

# DATA SHEET

**E14/3.5/5**

Planar E cores and accessories

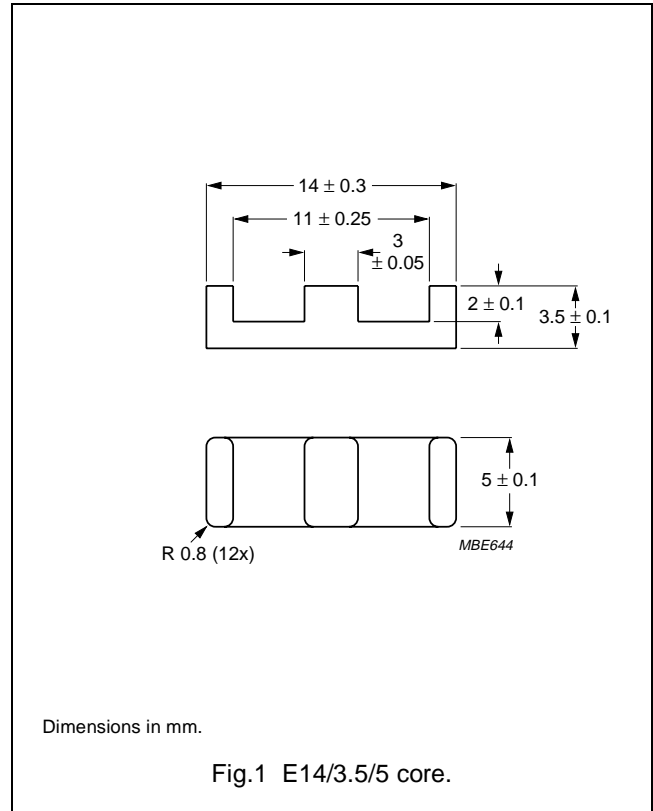
Supersedes data of February 2002

2004 Sep 01

**CORES**

**Effective core parameters of a set of E cores**

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	1.43	mm <sup>-1</sup>
$V_e$	effective volume	300	mm <sup>3</sup>
$l_e$	effective length	20.7	mm
$A_e$	effective area	14.3	mm <sup>2</sup>
$A_{min}$	minimum area	14.3	mm <sup>2</sup>
$m$	mass of core half	≈ 0.6	g

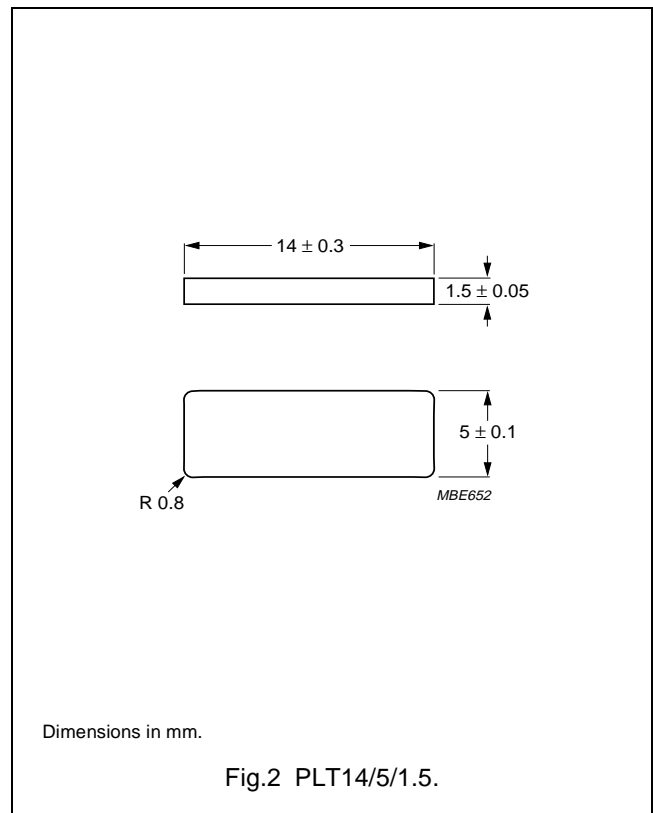


**Effective core parameters of an E/PLT combination**

SYMBOL	PARAMETER	VALUE	UNIT
$\Sigma(l/A)$	core factor (C1)	1.16	mm <sup>-1</sup>
$V_e$	effective volume	240	mm <sup>3</sup>
$l_e$	effective length	16.7	mm
$A_e$	effective area	14.5	mm <sup>2</sup>
$A_{min}$	minimum area	14.5	mm <sup>2</sup>
$m$	mass of plate	≈ 0.5	g

**Ordering information for plates**

GRADE	TYPE NUMBER
3C90	PLT14/5/1.5-3C90
3C92 <small>des</small>	PLT14/5/1.5-3C92
3C93 <small>des</small>	PLT14/5/1.5-3C93
3C94	PLT14/5/1.5-3C94
3C96 <small>des</small>	PLT14/5/1.5-3C96
3F3	PLT14/5/1.5-3F3
3F35 <small>prot</small>	PLT14/5/1.5-3F35
3F4 <small>des</small>	PLT14/5/1.5-3F4
3F45 <small>prot</small>	PLT14/5/1.5-3F45
3E6	PLT14/5/1.5-3E6



## Planar E cores and accessories

E14/3.5/5

**Core halves for use in combination with an ungapped E core**

$A_L$  measured in combination with a non-gapped core half, clamping force for  $A_L$  measurements,  $10 \pm 5$  N, using a PCB coil containing 4 layers of 8 tracks each, total height 1.6 mm.

GRADE	$A_L$ (nH)	$\mu_e$	AIR GAP ( $\mu\text{m}$ )	TYPE NUMBER
3C90	$63 \pm 3\%$	$\approx 72$	$\approx 530$	E14/3.5/5-3C90-A63-E
	$100 \pm 5\%$	$\approx 114$	$\approx 270$	E14/3.5/5-3C90-A100-E
	$160 \pm 8\%$	$\approx 182$	$\approx 130$	E14/3.5/5-3C90-A160-E
	$1280 \pm 25\%$	$\approx 1450$	$\approx 0$	E14/3.5/5-3C90
3C92 <b>des</b>	$960 \pm 25\%$	$\approx 1090$	$\approx 0$	E14/3.5/5-3C92
3C93 <b>des</b>	$1100 \pm 25\%$	$\approx 1250$	$\approx 0$	E14/3.5/5-3C93
3C94	$63 \pm 3\%$	$\approx 72$	$\approx 530$	E14/3.5/5-3C94-A63-E
	$100 \pm 5\%$	$\approx 114$	$\approx 270$	E14/3.5/5-3C94-A100-E
	$160 \pm 8\%$	$\approx 182$	$\approx 130$	E14/3.5/5-3C94-A160-E
	$1280 \pm 25\%$	$\approx 1450$	$\approx 0$	E14/3.5/5-3C94
3C96 <b>des</b>	$1200 \pm 25\%$	$\approx 1360$	$\approx 0$	E14/3.5/5-3C96
3F3	$63 \pm 3\%$	$\approx 72$	$\approx 530$	E14/3.5/5-3F3-A63-E
	$100 \pm 5\%$	$\approx 114$	$\approx 270$	E14/3.5/5-3F3-A100-E
	$160 \pm 8\%$	$\approx 182$	$\approx 130$	E14/3.5/5-3F3-A160-E
	$1100 \pm 25\%$	$\approx 1250$	$\approx 0$	E14/3.5/5-3F3
3F35 <b>prot</b>	$900 \pm 25\%$	$\approx 1020$	$\approx 0$	E14/3.5/5-3F35
3F4 <b>des</b>	$63 \pm 3\%$	$\approx 72$	$\approx 530$	E14/3.5/5-3F4-A63-E
	$100 \pm 5\%$	$\approx 114$	$\approx 270$	E14/3.5/5-3F4-A100-E
	$160 \pm 8\%$	$\approx 182$	$\approx 130$	E14/3.5/5-3F4-A160-E
	$650 \pm 25\%$	$\approx 740$	$\approx 0$	E14/3.5/5-3F4
3F45 <b>prot</b>	$650 \pm 25\%$	$\approx 740$	$\approx 0$	E14/3.5/5-3F45
3E6	$5600 +40/-30\%$	$\approx 6360$	$\approx 0$	E14/3.5/5-3E6

## Planar E cores and accessories

E14/3.5/5

**Core halves for use in combination with a plate (PLT)**

$A_L$  measured in combination with a plate (PLT) clamping force for  $A_L$  measurements,  $10 \pm 5$  N, using a PCB coil containing 4 layers of 8 tracks each, total height 1.6 mm.

GRADE	$A_L$ (nH)	$\mu_e$	AIR GAP ( $\mu\text{m}$ )	TYPE NUMBER
3C90	63 $\pm 3\%$	$\approx 58$	$\approx 600$	E14/3.5/5-3C90-A63-P
	100 $\pm 5\%$	$\approx 92$	$\approx 300$	E14/3.5/5-3C90-A100-P
	160 $\pm 8\%$	$\approx 148$	$\approx 150$	E14/3.5/5-3C90-A160-P
	1500 $\pm 25\%$	$\approx 1400$	$\approx 0$	E14/3.5/5-3C90
3C92 <b>des</b>	1130 $\pm 25\%$	$\approx 1040$	$\approx 0$	E14/3.5/5-3C92
3C93 <b>des</b>	1300 $\pm 25\%$	$\approx 1200$	$\approx 0$	E14/3.5/5-3C93
3C94	63 $\pm 3\%$	$\approx 58$	$\approx 600$	E14/3.5/5-3C94-A63-P
	100 $\pm 5\%$	$\approx 92$	$\approx 300$	E14/3.5/5-3C94-A100-P
	160 $\pm 8\%$	$\approx 148$	$\approx 150$	E14/3.5/5-3C94-A160-P
	1500 $\pm 25\%$	$\approx 1400$	$\approx 0$	E14/3.5/5-3C94
3C96 <b>des</b>	1350 $\pm 25\%$	$\approx 1260$	$\approx 0$	E14/3.5/5-3C96
3F3	63 $\pm 3\%$	$\approx 58$	$\approx 600$	E14/3.5/5-3F3-A63-P
	100 $\pm 5\%$	$\approx 92$	$\approx 300$	E14/3.5/5-3F3-A100-P
	160 $\pm 8\%$	$\approx 148$	$\approx 150$	E14/3.5/5-3F3-A160-P
	1300 $\pm 25\%$	$\approx 1200$	$\approx 0$	E14/3.5/5-3F3
3F35 <b>prot</b>	1050 $\pm 25\%$	$\approx 980$	$\approx 0$	E14/3.5/5-3F35
3F4 <b>des</b>	63 $\pm 3\%$	$\approx 58$	$\approx 600$	E14/3.5/5-3F4-A63-P
	100 $\pm 5\%$	$\approx 92$	$\approx 300$	E14/3.5/5-3F4-A100-P
	160 $\pm 8\%$	$\approx 148$	$\approx 150$	E14/3.5/5-3F4-A160-P
	780 $\pm 25\%$	$\approx 720$	$\approx 0$	E14/3.5/5-3F4
3F45 <b>prot</b>	780 $\pm 25\%$	$\approx 720$	$\approx 0$	E14/3.5/5-3F45
3E6	6400 +40/-30%	$\approx 5900$	$\approx 0$	E14/3.5/5-3E6

## Planar E cores and accessories

E14/3.5/5

## 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 = 100 °C	f = 400 kHz; $\hat{B}$ = 50 mT; T = 100 °C	f = 500 kHz; $\hat{B}$ = 50 mT; T = 100 °C
E+E14-3C90	≥320	≤ 0.030	–	–	–
E+PLT14-3C90	≥320	≤ 0.026	–	–	–
E+E14-3C92	≥370	≤ 0.024	≤ 0.16	–	–
E+PLT14-3C92	≥370	≤ 0.021	≤ 0.15	–	–
E+E14-3C93	≥320	≤ 0.024 <sup>(1)</sup>	≤ 0.16 <sup>(1)</sup>	–	–
E+PLT14-3C93	≥320	≤ 0.021 <sup>(1)</sup>	≤ 0.15 <sup>(1)</sup>	–	–
E+E14-3C94	≥320	≤ 0.024	≤ 0.16	–	–
E+PLT14-3C94	≥320	≤ 0.021	≤ 0.15	–	–
E+E14-3C96	≥340	≤ 0.019	≤ 0.13	≤ 0.05	≤ 0.11
E+PLT14-3C96	≥340	≤ 0.016	≤ 0.12	≤ 0.045	≤ 0.09
E+E14-3F3	≥300	≤ 0.033	–	≤ 0.06	–
E+PLT14-3F3	≥300	≤ 0.027	–	≤ 0.047	–
E+E14-3F35	≥300	–	–	≤ 0.03	≤ 0.05
E+PLT14-3F35	≥300	–	–	≤ 0.024	≤ 0.035

1. Measured at 140 °C.

## Properties of core sets under power conditions (continued)

GRADE	B (mT) at	CORE LOSS (W) at			
	H = 250 A/m; f = 10 kHz; T = 100 °C	f = 500 kHz; $\hat{B}$ = 100 mT; T = 100 °C	f = 1 MHz; $\hat{B}$ = 30 mT; T = 100 °C	f = 1 MHz; $\hat{B}$ = 50 mT; T = 100 °C	f = 3 MHz; $\hat{B}$ = 10 mT; T = 100 °C
E+E14-3F35	≥300	≤ 0.35	–	–	–
E+PLT14-3F35	≥300	≤ 0.27	–	–	–
E+E14-3F4	≥250	–	≤ 0.09	–	≤ 0.15
E+PLT14-3F4	≥250	–	≤ 0.07	–	≤ 0.11
E+E14-3F45	≥250	–	≤ 0.06	≤ 0.15	≤ 0.11
E+PLT14-3F45	≥250	–	≤ 0.05	≤ 0.12	≤ 0.085

**MOUNTING INFORMATION**

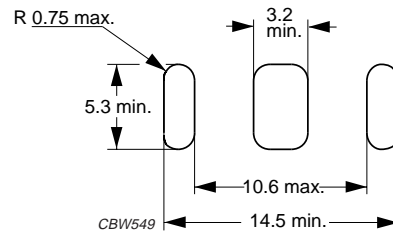
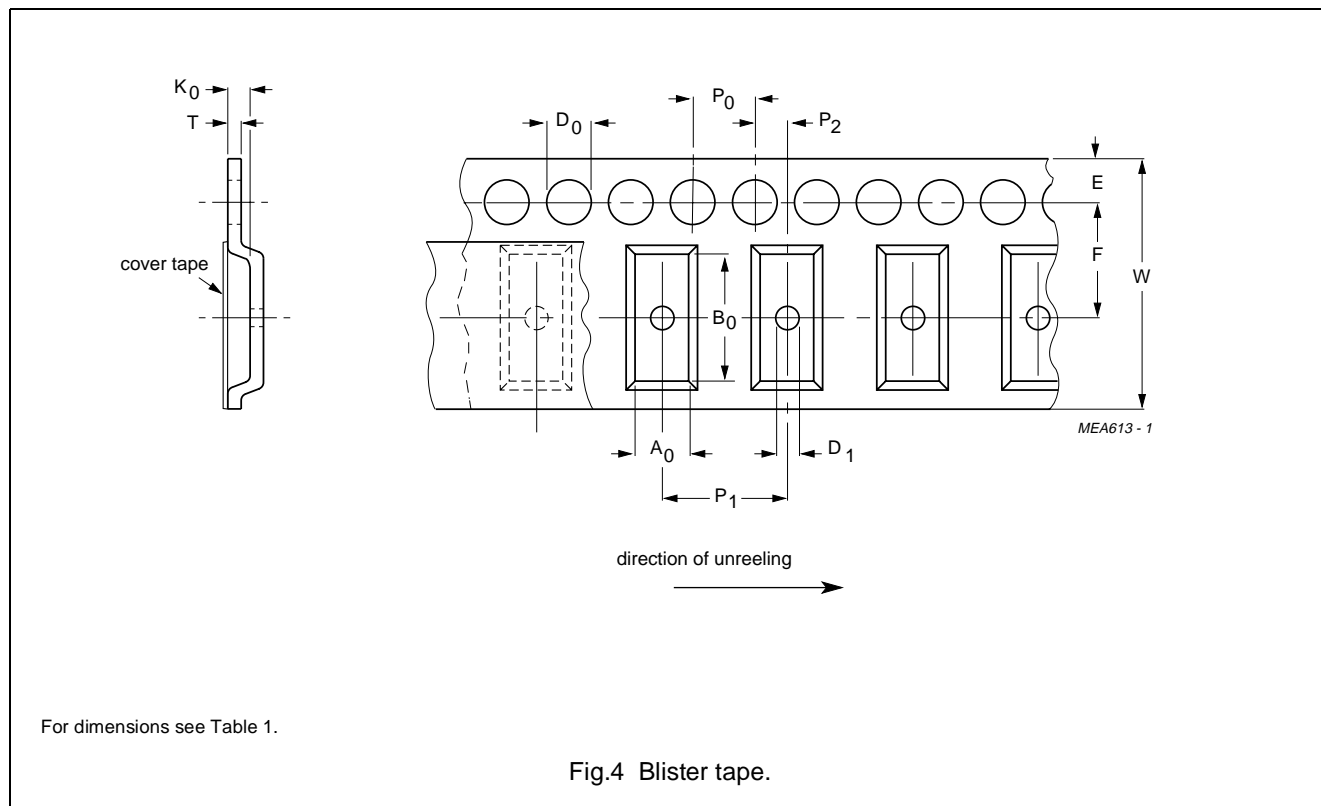


Fig.3 Recommended PCB cut-out for glued planar E14/3.5/5 cores.

**BLISTER TAPE AND REEL DIMENSIONS** prot



**Table 1** Physical dimensions of blister tape; see Fig.4

SIZE	DIMENSIONS (mm)
$A_0$	$5.4 \pm 0.2$
$B_0$	$14.6 \pm 0.2$
$K_0$	$4.0 \pm 0.2$
$T$	$0.3 \pm 0.05$
$W$	$24.0 \pm 0.3$
$E$	$1.75 \pm 0.1$
$F$	$11.5 \pm 0.1$
$D_0$	$1.5 \pm 0.1$
$D_1$	$\geq 1.5$
$P_0$	$4.0 \pm 0.1$
$P_1$	$8.0 \pm 0.1$
$P_2$	$2.0 \pm 0.1$

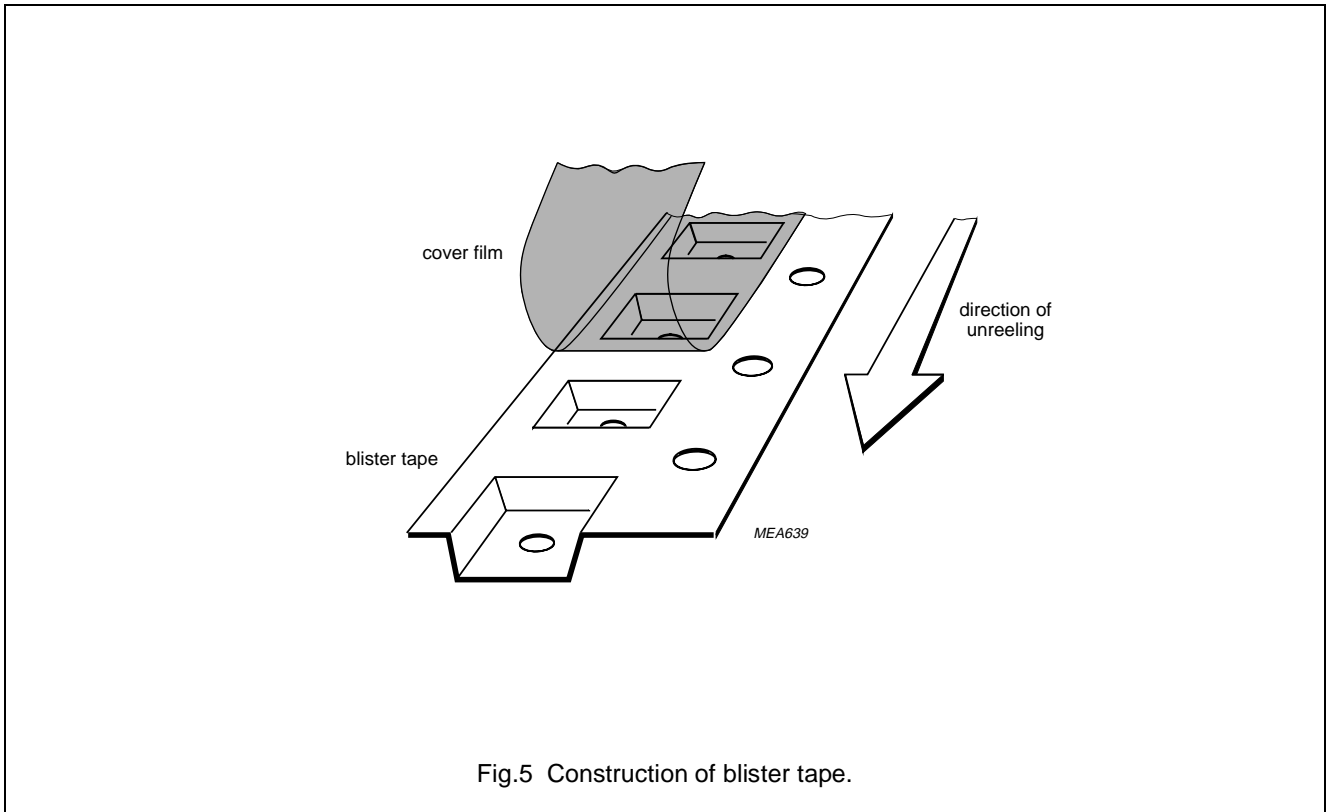
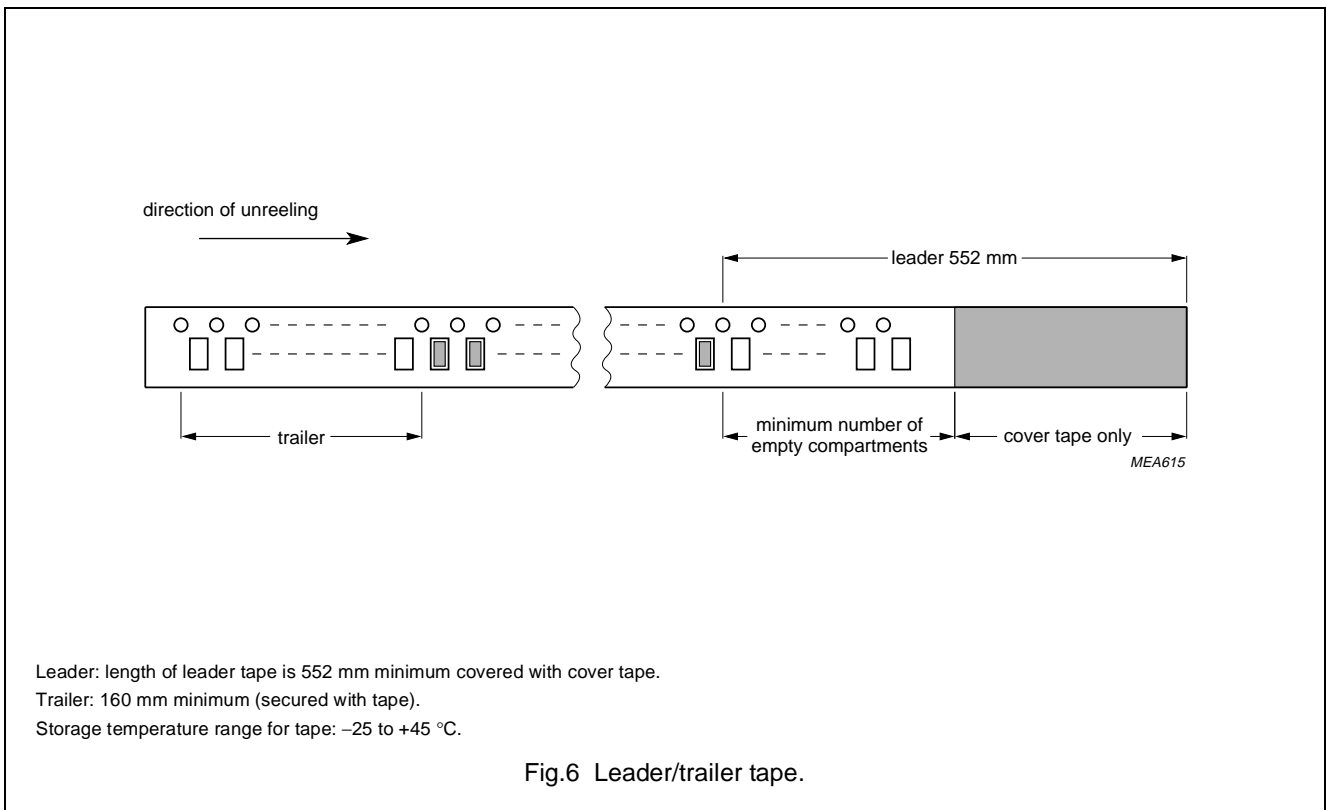


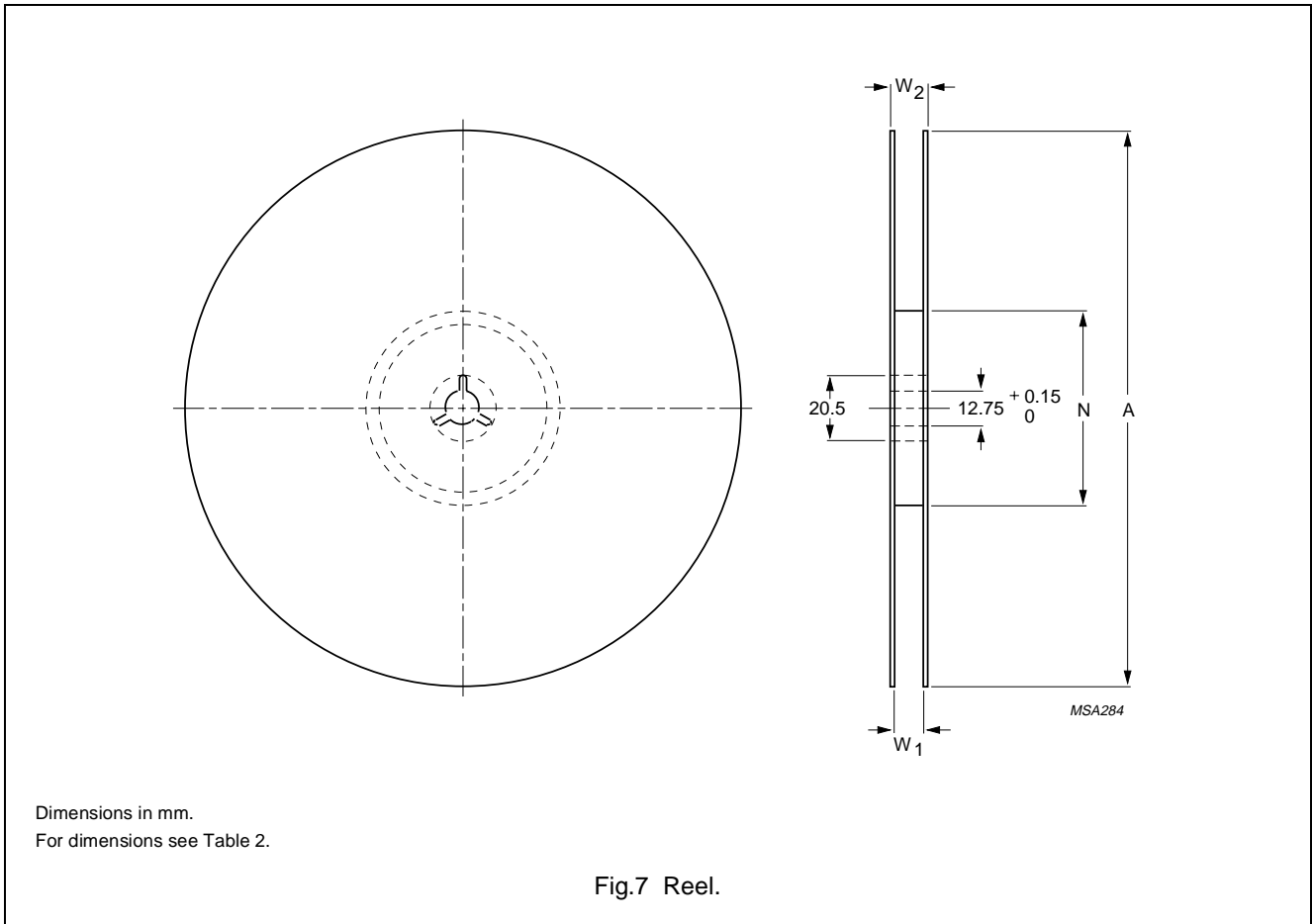
Fig.5 Construction of blister tape.



Leader: length of leader tape is 552 mm minimum covered with cover tape.  
 Trailer: 160 mm minimum (secured with tape).  
 Storage temperature range for tape: -25 to +45 °C.

Fig.6 Leader/trailer tape.





**Table 2** Reel dimensions; see Fig.7

SIZE	DIMENSIONS (mm)			
	A	N	W <sub>1</sub>	W <sub>2</sub>
24	330	100 ±5	24.4	≤28.4

## Planar E cores and accessories

E14/3.5/5




## DATA SHEET STATUS DEFINITIONS

DATA SHEET STATUS	PRODUCT STATUS	DEFINITIONS
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