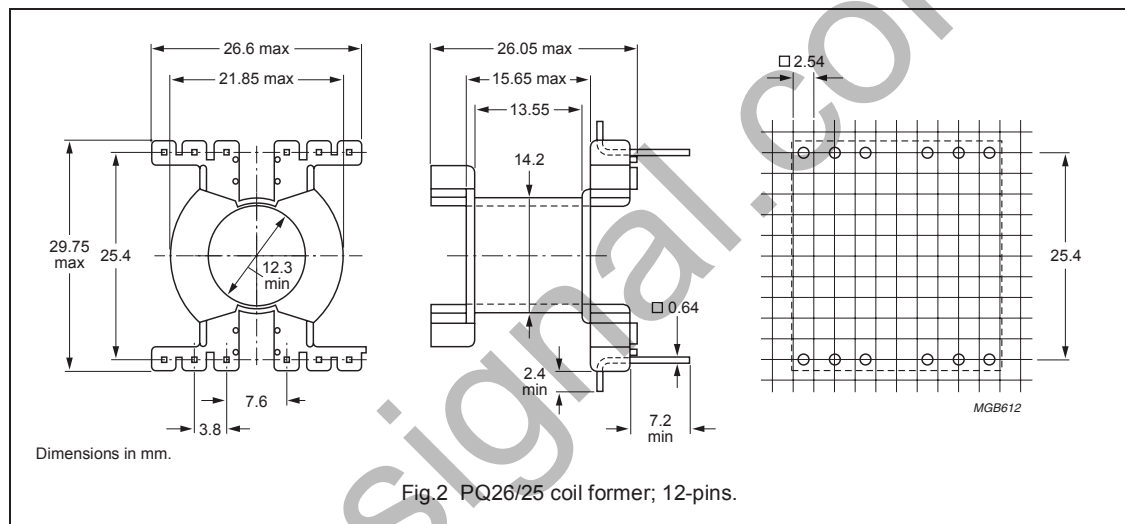
Note

1. Measured at 60 °C.

COIL FORMER

General data 12-pins PQ26/25 coil former

PARAMETER	SPECIFICATION
Coil former material	Polyethylene terephthalate (PET), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938
Pin material	copper-tin alloy (CuSn), tin (Sn) 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



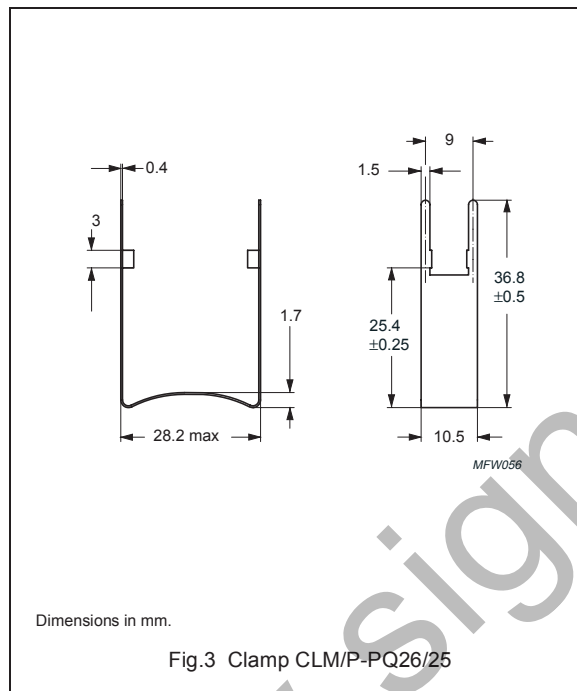
Winding data and area product for 12-pins PQ26/25 coil former

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	47.5	13.6	56.4	5700	CPV-PQ26/25-1S-12P-Z
1	47.5	13.6	56.4	5700	CPV-PQ26/25-1S-12PD-Z

MOUNTING PARTS

General data

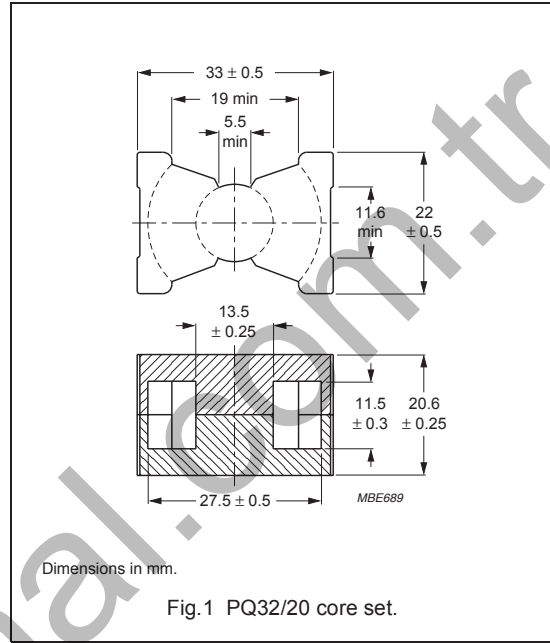
ITEM	REMARKS	TYPE NUMBER
Clamp	phosphorbronze, Sn plated, earth pins solderability acc. to "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s	CLM/P-PQ26/25



CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.331	mm ⁻¹
V_e	effective volume	9440	mm ³
l_e	effective length	55.9	mm
A_e	effective area	169	mm ²
A_{min}	minimum area	142	mm ²
m	mass of set	≈ 43	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 80 ± 20 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3C81	315 ± 3%	≈ 83	≈ 790	PQ32/20-3C81-E315
	400 ± 3%	≈ 105	≈ 600	PQ32/20-3C81-A400
	630 ± 3%	≈ 166	≈ 350	PQ32/20-3C81-A630
	1000 ± 3%	≈ 263	≈ 210	PQ32/20-3C81-A1000
	1600 ± 5%	≈ 421	≈ 120	PQ32/20-3C81-A1600
	7560 ± 25%	≈ 1990	≈ 0	PQ32/20-3C81
3C90	315 ± 3%	≈ 83	≈ 790	PQ32/20-3C90-E315
	400 ± 3%	≈ 105	≈ 600	PQ32/20-3C90-A400
	630 ± 3%	≈ 166	≈ 350	PQ32/20-3C90-A630
	1000 ± 3%	≈ 263	≈ 210	PQ32/20-3C90-A1000
	1600 ± 5%	≈ 421	≈ 120	PQ32/20-3C90-A1600
	6800 ± 25%	≈ 1790	≈ 0	PQ32/20-3C90
3C91 <small>des</small>	7560 ± 25%	≈ 1990	≈ 0	PQ32/20-3C91
3C94	6800 ± 25%	≈ 1790	≈ 0	PQ32/20-3C94
3C95 <small>des</small>	7560 ± 25%	≈ 1990	≈ 0	PQ32/20-3C95
3C96 <small>des</small>	6000 ± 25%	≈ 1580	≈ 0	PQ32/20-3C96

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3F3	315 \pm 3%	\approx 83	\approx 790	PQ32/20-3F3-E315
	400 \pm 3%	\approx 105	\approx 600	PQ32/20-3F3-A400
	630 \pm 3%	\approx 166	\approx 350	PQ32/20-3F3-A630
	1000 \pm 3%	\approx 263	\approx 210	PQ32/20-3F3-A1000
	1600 \pm 5%	\approx 421	\approx 120	PQ32/20-3F3-A1600
	6000 \pm 25%	\approx 1580	\approx 0	PQ32/20-3F3

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 = 25 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C	f = 500 kHz; B = 50 mT; T = 100 °C
3C81	\geq 320	\leq 1.9	–	–	–	–	–
3C90	\geq 320	\leq 1.2	\leq 1.3	–	–	–	–
3C91	\geq 320	–	\leq 0.7 ⁽¹⁾	–	\leq 4.4 ⁽¹⁾	–	–
3C94	\geq 320	–	\leq 0.9	–	\leq 5.5	–	–
3C95	\geq 320	–	–	\leq 5.57	\leq 5.29	–	–
3C96	\geq 340	–	\leq 0.7	–	\leq 4.4	\leq 1.7	\leq 3.5
3F3	\geq 320	–	\leq 1.0	–	–	\leq 1.8	–

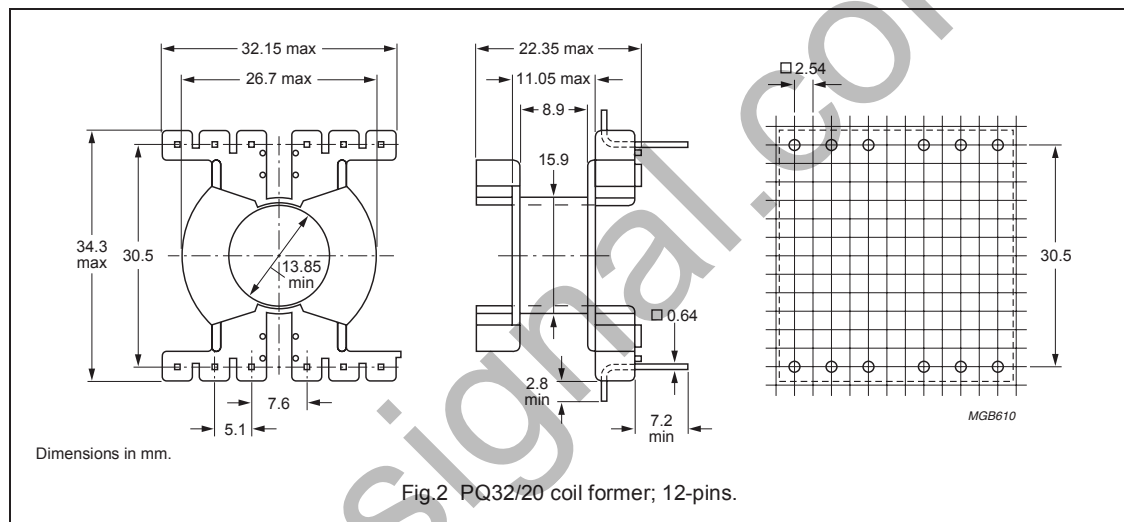
Note

1. Measured at 60 °C.

COIL FORMER

General data 12-pins PQ32/20 coil former

PARAMETER	SPECIFICATION
Coil former material	Polyethylene terephthalate (PET), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938
Pin material	copper-tin alloy (CuSn), tin (Sn) plated
Maximum operating temperature	180 °C, "IEC 60085", class H
Resistance to soldering heat	"IEC 6068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1



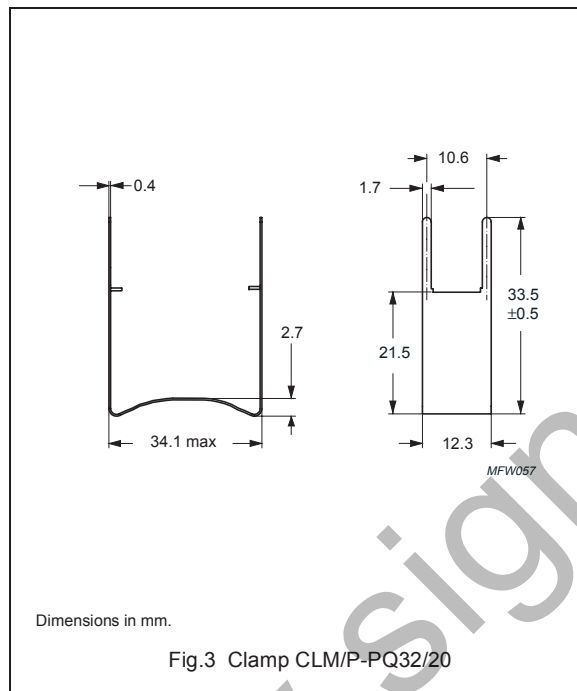
Winding data and area product for 12-pins PQ32/20 coil former

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	44.8	8.9	66.7	7570	CPV-PQ32/20-1S-12P-Z
1	44.8	8.9	66.7	7570	CPV-PQ32/20-1S-12PD-Z

MOUNTING PARTS

General data

ITEM	REMARKS	TYPE NUMBER
Clamp	phosphorbronze, Sn plated, earth pins solderability acc. to "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s	CLM/P-PQ32/20



CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.447	mm ⁻¹
V_e	effective volume	12500	mm ³
l_e	effective length	74.7	mm
A_e	effective area	167	mm ²
A_{min}	minimum area	142	mm ²
m	mass of set	≈ 57	g

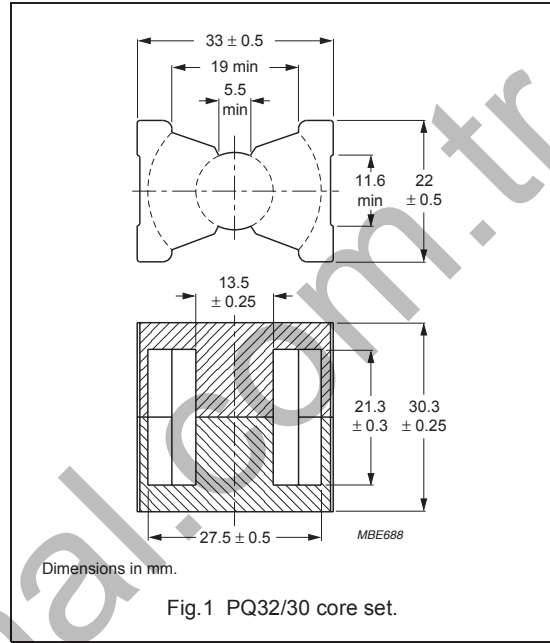


Fig.1 PQ32/30 core set.

Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 80 ± 20 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μ m)	TYPE NUMBER
3C81	315 ± 3%	≈ 112	≈ 800	PQ32/30-3C81-E315
	400 ± 3%	≈ 142	≈ 600	PQ32/30-3C81-A400
	630 ± 3%	≈ 224	≈ 350	PQ32/30-3C81-A630
	1000 ± 3%	≈ 356	≈ 200	PQ32/30-3C81-A1000
	1600 ± 5%	≈ 570	≈ 110	PQ32/30-3C81-A1600
	6570 ± 25%	≈ 2340	≈ 0	PQ32/30-3C81
3C90	315 ± 3%	≈ 112	≈ 800	PQ32/30-3C90-E315
	400 ± 3%	≈ 142	≈ 600	PQ32/30-3C90-A400
	630 ± 3%	≈ 224	≈ 350	PQ32/30-3C90-A630
	1000 ± 3%	≈ 356	≈ 200	PQ32/30-3C90-A1000
	1600 ± 5%	≈ 570	≈ 110	PQ32/30-3C90-A1600
	5600 ± 25%	≈ 1990	≈ 0	PQ32/30-3C90
3C91 <small>des</small>	6570 ± 25%	≈ 2340	≈ 0	PQ32/30-3C91
3C94	5600 ± 25%	≈ 1990	≈ 0	PQ32/30-3C94
3C95 <small>des</small>	6570 ± 25%	≈ 2340	≈ 0	PQ32/30-3C95
3C96 <small>des</small>	5040 ± 25%	≈ 1790	≈ 0	PQ32/30-3C96

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3F3	315 \pm 3%	\approx 112	\approx 800	PQ32/30-3F3-E315
	400 \pm 3%	\approx 142	\approx 600	PQ32/30-3F3-A400
	630 \pm 3%	\approx 224	\approx 350	PQ32/30-3F3-A630
	1000 \pm 3%	\approx 356	\approx 200	PQ32/30-3F3-A1000
	1600 \pm 5%	\approx 570	\approx 110	PQ32/30-3F3-A1600
	4580 \pm 25%	\approx 1630	\approx 0	PQ32/30-3F3

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 = 25 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C	f = 500 kHz; B = 50 mT; T = 100 °C
3C81	\geq 320	\leq 2.6	–	–	–	–	–
3C90	\geq 320	\leq 1.5	\leq 1.6	–	–	–	–
3C91	\geq 320	–	\leq 0.9 ⁽¹⁾	–	\leq 6.0 ⁽¹⁾	–	–
3C94	\geq 320	–	\leq 1.2	–	\leq 7.5	–	–
3C95	\geq 320	–	–	\leq 7.88	\leq 7.5	–	–
3C96	\geq 340	–	\leq 0.9	–	\leq 6.0	\leq 2.3	\leq 4.7
3F3	\geq 320	–	\leq 1.4	–	–	\leq 2.4	–

Note

1. Measured at 60 °C.

COIL FORMER

General data 12-pins PQ32/30 coil former

PARAMETER	SPECIFICATION
Coil former material	Polyethylene terephthalate (PET), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938
Pin material	copper-tin alloy (CuSn), tin (Sn) 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

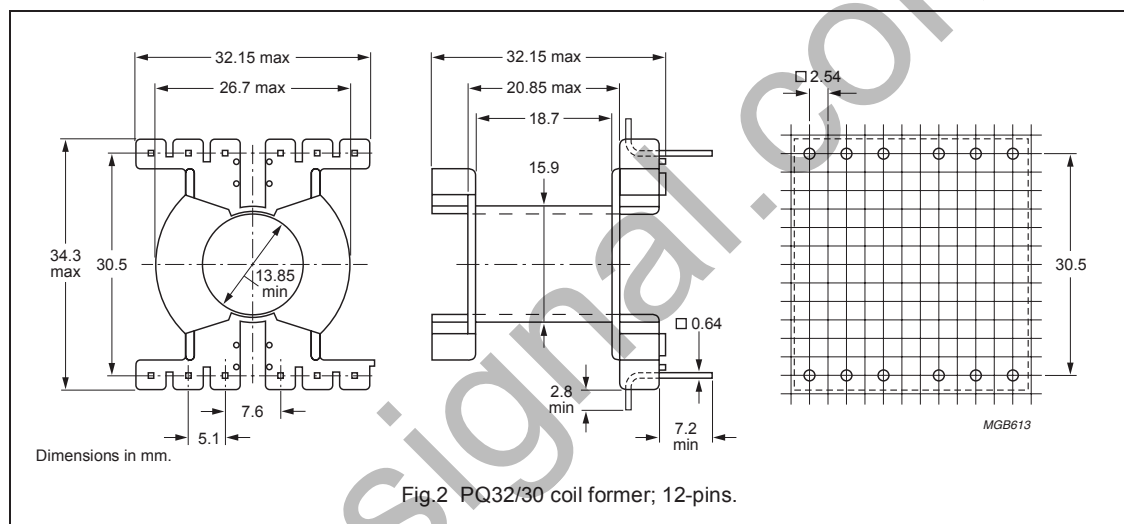


Fig.2 PQ32/30 coil former; 12-pins.

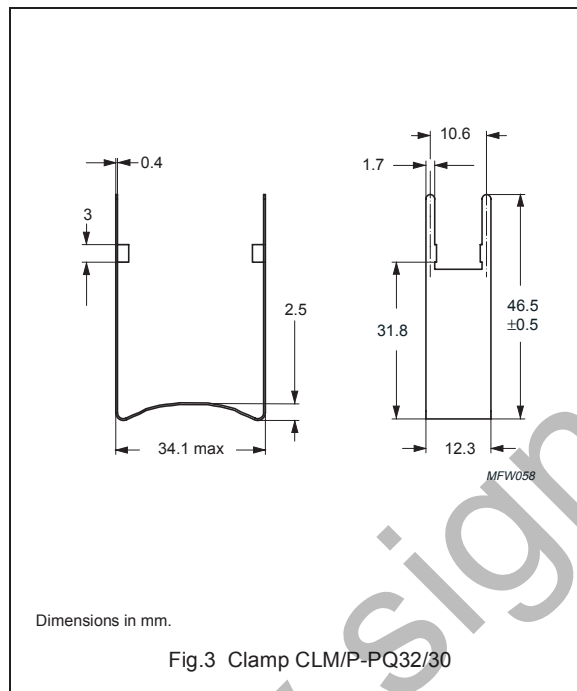
Winding data and area product for 12-pins PQ32/30 coil former

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	53.0	18.7	66.7	8850	CPV-PQ32/30-1S-12P-Z
1	53.0	18.7	66.7	8850	CPV-PQ32/30-1S-12PD-Z

MOUNTING PARTS

General data

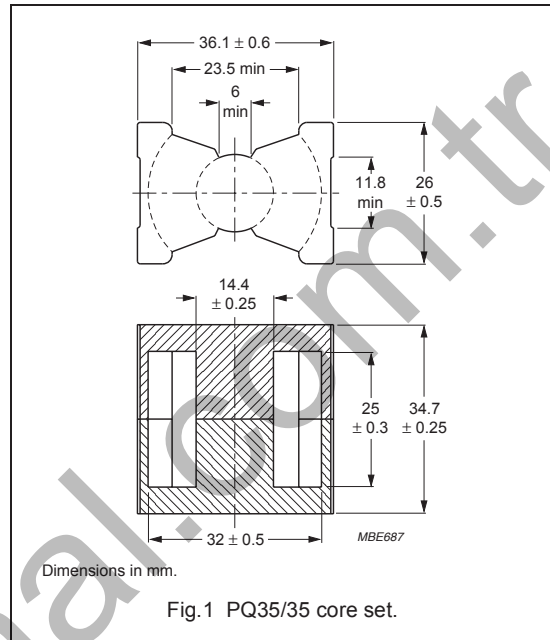
ITEM	REMARKS	TYPE NUMBER
Clamp	phosphorbronze, Sn plated, earth pins solderability acc. to "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s	CLM/P-PQ32/30



CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.454	mm ⁻¹
V_e	effective volume	16300	mm ³
l_e	effective length	86.1	mm
A_e	effective area	190	mm ²
A_{min}	minimum area	162	mm ²
m	mass of set	≈ 73	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 80 ± 20 N.

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3C81	315 ±3%	≈ 114	≈ 920	PQ35/35-3C81-E315
	400 ±3%	≈ 144	≈ 690	PQ35/35-3C81-E400
	630 ±3%	≈ 227	≈ 400	PQ35/35-3C81-A630
	1000 ±3%	≈ 361	≈ 230	PQ35/35-3C81-A1000
	1600 ±5%	≈ 577	≈ 120	PQ35/35-3C81-A1600
	6000 ±25%	≈ 2160	≈ 0	PQ35/35-3C81
3C90	315 ±3%	≈ 114	≈ 920	PQ35/35-3C90-E315
	400 ±3%	≈ 144	≈ 690	PQ35/35-3C90-E400
	630 ±3%	≈ 227	≈ 400	PQ35/35-3C90-A630
	1000 ±3%	≈ 361	≈ 230	PQ35/35-3C90-A1000
	1600 ±5%	≈ 577	≈ 120	PQ35/35-3C90-A1600
	5200 ±25%	≈ 1880	≈ 0	PQ35/35-3C90
3C91 <small>des</small>	6000 ±25%	≈ 2160	≈ 0	PQ35/35-3C91
3C94	5200 ±25%	≈ 1880	≈ 0	PQ35/35-3C94
3C95 <small>des</small>	6000 ±25%	≈ 2160	≈ 0	PQ35/35-3C95
3C96 <small>des</small>	4700 ±25%	≈ 1700	≈ 0	PQ35/35-3C96

GRADE	A_L (nH)	μ_e	TOTAL AIR GAP (μm)	TYPE NUMBER
3F3	315 \pm 3%	\approx 114	\approx 920	PQ35/35-3F3-E315
	400 \pm 3%	\approx 144	\approx 690	PQ35/35-3F3-E400
	630 \pm 3%	\approx 227	\approx 400	PQ35/35-3F3-A630
	1000 \pm 3%	\approx 361	\approx 230	PQ35/35-3F3-A1000
	1600 \pm 5%	\approx 577	\approx 120	PQ35/35-3F3-A1600
	4570 \pm 25%	\approx 1650	\approx 0	PQ35/35-3F3

Properties of core sets under power conditions

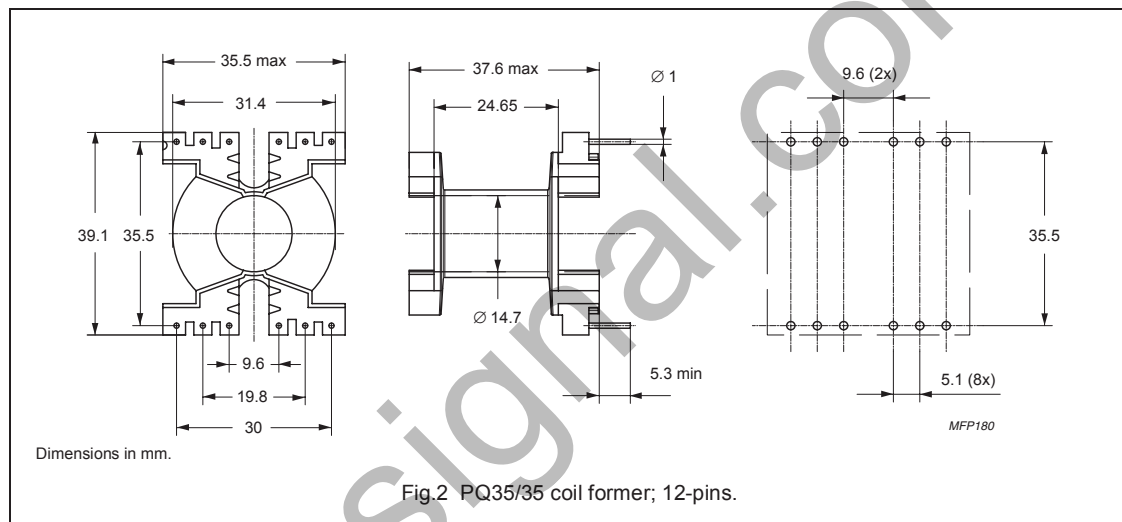
GRADE	B (mT) at	CORE LOSS (W) at					
	H = 250 A/m; f = 25 kHz; T = 100 °C	f = 25 kHz; B = 200 mT; T = 100 °C	f = 100 kHz; B = 100 mT; T = 100 °C	f = 100 kHz; B = 200 mT; T = 25 °C	f = 100 kHz; B = 200 mT; T = 100 °C	f = 400 kHz; B = 50 mT; T = 100 °C	f = 500 kHz; B = 50 mT; T = 100 °C
3C81	\geq 320	\leq 3.8	–	–	–	–	–
3C90	\geq 320	\leq 2.0	\leq 2.1	–	–	–	–
3C91	\geq 320	–	\leq 1.2 ⁽¹⁾	–	\leq 8.0 ⁽¹⁾	–	–
3C94	\geq 320	–	\leq 1.6	–	\leq 10	–	–
3C95	\geq 320	–	–	\leq 10.3	\leq 9.78	–	–
3C96	\geq 340	–	\leq 1.2	–	\leq 8.0	\leq 3.0	\leq 6.1
3F3	\geq 320	–	\leq 1.8	–	–	\leq 3.1	–

Note

1. Measured at 60 °C.

COIL FORMER**General data 12-pins PQ35/35 coil former**

PARAMETER	SPECIFICATION
Coil former material	Polyethylene terephthalate (PET), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41938
Pin material	copper-plated steel wire, tin (Sn) 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

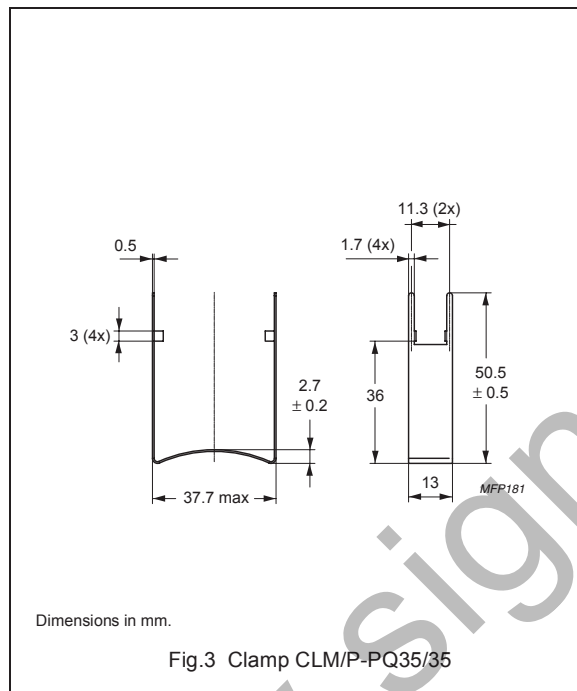
**Winding data for 12-pins PQ35/35 coil former**

NUMBER OF SECTIONS	MINIMUM WINDING AREA (mm ²)	NOMINAL WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	152	20.8	75	CPV-PQ35/35-1S-12P-Z

MOUNTING PARTS

General data

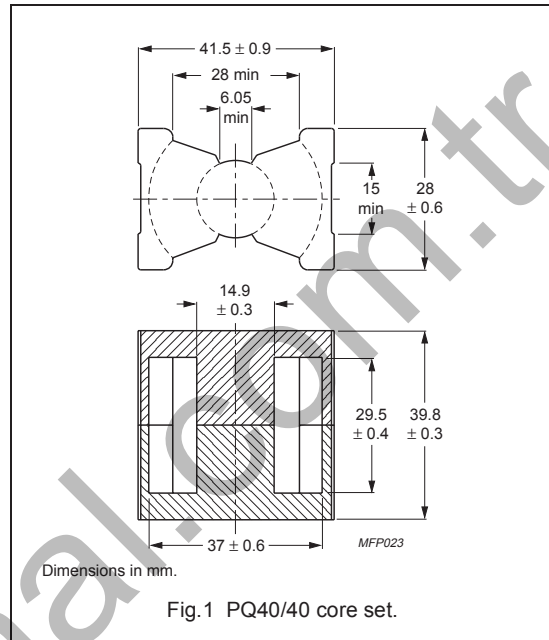
ITEM	REMARKS	TYPE NUMBER
Clamp	phosphorbronze, Sn plated, earth pins solderability acc. to "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s	CLM/P-PQ35/35



CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.507	mm ⁻¹
V_e	effective volume	20500	mm ³
l_e	effective length	102	mm
A_e	effective area	201	mm ²
A_{min}	minimum area	175	mm ²
m	mass of set	≈ 97	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 80 ± 20 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μ m)	TYPE NUMBER
3C91 <small>des</small>	$6100 \pm 25 \%$	≈ 2460	≈ 0	PQ40/40-3C91
3C94	$4900 \pm 25 \%$	≈ 1980	≈ 0	PQ40/40-3C94
3C95 <small>des</small>	$6100 \pm 25 \%$	≈ 2460	≈ 0	PQ40/40-3C95
3C96 <small>des</small>	$4200 \pm 25 \%$	≈ 1690	≈ 0	PQ40/40-3C96

Properties of core sets under power conditions

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 10 kHz; T = 100 °C	f = 100 kHz; B̂ = 100 mT; T = 100 °C	f = 100 kHz; B̂ = 200 mT; T = 25 °C	f = 100 kHz; B̂ = 200 mT; T = 100 °C	f = 500 kHz; B̂ = 50 mT; T = 100 °C
3C91	≥320	≤ 1.65 ⁽¹⁾	–	≤ 10 ⁽¹⁾	–
3C94	≥320	≤ 2.1	–	≤ 12.6	–
3C95	≥320	–	≤ 12.9	≤ 12.3	–
3C96	≥340	≤ 1.65	–	≤ 10	≤ 8.0

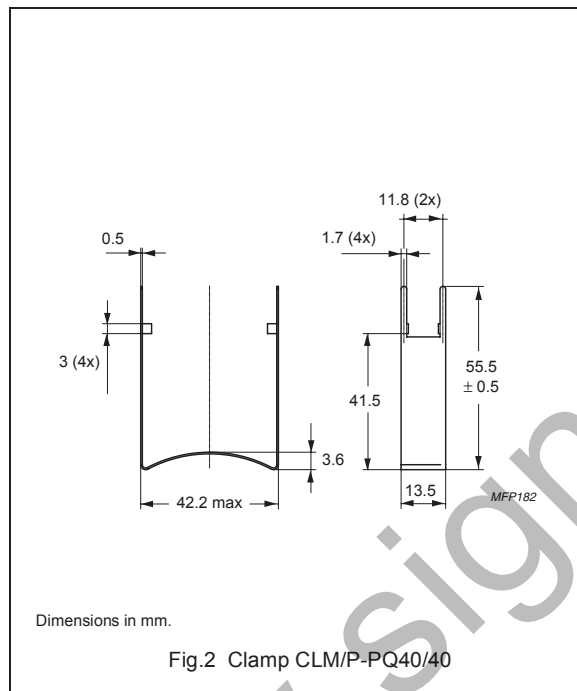
Note

1. Measured at 60 °C.

MOUNTING PARTS

General data

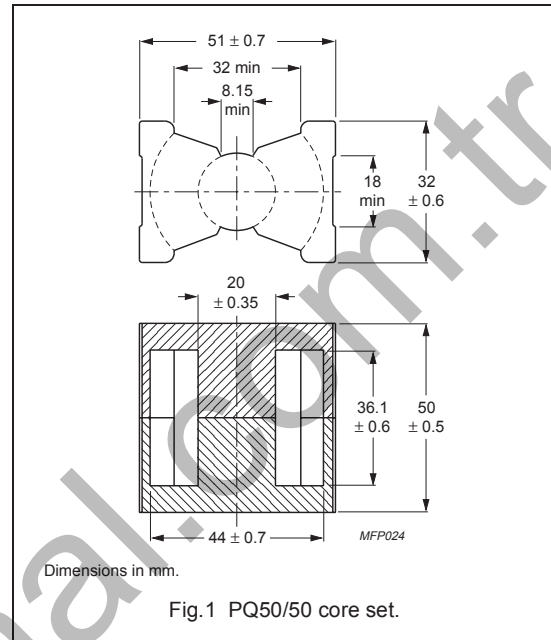
ITEM	REMARKS	TYPE NUMBER
Clamp	phosphorbronze, Sn plated, earth pins solderability acc. to "IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s	CLM/P-PQ40/40



CORE SETS

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	0.345	mm ⁻¹
V_e	effective volume	37100	mm ³
l_e	effective length	113	mm
A_e	effective area	328	mm ²
A_{min}	minimum area	314	mm ²
m	mass of set	≈ 195	g



Core sets for general purpose transformers and power applications

Clamping force for A_L measurements, 80 ± 20 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C91 <small>des</small>	$9200 \pm 25 \%$	≈ 2530	≈ 0	PQ50/50-3C91
3C94	$7400 \pm 25 \%$	≈ 2030	≈ 0	PQ50/50-3C94
3C95 <small>des</small>	$9200 \pm 25 \%$	≈ 2530	≈ 0	PQ50/50-3C95
3C96 <small>des</small>	$6300 \pm 25 \%$	≈ 1730	≈ 0	PQ50/50-3C96

Properties of core sets under power conditions

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 10 kHz; T = 100 °C	f = 100 kHz; $\hat{B} = 100$ mT; T = 100 °C	f = 100 kHz; $\hat{B} = 200$ mT; T = 25 °C	f = 100 kHz; $\hat{B} = 200$ mT; T = 100 °C	f = 500 kHz; $\hat{B} = 50$ mT; T = 100 °C
3C91	≥ 320	≤ 2.9 ⁽¹⁾	–	≤ 18 ⁽¹⁾	–
3C94	≥ 320	≤ 3.8	–	≤ 23	–
3C95	≥ 320	–	≤ 23.4	≤ 22.3	–
3C96	≥ 340	≤ 2.9	–	≤ 18	≤ 14

Note

1. Measured at 60 °C.