



Application Note

AN_116

FTDI Devices Tape, Reel, Tray & Tube Dimensions

Version 2.3

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This document provides information on the Tape, Reel, Tray, and Tube dimensions for FT232BL, FT245BL, FT232BQ, FT245BQ, FT232RL, FT245RL, FT232RNL, FT245RNL, FT232RQ, FT245RQ, FT232RNQ, FT245RNQ, FT2232D, FT232HL, FT232HQ, FT2232HL, FT2232HQ, FT4232HL, FT4232HQ, FT-X series, FT120, FT311D, FT312D, FT313H, FT4222HQ, VNC1L, VNC2, FT600Q, FT601Q, FT602Q, FT260S, FT260Q, FT232HPQ, FT233HPQ, FT2232HPQ, FT2233HPQ, FT4232HPQ, FT4233HPQ and FT4232HAQ.

This Application Note supersedes the FTDI Application Note AN232B-11.

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1 Introduction

This document provides information on the tape and reel dimensions for FT232BL, FT245BL, FT232BQ, FT245BQ, FT232RL, FT245RL, FT232RNL, FT245RNL, FT232RQ, FT245RQ, FT232RNQ, FT245RNQ, FT2232D, FT2232HL, FT2232HQ, FT4232HL, FT4232HQ, FT232HL, FT232HQ, FT-X series, FT120, FT311D, FT312D, FT313H, FT4222HQ, VNC1L, VNC2, FT600Q, FT601Q, FT602Q, FT260S, FT260Q, FT232HPQ, FT233HPQ, FT2232HPQ, FT2233HPQ, FT4232HPQ, FT4233HPQ and FT4232HAQ.

2 Packaging options

FTDI can supply devices packaged in tape and reel packaging or in trays or tubes. The quantities in each package type are described below.

2.1 Tape and Reel Packaging

IC – Tape and Reel	Package	Quantities (pieces)
FT232BL, FT245BL – R	LQFP	1000
FT232BQ	QFN	2500
FT232RL, FT245RL – R	SSOP	2000
FT232RQ, FT245RQ – R	QFN	6000
FT2232D – R	LQFP	1000
FT2232HL – R	LQFP	1000
FT2232HQ – R 9x9	QFN	4000
FT4232HL – R	LQFP	1000
FT4232HQ – R 9x9	QFN	4000
FT2232H-56Q – R 8x8	QFN	3000
FT4232H-56Q – R 8x8	QFN	3000
FT232HQ – R 8x8	QFN	3000
FT232HL	LQFP	1500
FT4222HQ	QFN	5000
VINC1L – A – R	LQFP	2000
VNC2-32LQFP	LQFP	1500
VNC2-48LQFP	LQFP	1500
VNC2-32 QFN 7x7	QFN	3000
VNC2-48 QFN 8x8	QFN	3000
FT311DLQFP	LQFP	1500
FT311D QFN 7X7	QFN	3000
FT312DLQFP	LQFP	1500
FT312D QFN 7x7	QFN	3000
FT200XD- R, FT234XD-R	DFN	5000
FT201XS – R, FT220XS – R, FT221XS – R, FT230XS – R, , FT240XS – R	SSOP	3000
FT231XS – R	SSOP	2000
FT201XQ- R, FT220XQ – R, FT221XQ – R, FT230XQ – R, FT231XQ – R, FT240XQ – R	QFN	5000
FT313HQ – R	QFN	3000
FT313HL – R	LQFP	1000
FT313HP – R	TQFP	2500
FT4222HQ-R	VQFN	5000
FT260Q – R	WQFN	2500
FT260S – R-	TSSOP	2500
FT232HPQ-REEL, FT233HPQ-REEL, FT2232HPQ-REEL, FT2233HPQ-REEL FT4232HPQ-REEL, FT4233HPQ-REEL-	QFN	3000
FT4232HAQ – R 9x9	QFN	2600

Table 2.1 – Tape and Reel Quantities

2.2 Tray/Tube Packaging

IC – Tray/Tube	Package	Quantities (pieces)	Box of Trays/Tube (pieces)
FT232BL, FT245BL – Tray	LQFP	250	2500
FT232RQ, FT245RQ – Tray	QFN	490	4900
FT2232D – Tray	LQFP	250	2500
FT2232HL – Tray	LQFP	160	1600
FT2232HQ – Tray	QFN	260	2600
FT4232HL – Tray	LQFP	160	1600
FT4232HQ – Tray	QFN	260	2600
VINC1L – A – Tray	LQFP	250	2500
VNC2-32LQFP	LQFP	250	2500
VNC2-48LQFP	LQFP	250	2500
VNC2-32 QFN 7x7x.9	QFN	260	2600
VNC2-48 QFN 8x8x.9	QFN	260	2600
FT311DLQFP	LQFP	250	2500
FT311D QFN 7X 7 X .9	QFN	260	2600
FT200XD- T, FT234XD-T	DFN	490	4900
FT201XS- U, FT220XS- U, FT230XS- U,	SSOP	100	10000
FT240XS – U, FT231XS- U	SSOP	58	5800
FT201XQ- T, FT220XQ- T, FT230XQ- T, FT240XQ- T-	QFN	490	4900
FT120T- U	TSSOP	50	3000
FT120Q- T	QFN	490	
FT313HP – T	TQFP	250	2500
FT313HQ – T-	QFN	260	2600
FT313HL – T	LQFP	160	1600
FT260Q – T	WQFN	490	
FT260S – U-	TSSOP	50	
FT232HPQ-TRAY, FT233HPQ-TRAY, FT2232HPQ-TRAY, FT2233HPQ-TRAY, FT4232HPQ-TRAY, FT4233HPQ-TRAY, –	QFN	260	
FT4232HAQ – Tray	QFN	260	2600

Table 2.2 – Tube/Tray Quantities

3 FT232BL, FT245BL and FT2232D Tape Dimensions

★ Pin 1 Identifier

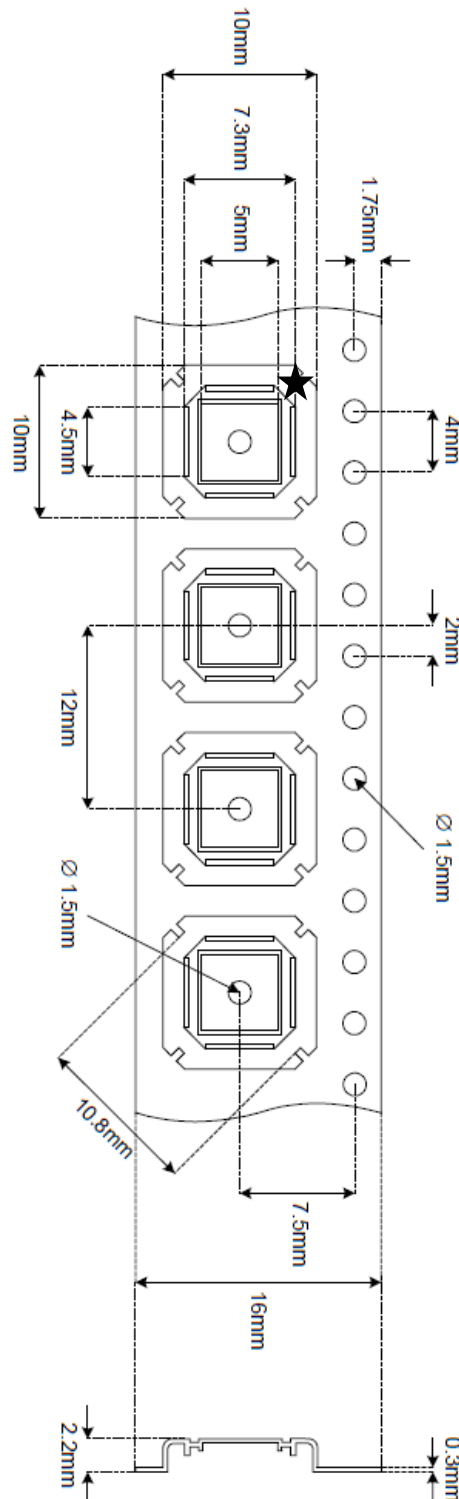


Figure 3.1 – FT232BL, FT245BL and FT2232D Tape Dimensions

4 FT232BL, FT245BL and FT2232D Reel Dimensions

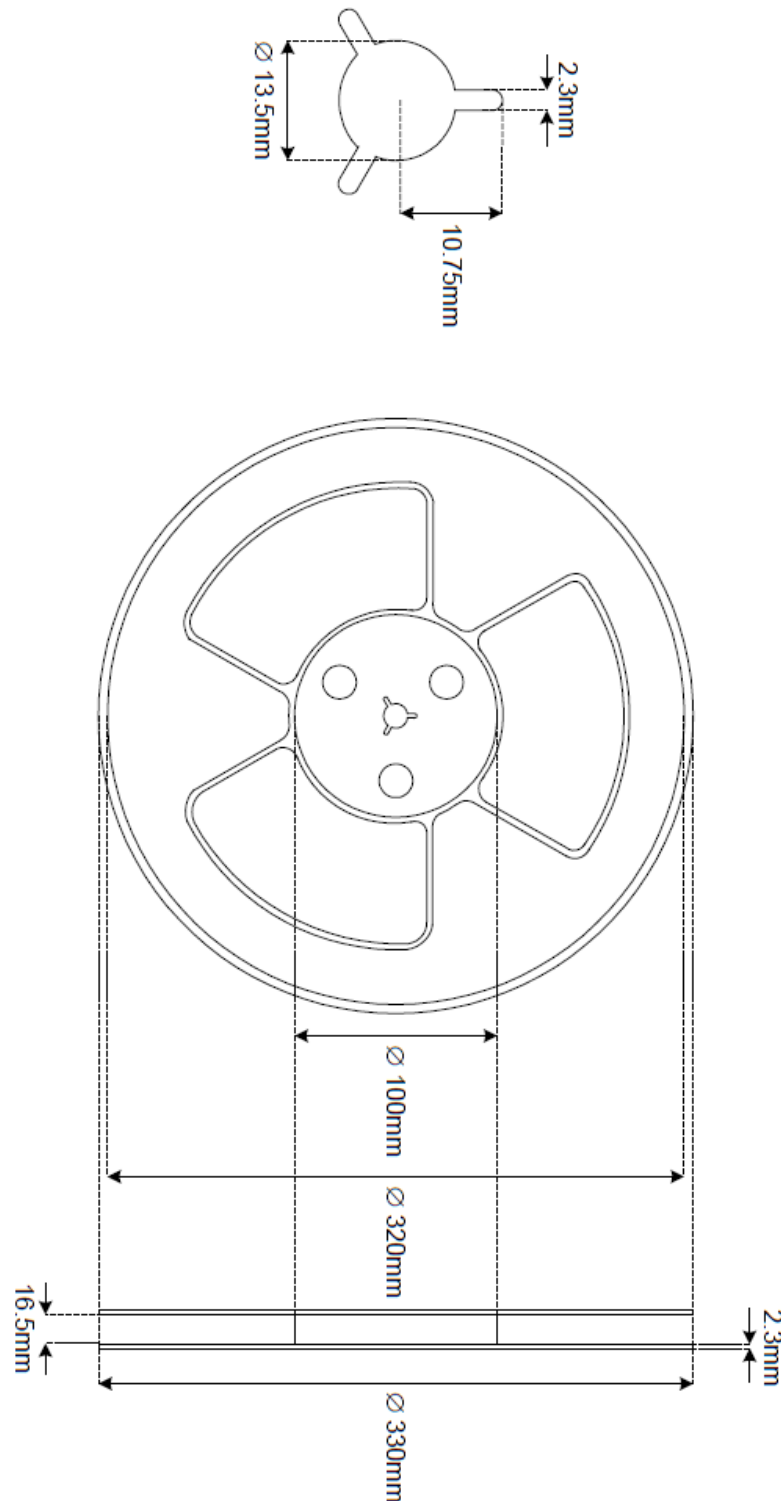


Figure 4.1 – FT232BL, FT245BL and FT2232D Reel Dimensions

6 FT232BQ and FT245BQ Reel Dimensions

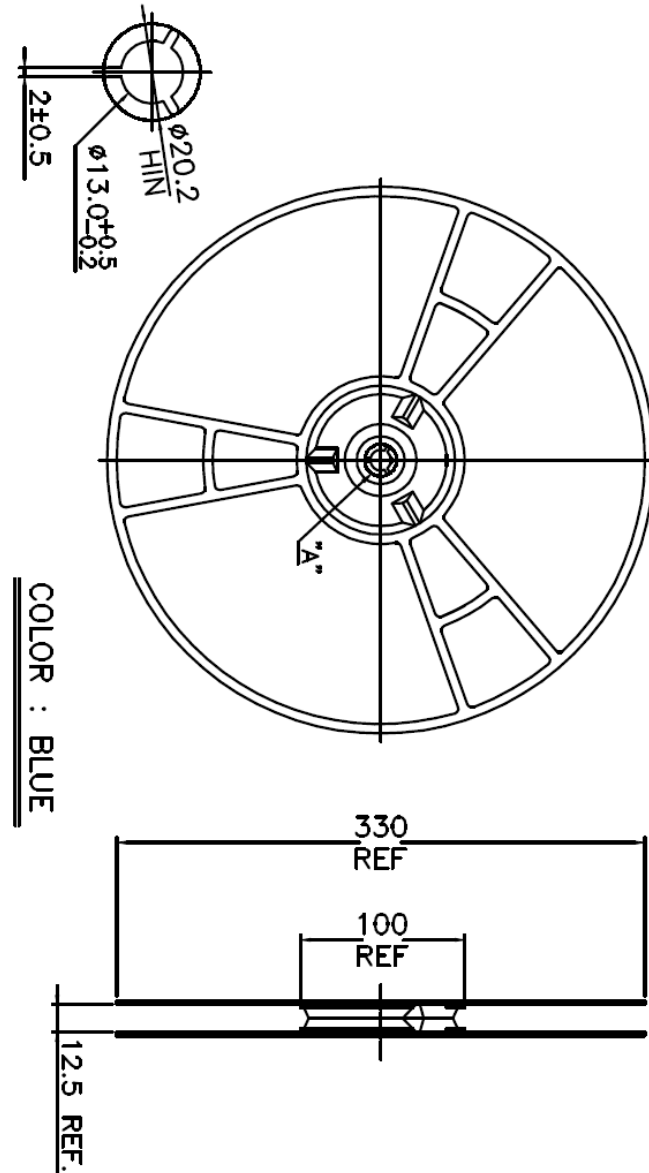


Figure 6.1 – FT232BQ and FT245BQ Reel Dimensions

7 FT232RL and FT245RL Tape Dimensions

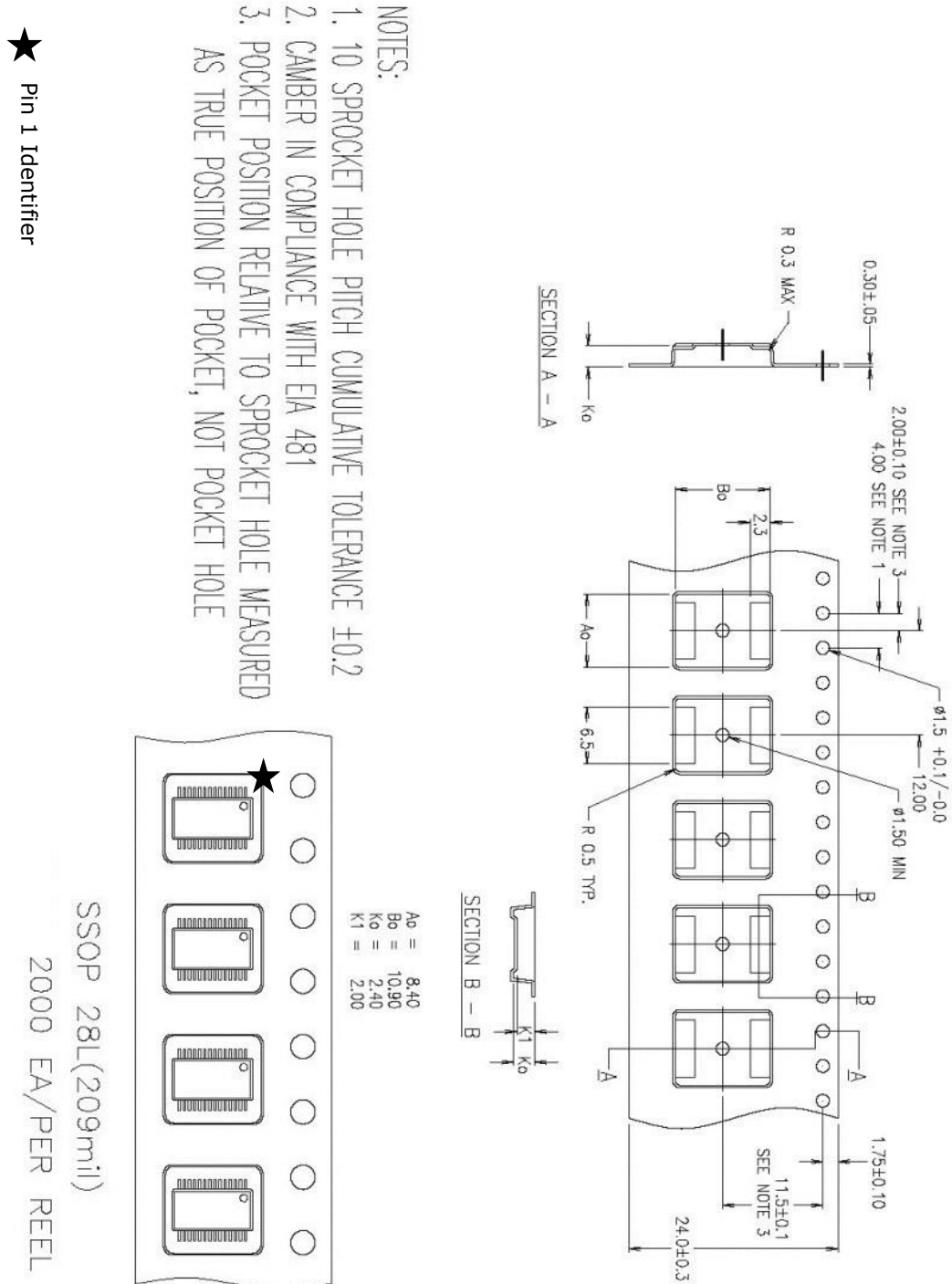


Figure 7.1 – FT232RL and FT245RL Tape Dimensions

8 FT232RL/FT232RNL and FT245RL/FT245RNL Reel Dimensions

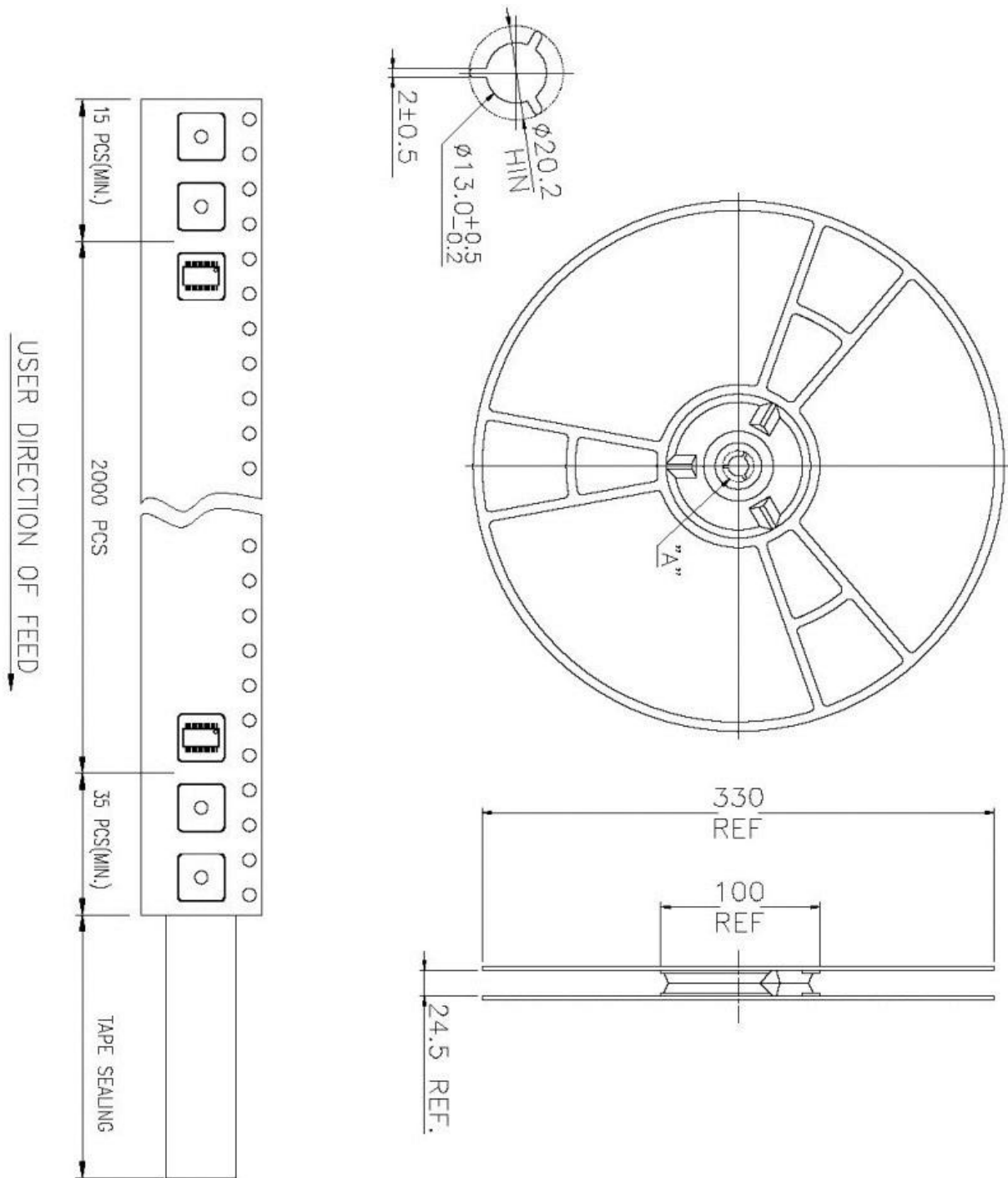


Figure 8.1 – FT232RL/FT232RNL and FT245RL/FT245RNL Reel Dimensions

9 FT232RL and FT245RL Tube Dimensions

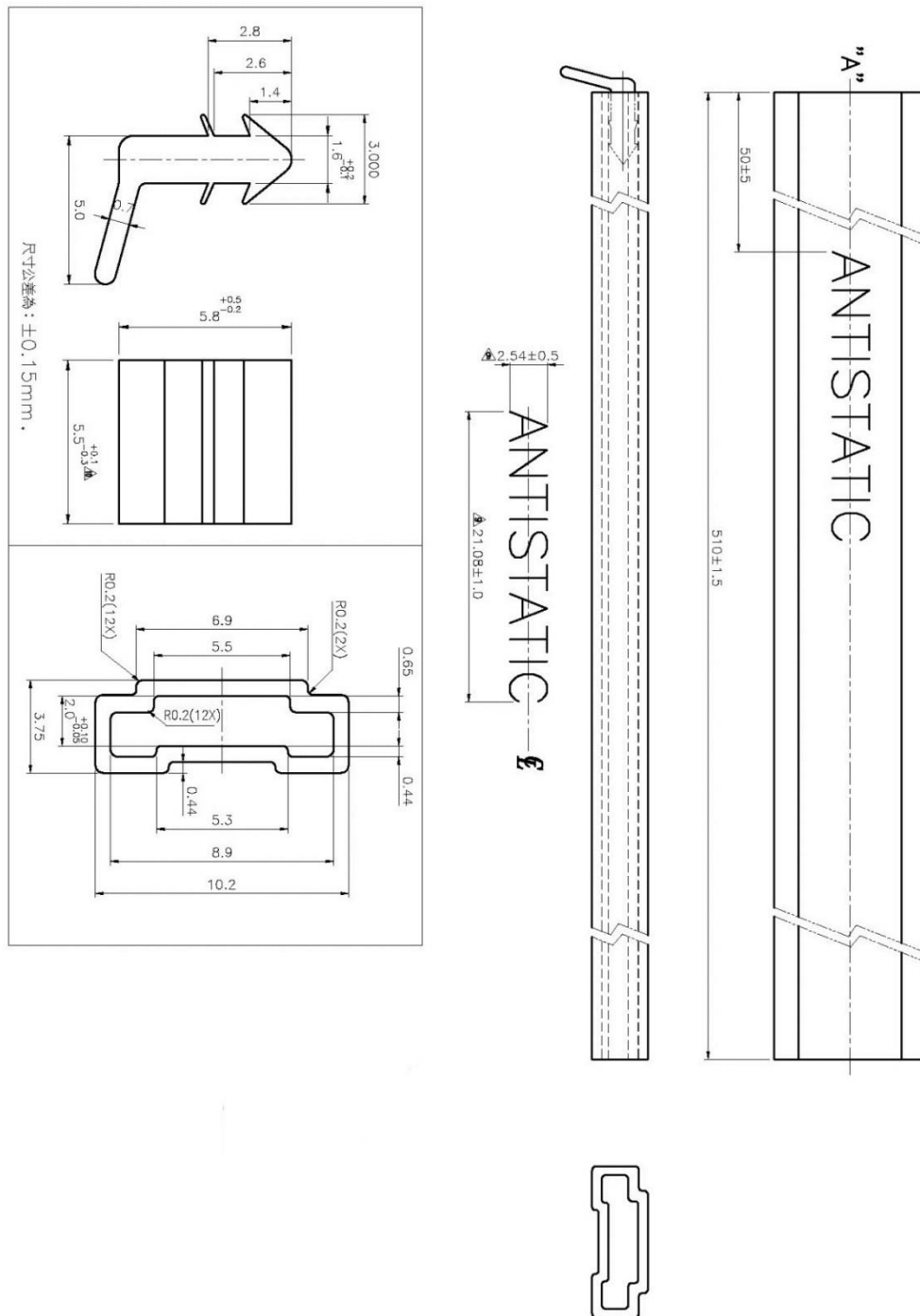


Figure 9.1 – FT232RL and FT245RL Tube Dimensions

11 FT232RNL and FT245RNL Tube Dimensions

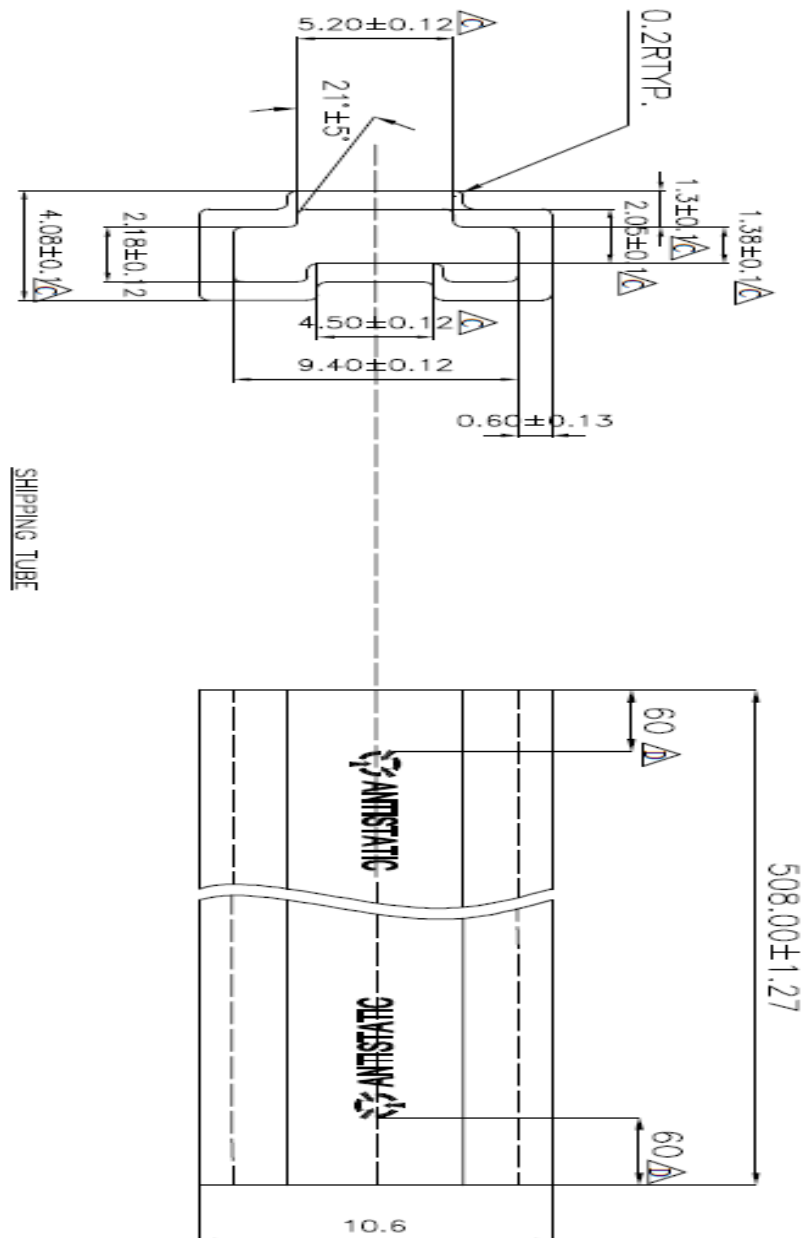
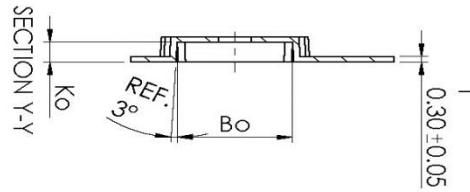


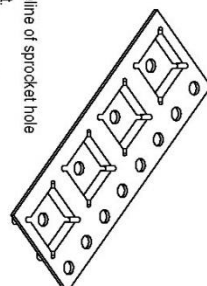
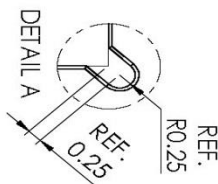
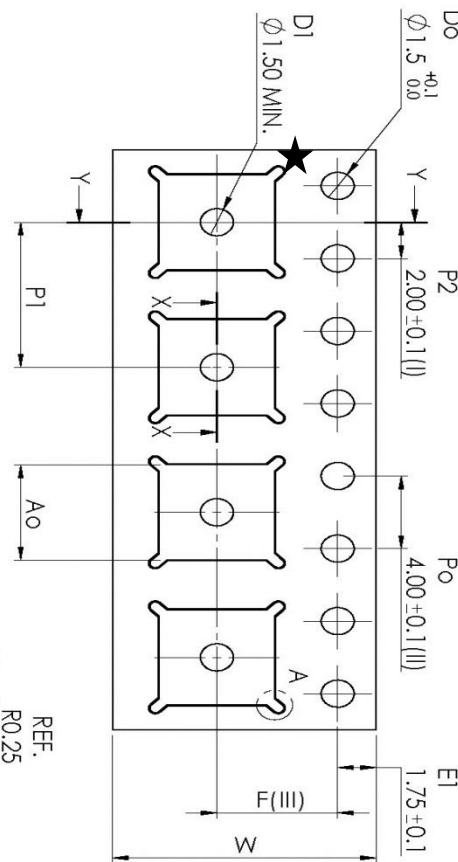
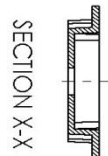
Figure 11.1 FT232RNL and FT245RNL Tube Dimensions

12 FT232RQ and FT245RQ Tape Dimensions

Ao	5.25	+/- 0.10
Bo	5.25	+/- 0.10
Ko	1.10	+/- 0.10
F	5.50	+/- 0.10
P1	8.00	+/- 0.10
W	12.00	+ 0.3/- 0.0



★ Pin 1 Identifier



- (I) Measured from centreline of sprocket hole to centreline of pocket.
- (II) Cumulative tolerance of 10 sprocket holes is ± 0.20 .
- (III) Measured from centreline of sprocket hole to centreline of pocket.
- (IV) Other material available.

ALL DIMENSIONS IN MILLIMETRES UNLESS OTHERWISE STATED.

Figure 12.1 – FT232RQ and FT245RQ Tape Dimensions

13 FT232RQ/FT232RNQ and FT245RQ/FT245RNQ Reel Dimensions

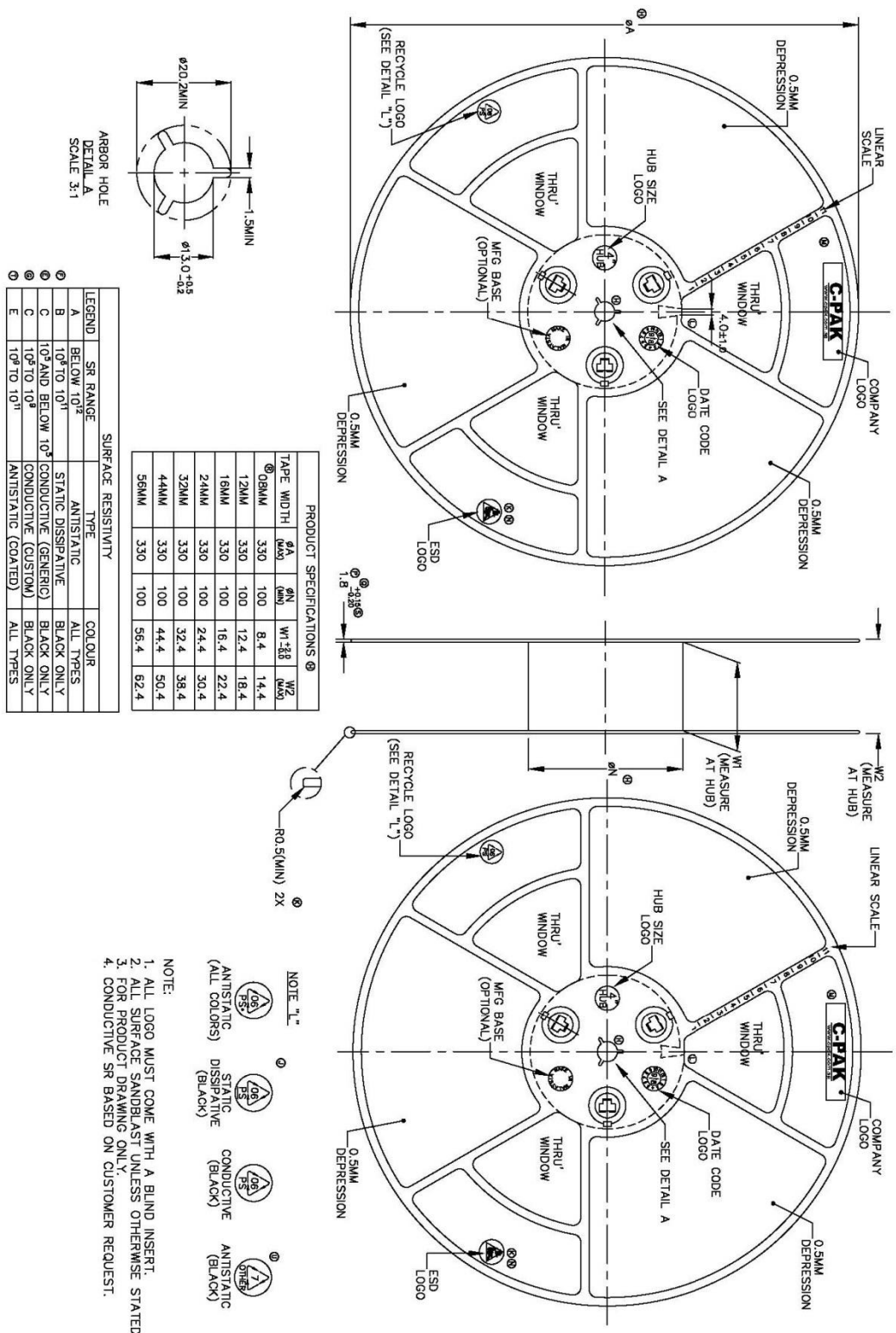


Figure 13.1 - FT232RQ/FT232RNQ and FT245RQ/FT245RNQ Reel Dimensions

14 FT232RQ/FT232RNQ and FT245RQ/FT245RNQ Tray Dimensions

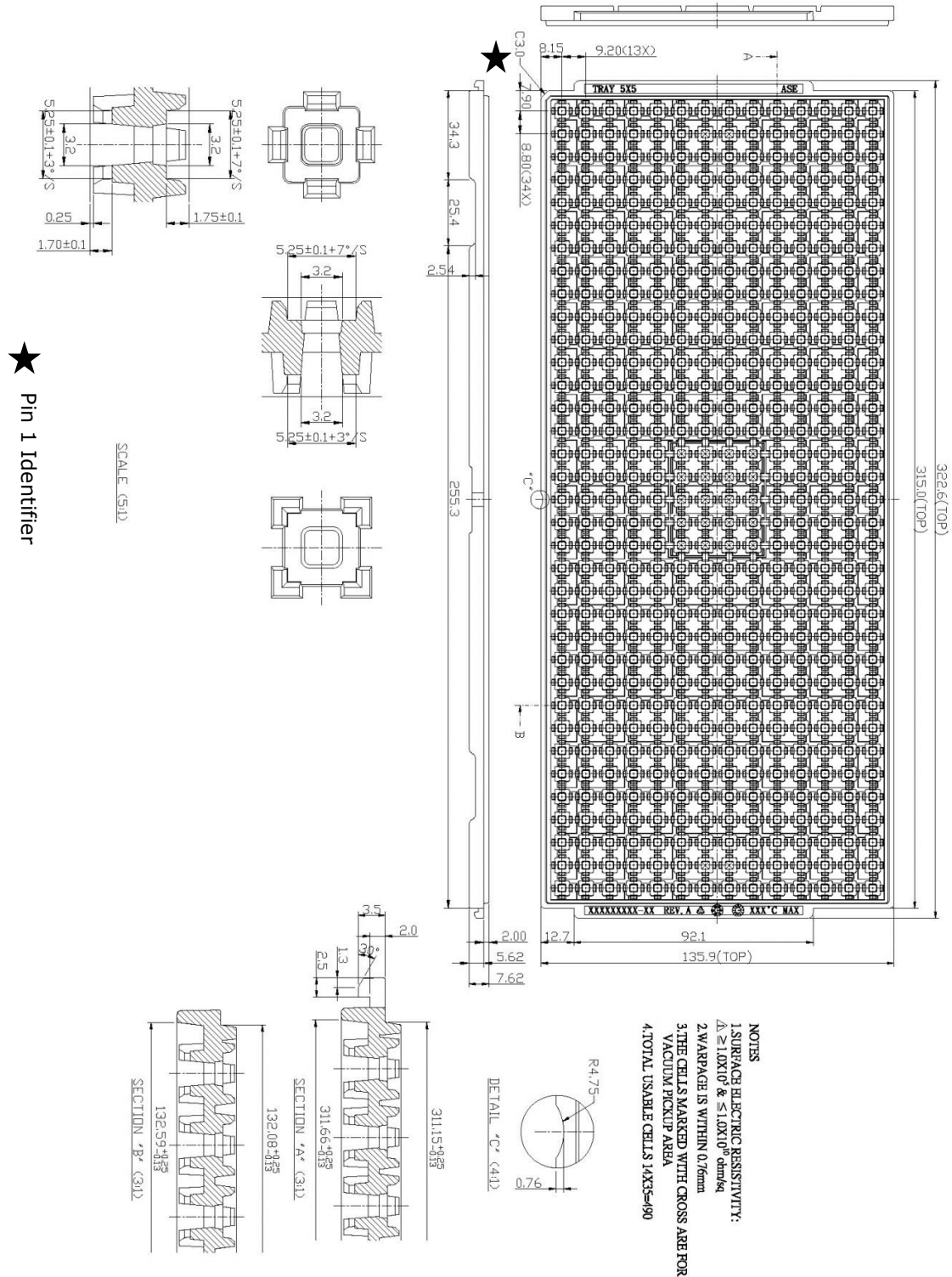


Figure 14.1 FT232RQ/FT232RNQ and FT245RQ/FT245RNQ Tray Dimensions

15 FT232RNQ and FT245RNQ Tape Dimensions

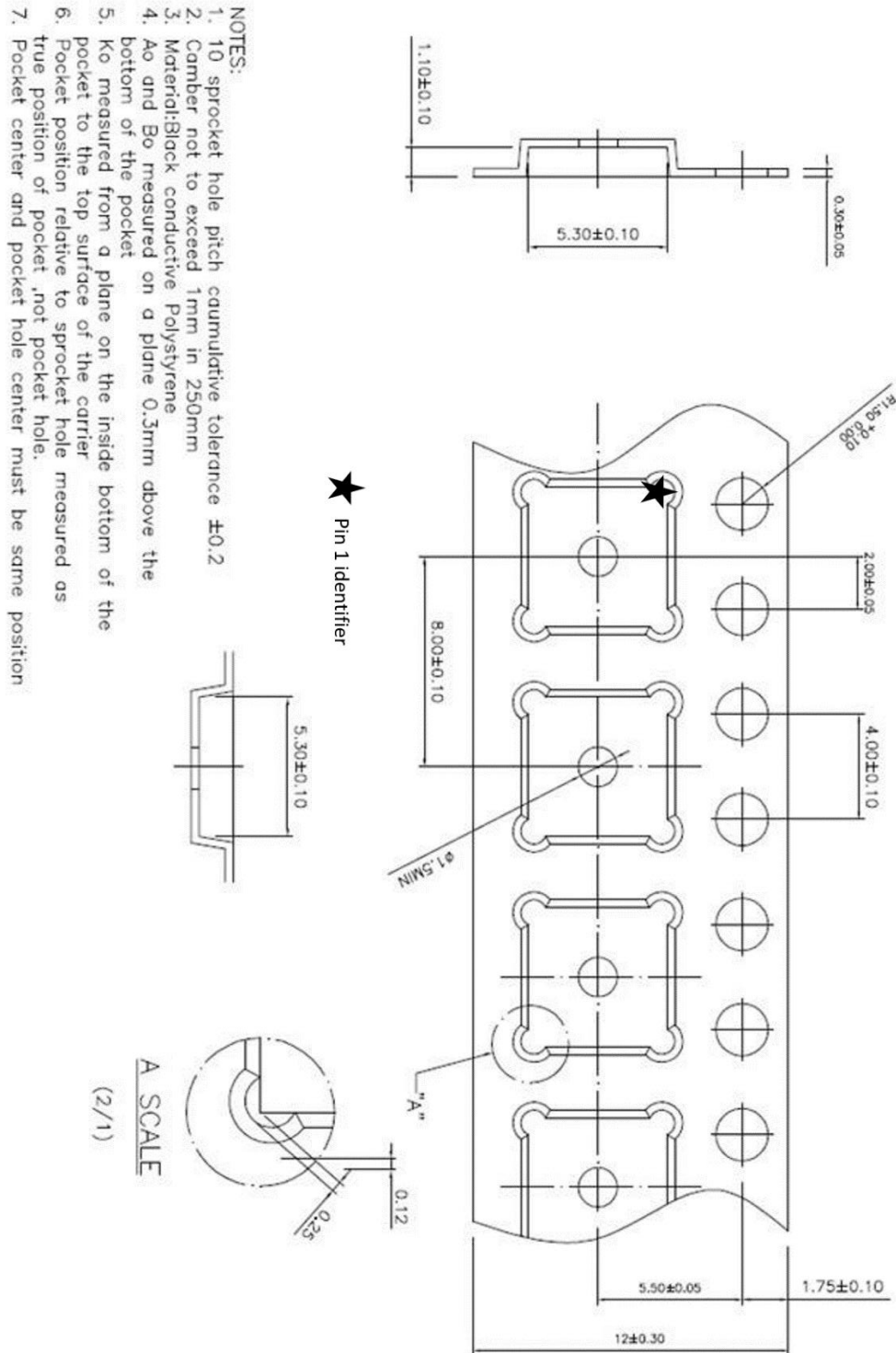


Figure 15.1 FT232RNQ and FT245RNQ Tape Dimensions

16 FT2232HL and FT4232HL Tape Dimensions

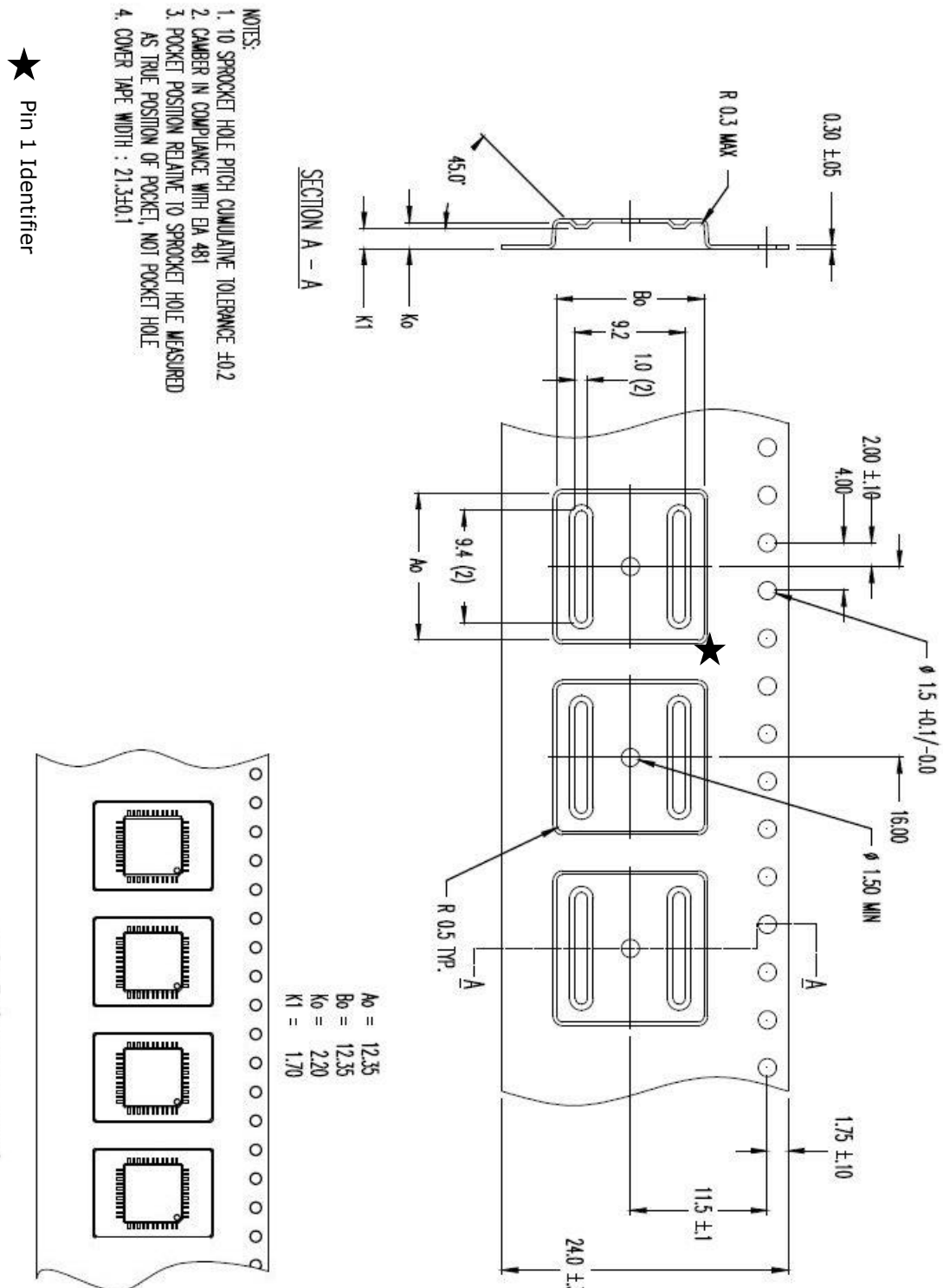


Figure 16.1 – FT2232HL and FT4232HL Tape Dimensions

17 FT2232HL and FT4232HL Reel Dimensions

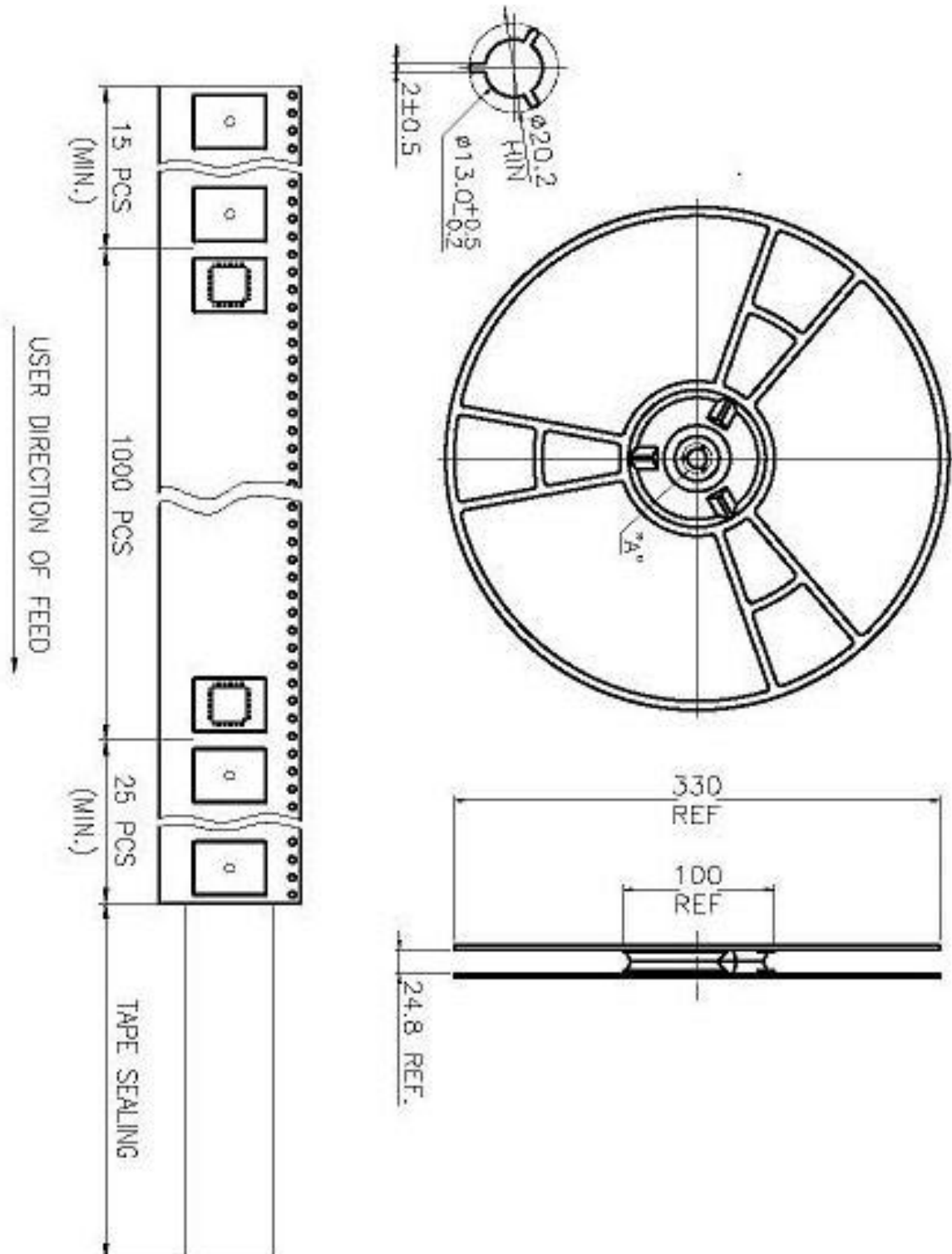


Figure 17.1 – FT2232HL and FT4232HL Reel Dimensions

18 FT2232HL and FT4232HL Tray Dimensions

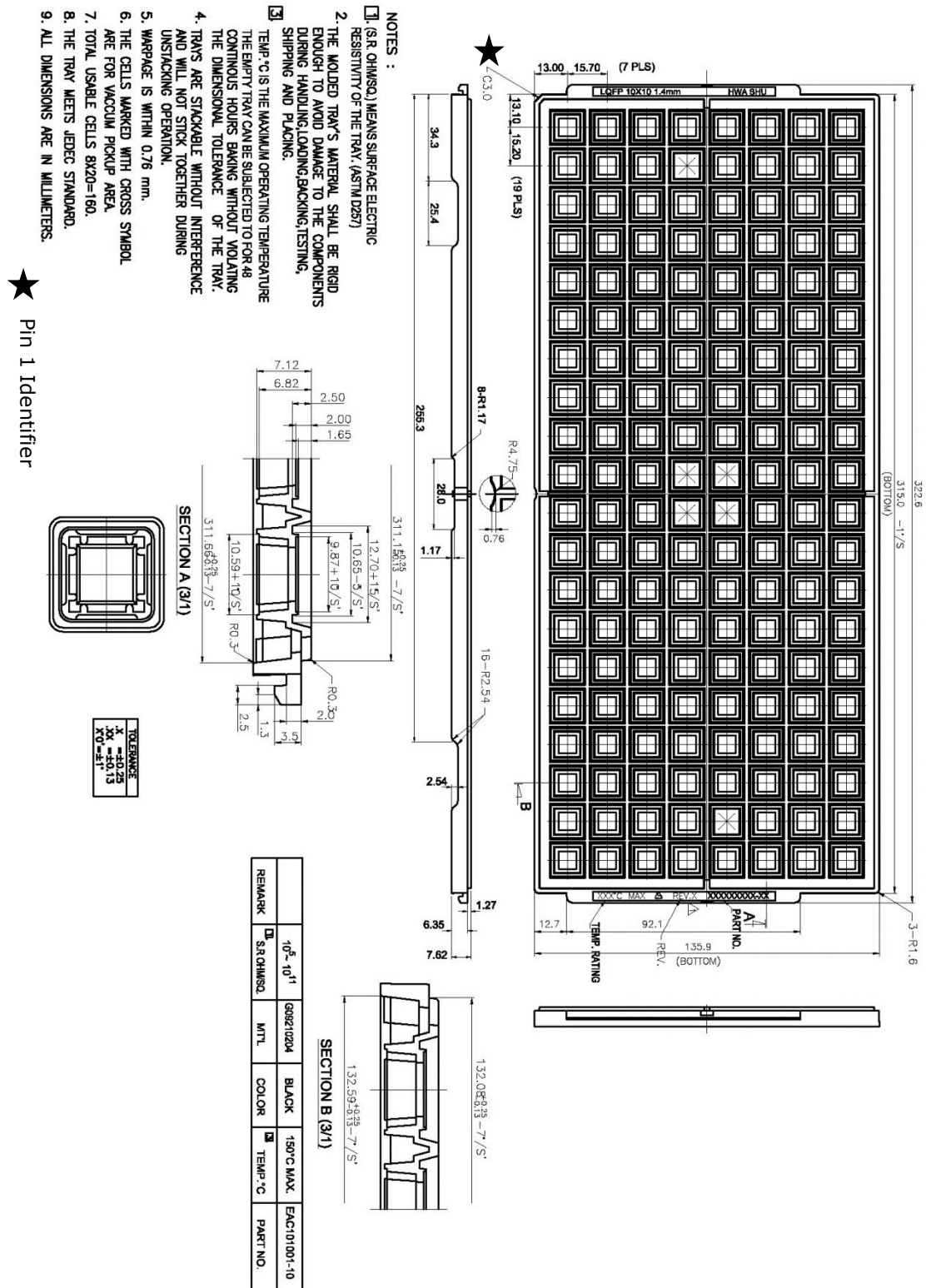


Figure 18.1 FT2232HL and FT4232HL Tray Dimensions

20 FT2232HQ and FT4232HQ Reel Dimensions

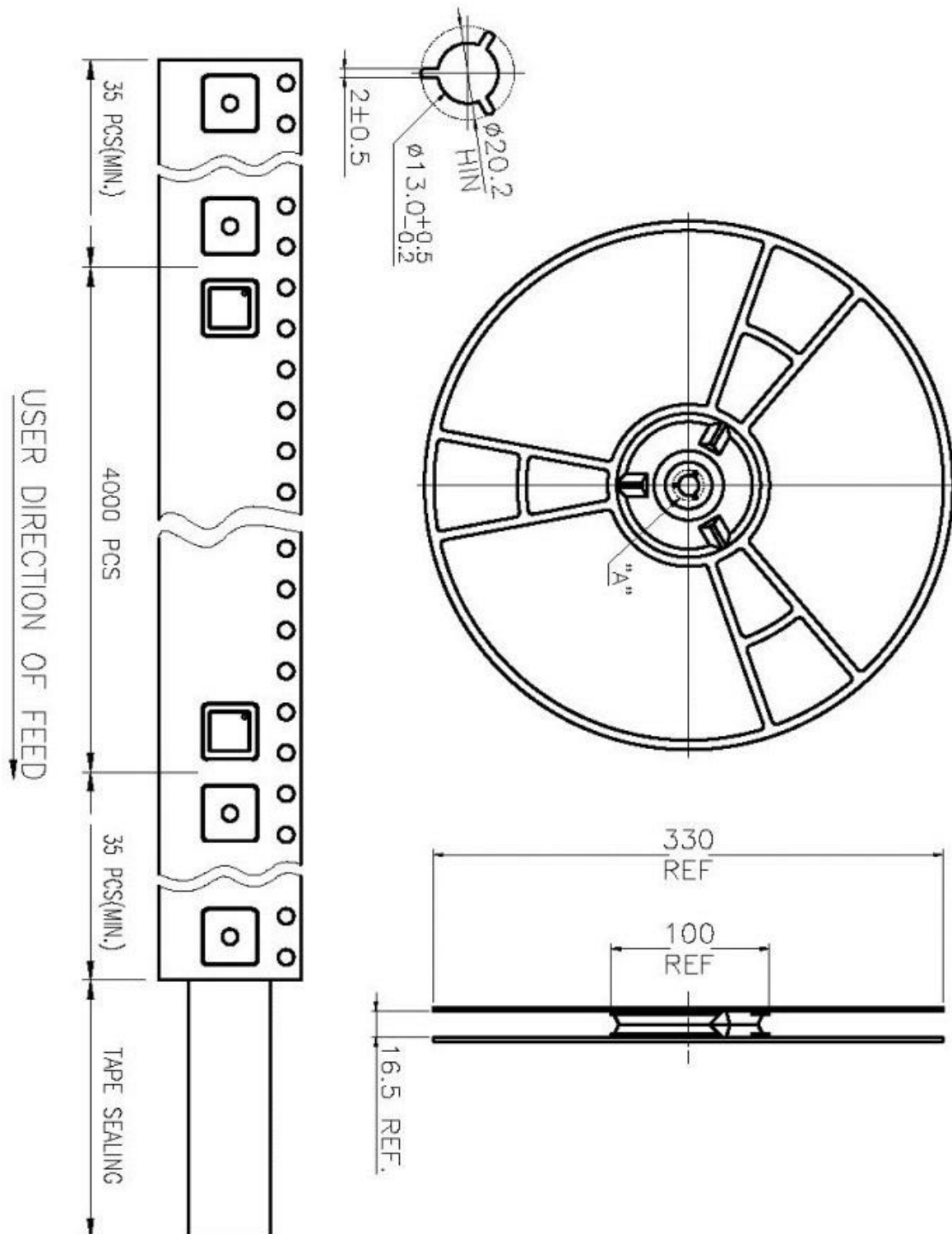


Figure 20.1 – FT2232HQ and FT4232HQ Reel Dimensions

21 FT2232HQ and FT4232HQ Tray Dimensions

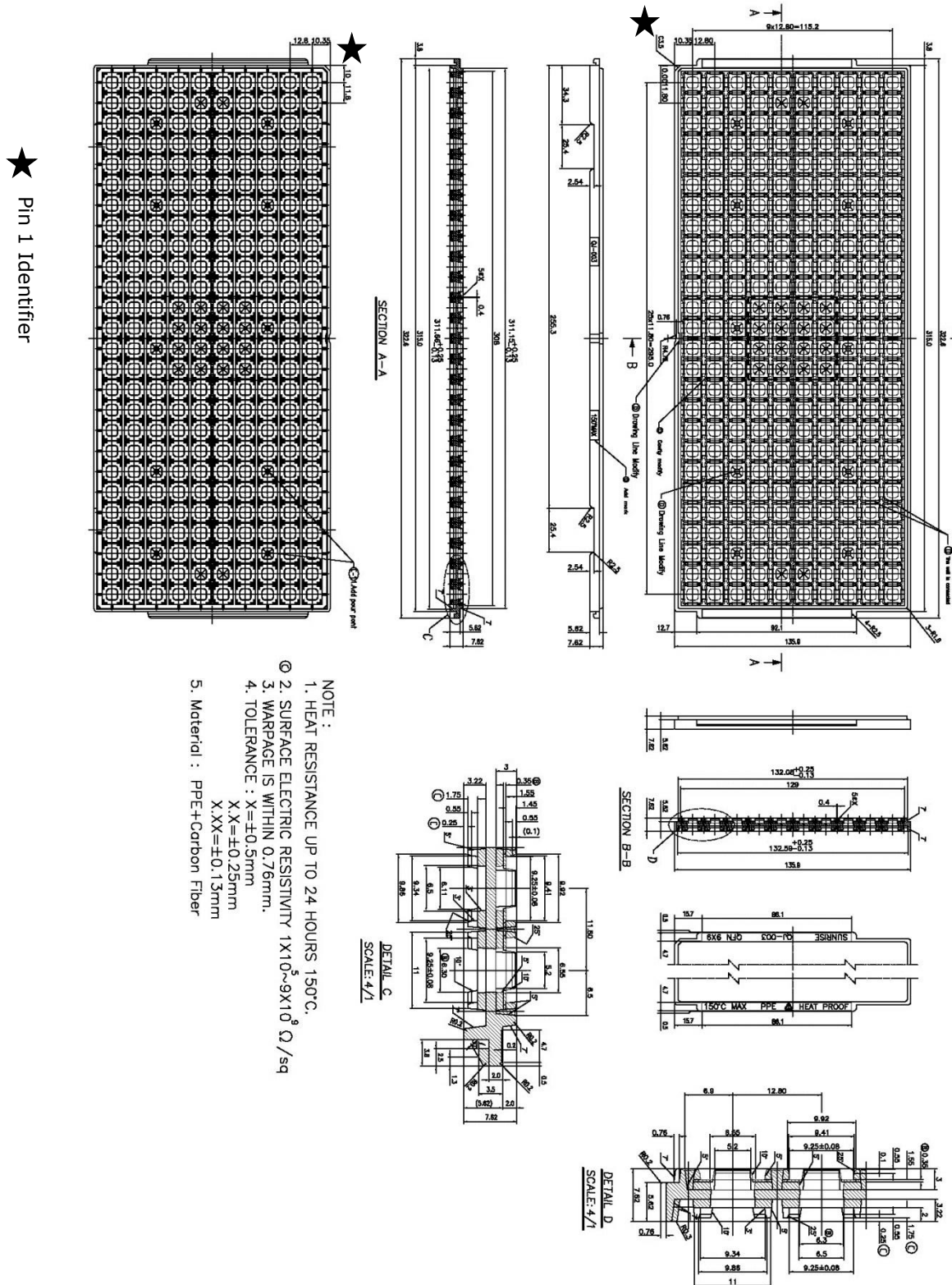


Figure 21.1 FT2232HQ and FT4232HQ Tray Dimensions

22 FT2232H-56Q, FT4232H-56Q, VNC2-48Q1C, FT232HQ – QFN Reel Dimensions

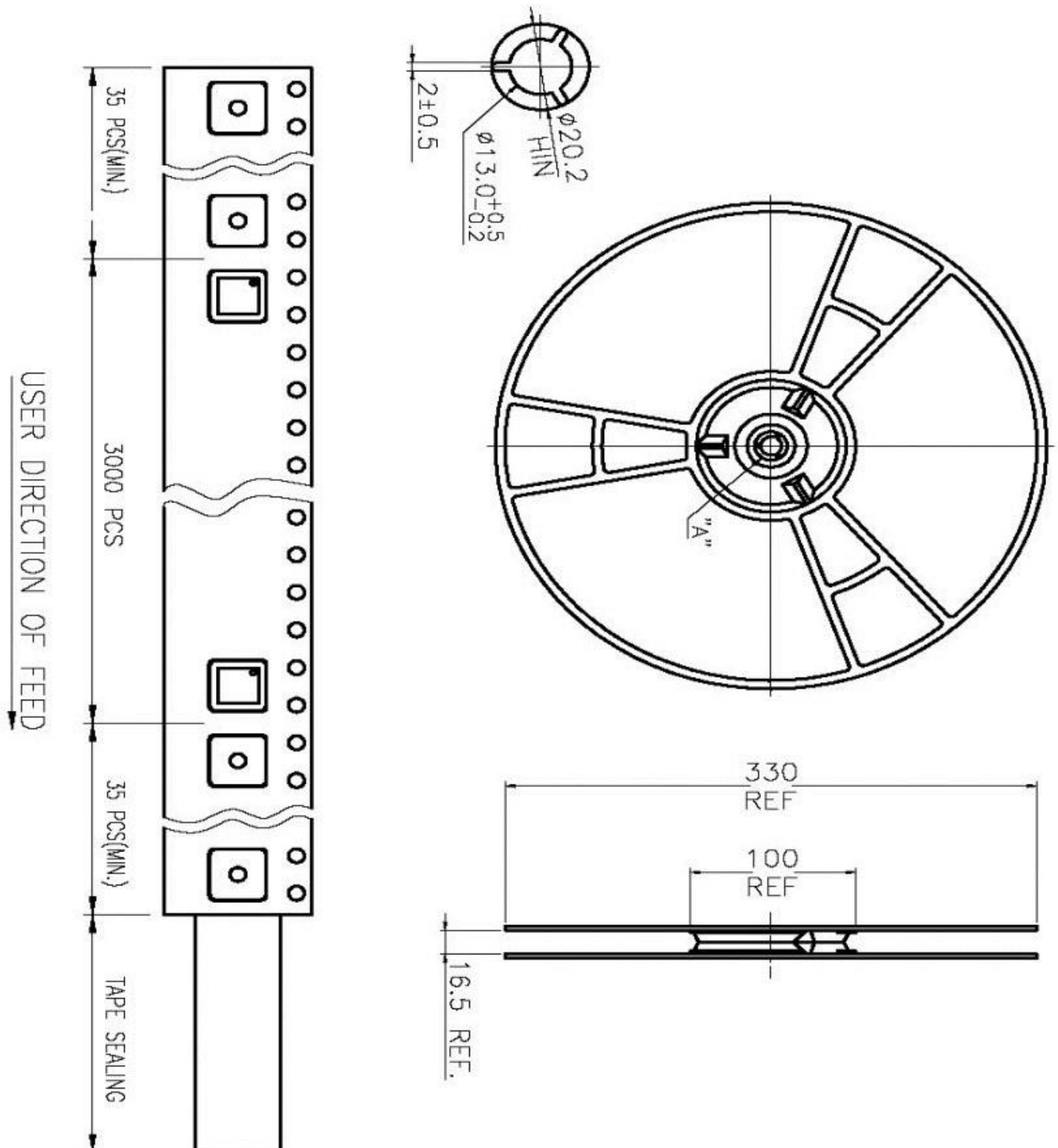
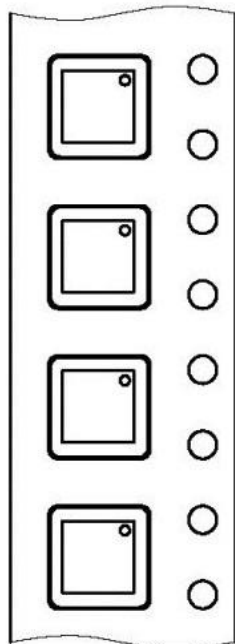
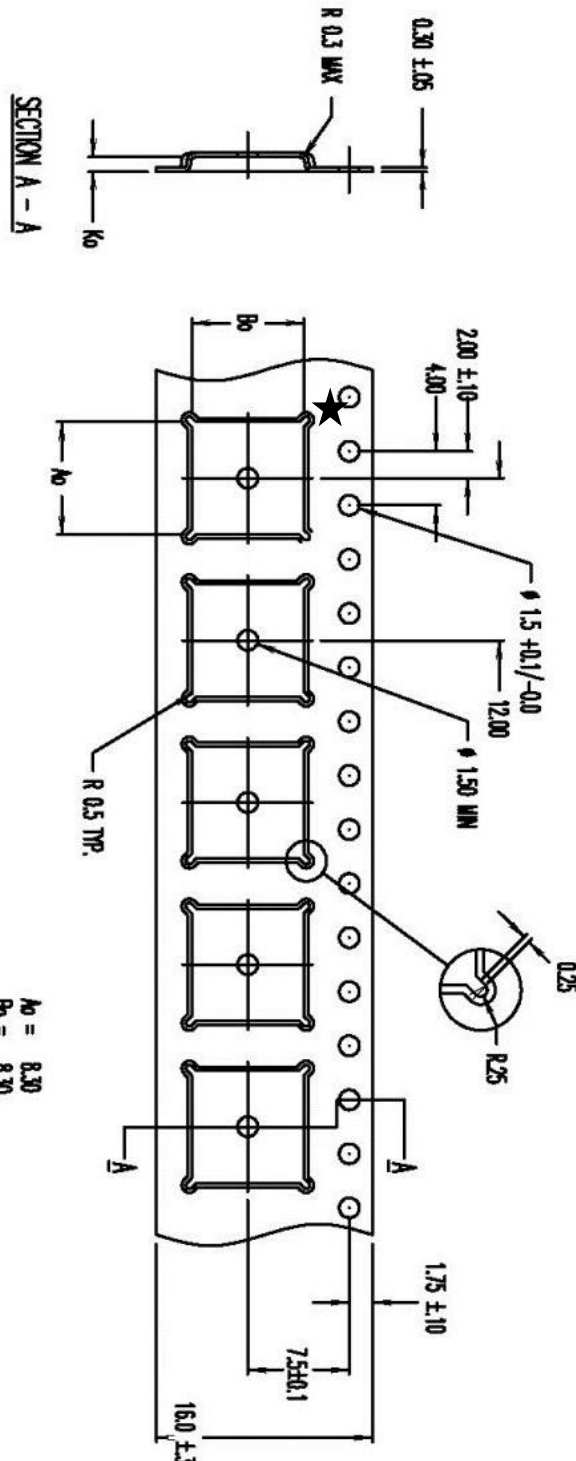


Figure 22.1– FT2232H-56Q, FT4232H-56Q, VNC2-48Q1C, FT232HQ – QFN Reel Dimensions

23 FT2232H-56Q, FT4232H-56Q, VNC2-48Q1C, FT232HQ – QFN Tape Dimensions

★ Pin 1 Identifier

- Notes:
1. 10 sprocket hole pitch cumulative tolerance ± 0.2
 2. Camber not to exceed 1mm in 100mm.
 3. Material: Black Advantek Polystyrene.
 4. A_0 and B_0 measured on a plane 0.3mm above the bottom of the pocket.
 5. K_0 measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
 6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.



QFN 8X8
3000 EA/PER REEL

Figure 23.1 – FT2232H-56Q, FT4232H-56Q, VNC2-48Q1C, FT232HQ – QFN Tape Dimensions

24 FT2232H-56Q, FT4232H-56Q, VNC2-48Q1C, FT232HQ – QFN Tray Dimensions

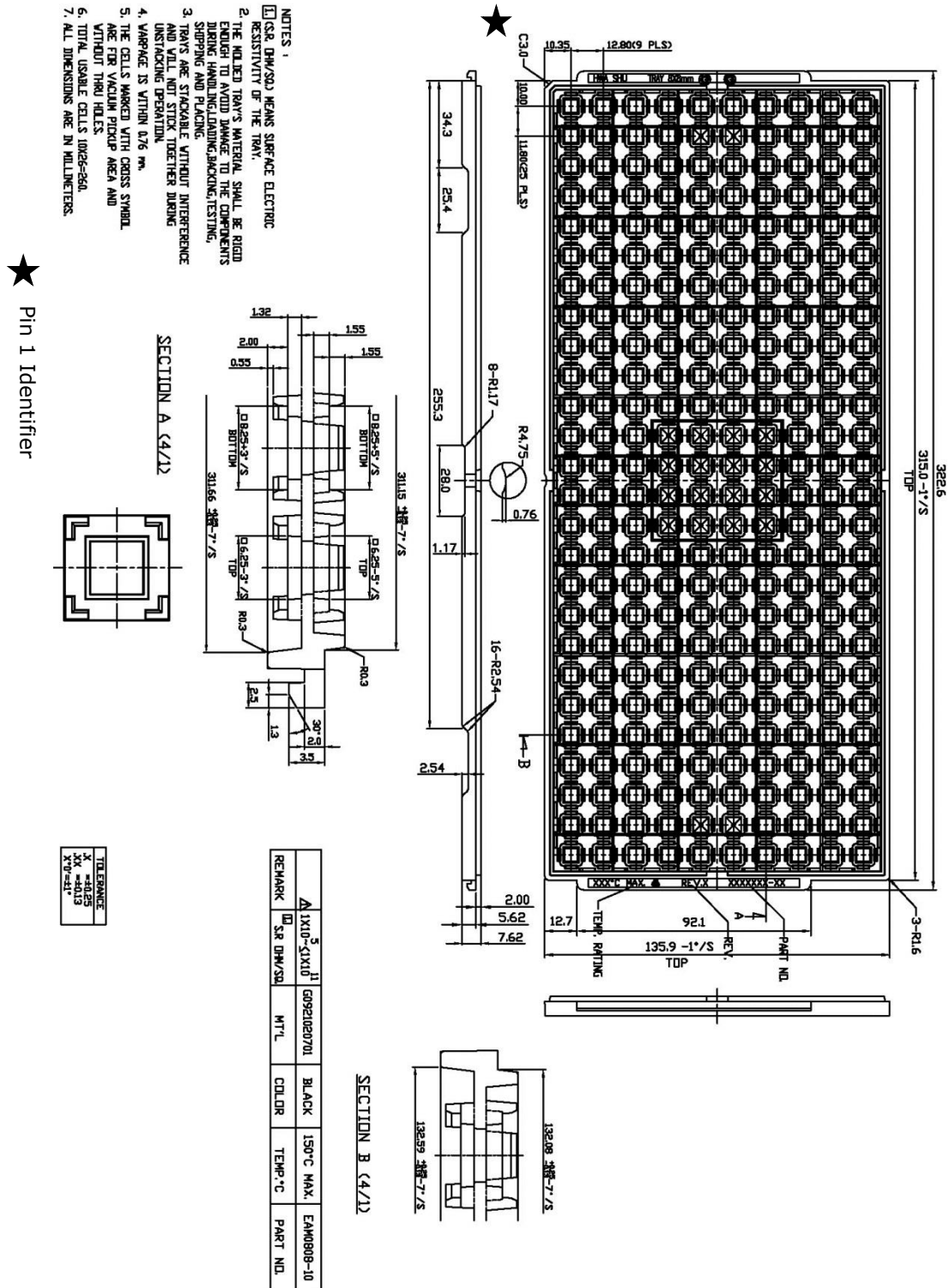


Figure 24.1 – FT2232H-56Q, FT4232H-56Q, VNC2-48Q1C, FT232HQ – QFN Tray Dimensions

25 VNC1L – A – Reel Vendor Part No. RD33008SW

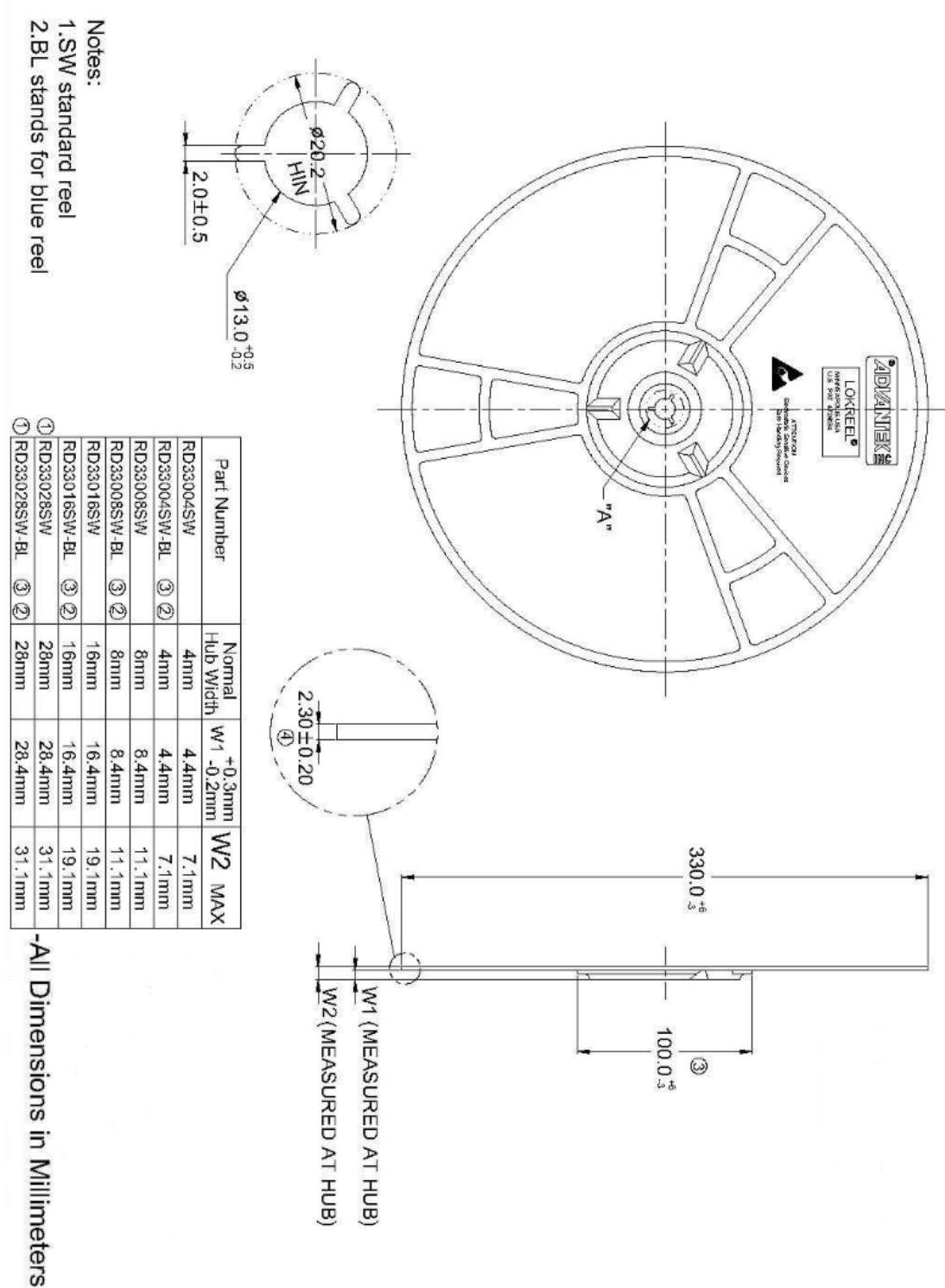


Figure 25.1 – VNC1L – A – Reel Vendor Part No. RD33008SW

26 VNC1L – A – Cover Tape Vendor Part No. AA13305NP

- NOTE:**
1. REEL TO CONTAIN 300 METERS OF SPLICE FREE MATERIAL.
 2. MATERIAL: POLYESTER FILM WITH ANTISTATIC COATING AND ADHESIVE COATING.
 3. COLOR: TRANSPARENT, NATURAL.

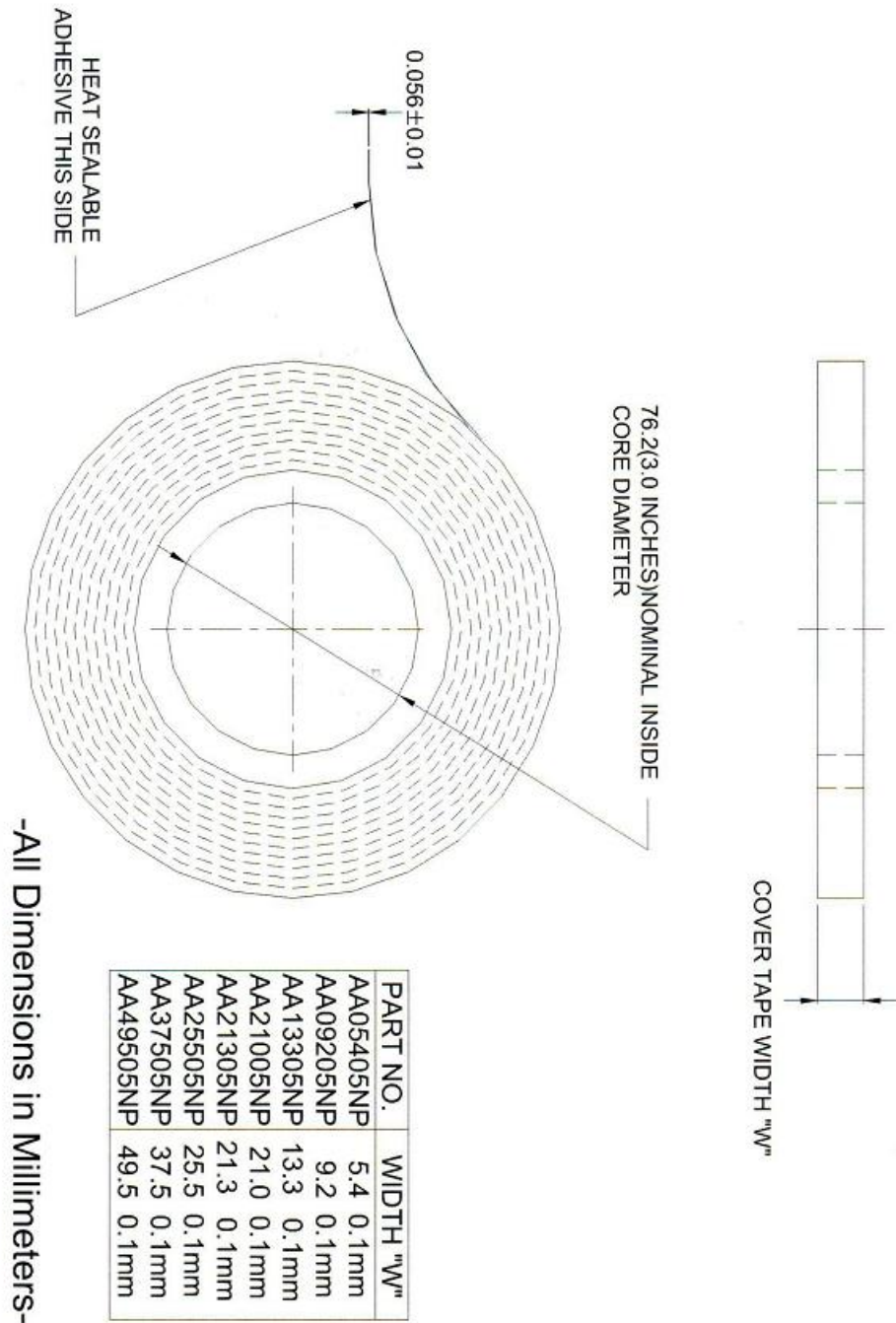


Figure 26.1 – VNC1L – A – Cover Tape Vendor Part No. AA13305NP

27 VNC1L – A – Carrier Tape Vendor Part No. Q07X07-A

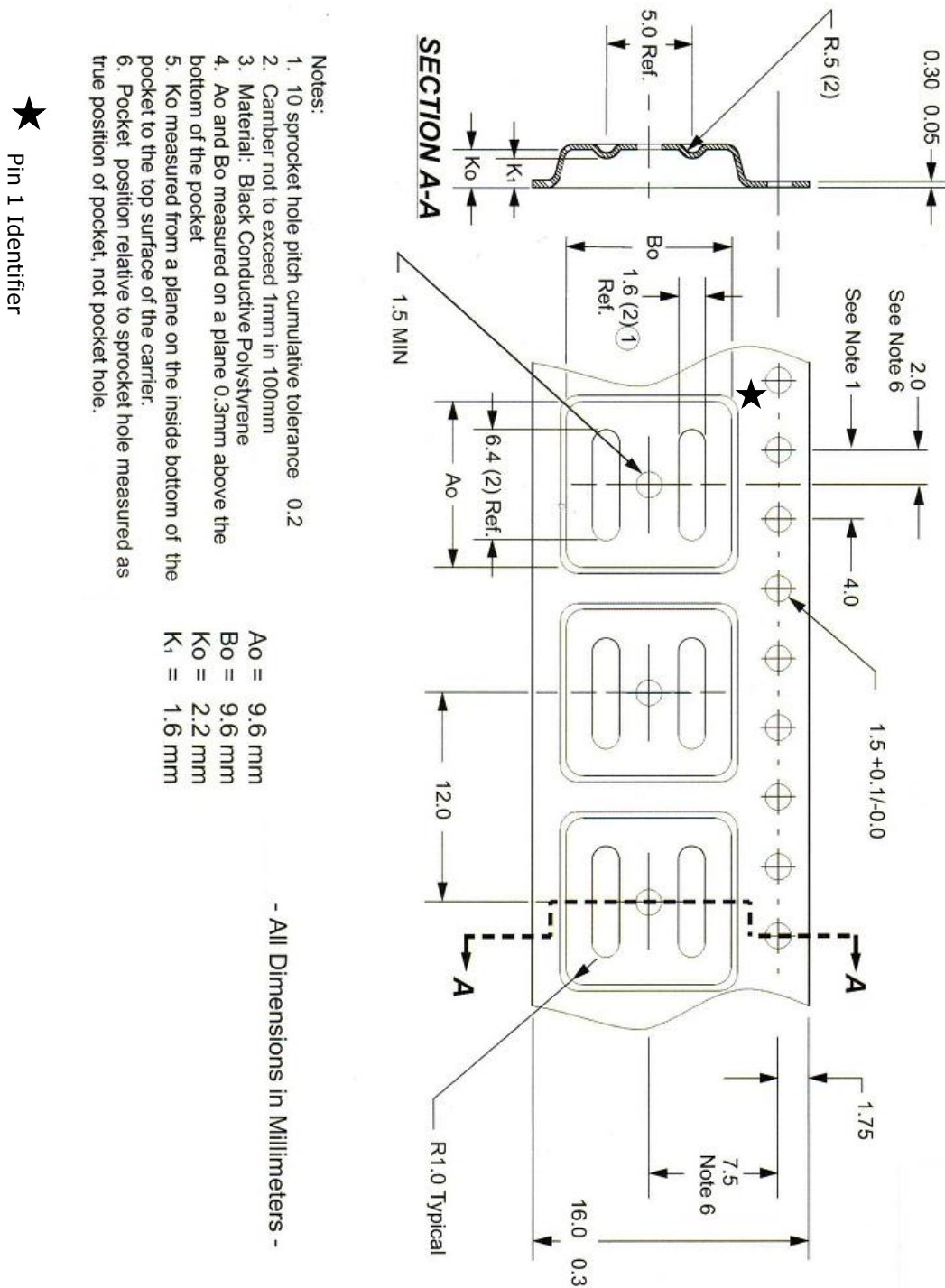


Figure 27.1 – VNC1L – A – Carrier Tape Vendor Part No. Q07X07-A

28 FT311D-32L1C, FT312D-32L1C, VNC2-32L1C –LQFP Reel Dimensions

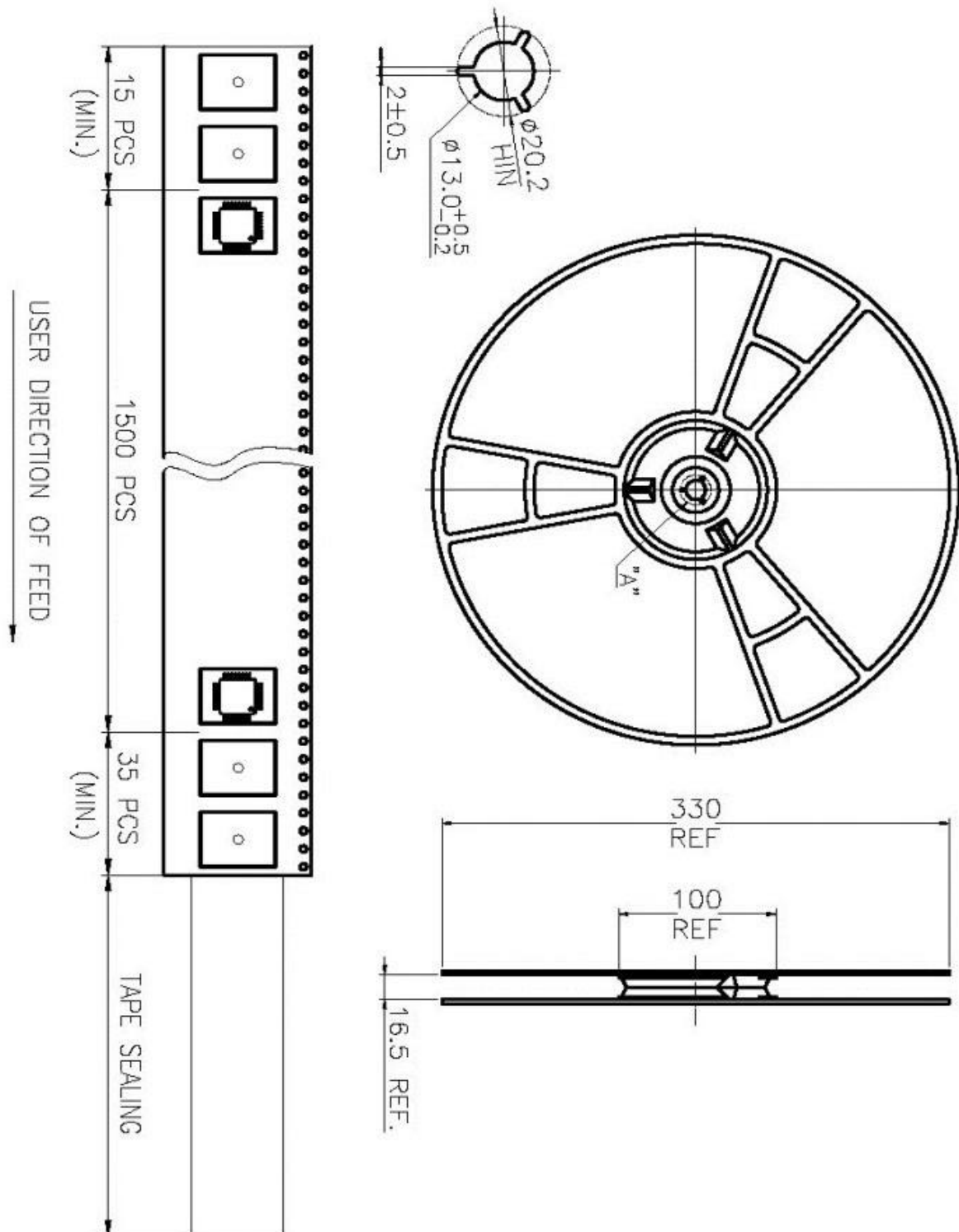


Figure 28.1 – FT311D-32L1C, FT312D-32L1C, VNC2-32L1C – LQFP Reel Dimensions

29 FT311D-32L1C, FT312D-32L1C, VNC2-32L1C - LQFP Carrier Tape Dimensions

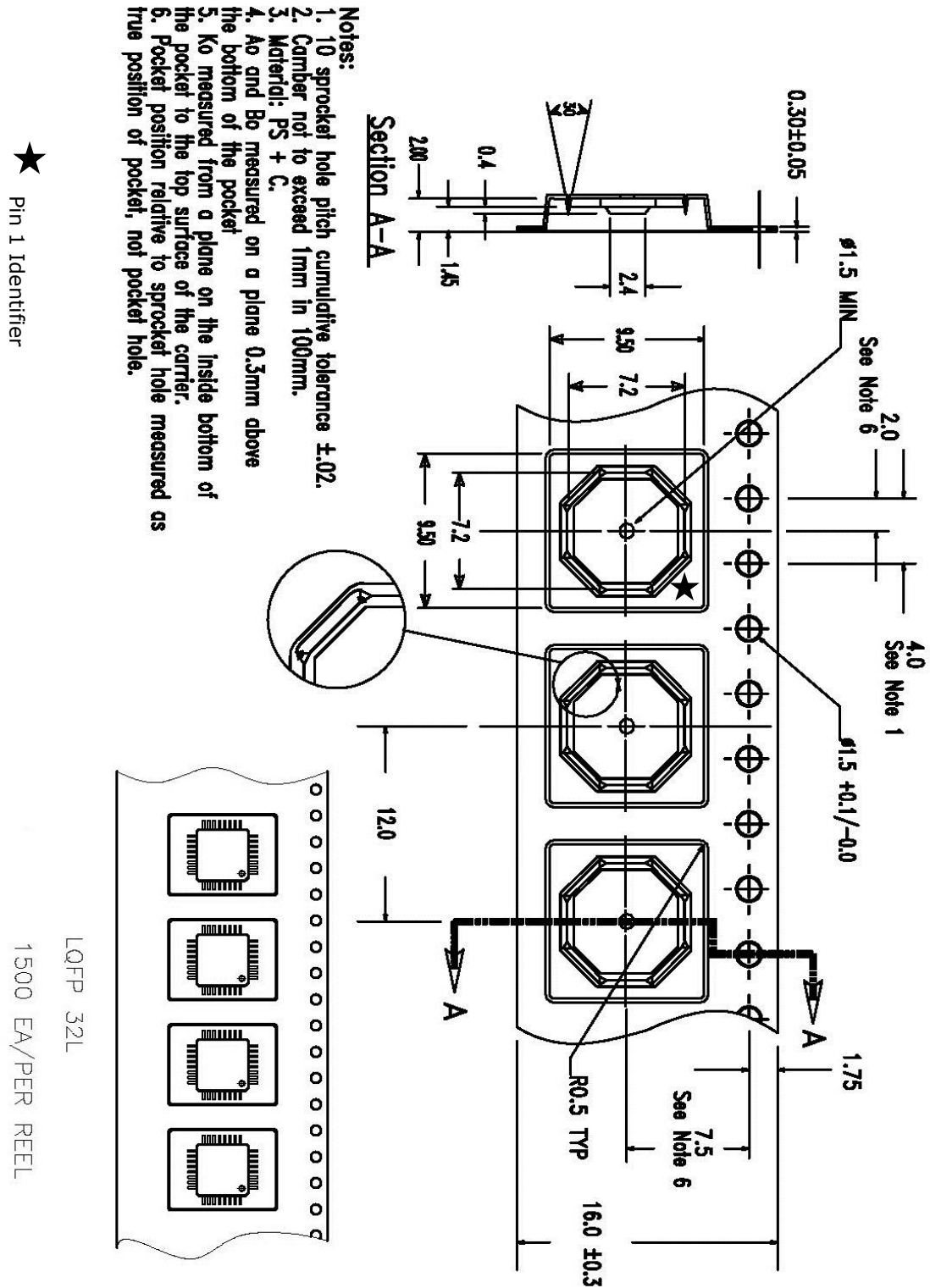


Figure 29.1 – FT311D-32L1C, FT312D-32L1C, VNC2-32L1C – LQFP Carrier Tape Dimensions

30 VNC2-48L1C, FT232HL – LQFP Reel Dimensions

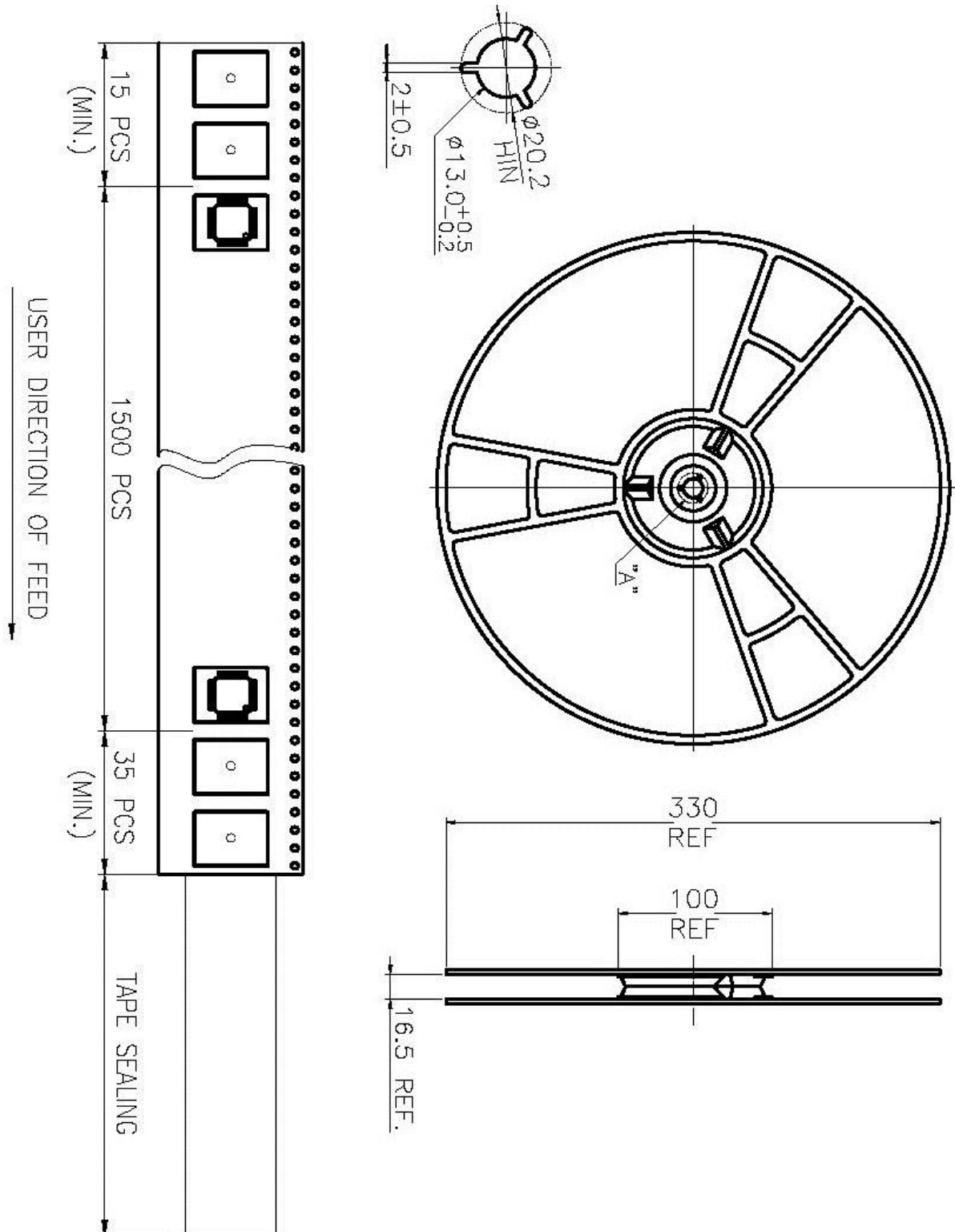


Figure 30.1 – VNC2-48L1C, FT232HL – LQFP Reel Dimensions

31 VNC2-48L1C, FT232HL – LQFP Carrier Tape Dimensions

★ Pin 1 Identifier

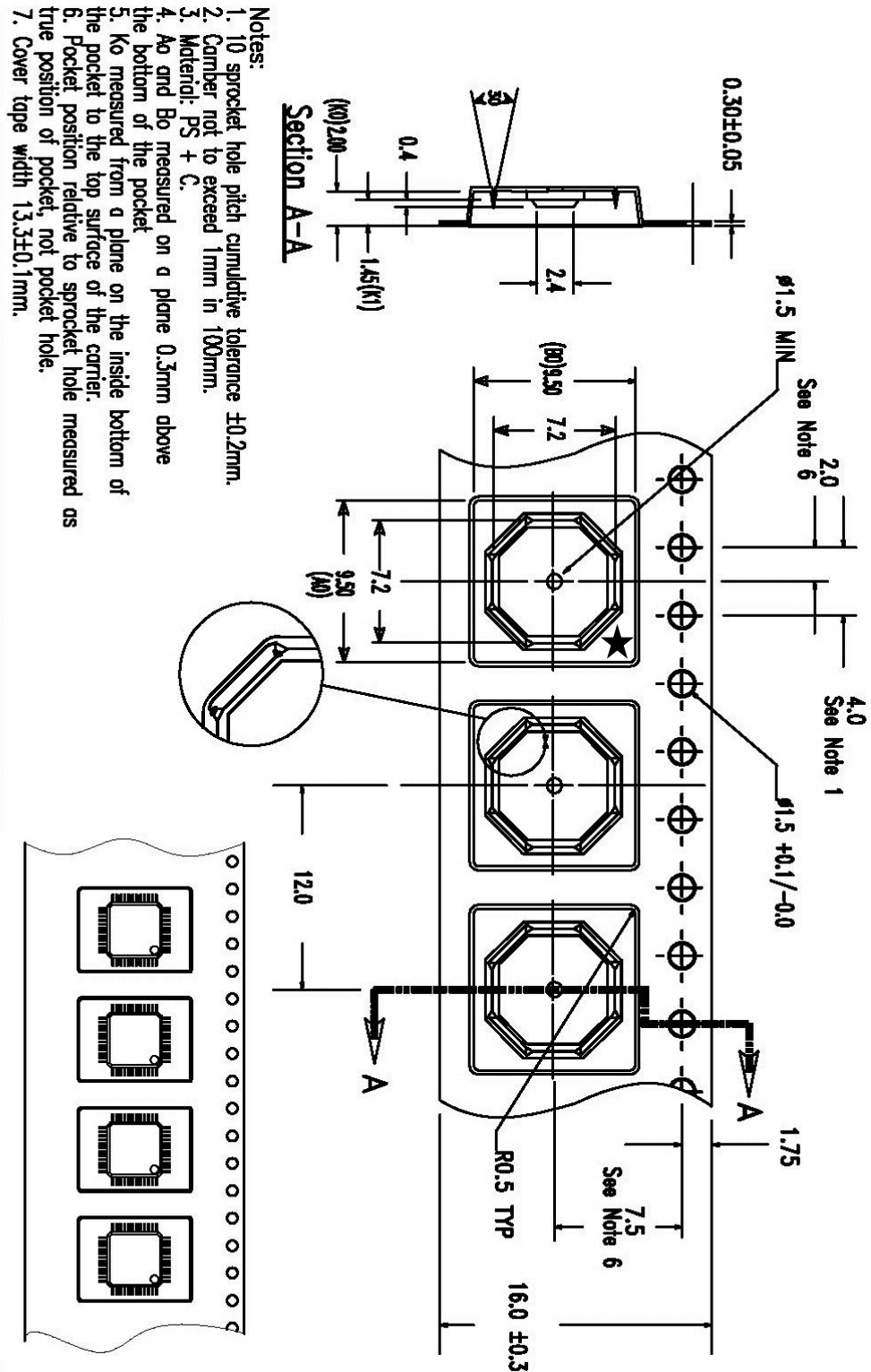


Figure 31.1 – VNC2-48L1C, FT232HL – LQFP Carrier Tape Dimensions

32 FT311D-32L1C, FT312D-32L1C, VNC2-32L1C, VNC2-48L1C, FT232HL – LQFP Tray Dimensions

- NOTES :**
1. (S.R. OHMSQ.) MEANS SURFACE ELECTRIC RESISTIVITY OF THE TRAY.
 2. THE MOLDED TRAY'S MATERIAL SHALL BE RIGID ENOUGH TO AVOID DAMAGE TO THE COMPONENTS DURING HANDLING, LOADING, PACKING, TESTING, SHIPPING AND PLACING.
 3. TEMP. C IS THE MAXIMUM OPERATING TEMPERATURE THE EMPTY TRAY CAN BE SUBJECTED TO FOR 48 CONTINUOUS HOURS BAKING WITHOUT VIOLATING THE DIMENSIONAL TOLERANCE OF THE TRAY.
 4. TRAYS ARE STACKABLE WITHOUT INTERFERENCE AND WILL NOT STICK TOGETHER DURING UNSTACKING OPERATION.
 5. WARPAGE IS WITHIN 0.76 mm.
 6. THE CELLS MARKED WITH CROSS SYMBOL ARE FOR VACUUM PICKUP AREA.
 7. TOTAL USABLE CELLS 10X25=250.
 8. THE TRAY MEETS JEDEC STANDARD.

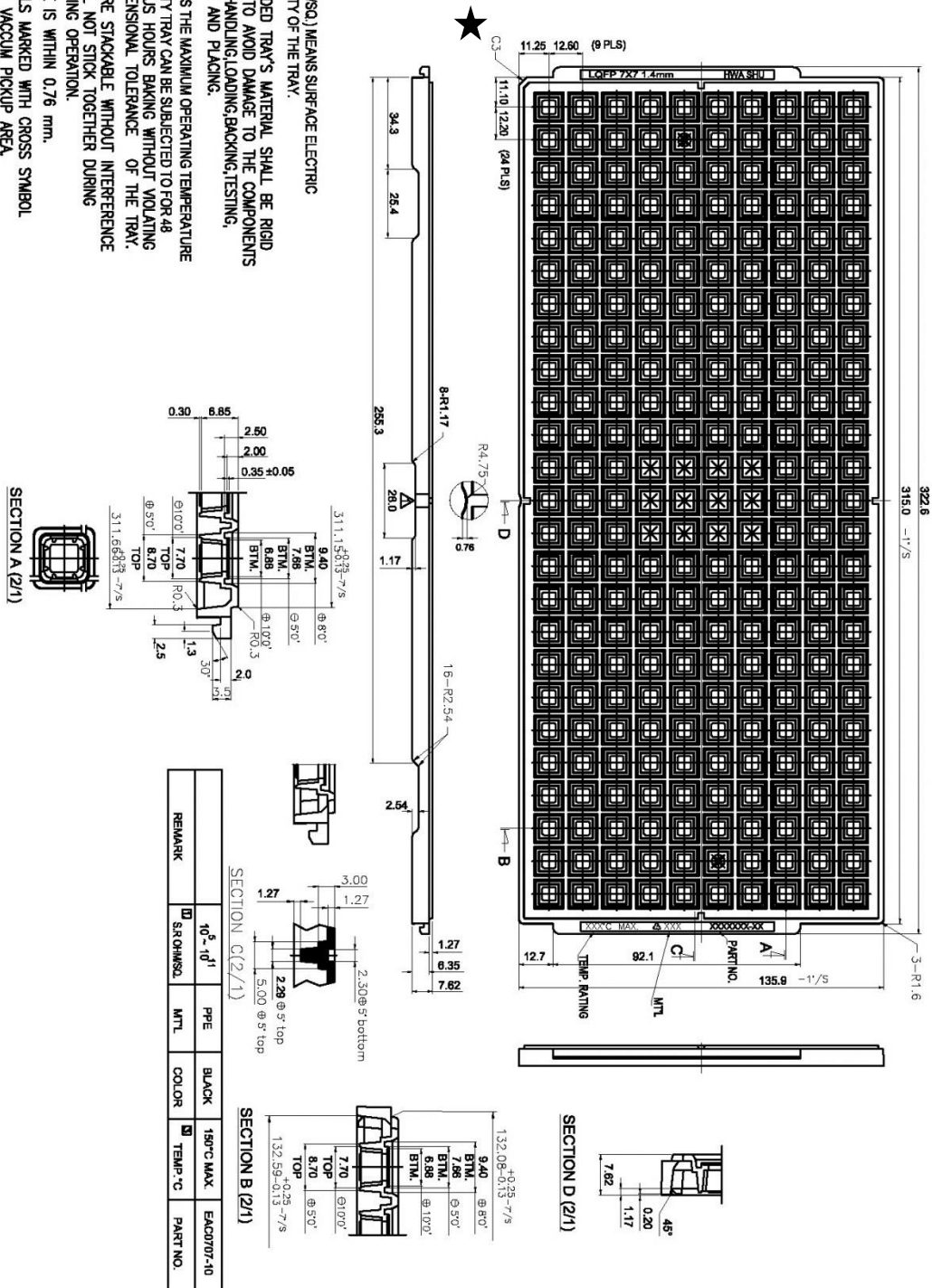


Figure 32.1- FT311D-32L1C, FT312D-32L1C, VNC2-32L1C, VNC2-48L1C, FT232HL – LQFP Tray Dimensions

33 FT311D-32Q1C, FT312D-32Q1C, VNC2-32Q1C –QFN Reel Dimensions

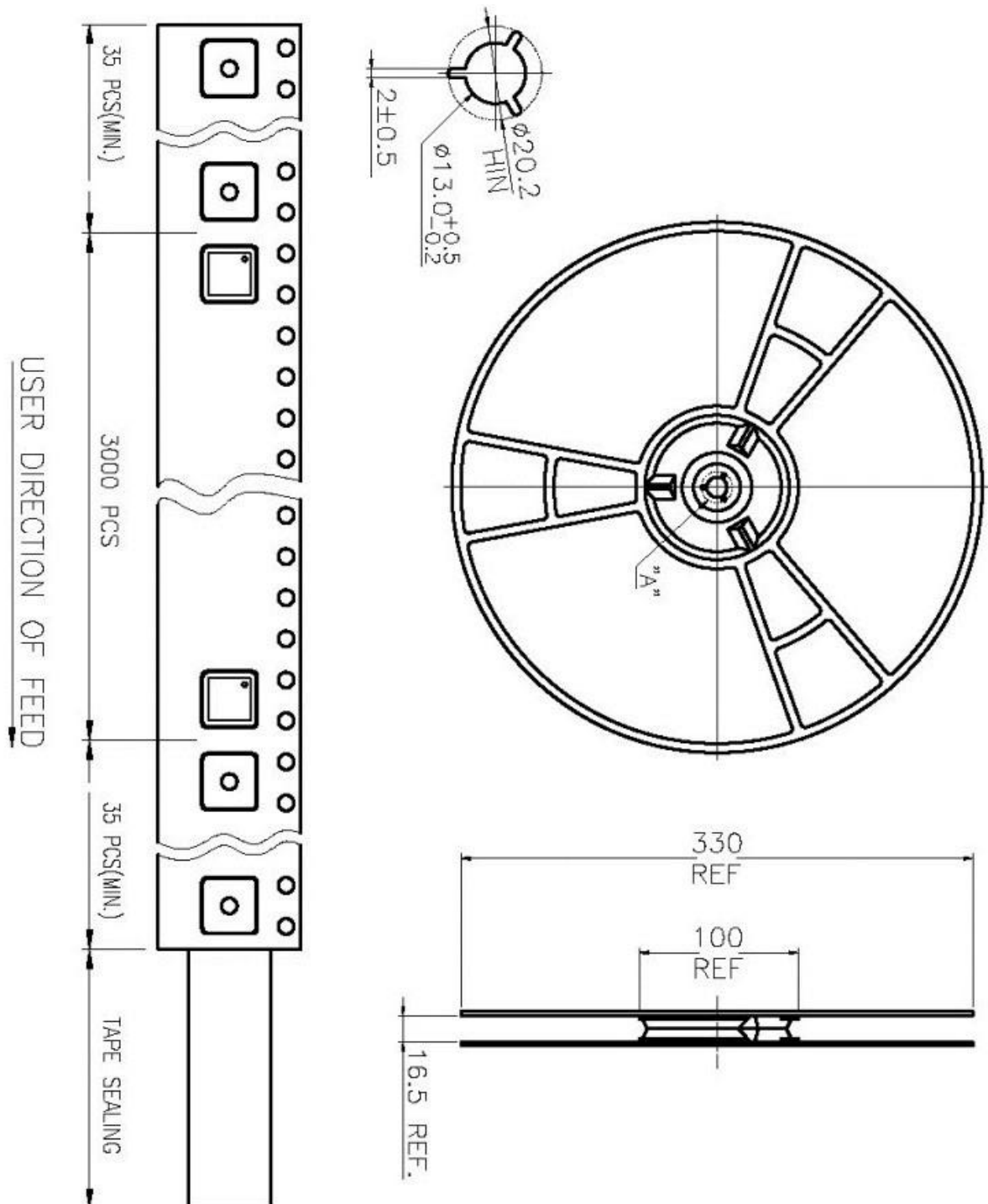


Figure 33.1 – FT311D-32Q1C, FT312D-32Q1C, VNC2-32Q1C –QFN Reel Dimensions

34 FT311D-32Q1C, FT312D-32Q1C, VNC2-32Q1C – QFN Carrier Tape Dimensions

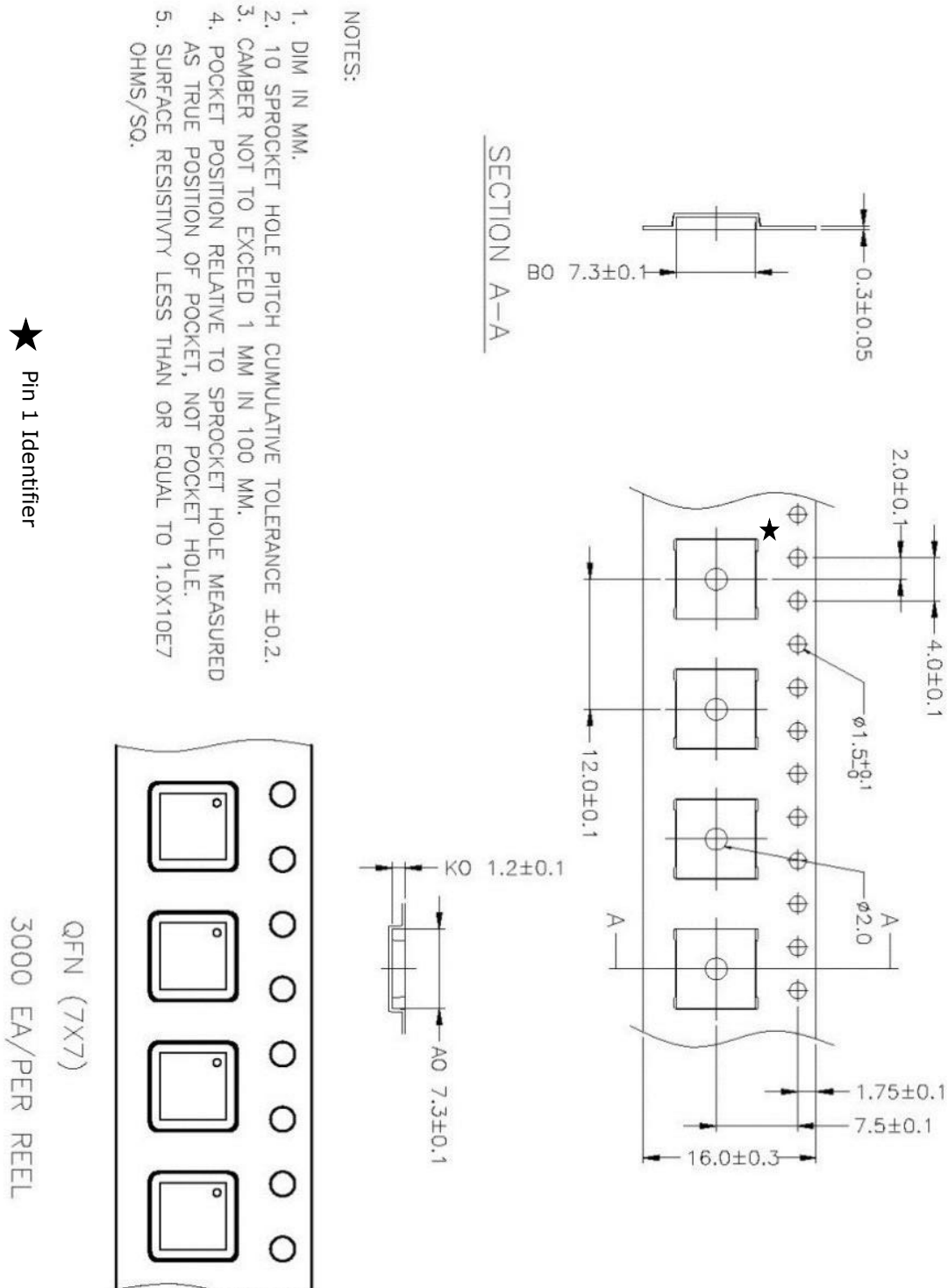


Figure 34.1 FT311D-32Q1C, FT312D-32Q1C, VNC2-32Q1C – QFN Carrier Tape Dimensions

35 FT311D-32Q1C, FT312D-32Q1C, VNC2-32Q1C – QFN Tray Dimensions

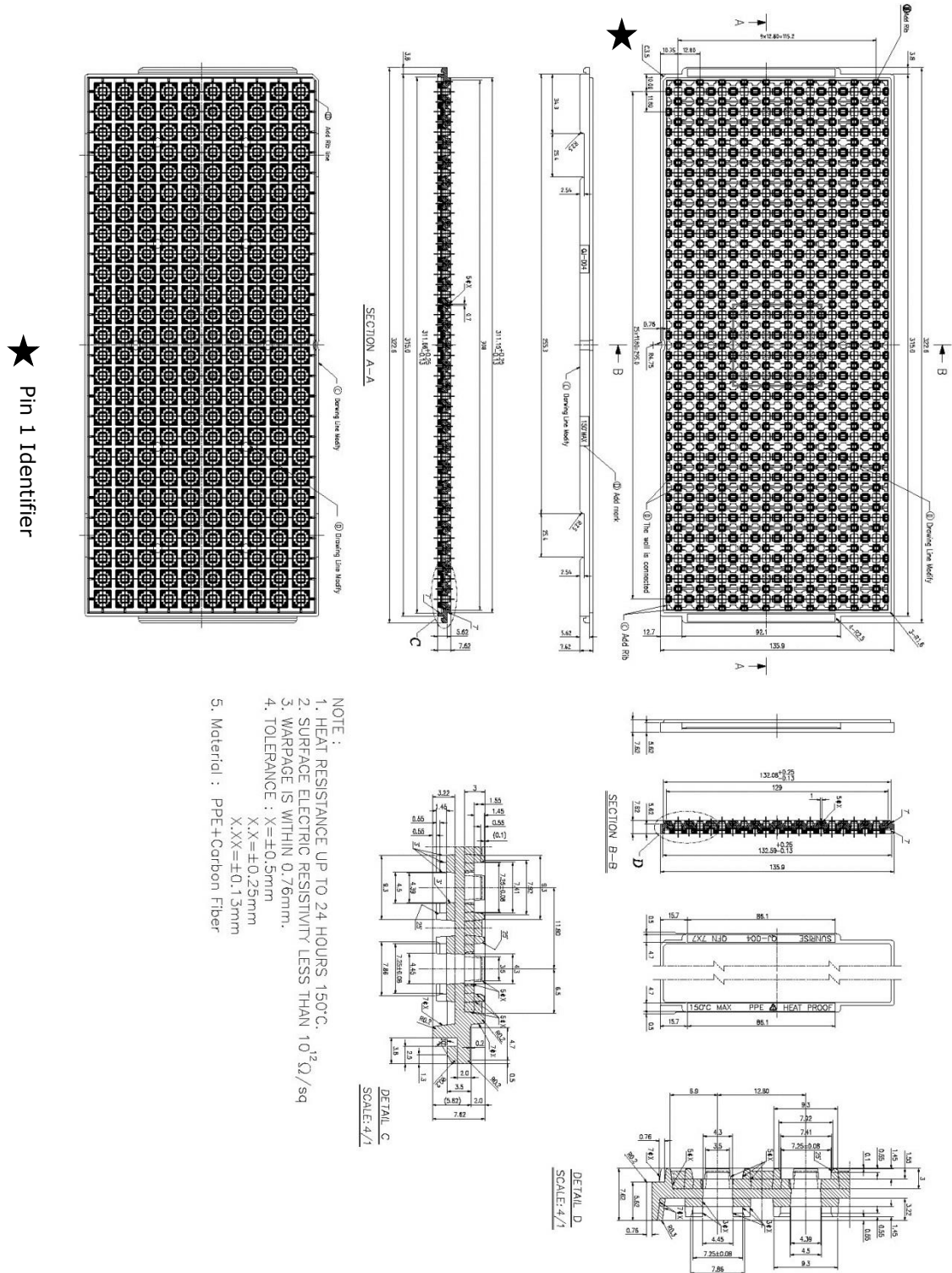


Figure 35.1 FT311D-32Q1C, FT312D-32Q1C, VNC2-32Q1C – QFN Tray Dimensions

36 FT200XD, FT234XD Reel Dimensions

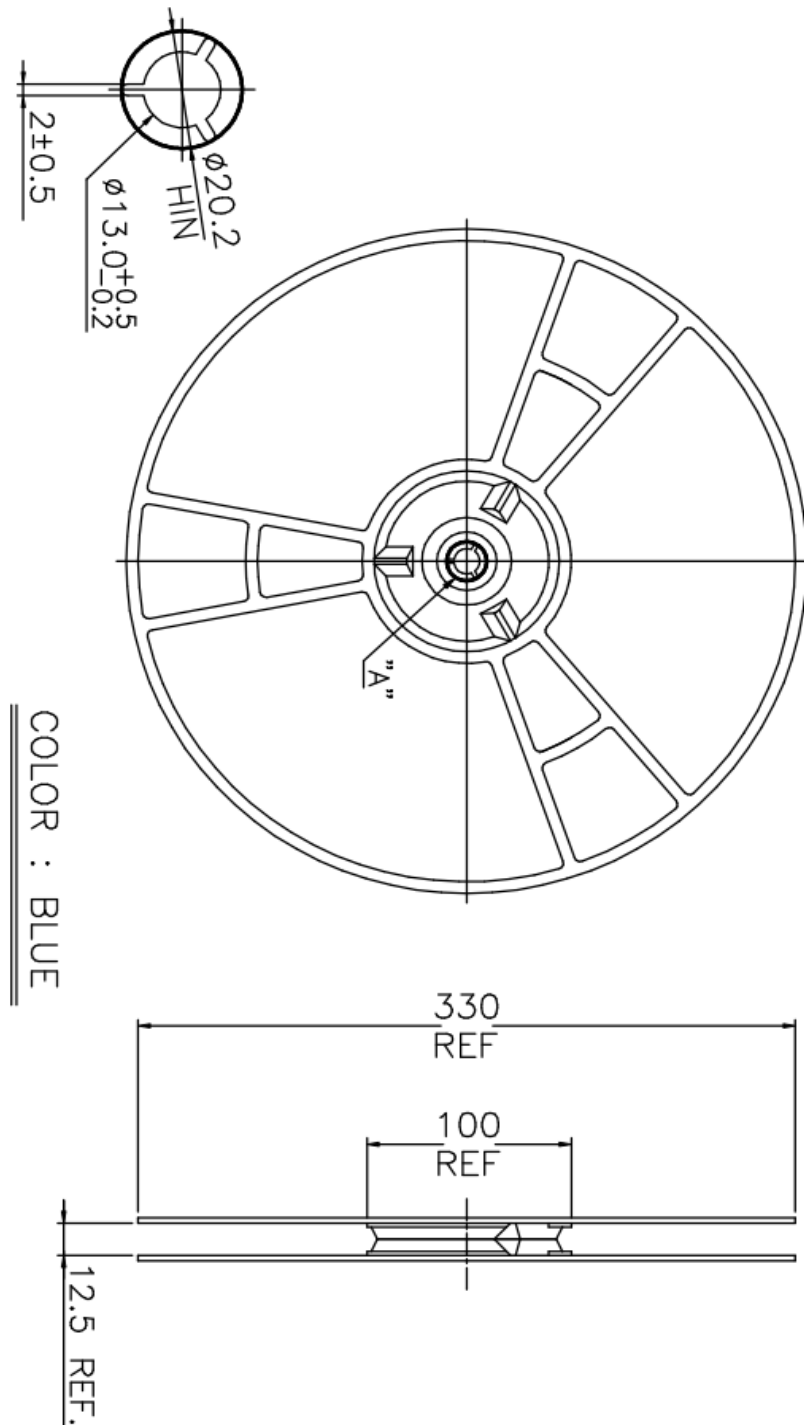
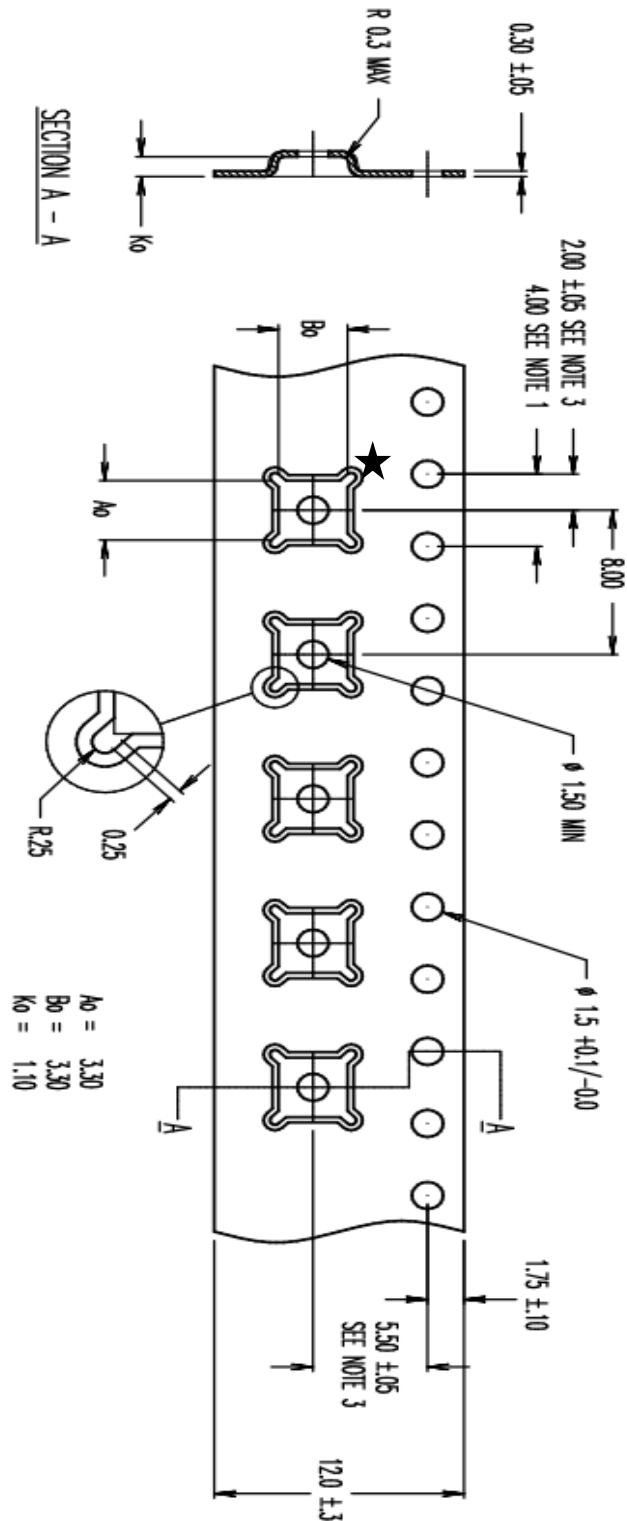


Figure 36.1 FT200XD, FT234XD Reel Dimensions

37 FT200XD, FT234XD Tape Dimensions

- Notes:
1. 10 sprocket hole pitch cumulative tolerance ± 0.2
 2. Camber not to exceed 1mm in 100mm.
 3. Material: Black Advantek Polystyrene.
 4. A_0 and B_0 measured on a plane 0.3mm above the bottom of the pocket.
 5. K_0 measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
 6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.
 7. Cover Tape width 9.3 ± 0.1 mm.



★ Pin 1 Identifier

Figure 37.1 FT200XD, FT234XD Tape Dimensions

39 FT201XQ, FT220XQ, FT221XQ, FT230XQ, FT231XQ, FT240XQ QFN Tape Dimensions

- Notes:
1. 10 sprocket hole pitch cumulative tolerance ± 0.2
 2. Camber not to exceed 1mm in 100mm.
 3. Material: Black Advantek Polystyrene.
 4. A_0 and B_0 measured on a plane 0.3mm above the bottom of the pocket.
 5. K_0 measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
 6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

★ Pin 1 Identifier

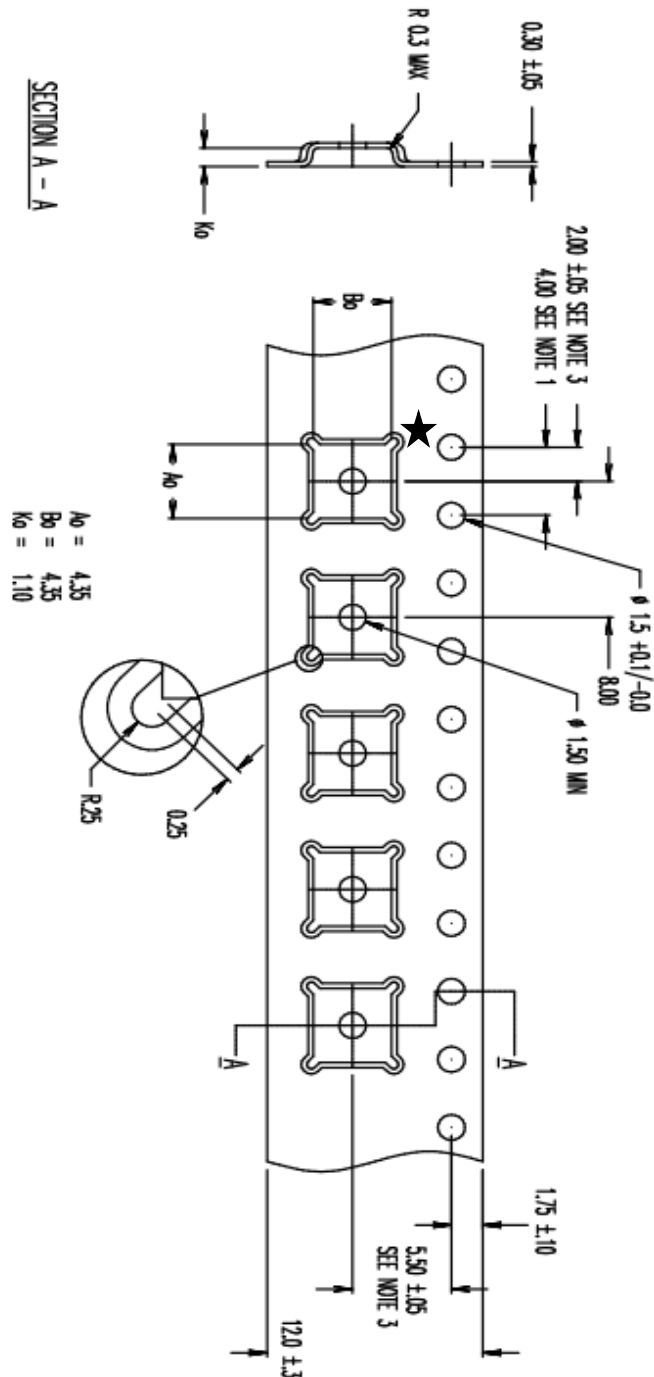


Figure 39.1 FT201XQ, FT220XQ, FT221XQ, FT230XQ, FT231XQ, FT240XQ QFN Tape Dimensions

40 FT201XQ, FT220XQ, FT230XQ SSOP Reel Dimensions

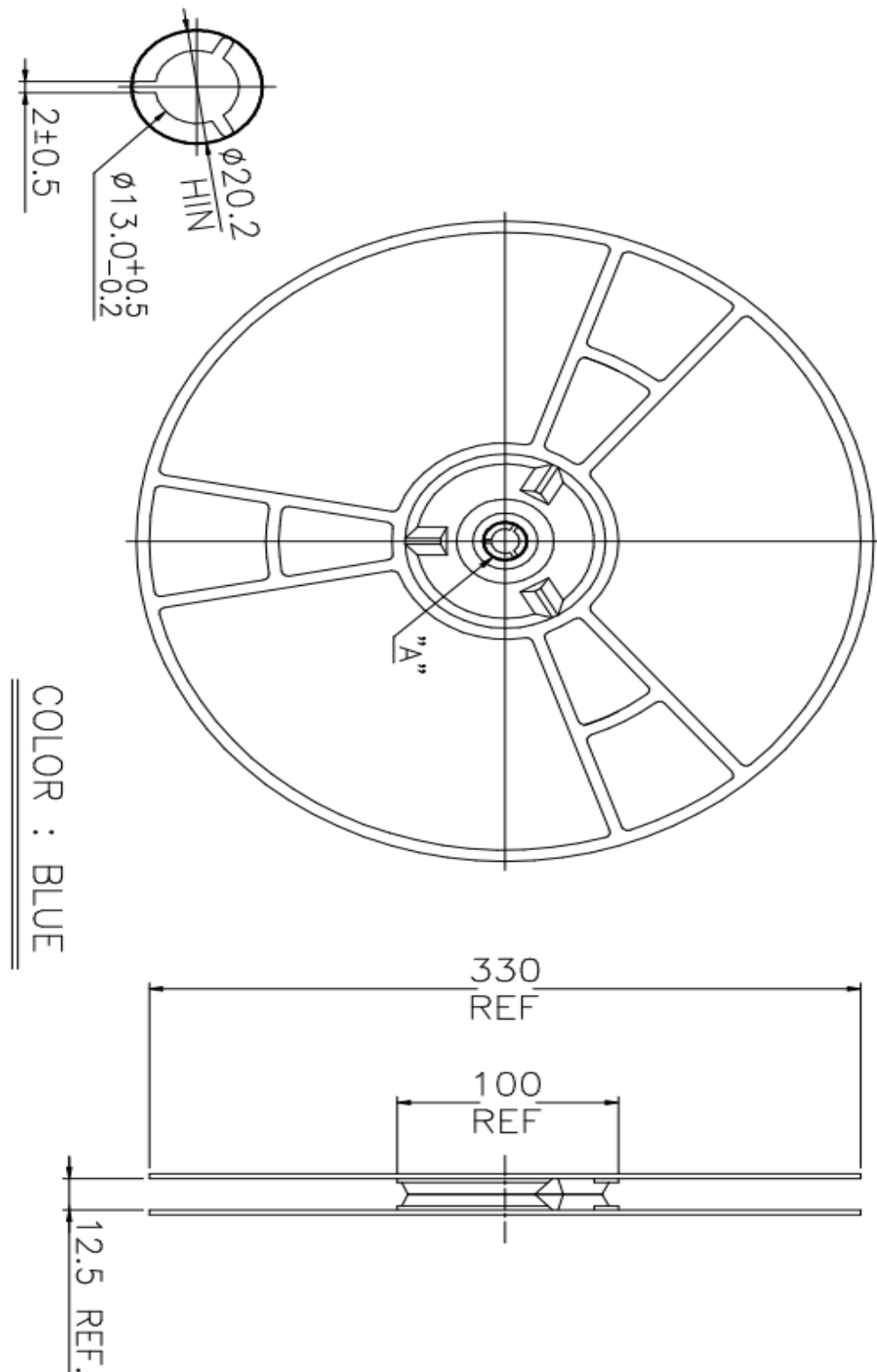


Figure 40.1 FT201XQ, FT220XQ, FT230XQ SSOP Reel Dimensions

42 FT221XQ, FT231XQ, FT240XQ SSOP Reel Dimensions

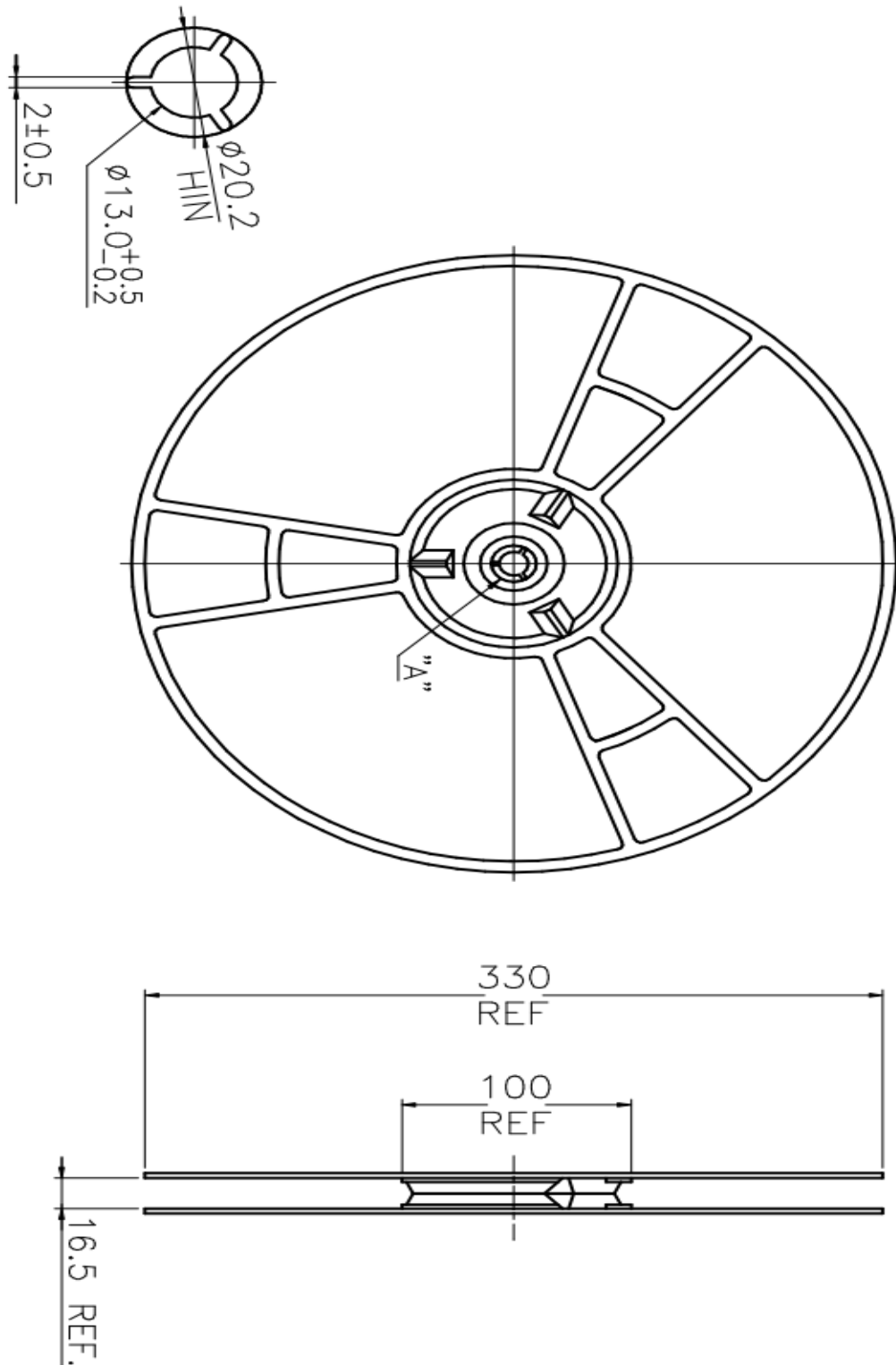
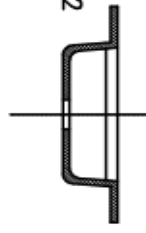
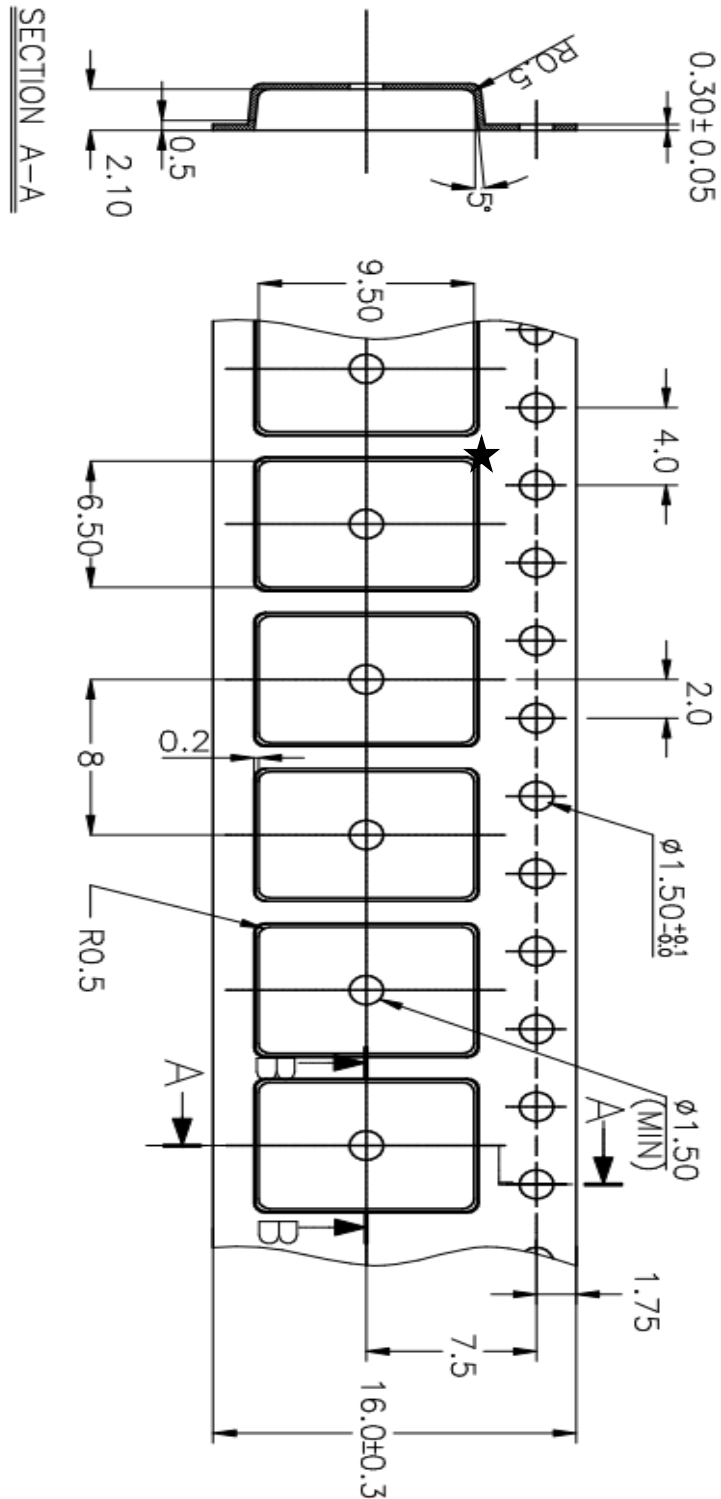


Figure 42.1 FT221XQ, FT231XQ, FT240XQ SSOP Reel Dimensions

43 FT221XQ, FT231XQ, FT240XQ SSOP Tape Dimensions



★ Pin 1 Identifier



44 FT120T TSSOP Reel Dimensions

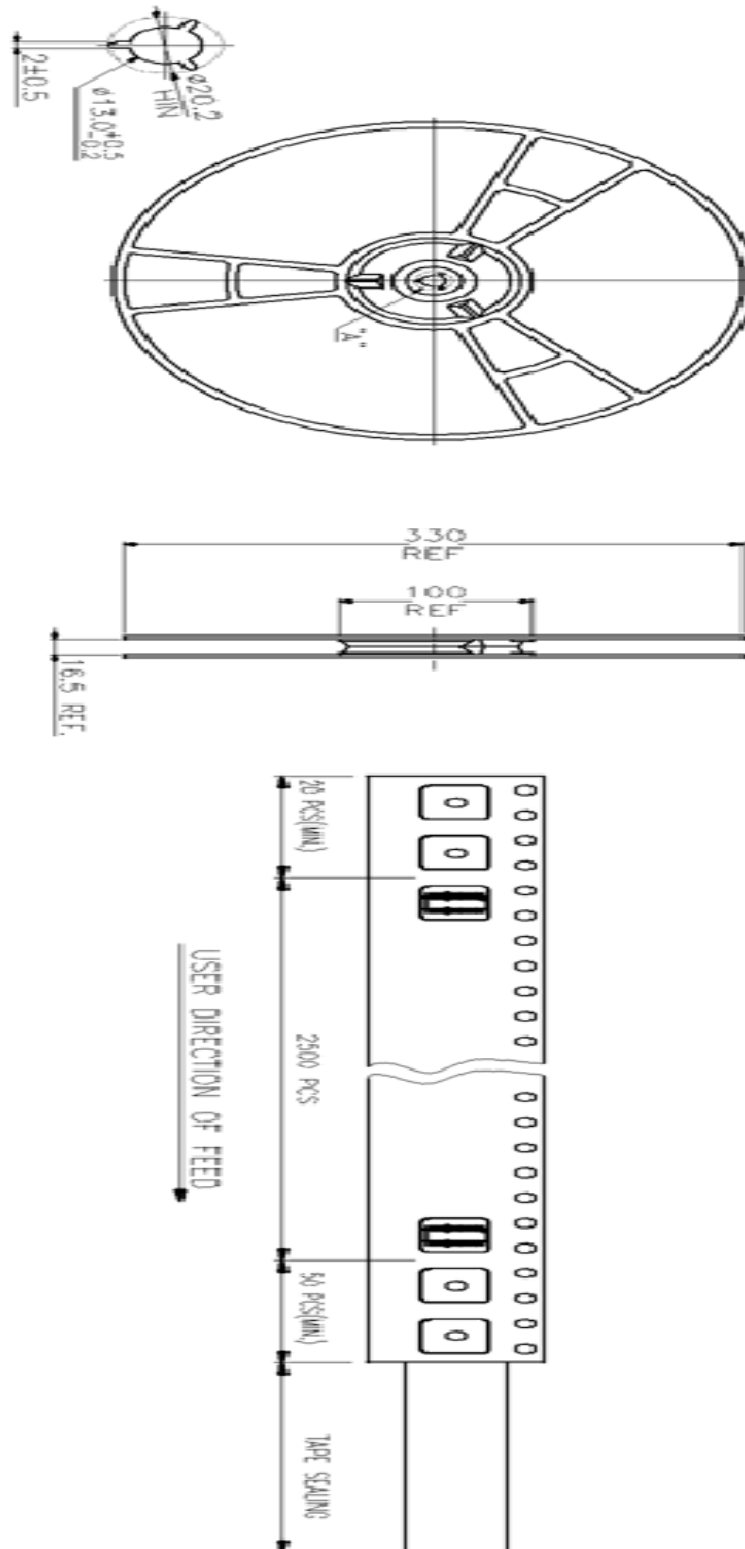


Figure 44.1 FT120T TSSOP Reel Dimensions

45 FT120T TSSOP Tube Dimensions

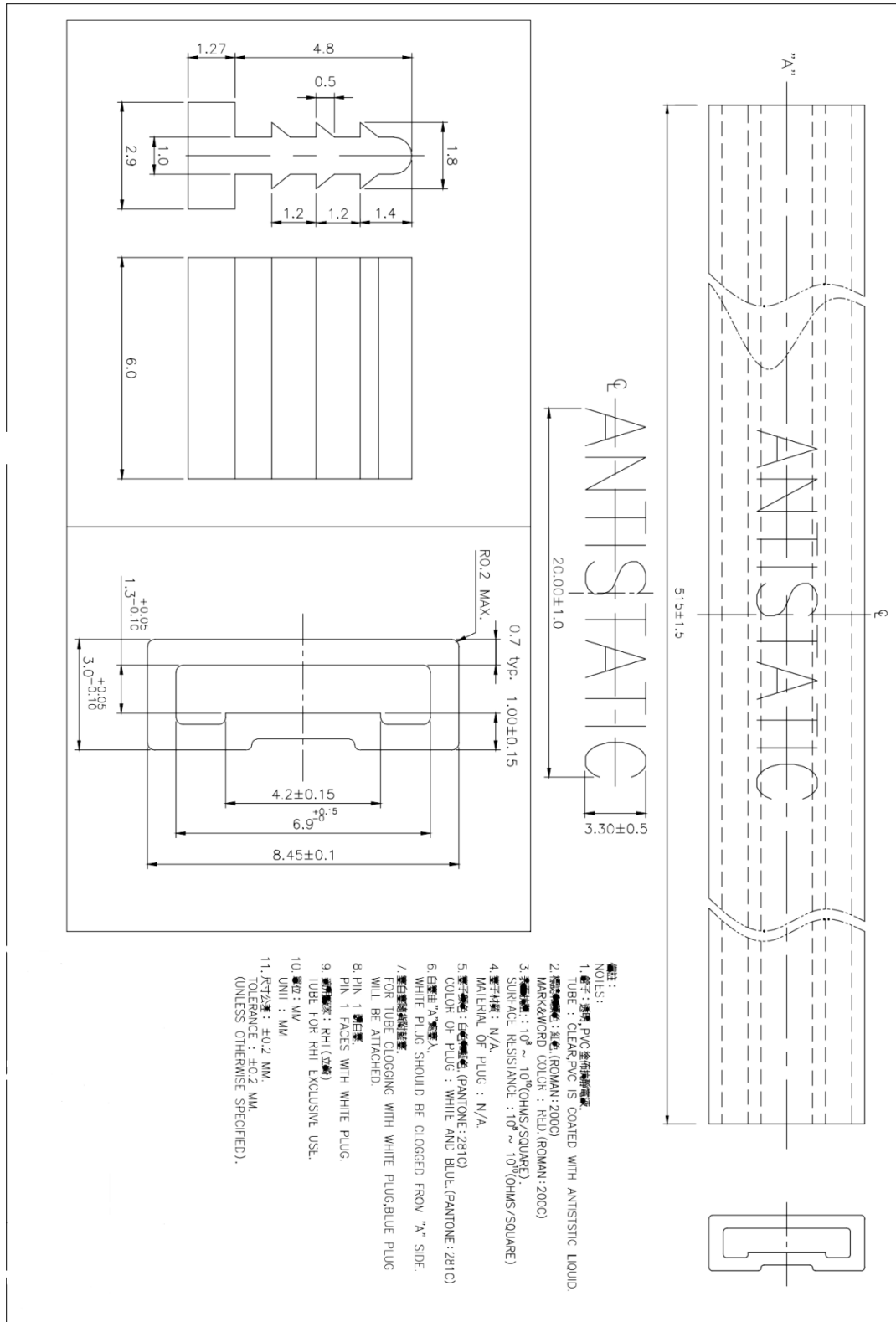


Figure 45.1 FT120T TSSOP Tube Dimensions

46 FT120T TSSOP Tape Dimensions

- NOTES:
1. TO SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ± 0.2
 2. CAMBER IN COMPLIANCE WITH EIA 481
 3. POCKET POSITION RELATIVE TO SPROCKET HOLE MEASURED AS TRUE POSITION OF POCKET, NOT POCKET HOLE

★ Pin 1 Identifier

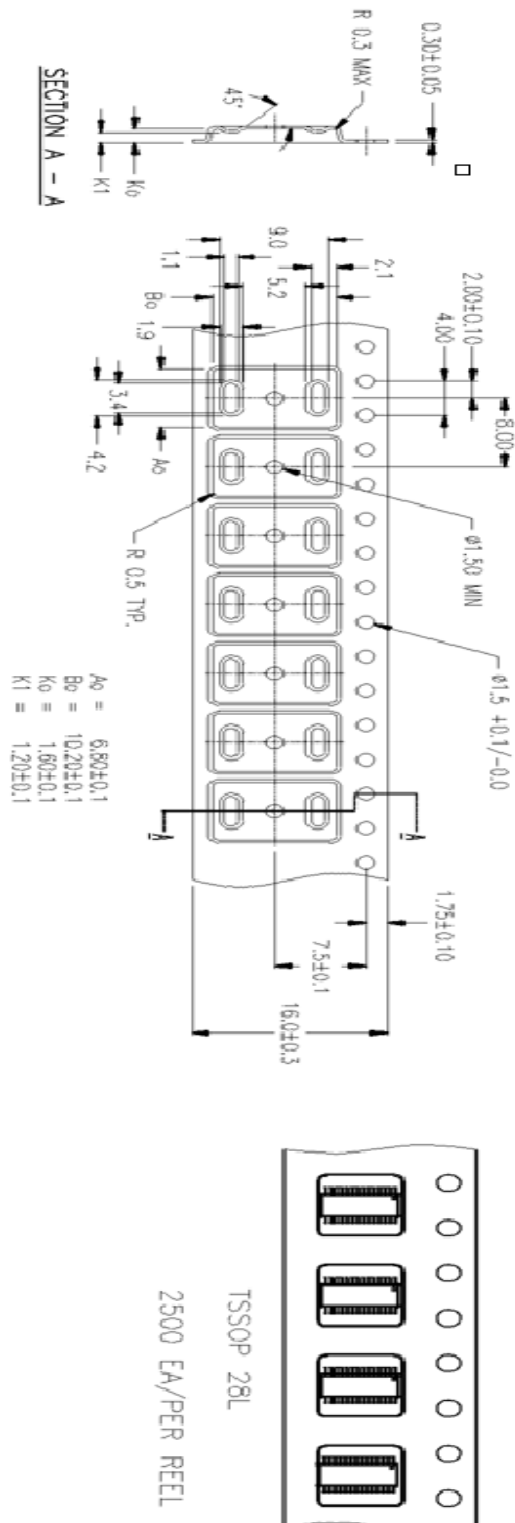


Figure 46.1 FT120T TSSOP Tape Dimensions

47 FT201XS, FT220XS, FT230XS, FT240XS Reel Dimensions

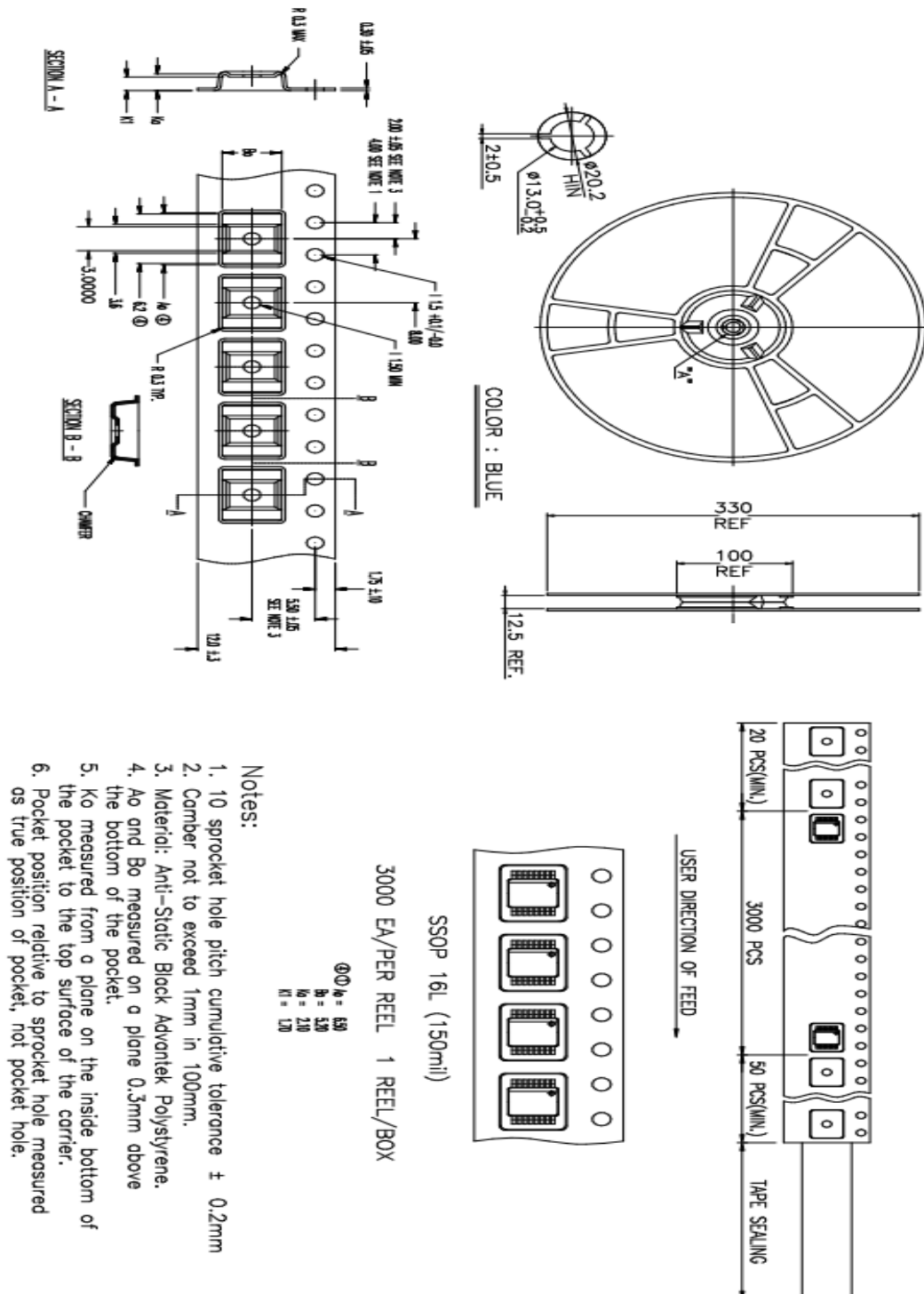


Figure 47.1 FT201XS, FT220XS, FT230XS, FT240XS Reel Dimensions

48 FT221XS, FT231XS Reel Dimensions

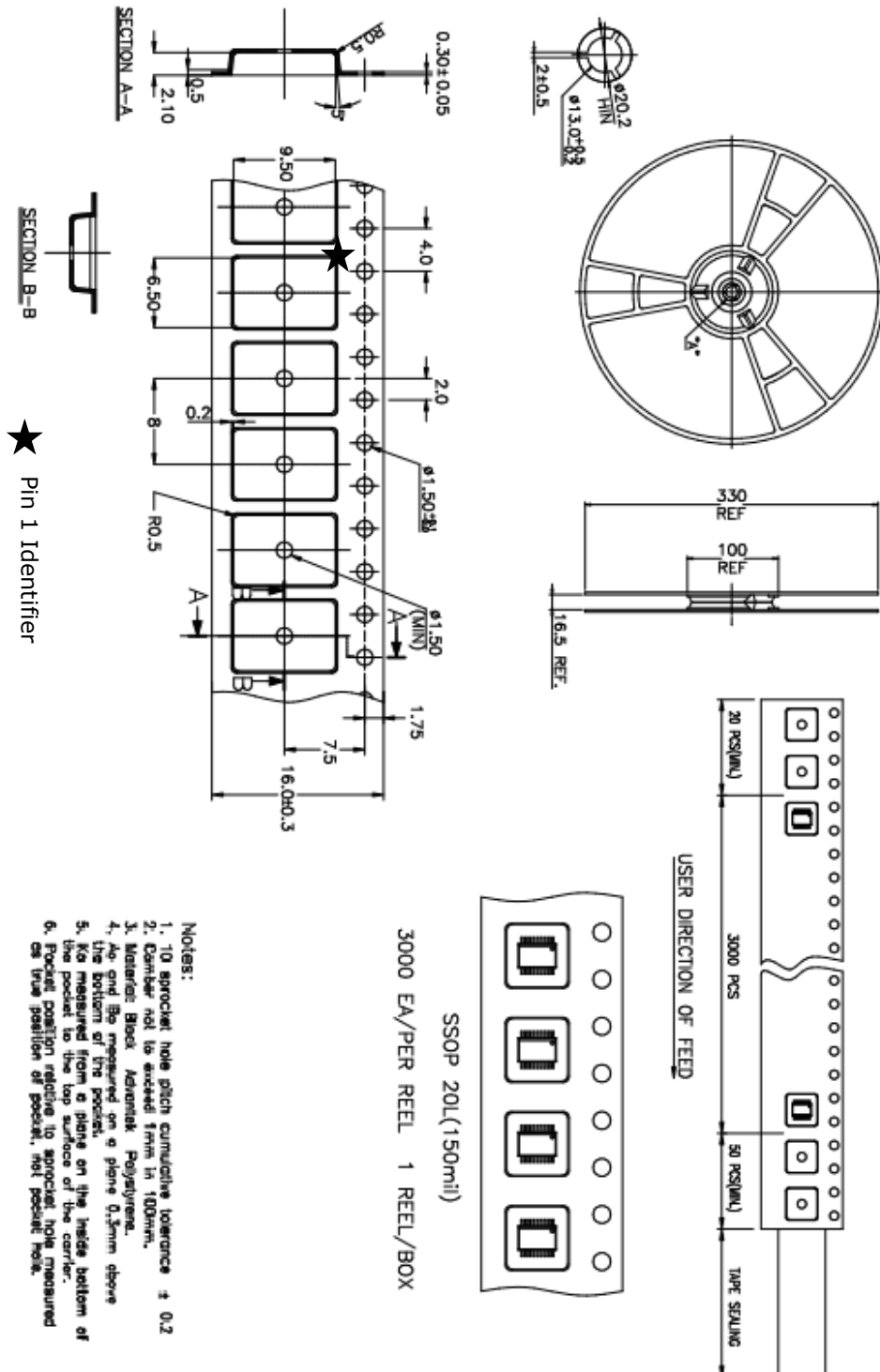


Figure 48.1 FT221XS, FT231XS Reel Dimensions

50 FT313H-QFN Reel Dimensions

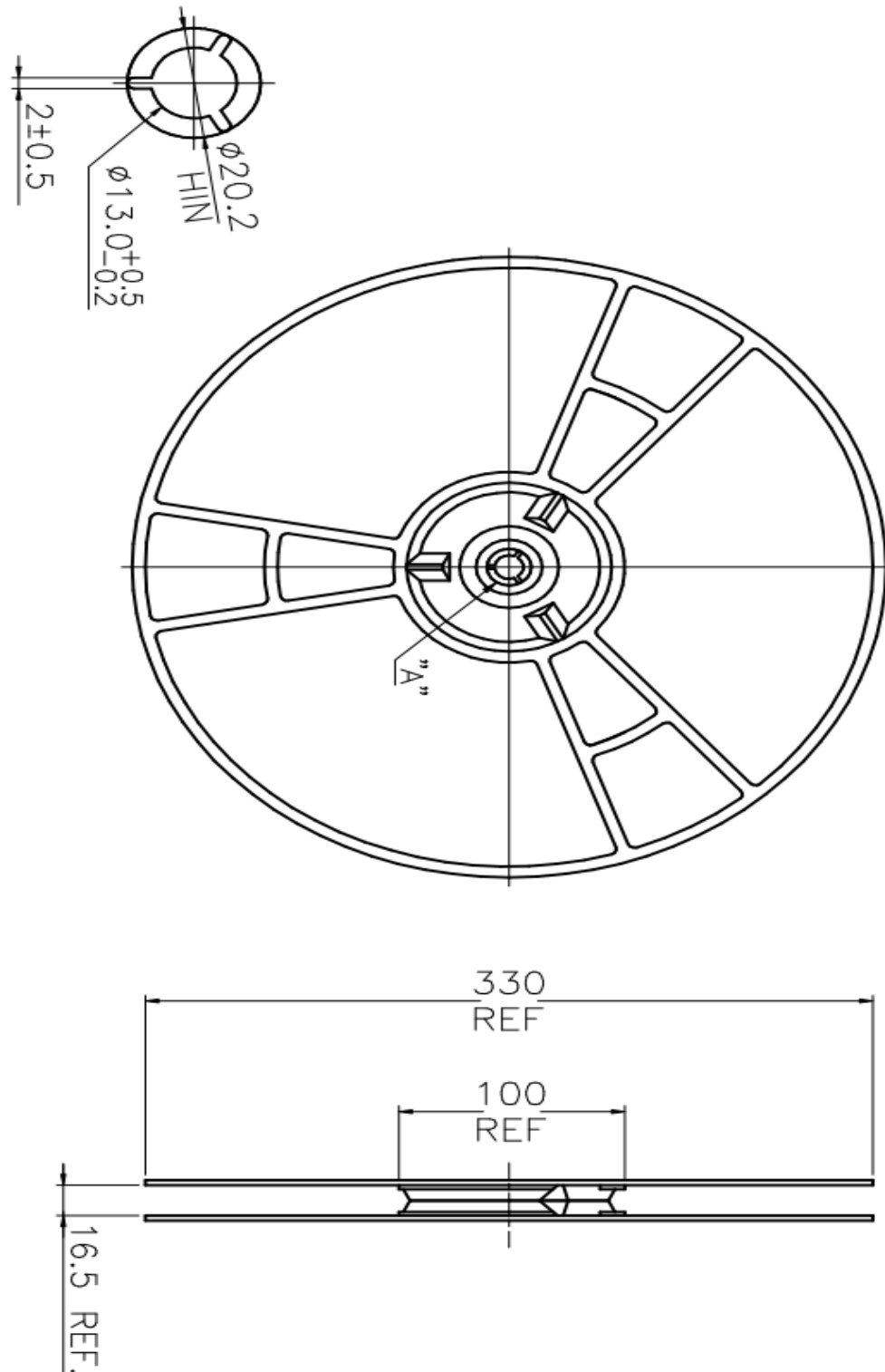


Figure 50.1 FT313H-QFN Reel Dimensions

51 FT313H-QFN Tape Dimensions

★ Pin 1 Identifier

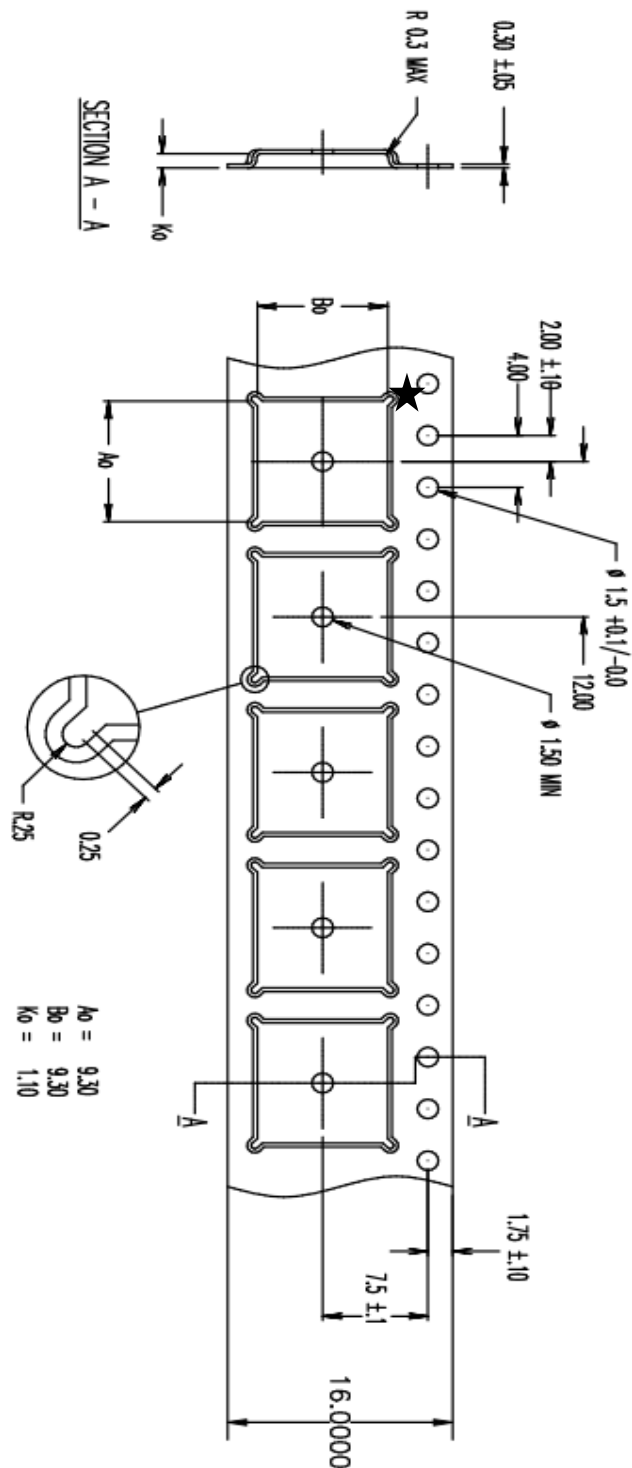


Figure 51.1 FT313H-QFN Tape Dimensions

52 FT313H-LQFP Reel Dimensions

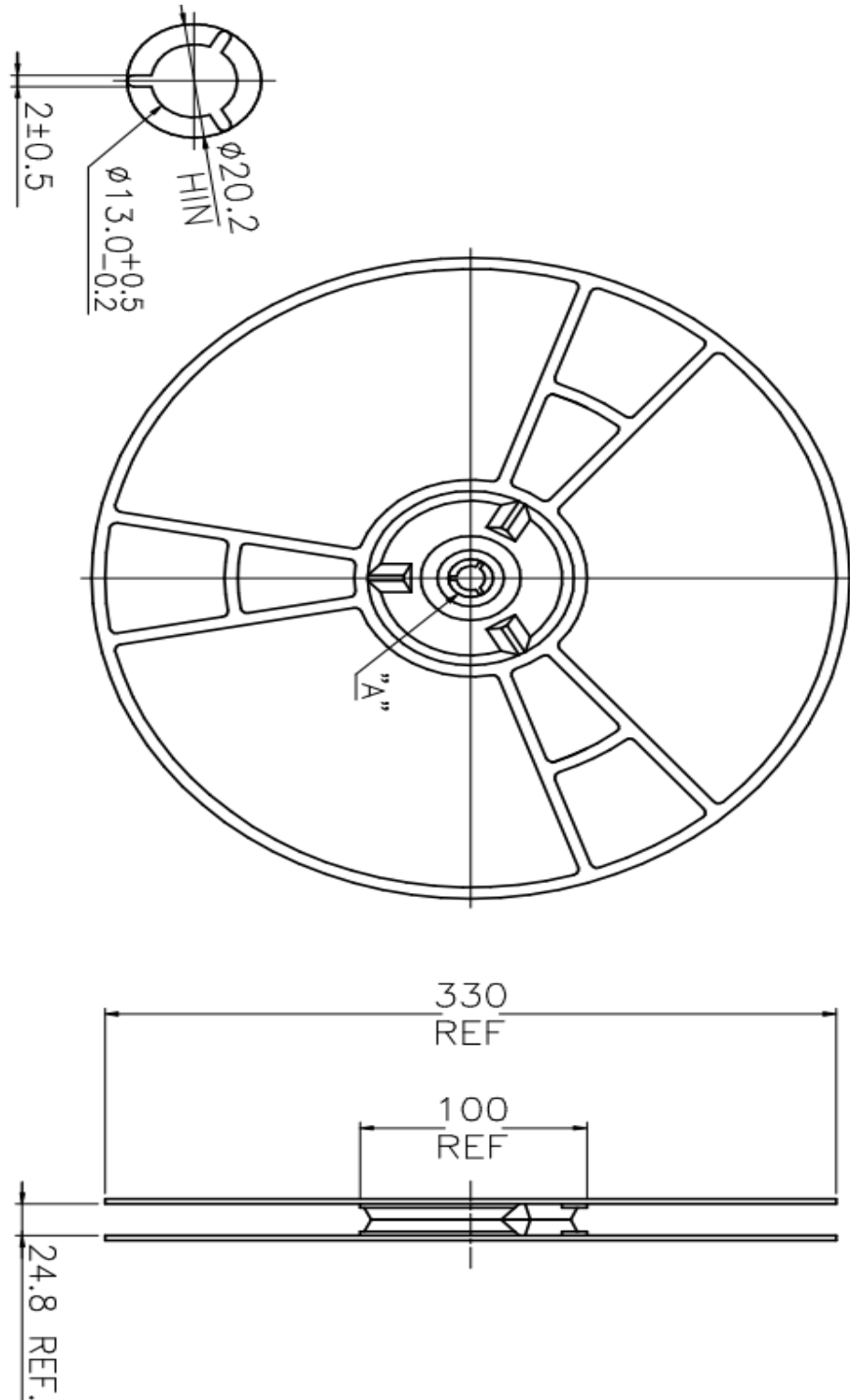


Figure 49.1 FT313H-LQFP Reel Dimensions

53 FT313H-LQFP Tape Dimensions

- NOTES:
1. TO SPROCKET HOLE PITCH CUMULATIVE TOLERANCE ± 0.2
 2. CAMBER IN COMPLIANCE WITH EA 481
 3. POCKET POSITION RELATIVE TO SPROCKET HOLE MEASURED AS TRUE POSITION OF POCKET, NOT POCKET HOLE
 4. COVER TAPE WIDTH : 21.3 ± 0.1

★ Pin 1 Identifier

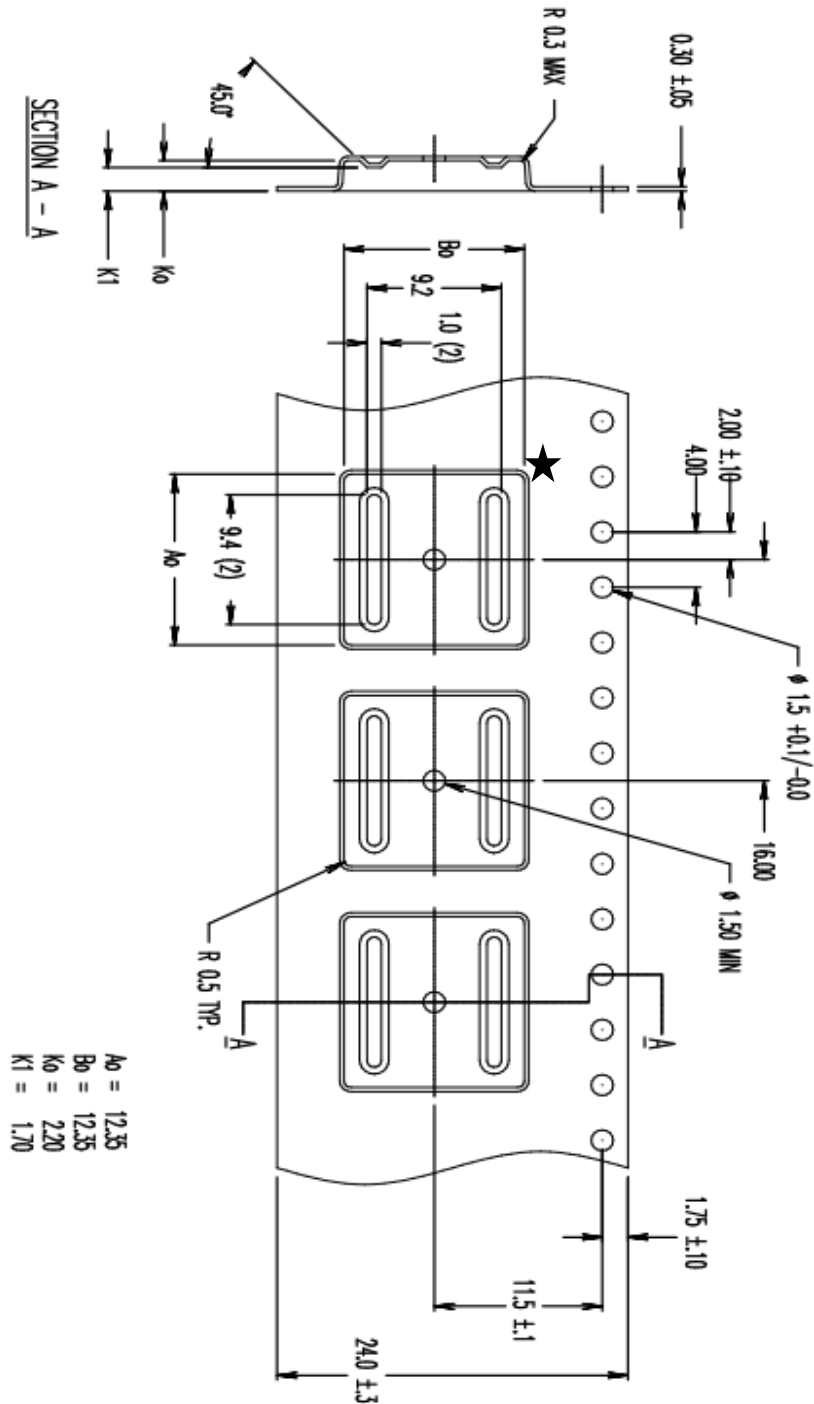


Figure 53.1 FT313H-LQFP Tape Dimensions

54 FT313H-TQFP Reel Dimensions

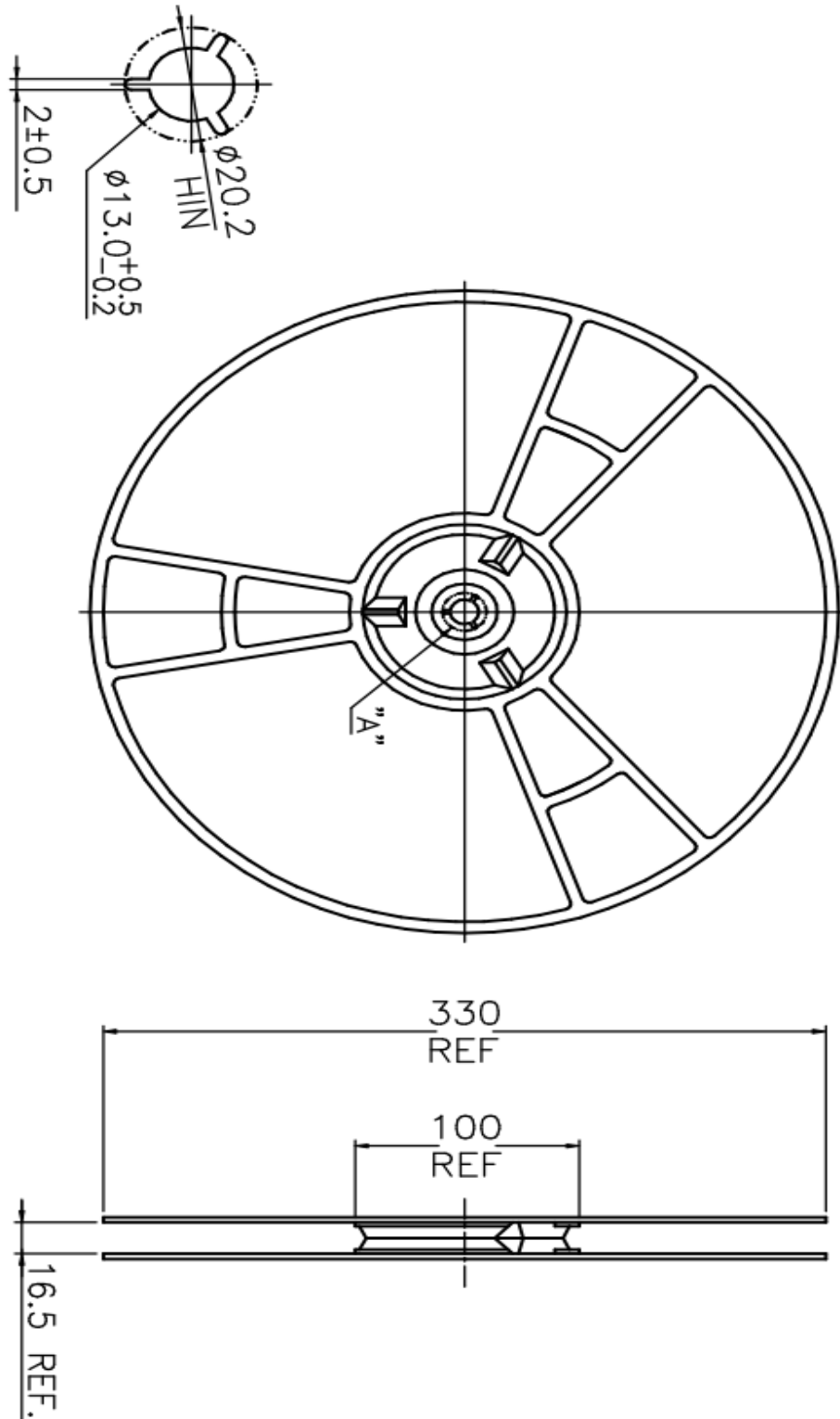


Figure 54.1 FT313H-TQFP Reel Dimensions

55 FT313H-TQFP Tape Dimensions

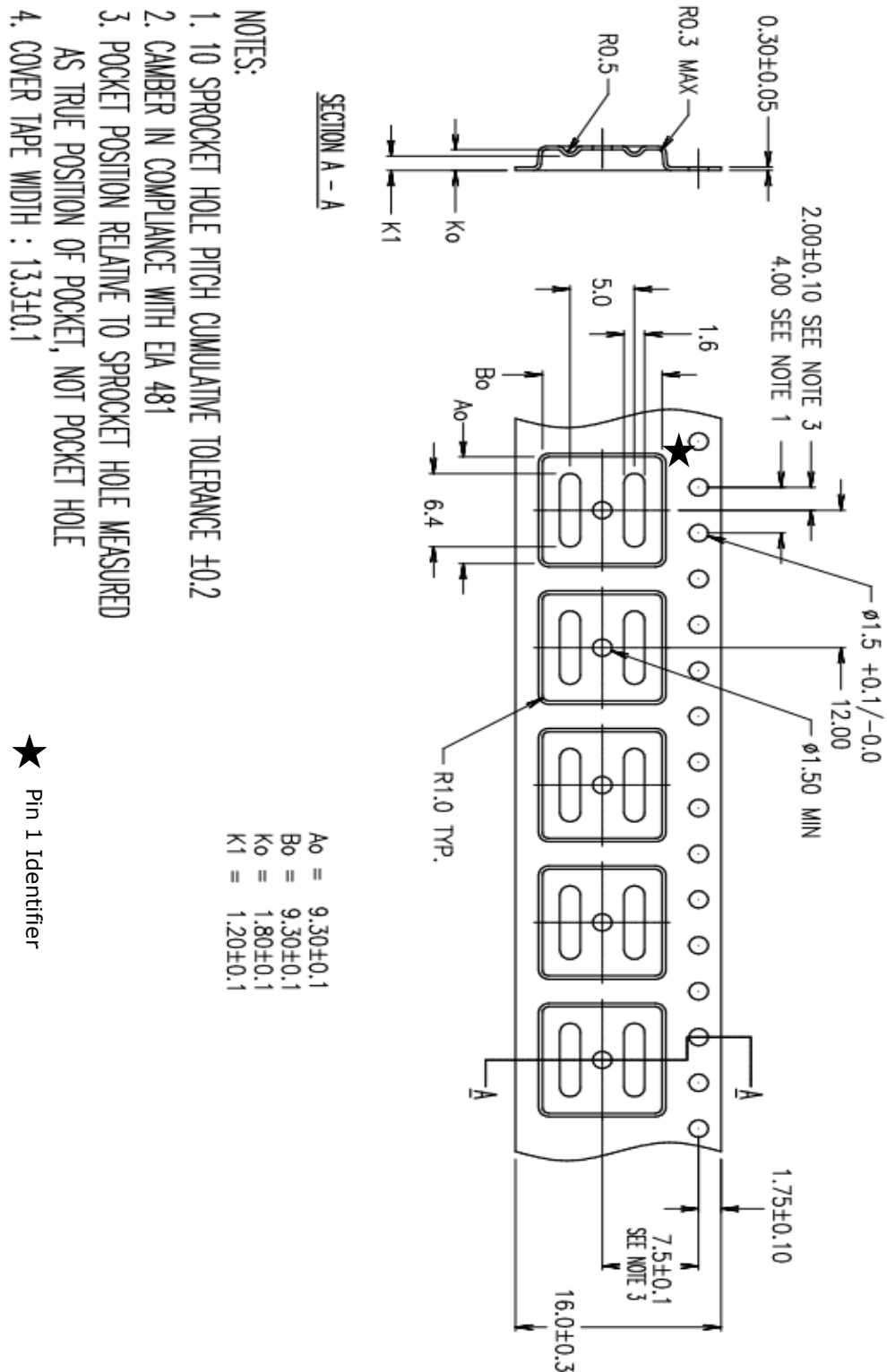


Figure 55.1 FT313H-TQFP Tape Dimensions

56 FT600Q Reel Dimensions

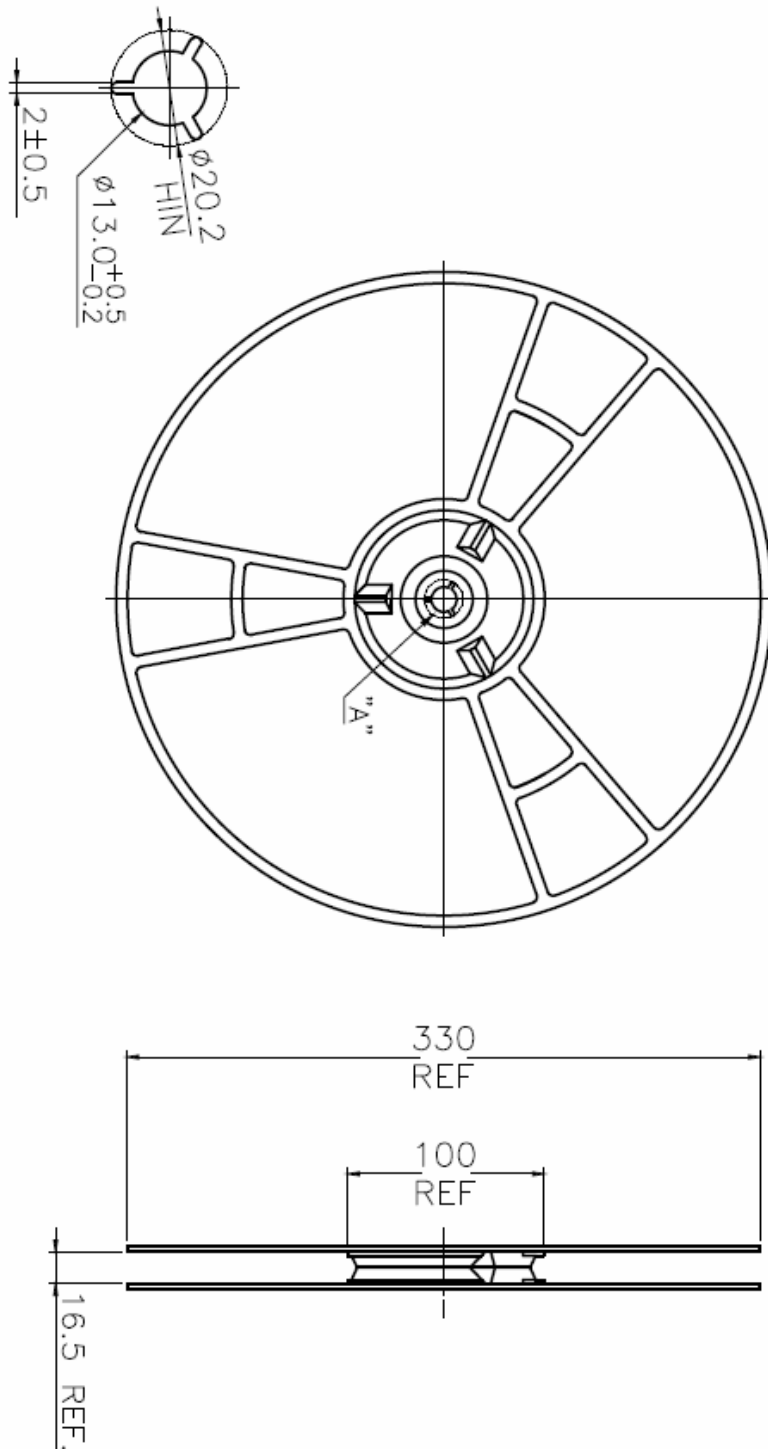
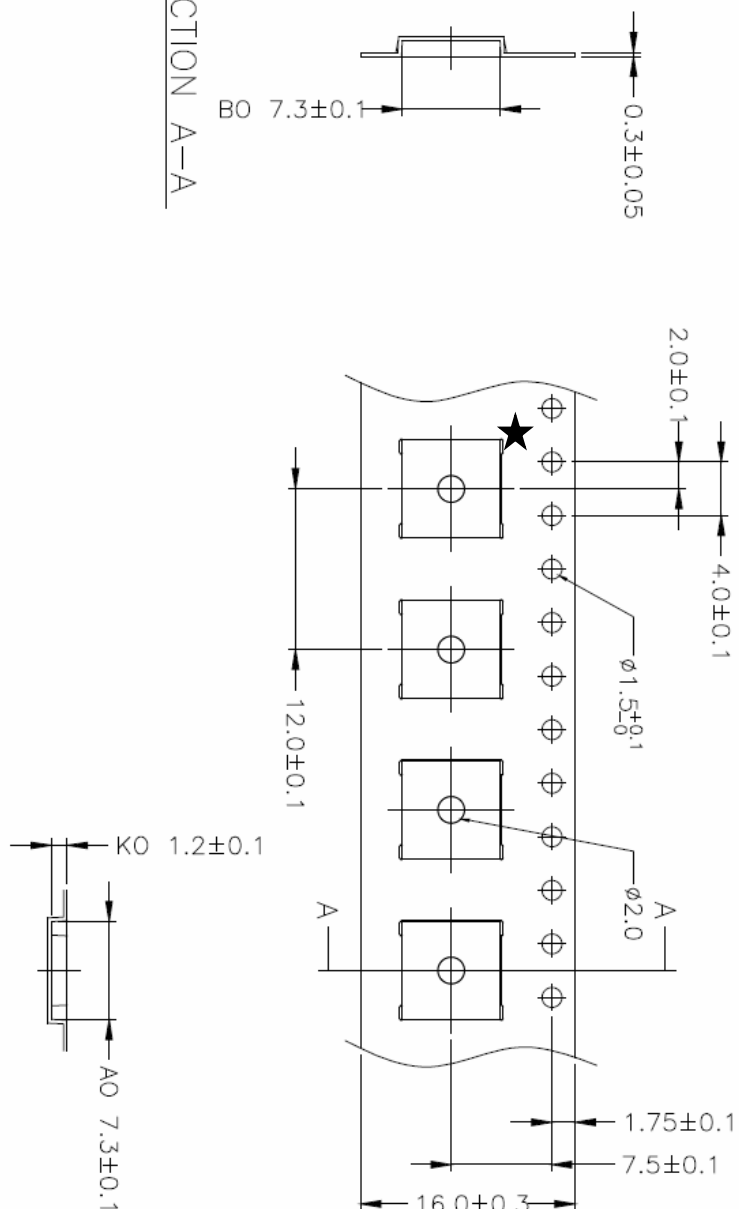


Figure 56.1 FT600Q Reel Dimensions

57 FT600Q Tape Dimensions

NOTES:

SECTION A-A



★ Pin 1 Identifier

Figure 57.1 FT600Q Tape Dimensions

58 FT601Q, FT602Q Reel Dimensions

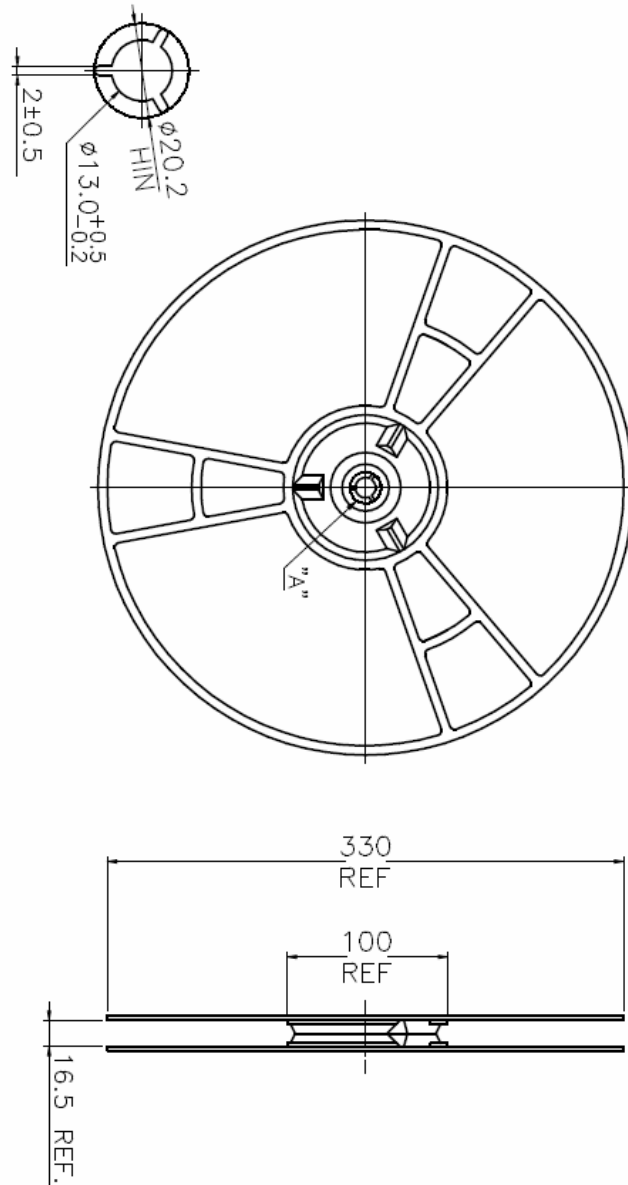


Figure 58.1 FT601Q, FT602Q Reel Dimensions

59 FT601Q, FT602Q Tape Dimensions

- Notes:
1. 10 sprocket hole pitch cumulative tolerance ± 0.2
 2. Camber not to exceed 1mm in 100mm.
 3. Material: Black Advantek Polystyrene.
 4. A_0 and B_0 measured on a plane 0.3mm above the bottom of the pocket.
 5. K_0 measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
 6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

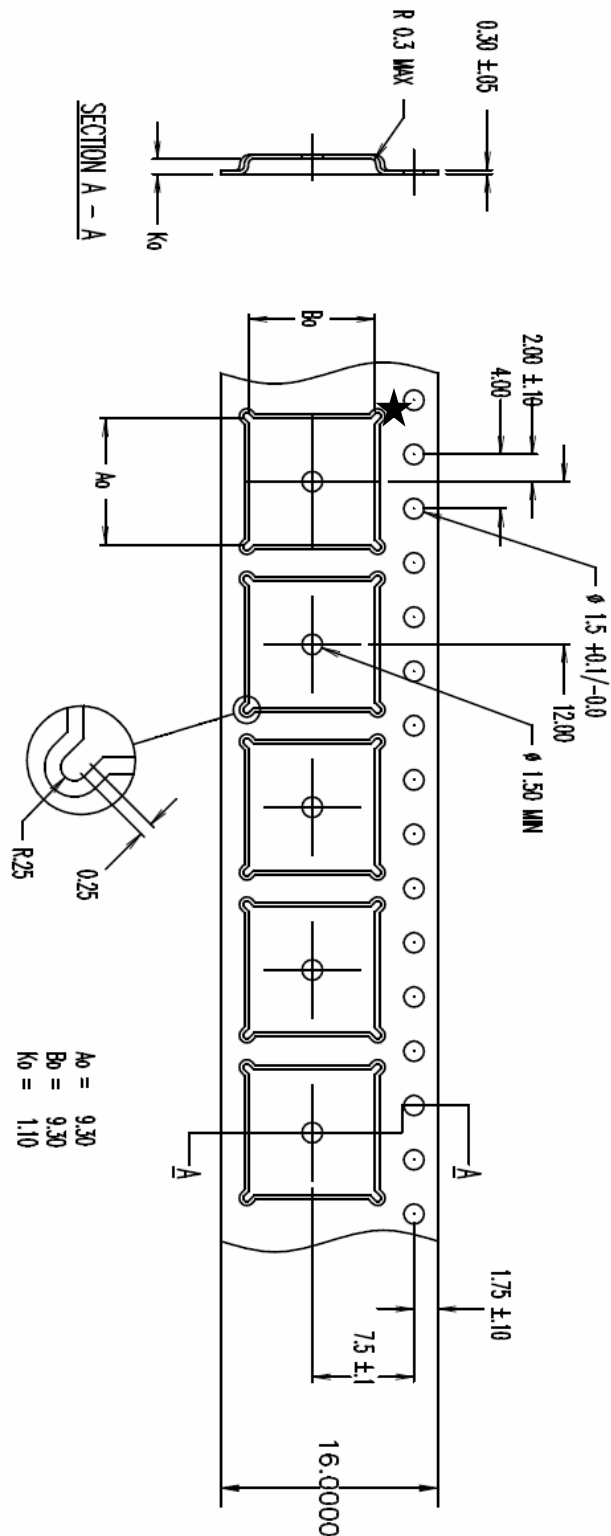


Figure 59.1 FT601Q, FT602Q Tape Dimensions

★ Pin 1 Identifier

60 FT601Q, FT602Q Tray Dimensions

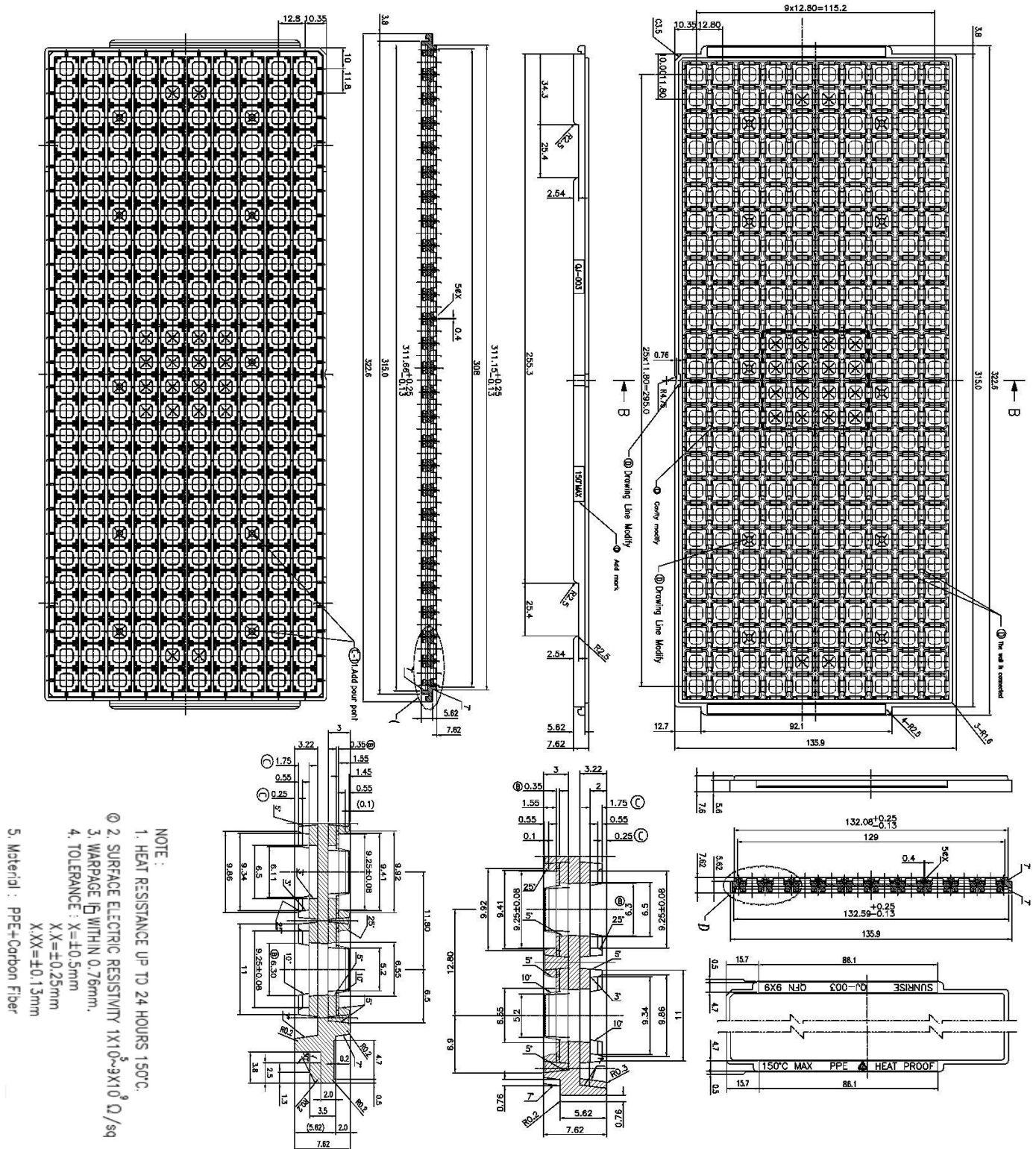


Figure 60.1 FT601Q, FT602Q Tray Dimensions

61 FT4222HQ Reel Dimensions

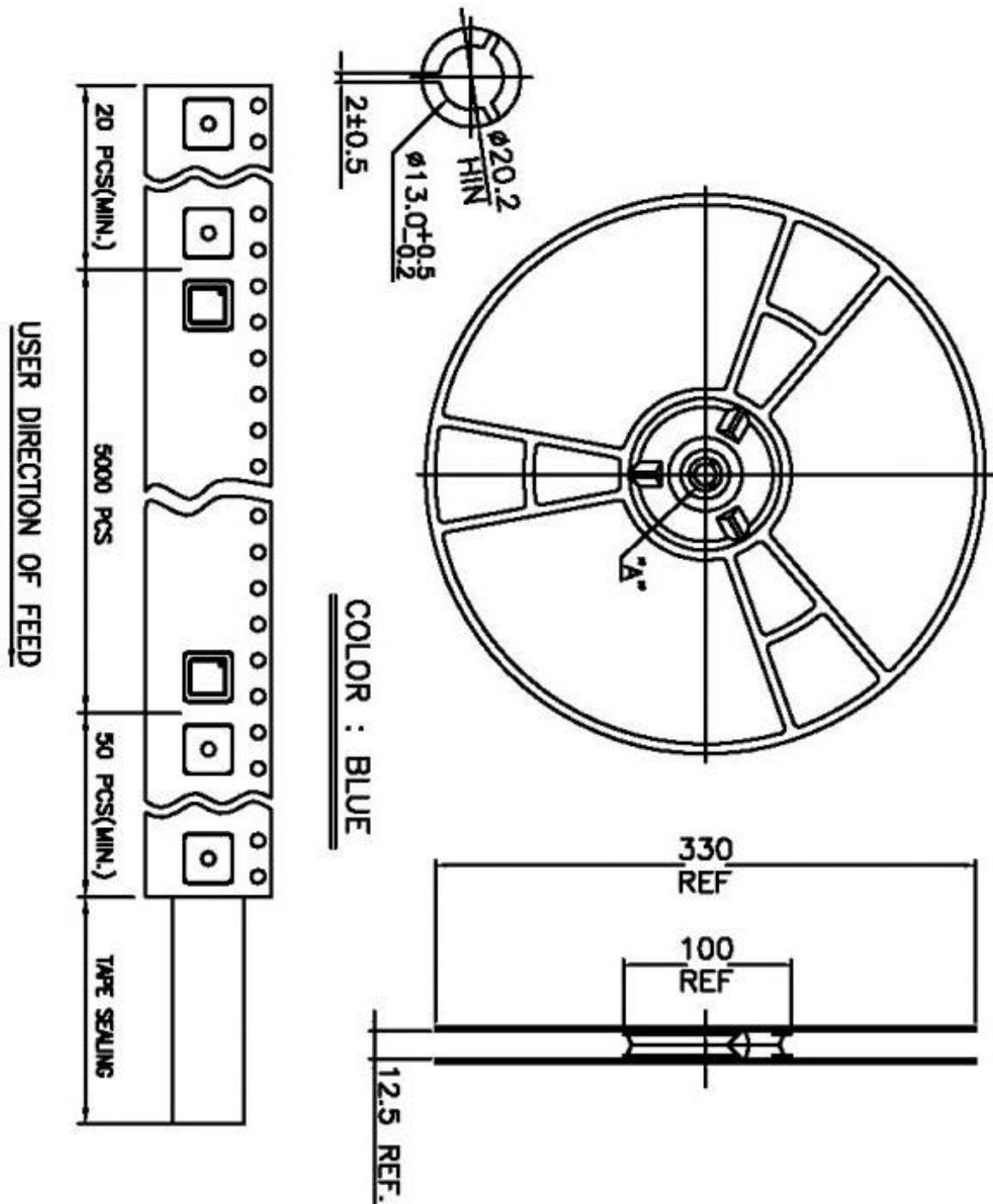


Figure 61.1 FT4222HQ Reel Dimensions

63 FT4222HQ Tray Dimensions

- NOTES:**
1. (S.R. OHMSQ) MEANS SURFACE ELECTRIC RESISTIVITY OF THE TRAY.
 2. THE MOLDED TRAY'S MATERIAL SHALL BE RIGID ENOUGH TO AVOID DAMAGE TO THE COMPONENTS DURING HANDLING, LOADING, PACKING, TESTING, SHIPPING AND PLACING.
 3. TRAYS ARE STACKABLE WITHOUT INTERFERENCE AND WILL NOT STICK TOGETHER DURING UNSTACKING OPERATION.
 4. WARPAGE IS WITHIN 0.76 mm.
 5. THE CELLS MARKED WITH CROSS SYMBOL ARE FOR VACUUM PICKUP AREA AND WITHOUT THRU HOLES.
 6. TOTAL USABLE CELLS 14X35=490.
 7. ALL DIMENSIONS ARE IN MILLIMETERS.

★ Pin 1 Identifier

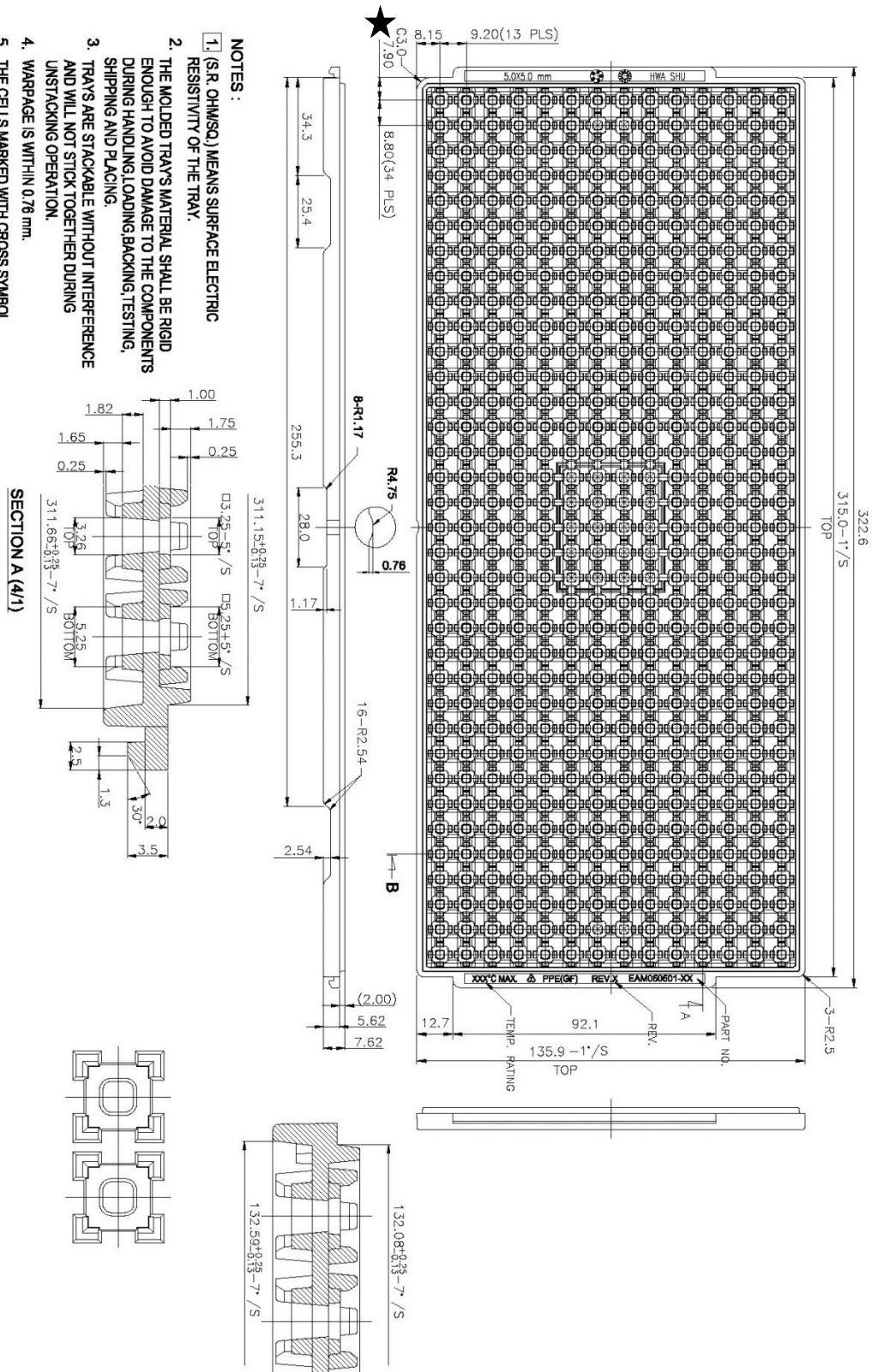


Figure 63.1 FT4222HQ Tray Dimensions

64 FT260Q Tray Dimensions

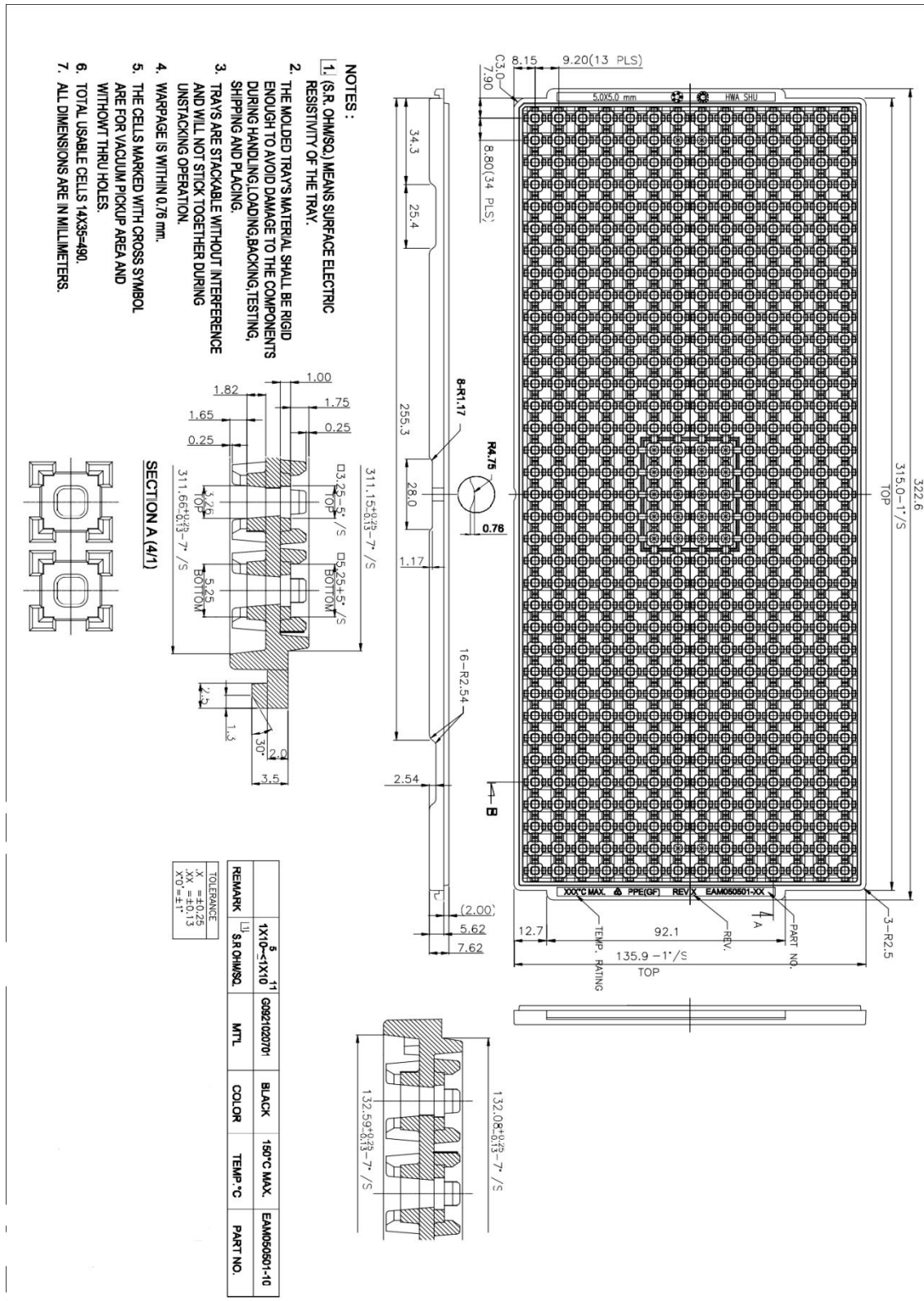


Figure 64.1 FT260Q Tray Dimensions

65 FT260Q Reel Dimensions

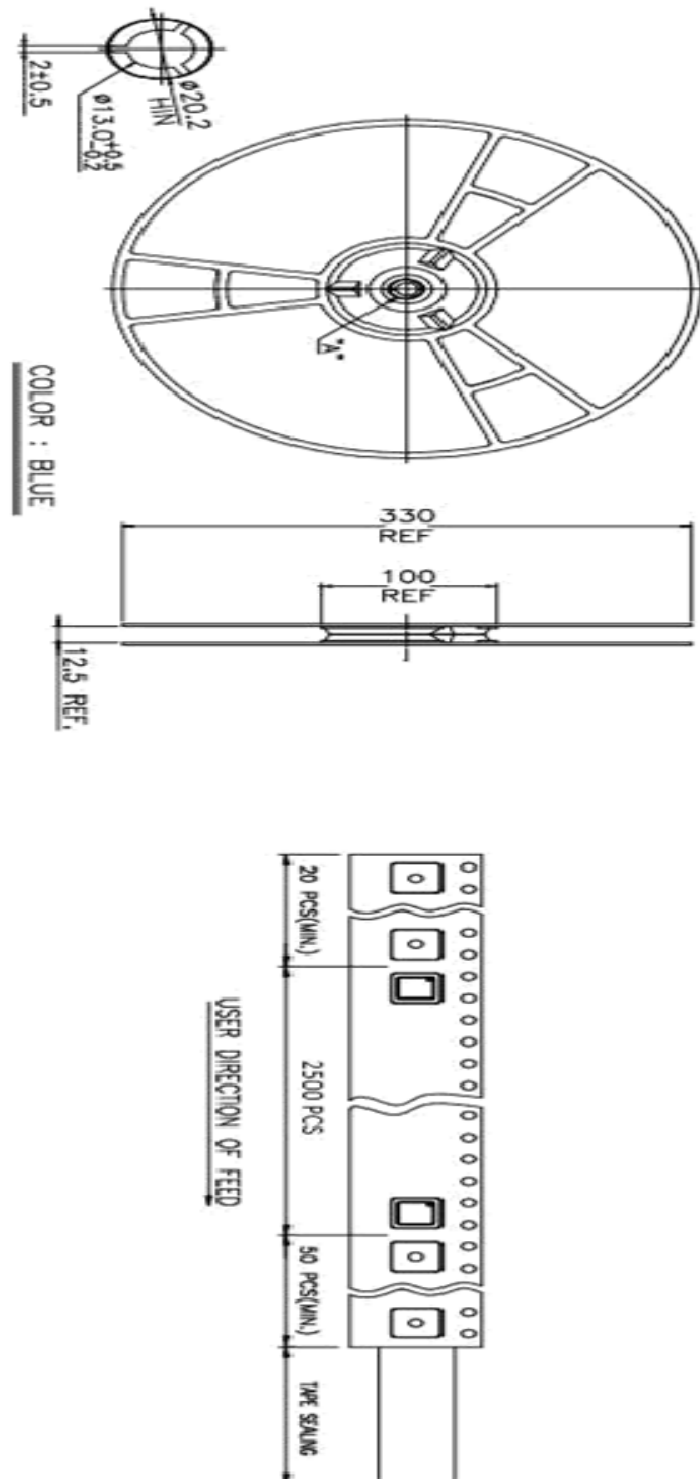


Figure 65.1 FT260Q Reel Dimensions

66 FT260Q Tape Dimensions

- Notes:
1. 10 sprocket hole pitch cumulative tolerance ± 0.2
 2. Carrier not to exceed 1mm in 100mm.
 3. Material: Block Advantek Polystyrene.
 4. A_0 and B_0 measured on a plane 0.3mm above the bottom of the pocket.
 5. K_0 measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
 6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

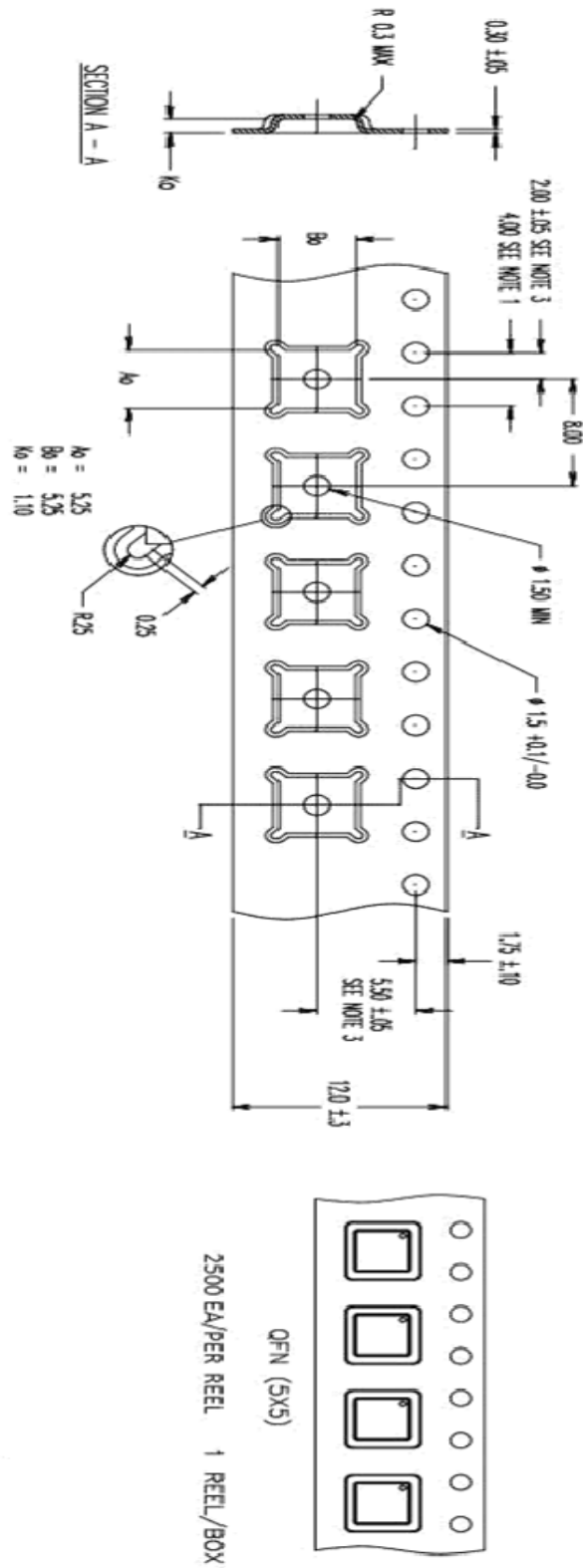


Figure 66.1 FT260Q Tape Dimensions

67 FT260S Reel Dimensions

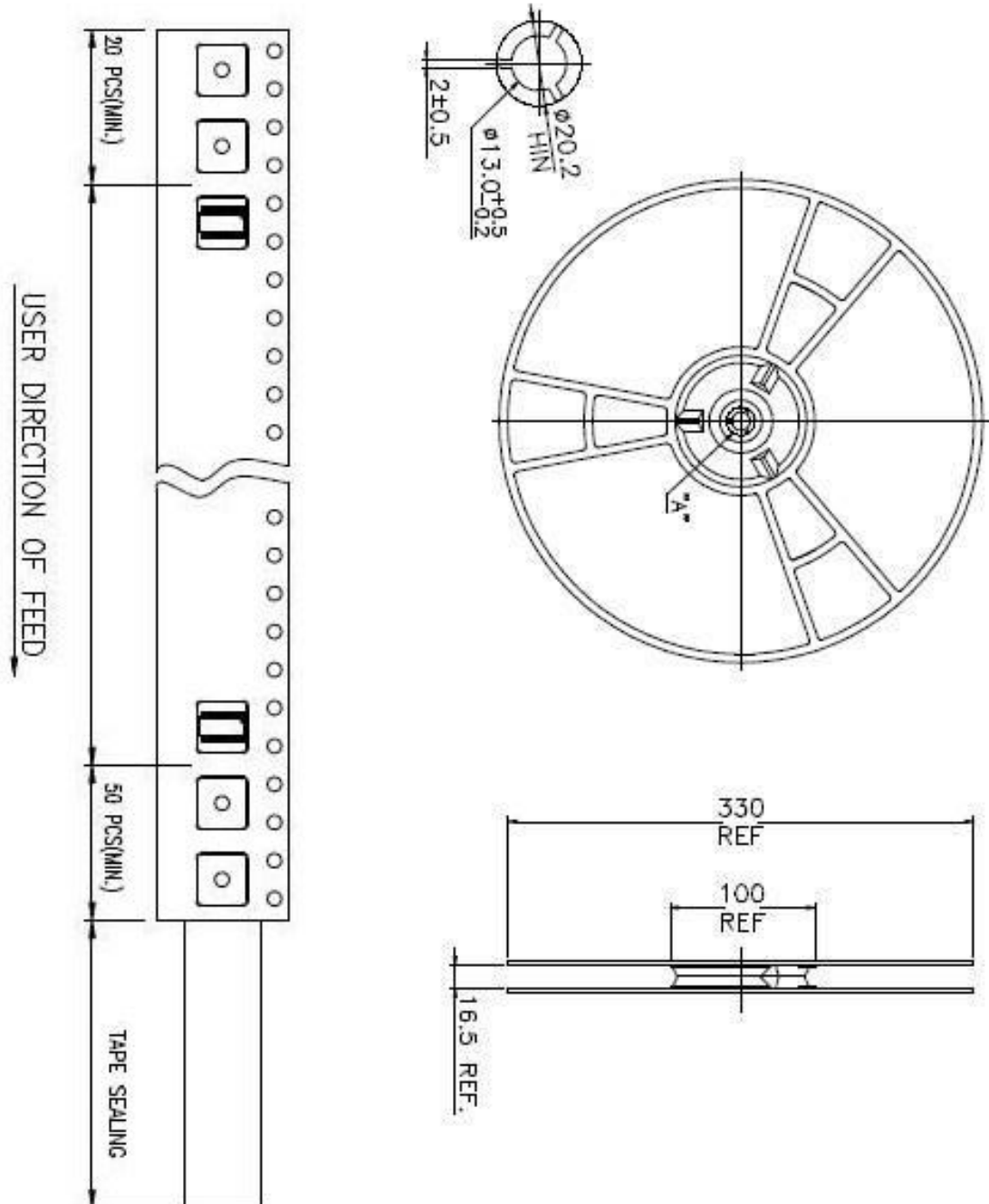


Figure 67.1 FT260S Reel Dimensions

68 FT260S Tape Dimensions

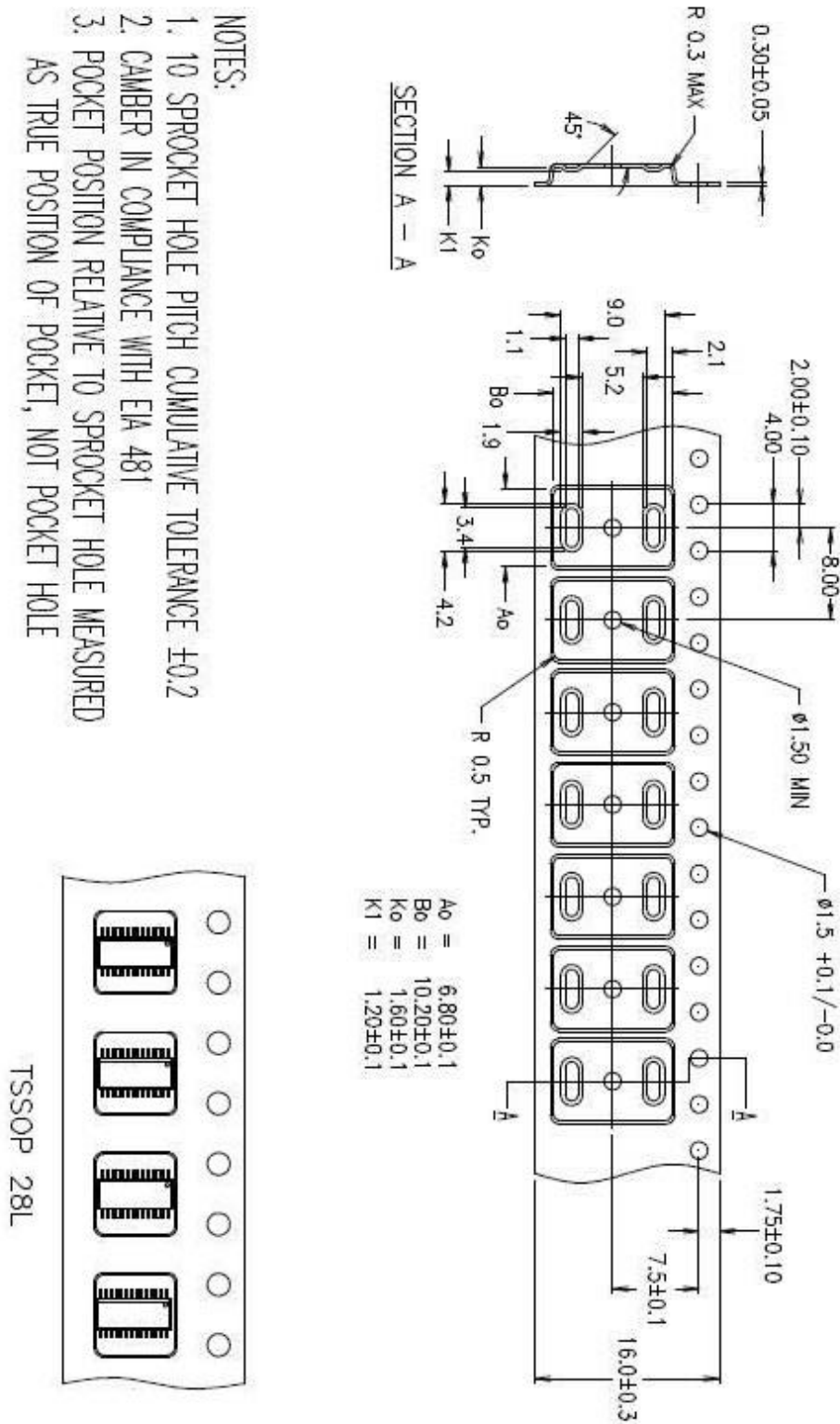


Figure 68.1 FT260S Tape Dimensions

69 FT260S Tube Dimensions

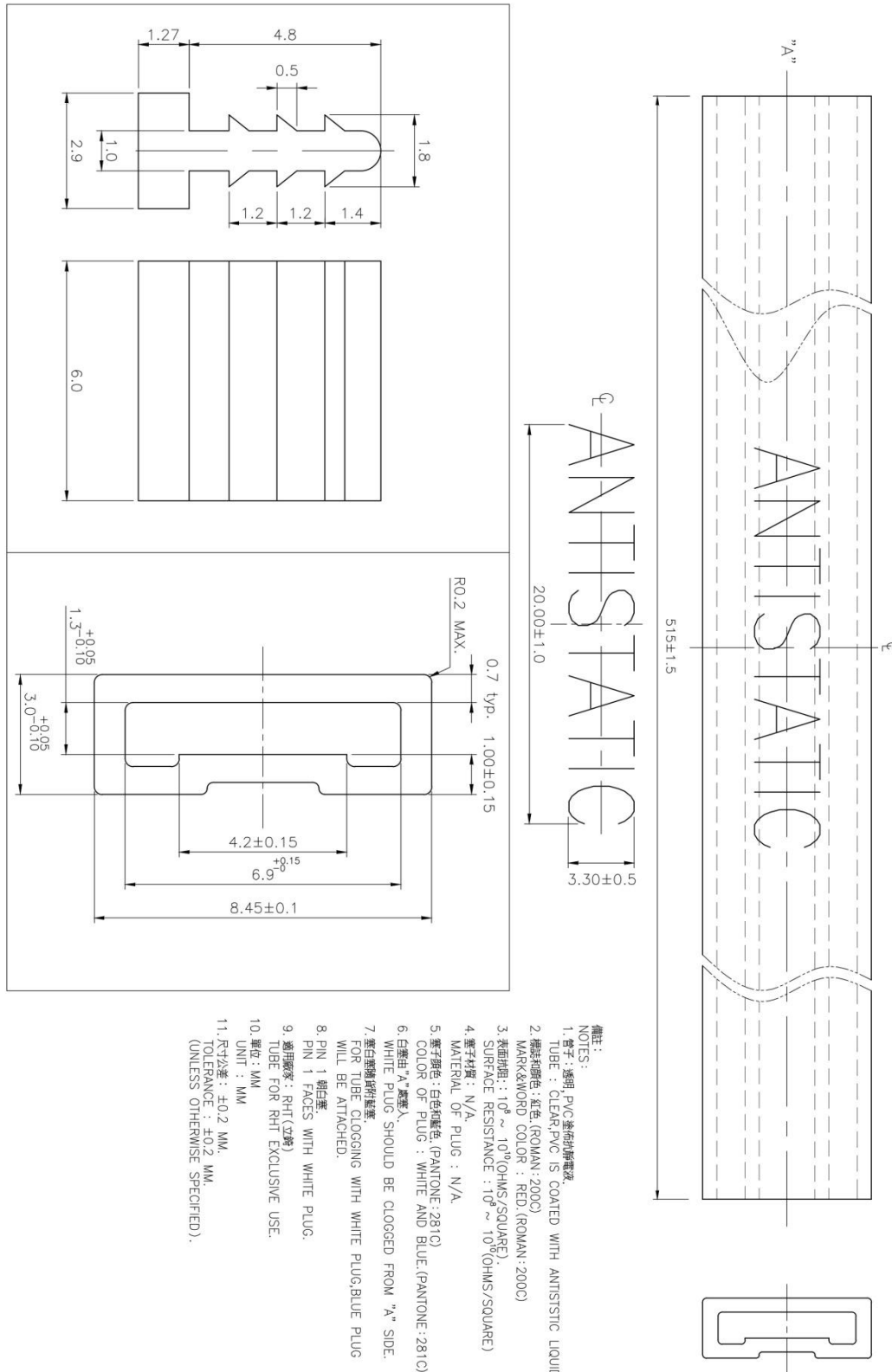


Figure 69.1 FT260S Tube Dimensions

70 FT232HPQ, FT2232HPQ and FT4232HPQ Tape Dimensions

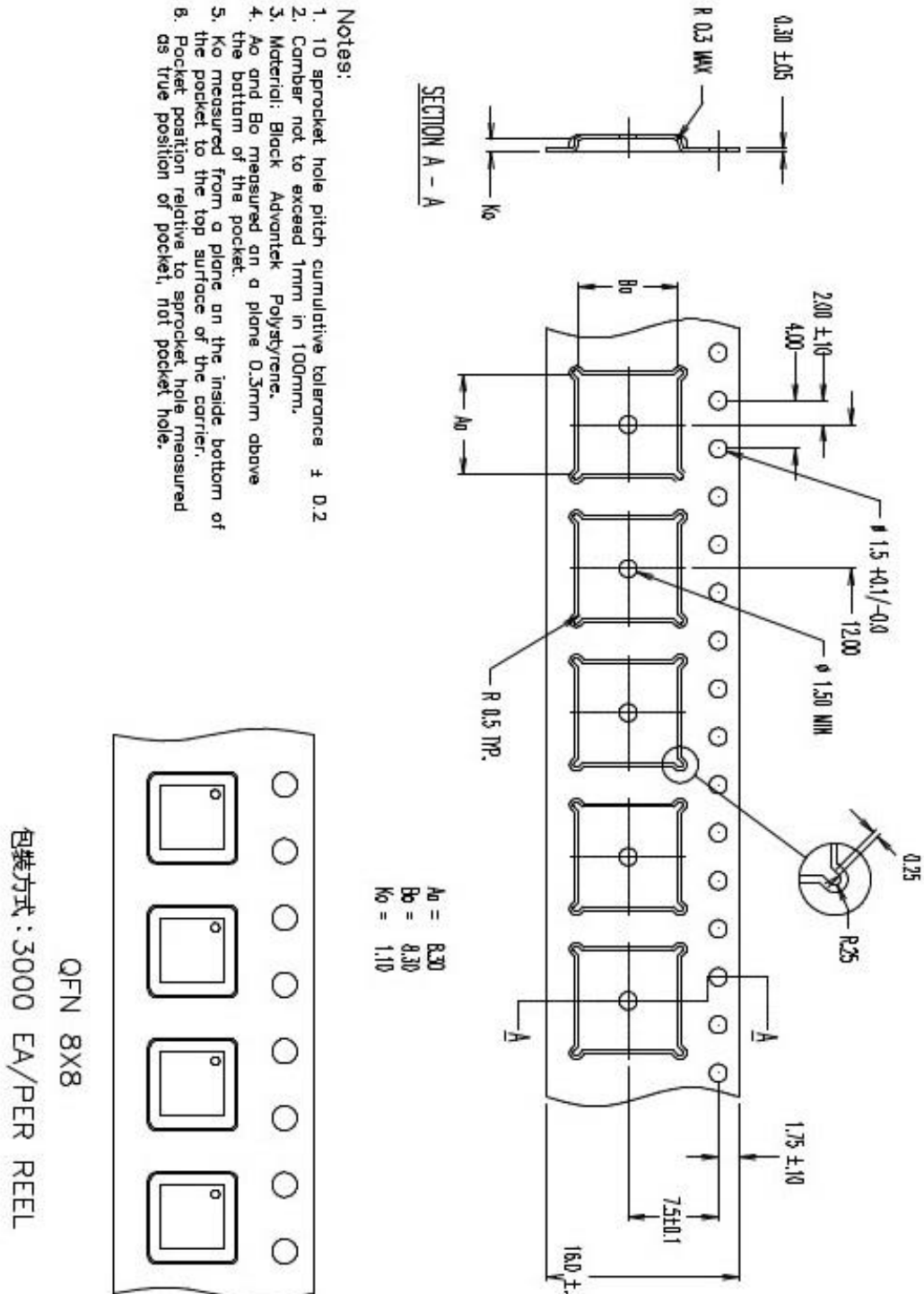


Figure 70.1 FT232HPQ, FT2232HPQ and FT4232HPQ Tape Dimensions

71 FT232HPQ, FT2232HPQ and FT4232HPQ Reel Dimensions

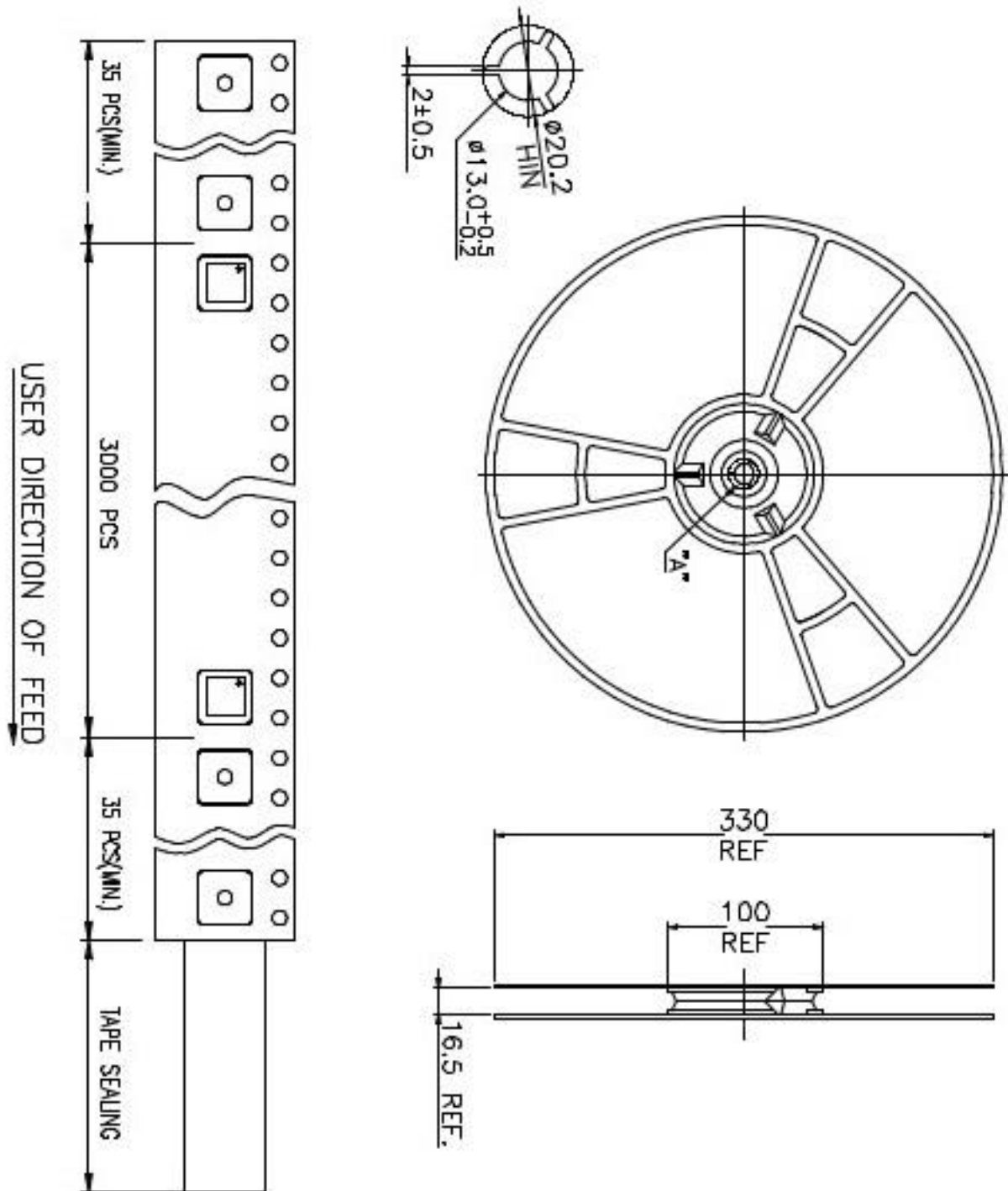


Figure 71.1 FT232HPQ, FT2232HPQ and FT4232HPQ Reel Dimensions

72 FT232HPQ, FT2232HPQ and FT4232HPQ Tray Dimensions

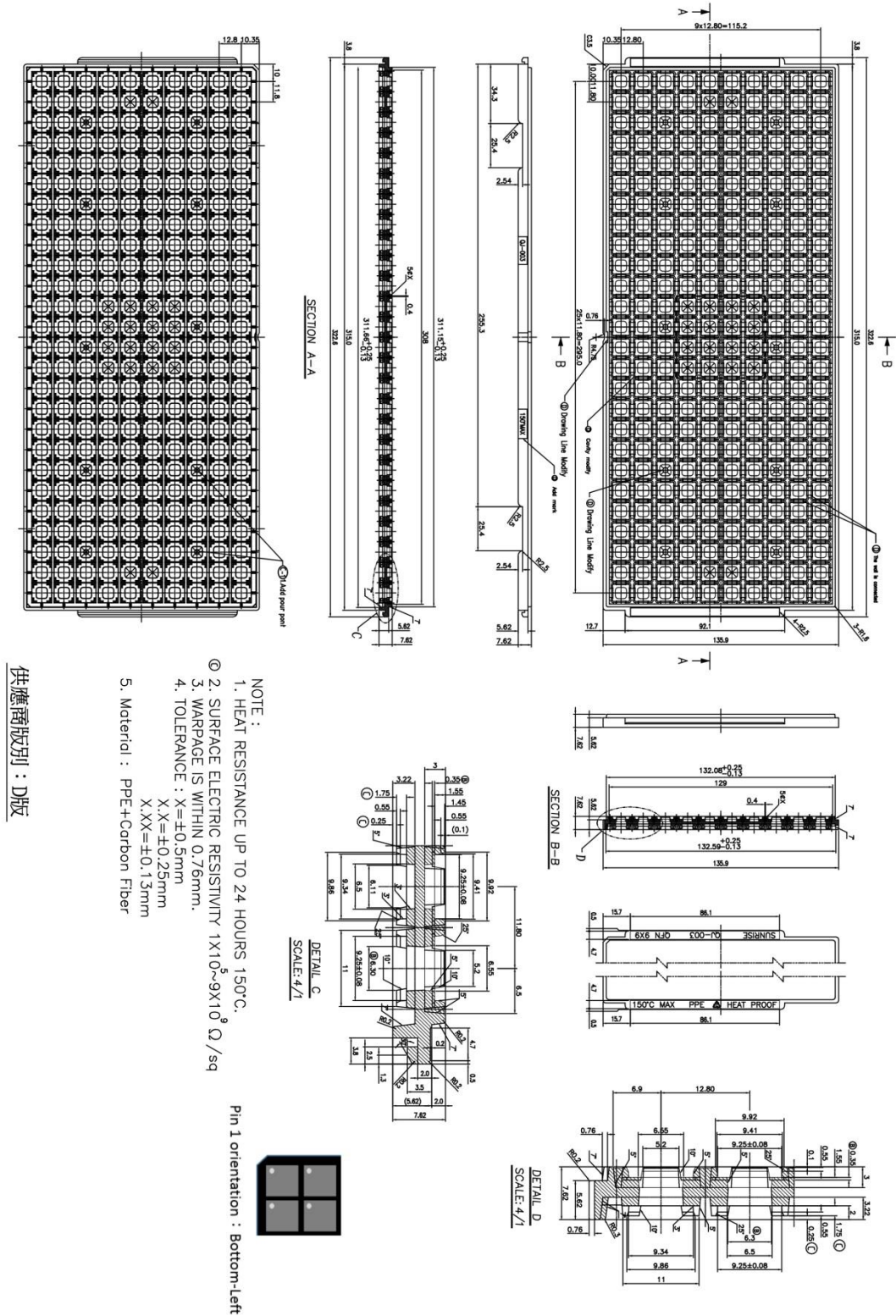


Figure 72.1 FT232HPQ, FT2232HPQ and FT4232HPQ Tray Dimensions

74 FT233HPQ, FT2233HPQ and FT4233HPQ Reel Dimensions

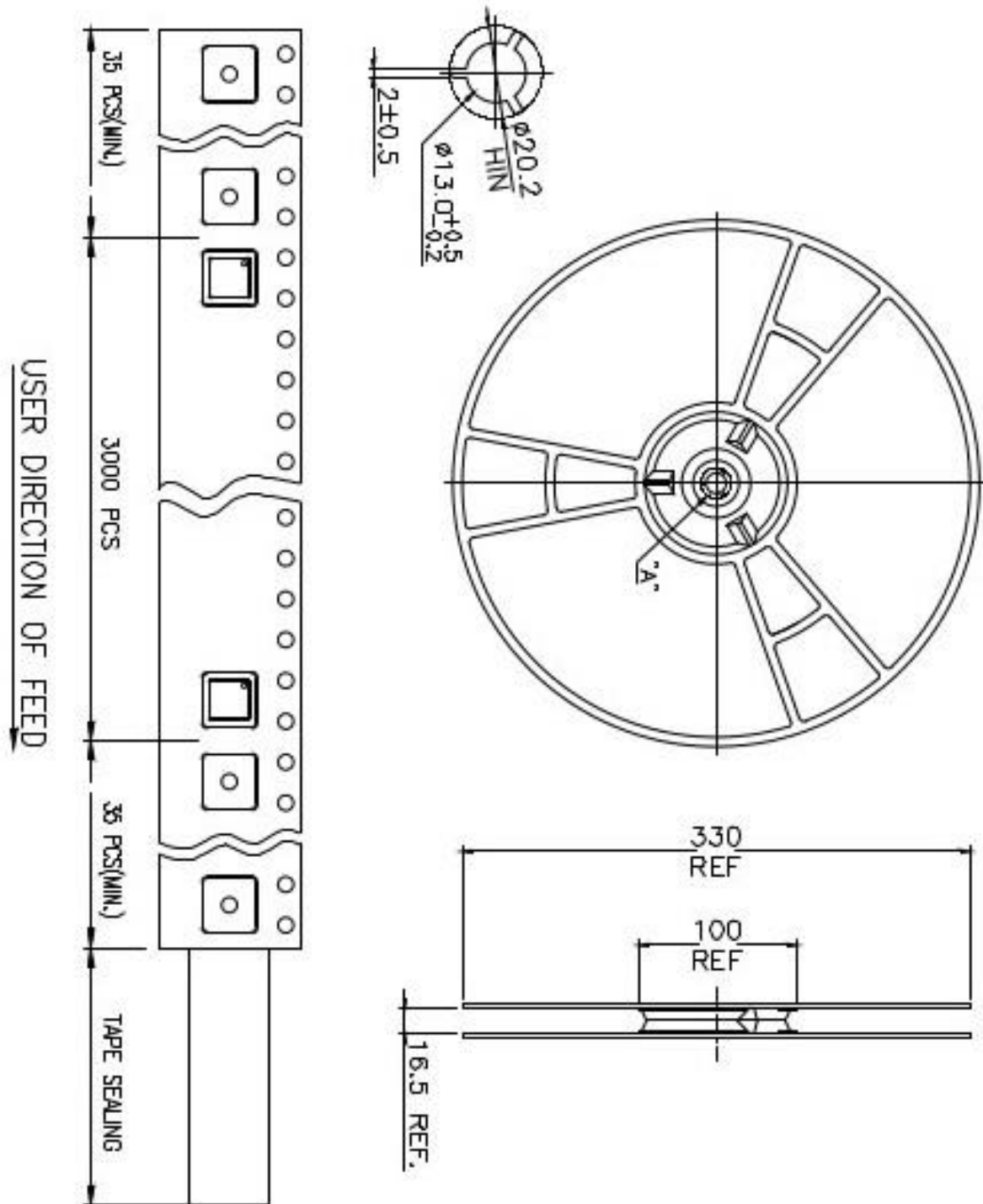


Figure 74.1 FT233HPQ, FT2233HPQ and FT4233HPQ Reel Dimensions

75 FT233HPQ, FT2233HPQ and FT4233HPQ Tray Dimensions

- NOTES:
1. S.R. DIM/SQ. MEANS SURFACE ELECTRIC RESISTIVITY OF THE TRAY.
 2. THE MOUNTED TRAYS MATERIAL SHALL BE RIGID ENOUGH TO AVOID DAMAGE TO THE COMPONENTS DURING HANDLING, LOADING, BACKING, TESTING, SHIPPING AND PLACING.
 3. TRAYS ARE STACKABLE WITHOUT INTERFERENCE AND WILL NOT STICK TOGETHER DURING UNSTACKING OPERATION.
 4. WARPAGE IS WITHIN 0.76 mm.
 5. THE CELLS MARKED WITH CROSS SYMBOL ARE FOR VACUUM PICKUP AREA AND WITHOUT THRU HOLES.
 6. TOTAL USABLE CELLS 1026±20.
 7. ALL DIMENSIONS ARE IN MILLIMETERS.

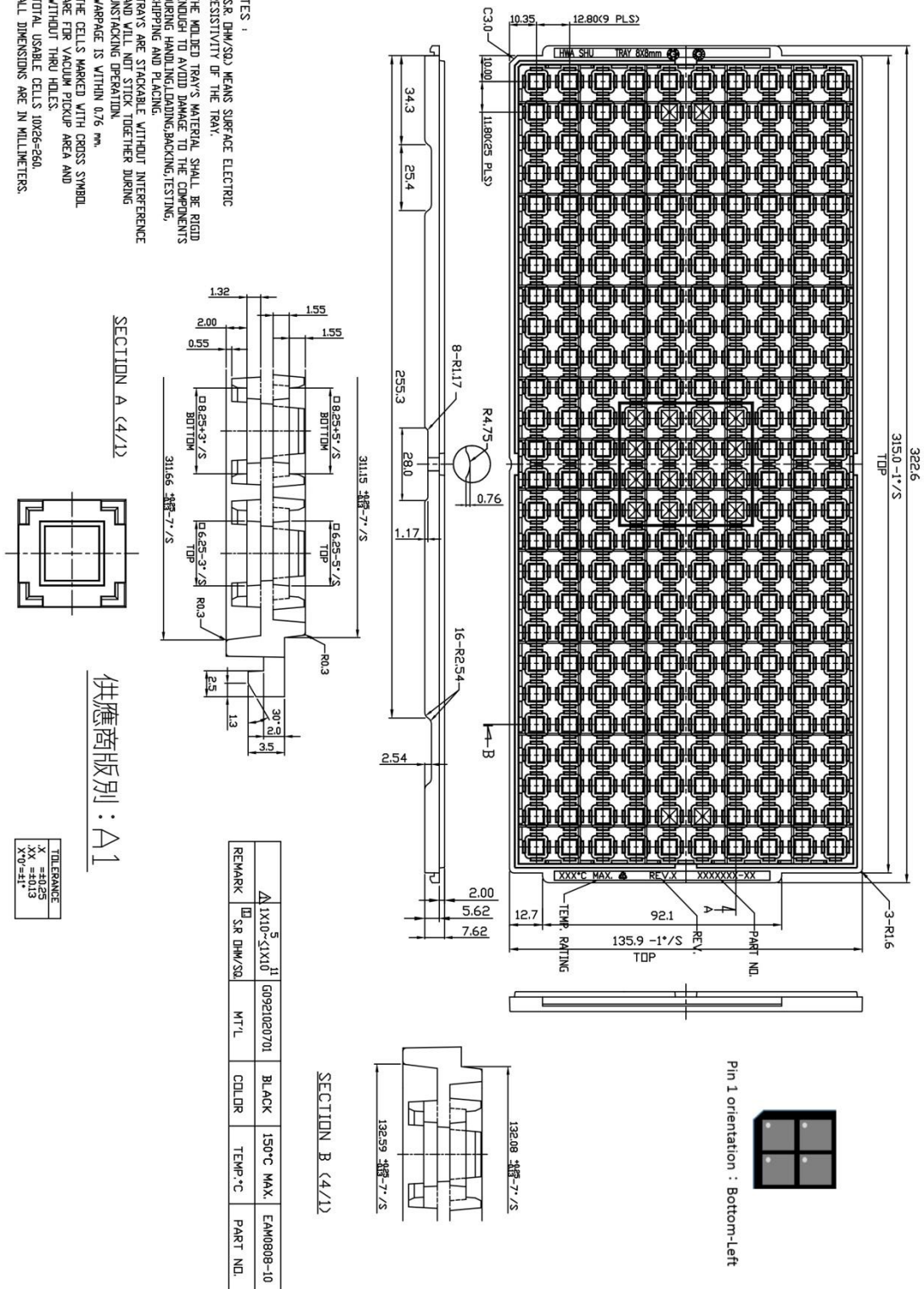
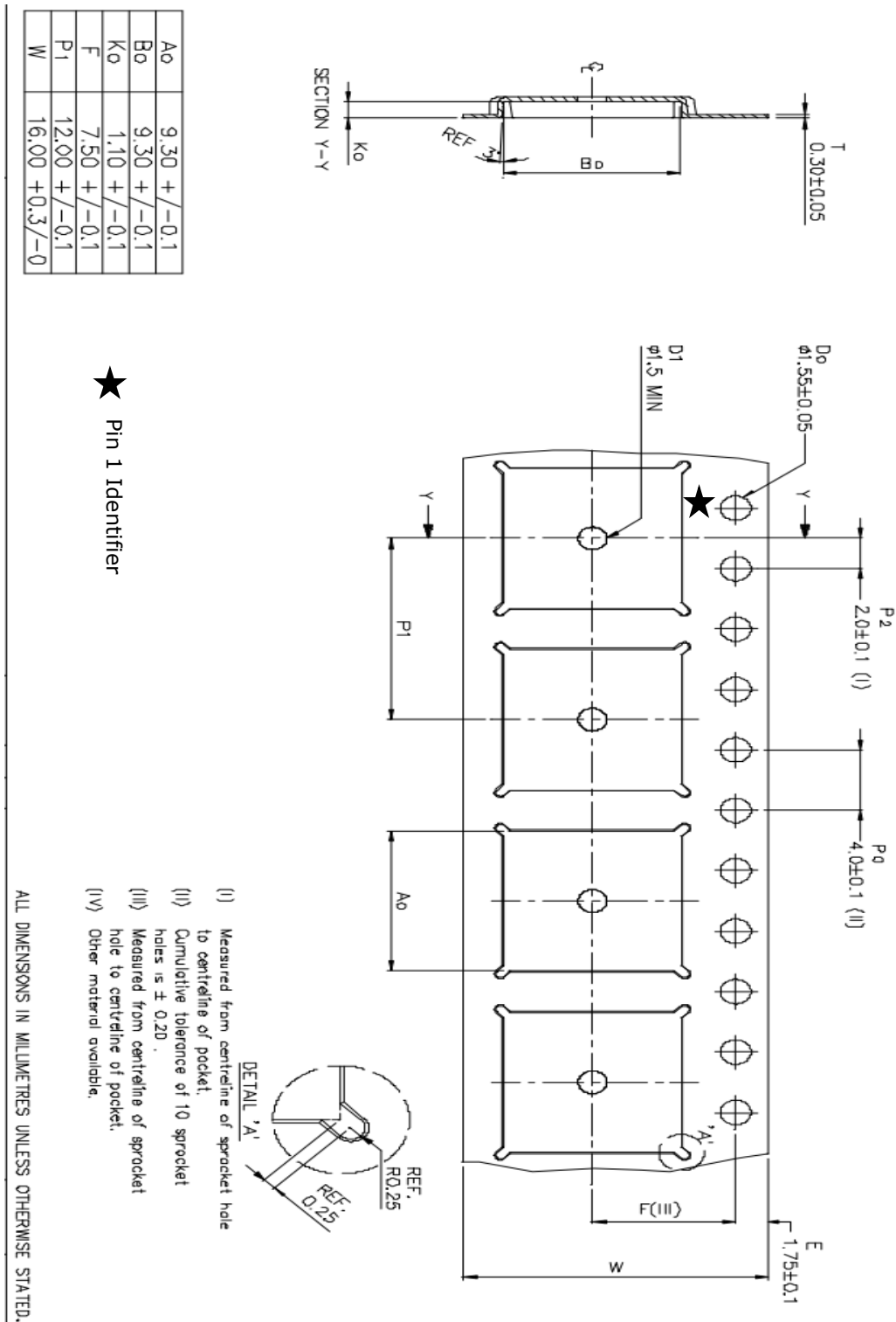


Figure 75.1 FT233HPQ, FT2233HPQ and FT4233HPQ Tray Dimensions

76 FT4232HAQ Tape Dimensions



77 FT4232HAQ Reel Dimensions

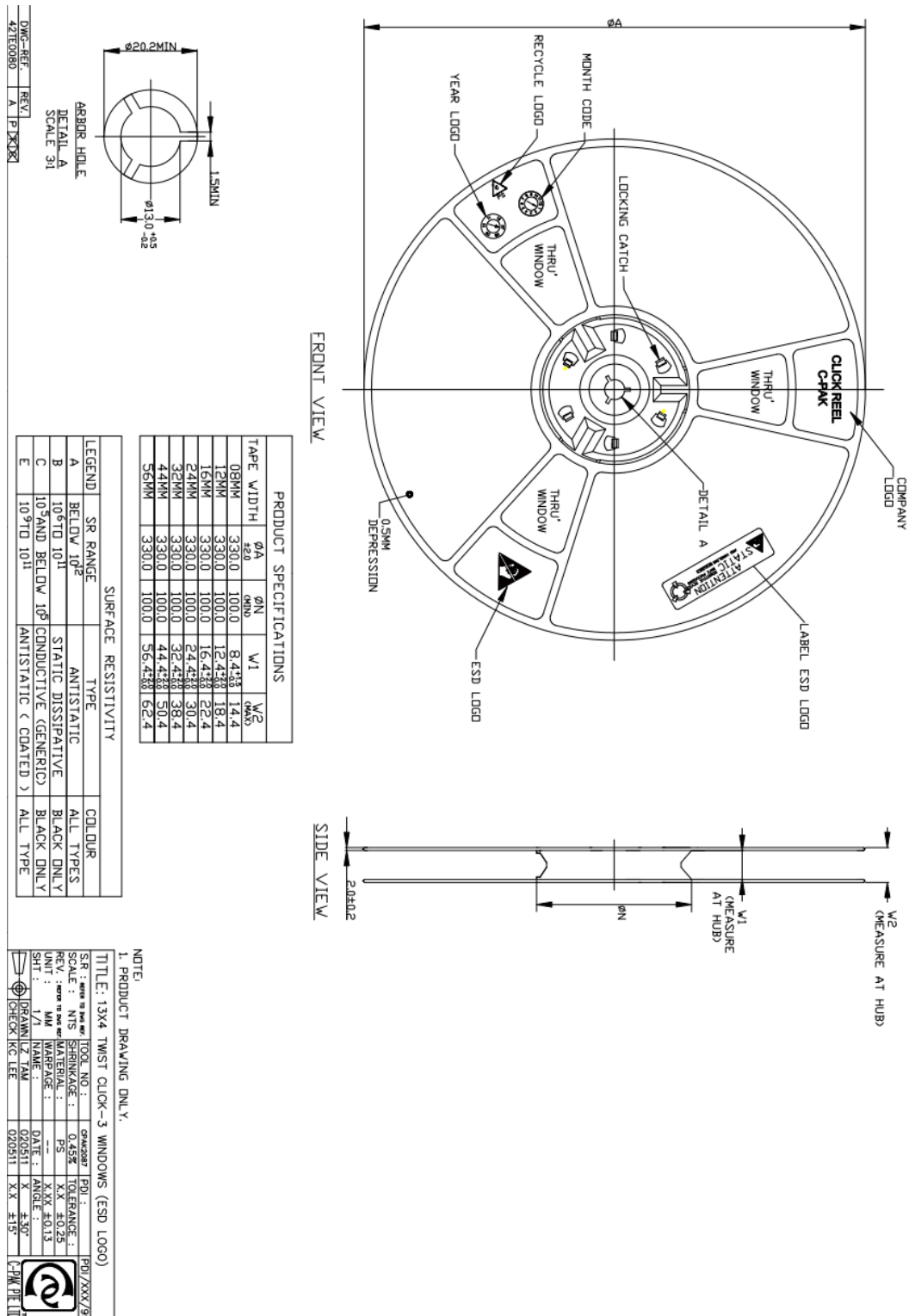


Figure 77.1 FT4232HAQ Reel Dimensions

78 FT4232HAQ Tray Dimensions

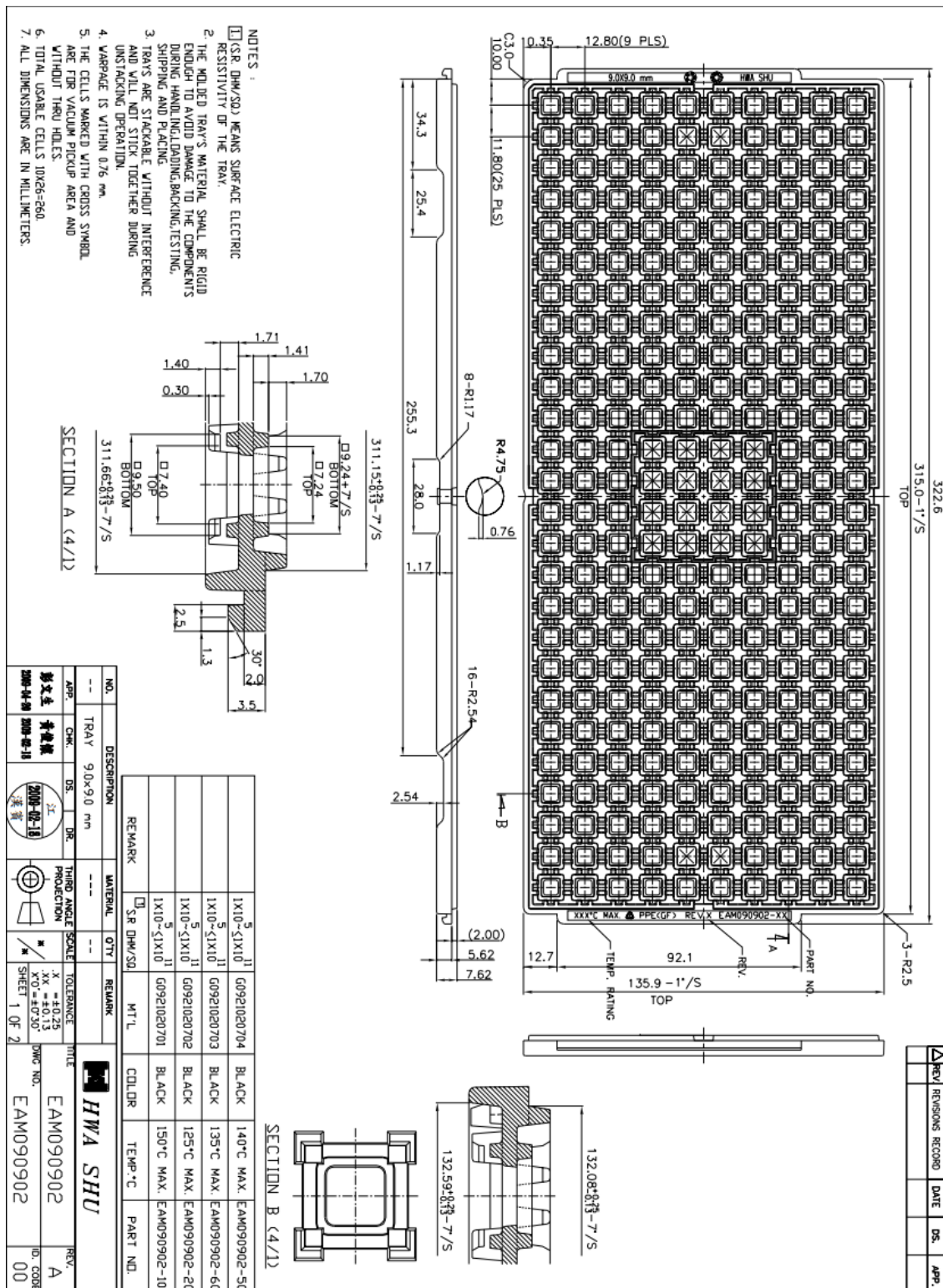
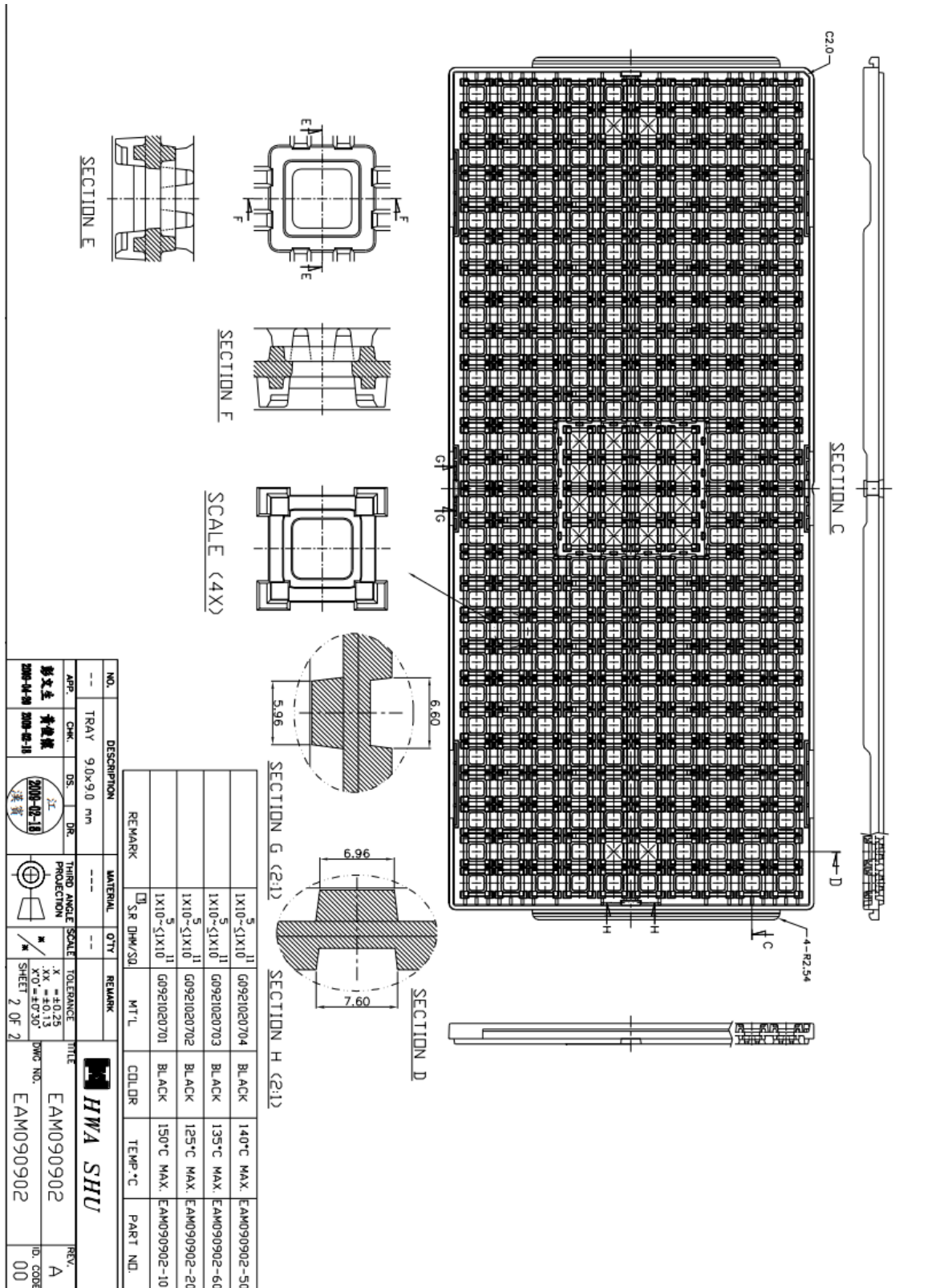


Figure 78.1 FT4232HAQ Tray Dimensions Part 1


Figure 78.2 FT4232HAQ Tray Dimensions Part 2

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Appendix A – References

Document References

NA

Acronyms and Abbreviations

Terms	Description
LQFP	Low Profile Quad Flat Pack
QFN	Quad Flat No-Leads Package
TSSOP	Thin Shrink Small Outline Package
VNC2	Vinculum-II

Appendix B – List of Figures and Tables

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Appendix C – Revision History

Document Title : AN_116 FTDI Devices Tape, Reel, Tray & Tube Dimensions
 Document Reference No. : FT_000154
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Revision	Changes	Date
1.0	Initial Release (based on and supersedes AN232B-11)	11-08-2009
1.1	Added the VNC2 tray and T&R dimensions drawings	24-05-2010
1.2	Updated VNC2 tray dimensions drawings	17-01-2011
1.3	Added pin 1 identifier to tapes	17-02-2011
1.4	Added FT232H tape/reel /tray dimensions	07-11-2011
1.5	Add Reel & Tape information of FTX series chips, FT12 series chips, FT311D and FT313H ; Updated contact's page ;	06-12-2012
1.6	Added section FT231XS tube dimension; Added FT234XD tape and reel (same as FT200XD); Added FT200XD, FT234XD pin 1 identifier; Added FT600Q, FT601Q and FT602Q	12-07-2017
1.7	Added Reel & Tape information for FT4222HQ	02-11-2017
1.8	Added Pin 1 identifier for FT4222HQ	08-05-2018
1.9	Correction Pin 1 identifier for FT200XD & FT234XD	06-06-2018
2.0	Update Added Tape, Reel & Tray images – Added for FT2232H-56Q, FT4232H-56Q, FT232RQ, FT245RQ, FT4222HQ, FT312D-32L & FT312D-32Q. Updated Tape, Reel & Tray images for FT232RQ, FT245RQ, FT2232HL, FT4232HL, FT311D-32L, VNV2-32L, VNC2-48L, FT232HL, FT311D-32Q, VNC2-32Q, VNC2-48Q, FT232HQ, FT2232HQ, FT4232HQ Tray sections, Ft232RL, FT245RL.	30-04-2019
2.1	Added Reel & Tape information for FT260Q, updated FT120T Reel & Tube information; Deleted FT120Q's Dimensions for its EOL. Add Tray dimension for FT601; Added FT232HPQ, FT233HPQ, FT2232HPQ, FT2233HPQ, FT4232HPQ and FT4233HPQ tape, reel, and tray dimensions; Added FT260S tape, reel, and tube dimensions.	20-07-2021
2.2	Added Reel, Tape and Tray Information for FT4232HAQ.	18-07-2022
2.3	Added FT232RNL/Q, FT245RL/Q, Tape and Tube dimensions	24-08-2022