

CBW596

Soft Ferrites

Frame and Bar cores and accessories

PRODUCT OVERVIEW AND TYPE NUMBER STRUCTURE

Product overview Frame and Bar cores

CORE TYPE	V_e (mm ³)	A_e (mm ²)	MASS (g)
FRM 20/5/15	655	14	2.1
BAR 20/3/5.5	655	14	1.5
FRM 21/4/12	312	7.9	1.5
BAR 22/2/6	312	7.9	1.0
FRM 24/3.9/10	370	8.1	1.3
BAR 25/2.2/4	370	8.1	1.2
FRM 27/3.8/9	504	9.7	1.6
BAR 28/3.8/2.3	504	9.7	1.2

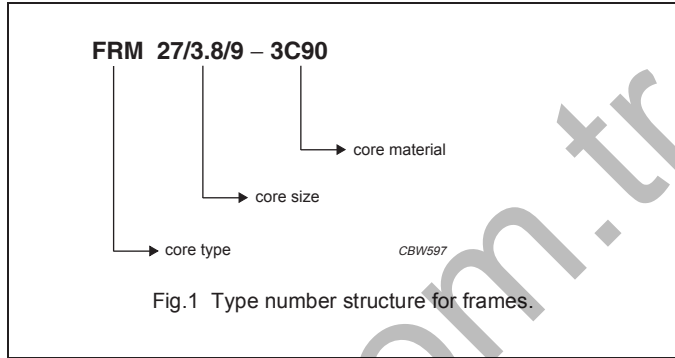


Fig.1 Type number structure for frames.

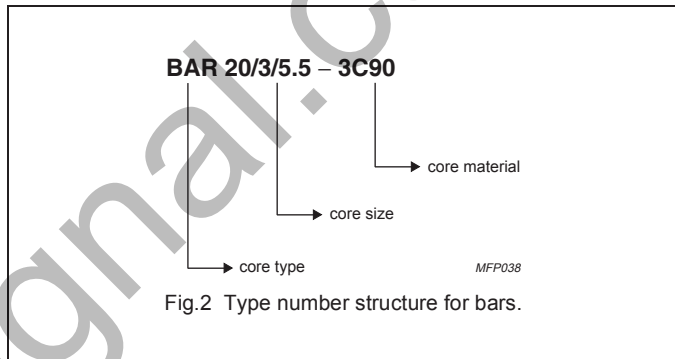


Fig.2 Type number structure for bars.

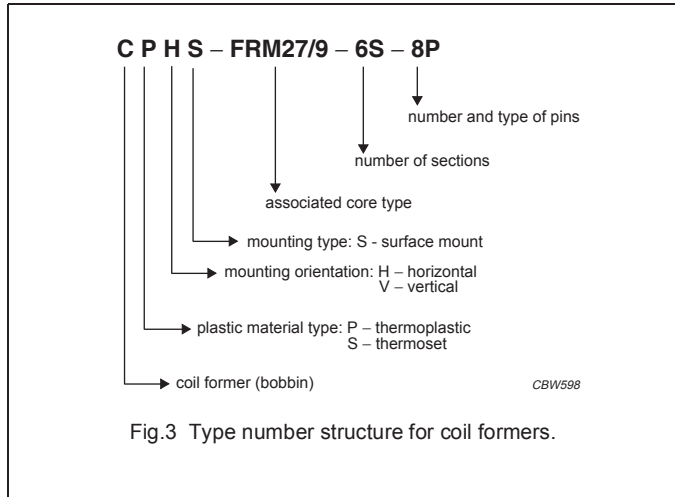
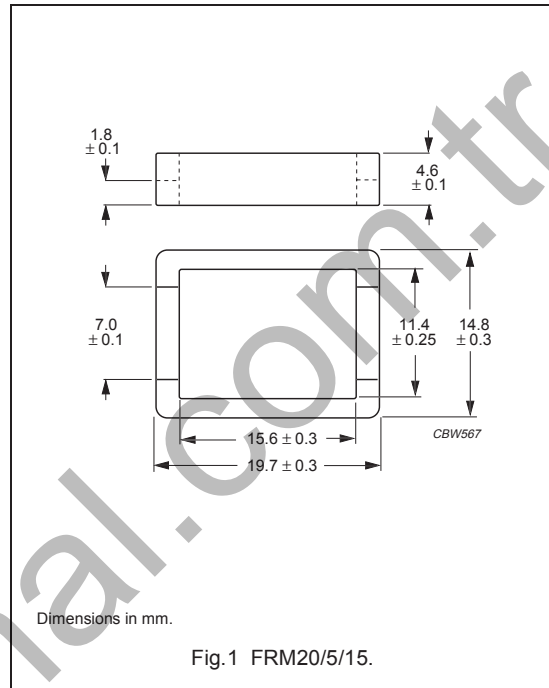


Fig.3 Type number structure for coil formers.

CORE SETS

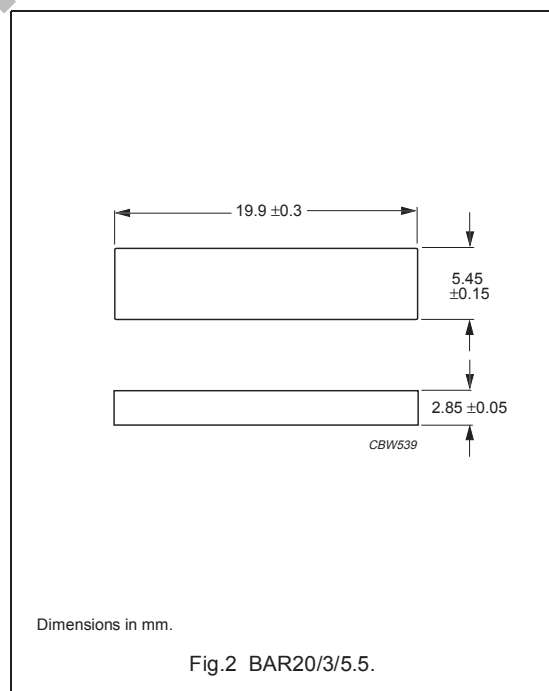
Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	3.29	mm ⁻¹
V_e	effective volume	655	mm ³
l_e	effective length	46	mm
A_e	effective area	14	mm ²
A_{min}	minimum area	7.4	mm ²
m	mass of frame	≈ 2.1	g
m	mass of bar	≈ 1.5	g



Ordering information for bar cores

GRADE	TYPE NUMBER
3C90	BAR20/3/5.5-3C90
3C91	BAR20/3/5.5-3C91



Frame and Bar cores and accessories

FRM20/5/15

Frame cores for use in combination with matching bar cores A_L measured in combination with bar core

GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C90	500 \pm 25%	\approx 1310	\approx 0	FRM20/5/15-3C90
3C91	600 \pm 25%	\approx 1570	\approx 0	FRM20/5/15-3C91

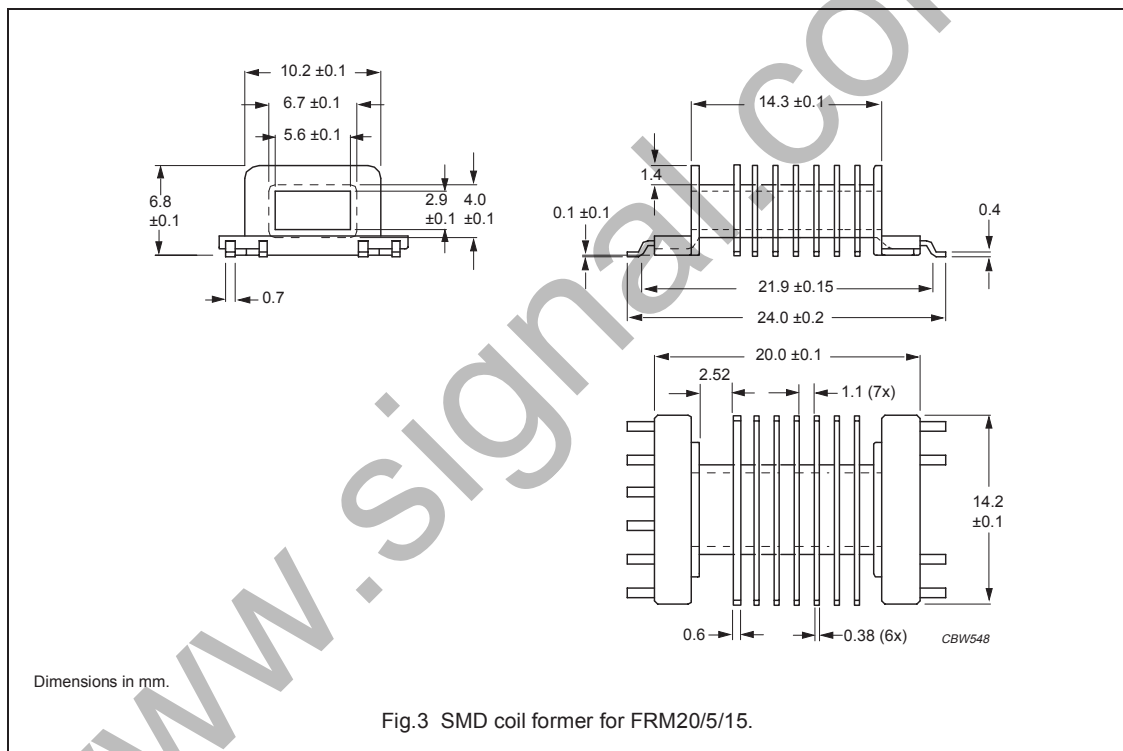
Properties of Frame and Bar combinations under power conditions

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 10 kHz; T = 100 °C	f = 25 kHz; \hat{B} = 200 mT; T = 100 °C	f = 100 kHz; \hat{B} = 100 mT; T = 100 °C	f = 100 kHz; \hat{B} = 100 mT; T = 60 °C	f = 100 kHz; \hat{B} = 200 mT; T = 60 °C
3C90	\geq 320	\leq 0.073	\leq 0.080	–	–
3C91	\geq 320	–	–	\leq 0.033	\leq 0.26

COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	liquid crystal polymer (LCP), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E54705(M)
Pin material	copper-tin alloy (CuSn), tin (Sn) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



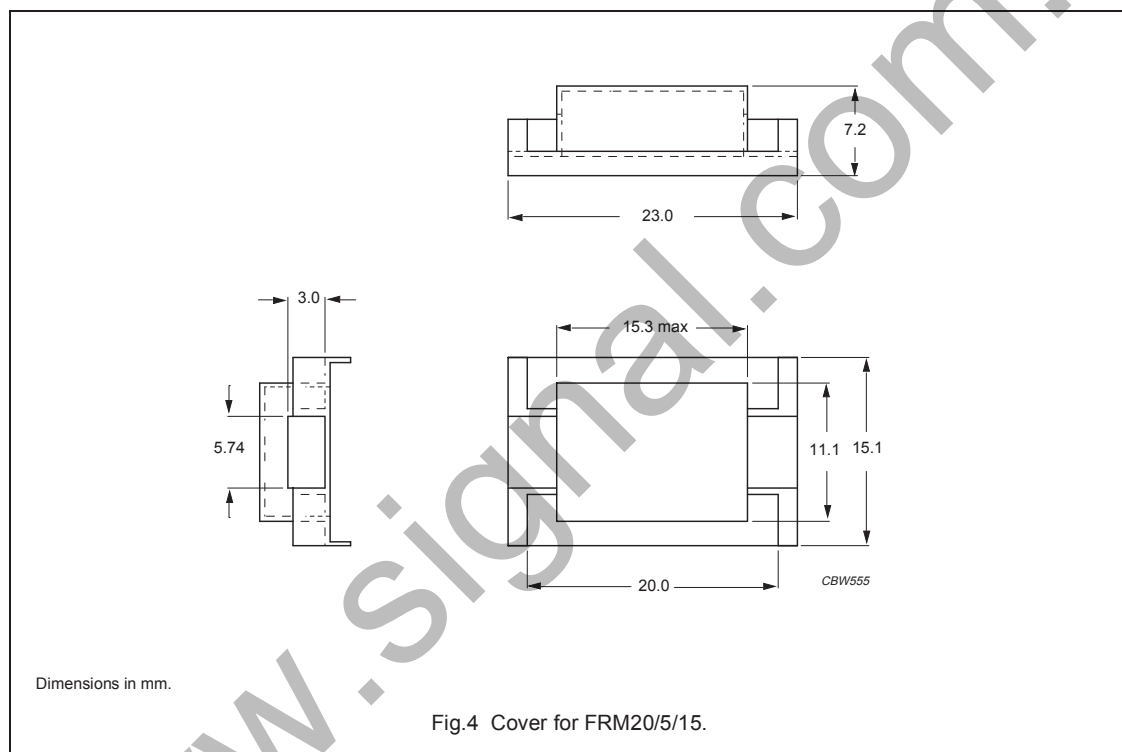
Winding data and area product

NUMBER OF SECTIONS	NUMBER OF SOLDER PADS	WINDING AREA (mm ²)	WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
8	10	3.5 + 7 × 1.5	2.52 + 7 × 1.1	27	25.9 + 7 × 11.1	CPHS-FRM20/15-8S-10P

MOUNTING PARTS

General data

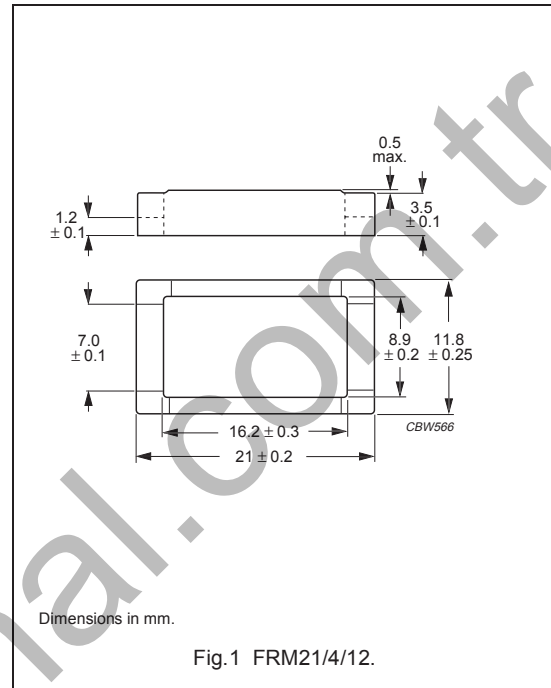
PARAMETER	SPECIFICATION
Cover material	liquid crystal polymer (LCP), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E54705(M)
Maximum operating temperature	155 °C, "IEC 60085", class F



CORE SETS

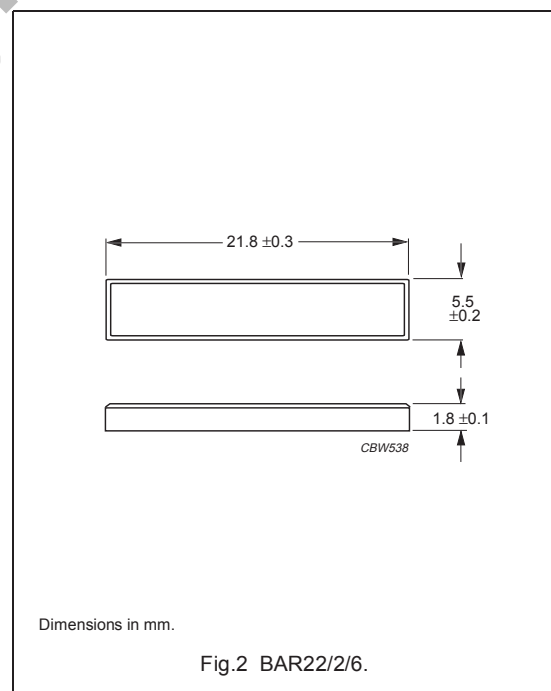
Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	5.06	mm ⁻¹
V_e	effective volume	312	mm ³
l_e	effective length	40	mm
A_e	effective area	7.9	mm ²
A_{min}	minimum area	5.7	mm ²
m	mass of frame	≈ 1.5	g
m	mass of bar	≈ 1.0	g



Ordering information for bar cores

GRADE	TYPE NUMBER
3C90	BAR22/2/6-3C90
3C91	BAR22/2/6-3C91



Frame and Bar cores and accessories

FRM21/4/12

Frame cores for use in combination with matching bar cores A_L measured in combination with bar core.

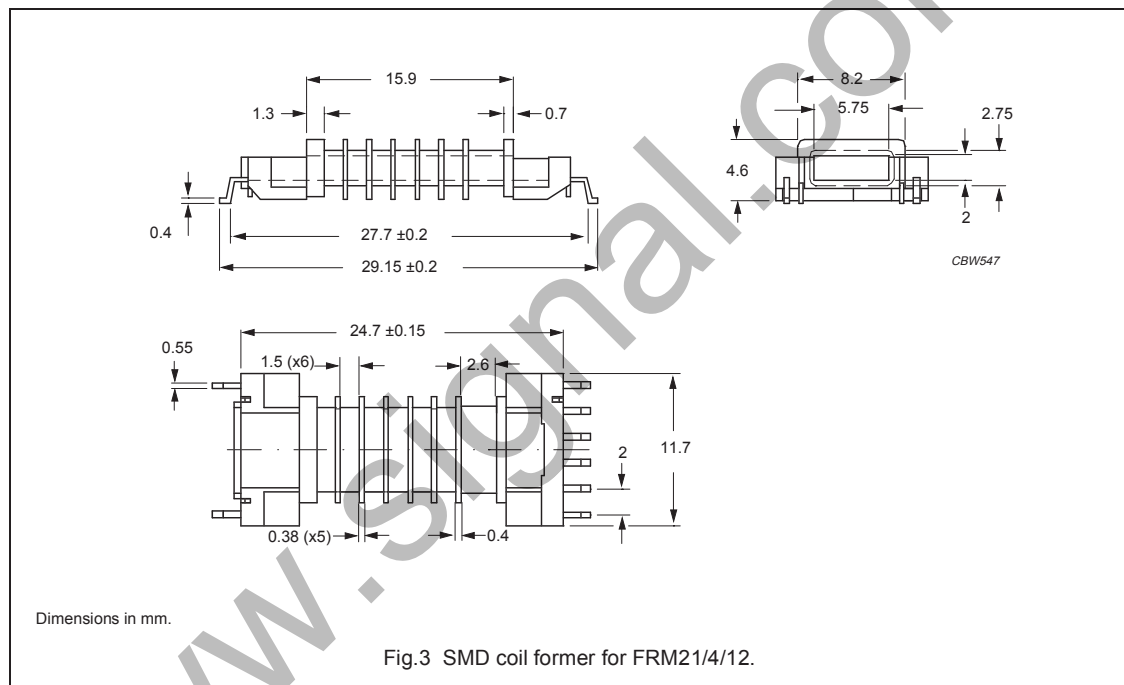
GRADE	A_L (nH)	μ_e	AIR GAP (μm)	TYPE NUMBER
3C90	400 \pm 25%	\approx 1610	\approx 0	FRM21/4/12-3C90
3C91	470 \pm 25%	\approx 1890	\approx 0	FRM21/4/12-3C91

Properties of Frame and Bar combinations under power conditions

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 10 kHz; T = 100 °C	f = 25 kHz; \hat{B} = 200 mT; T = 100 °C	f = 100 kHz; \hat{B} = 100 mT; T = 100 °C	f = 100 kHz; \hat{B} = 100 mT; T = 60 °C	f = 100 kHz; \hat{B} = 200 mT; T = 60 °C
3C90	\geq 320	\leq 0.034	\leq 0.037	–	–
3C91	\geq 320	–	–	\leq 0.020	\leq 0.14

COIL FORMERS**General data**

PARAMETER	SPECIFICATION
Coil former material	liquid crystal polymer (LCP), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E54705(M)
Pin material	copper-tin alloy (CuSn), tin (Sn) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s

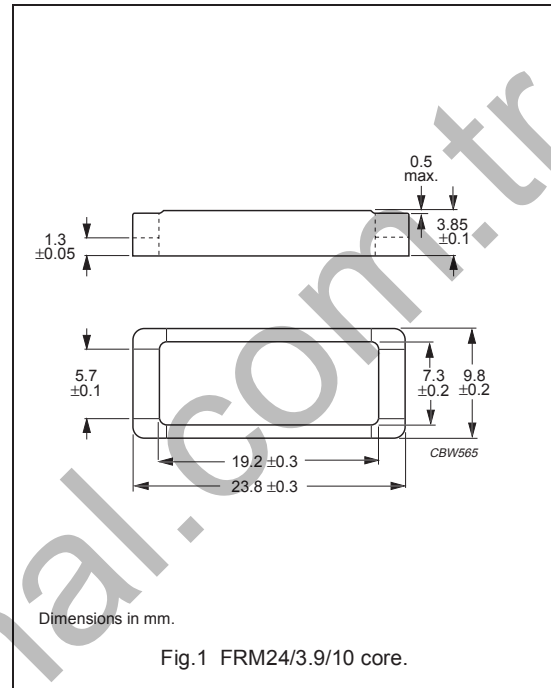
**Winding data and area product**

NUMBER OF SECTIONS	NUMBER OF SOLDER PADS	WINDING AREA (mm ²)	WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
7	8	2.3 + 6 × 1.35	2.6 + 6 × 1.5	21	18.2 + 6 × 10.7	CPHS-FRM21/12-7S-8P

CORE SETS

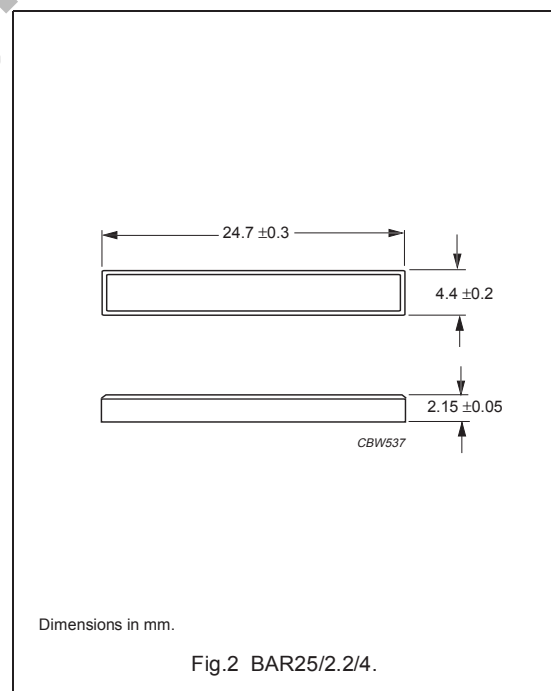
Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	5.65	mm ⁻¹
V_e	effective volume	370	mm ³
l_e	effective length	45.8	mm
A_e	effective area	8.1	mm ²
A_{min}	minimum area	6.0	mm ²
m	mass of frame	≈ 1.3	g
m	mass of bar	≈ 1.2	g



Ordering information for bar cores

GRADE	TYPE NUMBER
3C90	BAR25/2.2/4-3C90
3C91	BAR25/2.2/4-3C91



Frame and Bar cores and accessories

FRM24/3.9/10

Frame cores for use in combination with matching bar cores

AL measured in combination with bar core.

GRADE	A _L (nH)	μ _e	AIR GAP (μm)	TYPE NUMBER
3C90	370 ±25%	≈ 1660	≈ 0	FRM24/3.9/10-3C90
3C91	440 ±25%	≈ 1970	≈ 0	FRM24/3.9/10-3C91

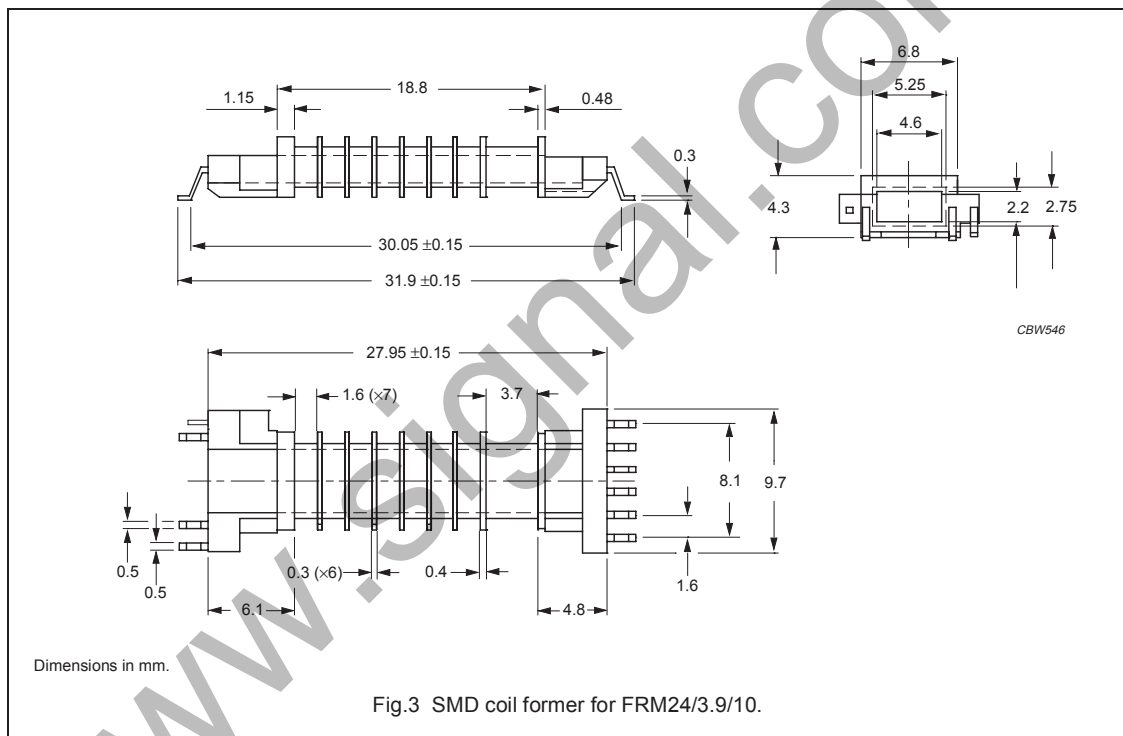
Properties of Frame and Bar combinations under power conditions

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 10 kHz; T = 100 °C	f̂ = 25 kHz; B̂ = 200 mT; T = 100 °C	f̂ = 100 kHz; B̂ = 100 mT; T = 100 °C	f̂ = 100 kHz; B̂ = 100 mT; T = 60 °C	f̂ = 100 kHz; B̂ = 200 mT; T = 60 °C
3C90	≥320	≤ 0.041	≤ 0.044	–	–
3C91	≥320	–	–	≤ 0.019	≤ 0.15

COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	liquid crystal polymer (LCP), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E54705(M)
Pin material	copper-tin alloy (CuSn), tin (Sn) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



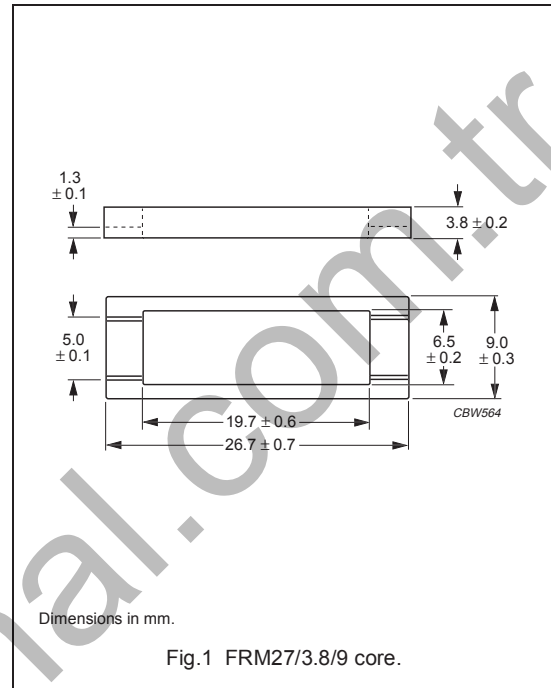
Winding data and area product

NUMBER OF SECTIONS	NUMBER OF SOLDER PADS	WINDING AREA (mm ²)	WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
8	9	2.9 + 7 x 1.24	3.7 + 7 x 1.6	17.3	23.5 + 7 x 10.0	CPHS-FRM24/10-8S-9P

CORE SETS

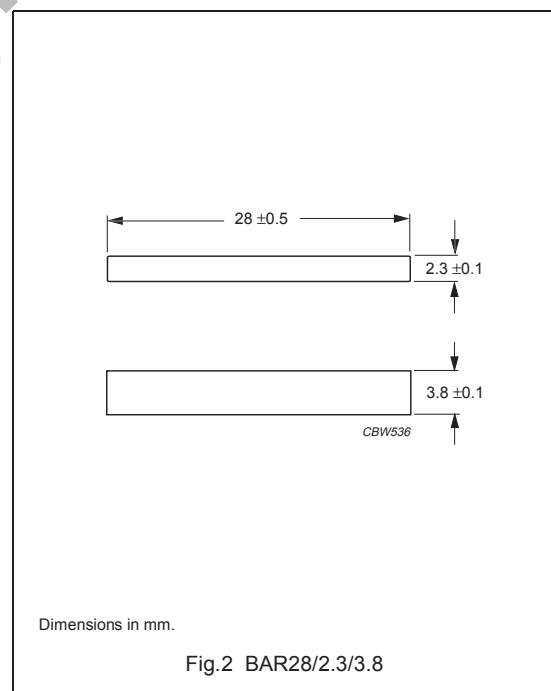
Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	5.56	mm ⁻¹
V_e	effective volume	504	mm ³
l_e	effective length	52.1	mm
A_e	effective area	9.7	mm ²
A_{min}	minimum area	8.7	mm ²
m	mass of frame	≈ 1.6	g
m	mass of bar	≈ 1.2	g



Ordering information for bar cores

GRADE	TYPE NUMBER
3C90	BAR28/2.3/3.8-3C90
3C91	BAR28/2.3/3.8-3C91



Frame and Bar cores and accessories

FRM27/3.8/9

Frame cores for use in combination with matching bar coresA_L measured in combination with a bar core.

GRADE	A _L (nH)	μ _e	AIR GAP (μm)	TYPE NUMBER
3C90	350 ±20%	≈ 1550	≈ 0	FRM27/3.8/9-3C90
3C91	420 ±20%	≈ 1860	≈ 0	FRM27/3.8/9-3C91

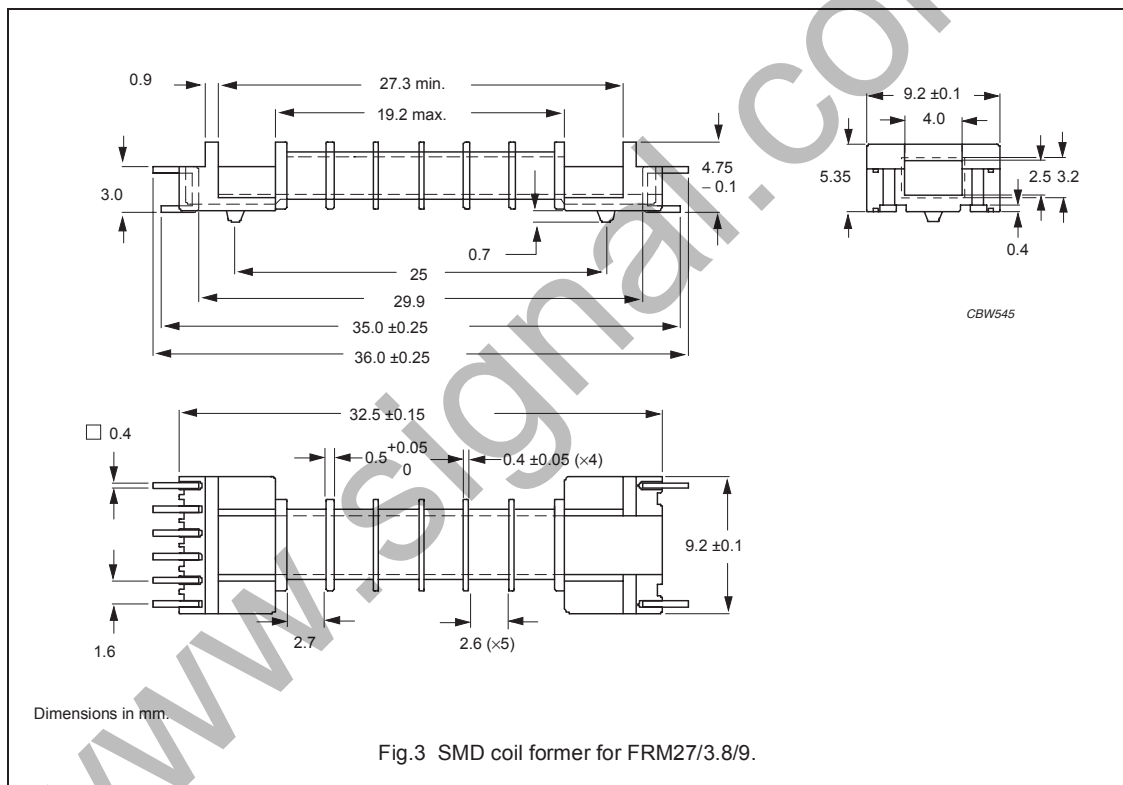
Properties of Frame and Bar combinations under power conditions

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 10 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 = 100 mT; T = 60 °C	f = 100 kHz; B̂ = 200 mT; T = 60 °C
3C90	≥320	≤ 0.056	≤ 0.060	–	–
3C91	≥320	–	–	≤ 0.025	≤ 0.2

COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	liquid crystal polymer (LCP), glass-reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E54705(M)
Pin material	copper-tin alloy (CuSn), tin (Sn) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



Winding data and area product

NUMBER OF SECTIONS	NUMBER OF SOLDER PADS	WINDING AREA (mm ²)	WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	AREA PRODUCT Ae x Aw (mm ⁴)	TYPE NUMBER
6	8	1.75 + 5 × 1.7	2.7 + 5 × 2.6	18.5	17.0 + 5 × 16.5	CPHS-FRM27/9-6S-8P