

DATA SHEET

EFD15 EFD cores and accessories

Product specification
Supersedes data of December 1998
File under Ferrite Ceramics, MA01

2000 Apr 20

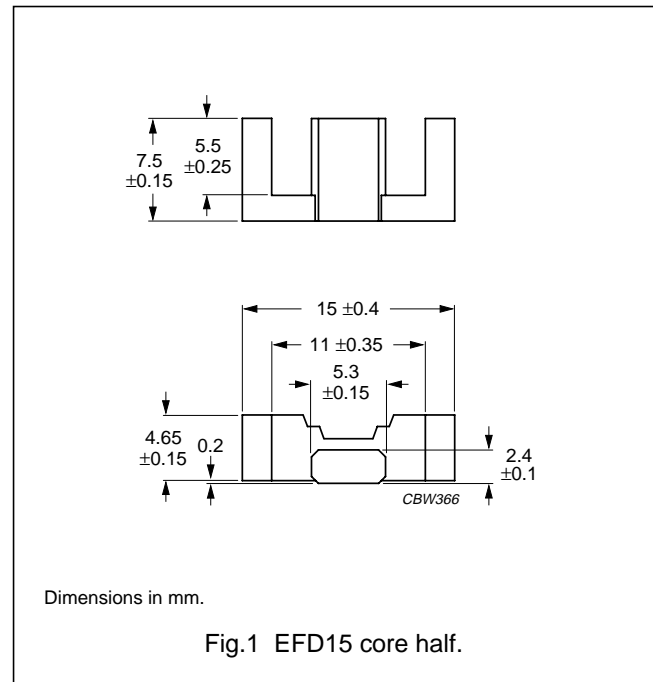
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CORES

Effective core parameters

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	2.27	mm ⁻¹
V_e	effective volume	510	mm ³
l_e	effective length	34.0	mm
A_e	effective area	15.0	mm ²
A_{min}	minimum area	12.2	mm ²
m	mass of core half	≈1.4	g



Core sets

Clamping force for A_L measurements, 20 ± 5 N.

GRADE	A_L (nH)	μ_e	AIR GAP (μ m)	TYPE NUMBER
3C90	63 ± 5%	≈ 115	≈ 350	EFD15-3C90-A63-S
	100 ± 8%	≈ 180	≈ 170	EFD15-3C90-A100-S
	160 ± 10%	≈ 290	≈ 100	EFD15-3C90-A160-S
	950 ± 25%	≈ 1700	≈ 0	EFD15-3C90-S
3C94 <small>des</small>	63 ± 5%	≈ 115	≈ 350	EFD15-3C94-A63-S
	100 ± 8%	≈ 180	≈ 170	EFD15-3C94-A100-S
	160 ± 10%	≈ 290	≈ 100	EFD15-3C94-A160-S
	950 ± 25%	≈ 1700	≈ 0	EFD15-3C94-S
3C96 <small>prot</small>	850 ± 25%	≈ 1520	≈ 0	EFD15-3C96-S
3F3	63 ± 5%	≈ 115	≈ 350	EFD15-3F3-A63-S
	100 ± 8%	≈ 180	≈ 170	EFD15-3F3-A100-S
	160 ± 10%	≈ 290	≈ 100	EFD15-3F3-A160-S
	780 ± 25%	≈ 1400	≈ 0	EFD15-3F3-S
3F35 <small>prot</small>	630 ± 25%	≈ 1130	≈ 0	EFD15-3F35-S
3F4 <small>des</small>	63 ± 5%	≈ 115	≈ 350	EFD15-3F4-A63-S
	100 ± 8%	≈ 180	≈ 160	EFD15-3F4-A100-S
	160 ± 10%	≈ 290	≈ 90	EFD15-3F4-A160-S
	400 ± 25%	≈ 720	≈ 0	EFD15-3F4-S
3E4 <small>sup</small>	2000 +40/-30%	≈ 3610	≈ 0	EFD15-3E4-S
3E5	3600 +40/-30%	≈ 6500	≈ 0	EFD15-3E5-S

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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 = 100 kHz; Ḃ = 100 mT; T = 100 °C	f = 100 kHz; Ḃ = 200 mT; T = 100 °C	f = 400 kHz; Ḃ = 50 mT; T = 100 °C
3C90	≥320	≤0.057	–	–
3C94	≥320	≤0.045	≈0.22	≈0.100
3C96	≥320	≈0.032	≈0.15	≈0.070
3F35	≥300	–	–	≈0.051
3F3	≥315	≤0.06	–	≤0.100
3F4	≥250	–	–	–

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; Ḃ = 50 mT; T = 100 °C	f = 500 kHz; Ḃ = 100 mT; T = 100 °C	f = 1 MHz; Ḃ = 30 mT; T = 100 °C	f = 3 MHz; Ḃ = 10 mT; T = 100 °C
3C90	≥320	–	–	–	–
3C94	≥320	–	–	–	–
3C96	≥320	–	–	–	–
3F35	≥300	≈0.082	≈0.61	–	–
3F3	≥315	–	–	–	–
3F4	≥250	–	–	≤0.10	≤0.16

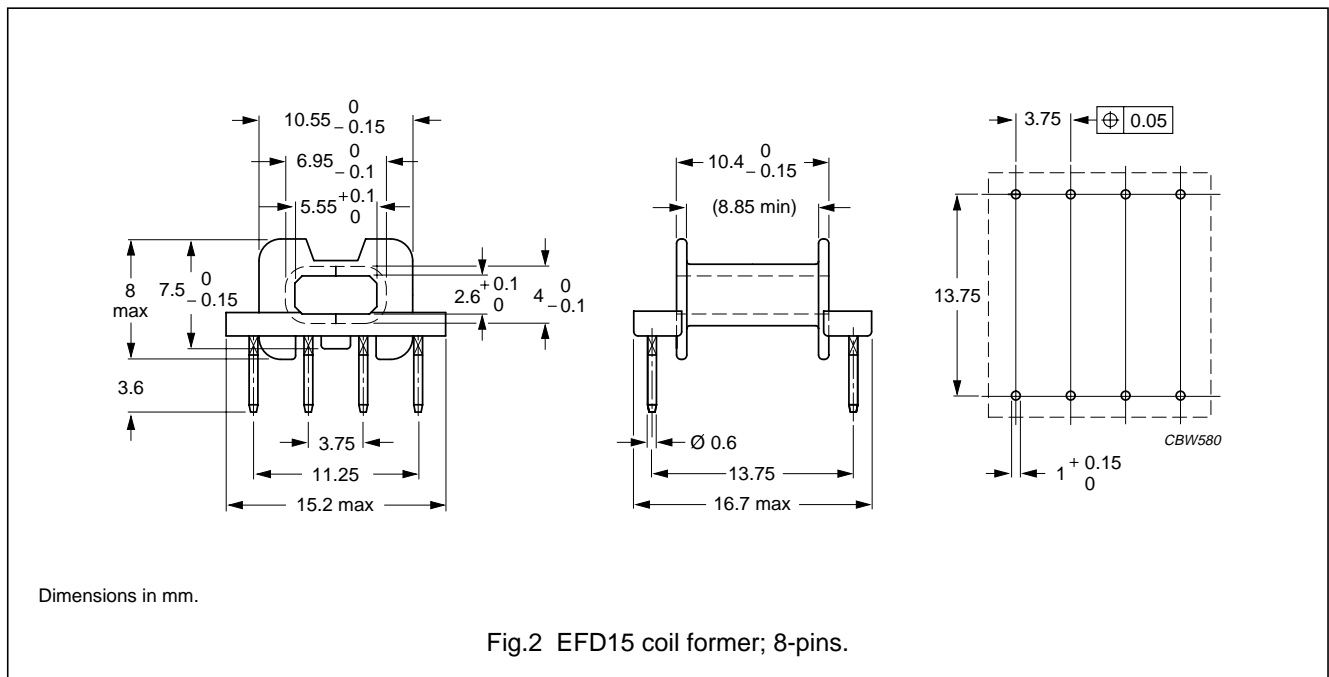
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COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E167521(M)
Pin material	copper-tin alloy (CuSn), tin-lead alloy (SnPb) plated
Maximum operating temperature	180 °C, "IEC 60085", class H
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



Winding data for EFD15 coil former with 8-pins

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	14.8	8.85	26.3	CSH-EFD15-1S-8P; see note 1

Note

- Also available with post-inserted pins.

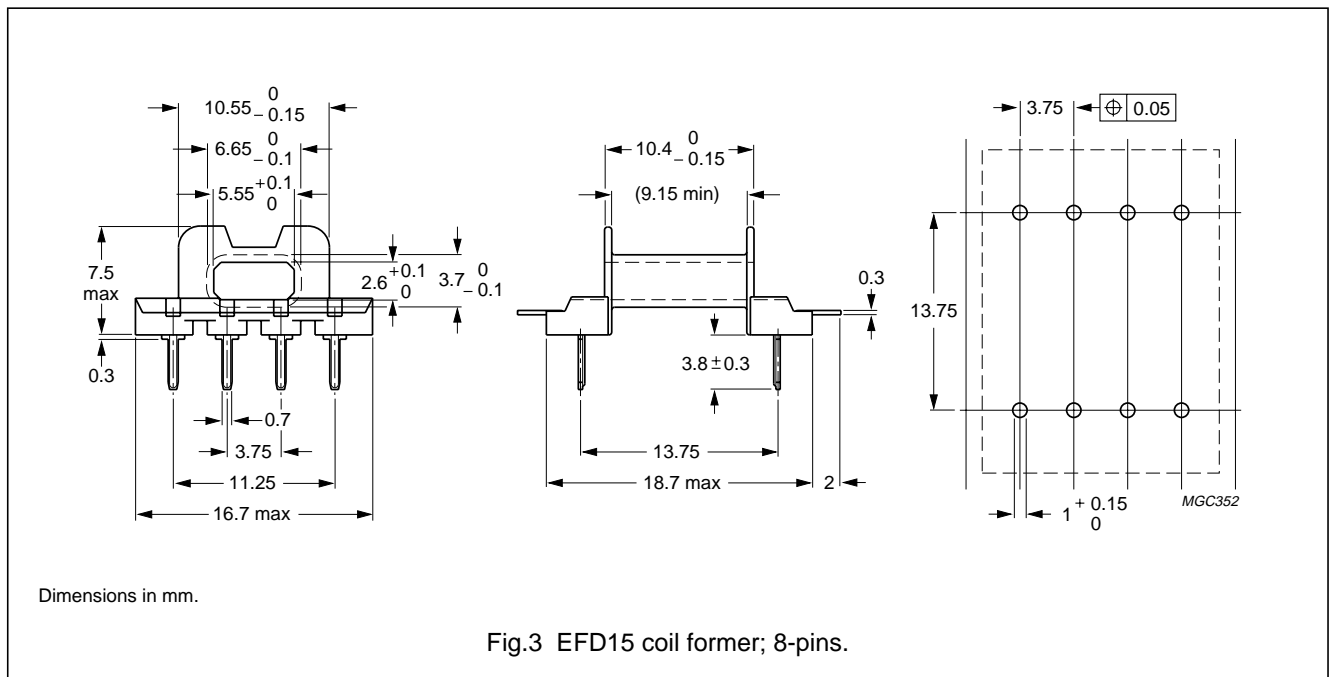
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COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	liquid crystal polymer (LCP), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E83005(M)
Pin material	copper-tin alloy (CuSn), tin-lead alloy (SnPb) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



Winding data for EFD15 coil former (PCB) with 8-pins

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	16.7	9.15	25.6	CPH-EFD15-1S-8P

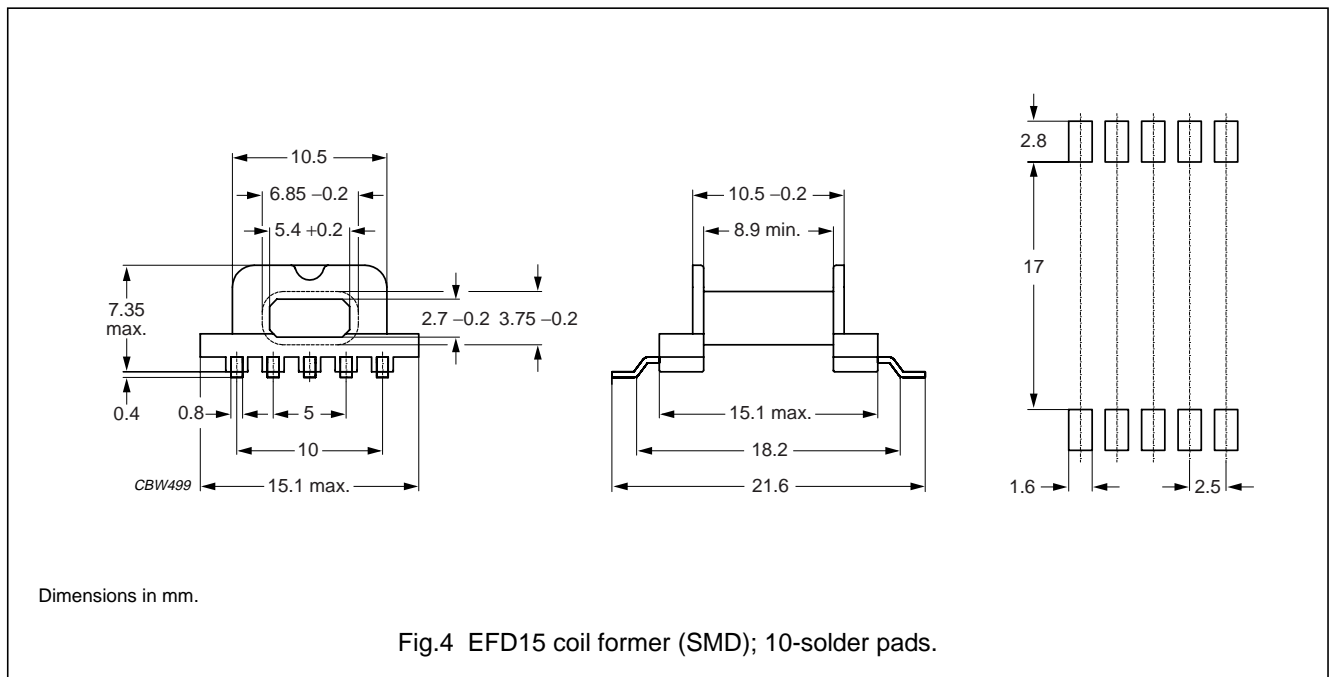
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COIL FORMERS

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)
Solder pad material	copper-tin alloy (CuSn), tin-lead alloy (SnPb) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



Winding data for EFD15 coil former (SMD)

NUMBER OF SECTIONS	NUMBER OF SOLDER PADS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	8	16	8.9	26	CPHS-EFD15-1S-8P-T
1	10	16	8.9	26	CPHS-EFD15-1S-10P

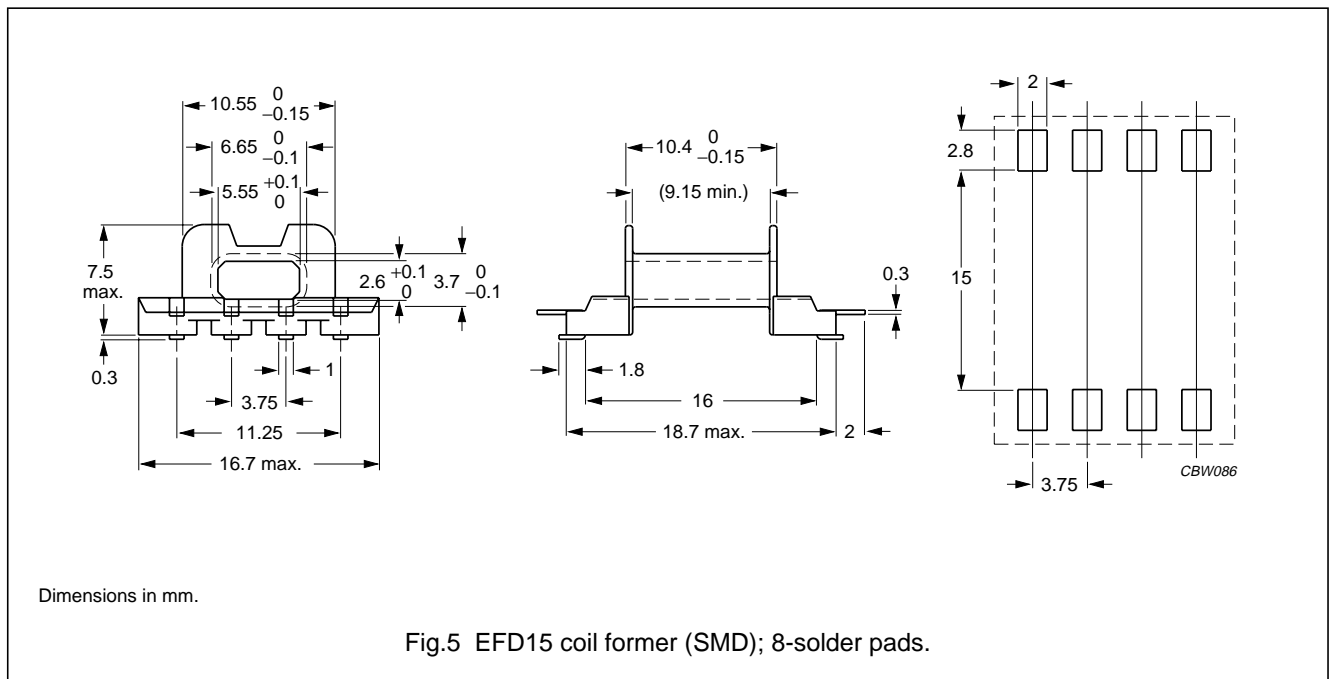
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COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	liquid crystal polymer (LCP), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E83005(M)
Solder pad material	copper-tin alloy (CuSn), tin-lead alloy (SnPb) plated
Maximum operating temperature	155 °C, "IEC 60085", class F
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



Winding data for EFD15 coil former (SMD) with 8-solder pads

NUMBER OF SECTIONS	NUMBER OF SOLDER PADS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	8	16.7	9.15	25.6	CPHS-EFD15-1S-8P

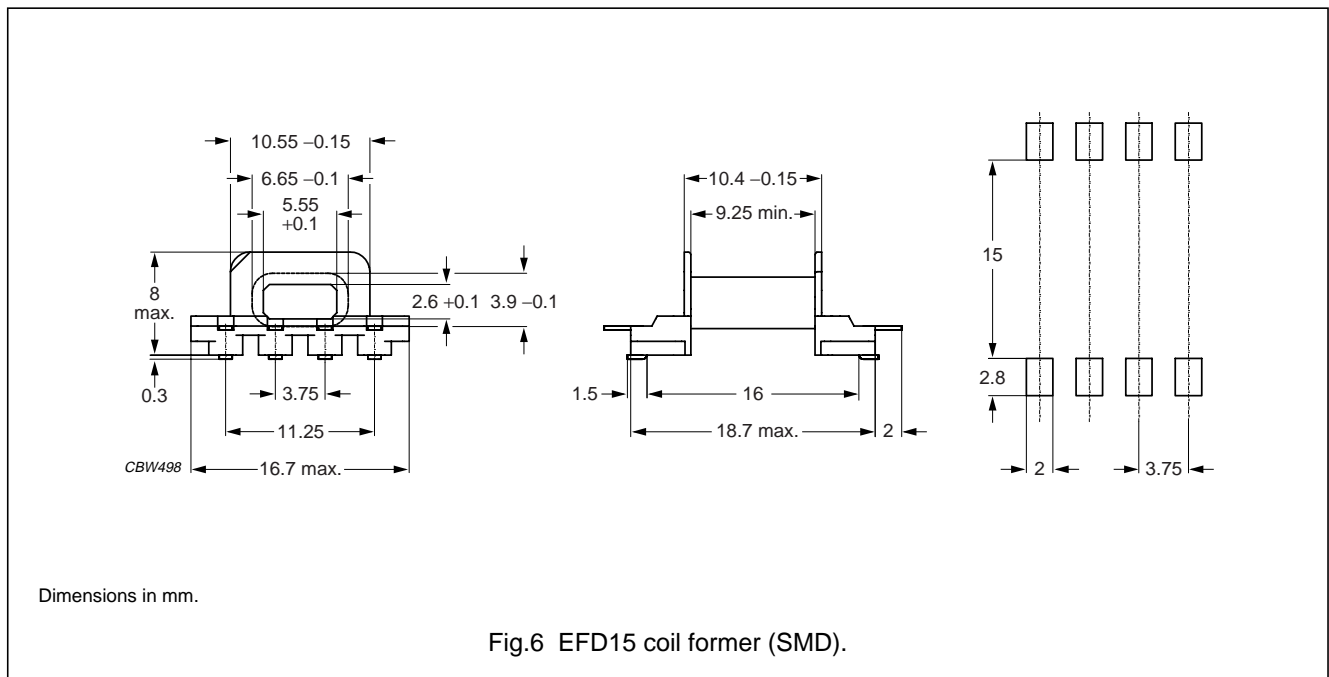
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COIL FORMERS

General data

PARAMETER	SPECIFICATION
Coil former material	phenolformaldehyde (PF), glass reinforced, flame retardant in accordance with "UL 94V-0"; UL file number E41429 (M)
Pin material	copper-tin alloy (CuSn), tin-lead alloy (SnPb) plated
Maximum operating temperature	180 °C, "IEC 60085", class H
Resistance to soldering heat	"IEC 60068-2-20", Part 2, Test Tb, method 1B, 350 °C, 3.5 s
Solderability	"IEC 60068-2-20", Part 2, Test Ta, method 1: 235 °C, 2 s



Winding data for EFD15 (SMD) coil former

NUMBER OF SECTIONS	WINDING AREA (mm ²)	MINIMUM WINDING WIDTH (mm)	AVERAGE LENGTH OF TURN (mm)	TYPE NUMBER
1	16.7	9.25	24.1	CSHS-EFD15-1S-8P-T

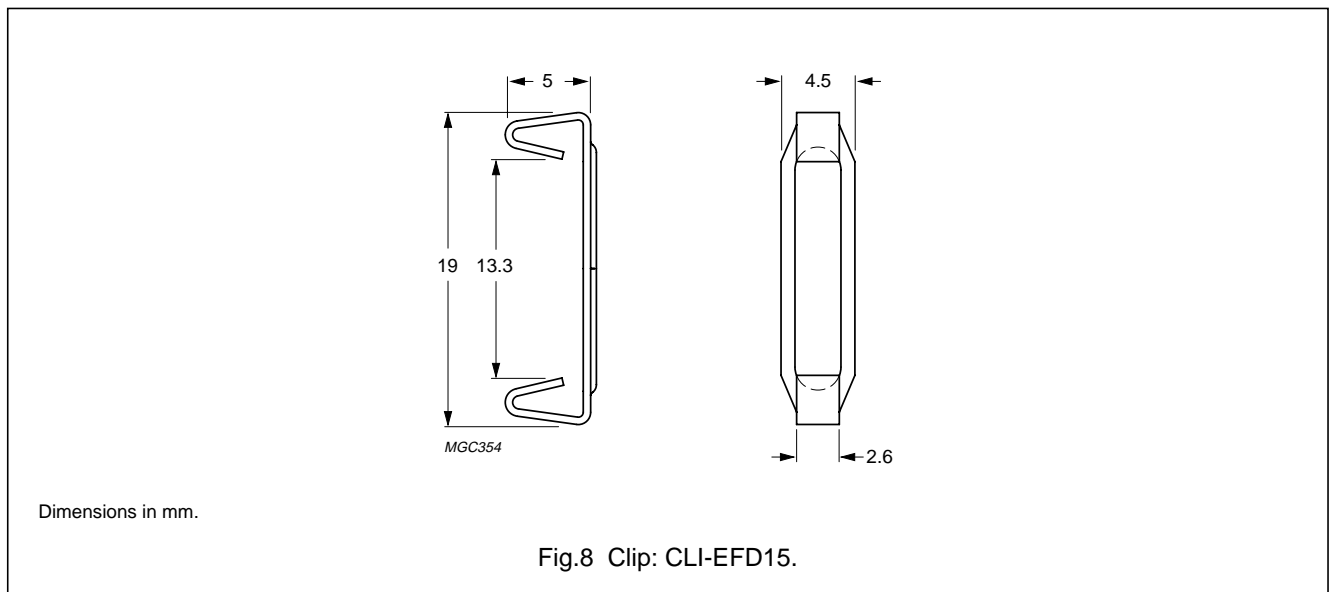
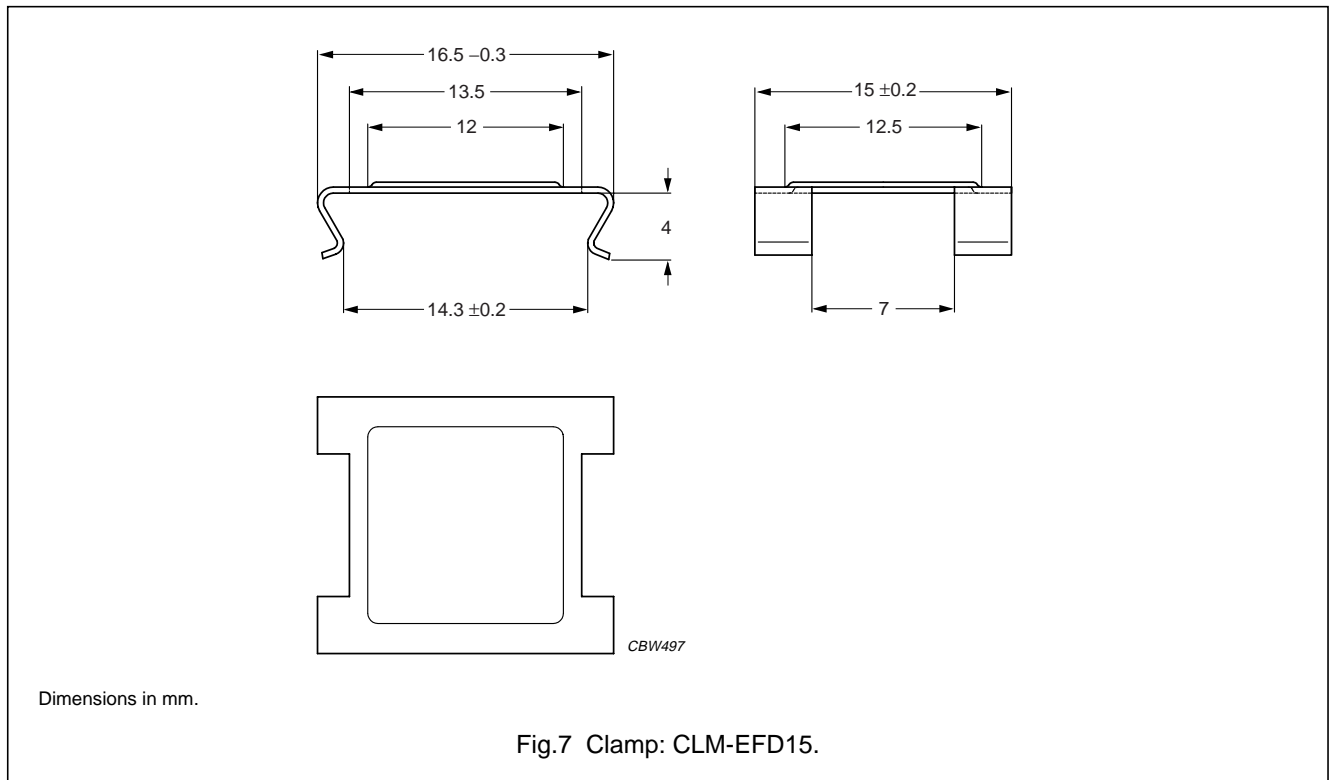
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MOUNTING PARTS

General data

ITEM	REMARKS	FIGURE	TYPE NUMBER
Clamp	stainless steel (CrNi); clamping force ≈ 25 N	7	CLM-EFD15
Clip	stainless steel (CrNi); clamping force ≈ 12.5 N	8	CLI-EFD15



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DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS
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