



CHAPTER 13 PACKING METHODS AND LABELS

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INTRODUCTION

The world of shipping and handling is a hostile one in which product can encounter stress from moisture, temperature changes, and rough handling. AMD takes special care to design packing containers and packing methods that ensure the preservation of product quality from its factory floor to its customers' doors.

This chapter provides information about how AMD packs product for shipment and what labels are applied to the shipping boxes. All AMD packing methods are covered except for the packing of bare die and wafers (see *Chapter 11 Die and Wafer Shipments*).

QUALITY PACK PROGRAM

Under AMD's innovative Quality-Pack (Q-PACK™) program, standard quantities of product are packed in Q-PACK™ boxes right in the manufacturing area. Doing so preserves the outgoing quality of the product, and the low device counts per box minimize the need for distributors to repack product.

Q-PACK™ Box Design. The Q-PACK™ box is specially designed to protect product from electrostatic discharge and mechanical damage. AMD offers several box sizes to accommodate its variety of product carriers and includes:

- 1Q and mini-Q boxes for tubes
- 2K and 4K boxes for larger tubes and dry packed tubes
- Tray boxes for trays
- Reel boxes for tape-and-reel carriers, including surftape

Q-PACK™ boxes are made of strong, corrugated cardboard, which is rated at a 200-pound bursting strength. The boxes have successfully passed all international shipping stress tests, thus, product is often shipped in a Q-PACK™ box without being packed in an outer container box.

A conductive coating on the inner lining of the Q-PACK™ boxes provides ESD protection. Once the box is closed, a complete Faraday shield is created.

Q-PACK™ Box Quantities. The quantity of devices in a Q-PACK™ box are standardized per package and leadcount for all AMD products (refer to each respective product carrier chapter in this publication). Ordering in increments of full Q-PACK™ box quantities enables AMD and distributors to fill more of an order with pre-packed inventory, thus delivering product that has not been handled since leaving AMD's factory floor.



Figure 13.1 AMD's packing containers offer superior product protection during shipping and handling.

Q-PACK™ Box Quantity per Outer Container

Container	Mini-Q	1Q	2Q/2K	4Q/4K	Tray Box	1R Reel Box
2Q	3	2	N/A	N/A	N/A	N/A
4Q	6	4	N/A	N/A	N/A	N/A
8Q	12	8	4	2	3	N/A
16Q	24	16	8	4	6	N/A
24Q	36	24	12	6	9	N/A
3T	N/A	N/A	N/A	N/A	3	N/A
4T	N/A	N/A	N/A	N/A	4	N/A
6T	N/A	N/A	N/A	N/A	6	N/A
5R ¹	N/A	N/A	N/A	N/A	N/A	5 ⁵

Notes:

- 1 Includes regular tape-and-reel (for IC packages) and surf tape-and-reel (for bare die); one per reel box.
- 2 For BGAs in 56-mm carrier tape (388 BGA, 420 BGD, 492 BGA, and 569 BGA), there are only four 1R reel boxes in a 5R outer container.

Q-PACK™ Box Packing. When packing product in Q-PACK™ boxes, antistatic bubble pack is used to fill excess space. If more than two Q-PACK™ boxes are shipped, they may be packed in an outer container for more efficient shipping.

Nine outer container sizes allow compact packing without the need for much filler material. In rare cases, if there is excess space, bubble pack or an empty box may be used as filler. The dimensions of the outer container are shown in the table on *page 13-4*.

Quantity of OPNs and Date Codes. The quantity of product with different OPNs and date codes included in each Q-PACK™ box and outer container is as defined below.

- **Per Q-PACK™ Box** - Each Q-PACK™ box will only contain product having one Ordering Part Number (OPN). Generally, this product is of one date code only; however, there are times when a maximum of three date codes are shipped in a Q-PACK™ box. In these cases, the inventory label that appears on the box (see *Figure 13.5 on page 13-8*) will read “Combined” in the lot number field, and the date code field will reflect the oldest date code of the product.
- **Per Outer Container** - There is no limit to the number of date codes that can be in an outer container; however, it is generally not more than three. The shipping label applied to the outer container (see *Figure 13.6 on page 13-9*) will include a list of all date codes in the shipment for that OPN, and the quantity of devices per date code (when the number of date codes is three or less). On those rare occasions when there are more than three date codes, the shipping label will show the range of date codes, from the oldest one in the shipment to the most recent one. When the Q-PACK™ box itself ships alone (not in an outer container), it will never contain more than three date codes.



Box Dimensions

Box Type		Length ¹	Width ¹	Height ¹	
Q-PACK™ Boxes (intermediate containers)	Mini-Q	21.00	4.50	1.625	
	1Q			2.25	
	2K ²	21.75	4.25	5.25	
	4K ²	21.50	9.00		
	Tray Box	15.50	7.50	4.50	
	Reel Box ³ (16 mm - 24 mm)	48 — 100 LQFPs	14.2	13.5	1.4 ⁴
		20 — 32 PLCCs			
		16—28 SOICs			
		20—24 SSOPs			
		All TQFPs			
Reel Box ³ (32 mm - 44 mm)	144 LQFP	14.2	13.5	2.75	
	All OBGAs				
	44—84 PLCCs				
	44 SOIC				
	56 SSOP				
256 BGT, 272 BGA, 292 BGA, & 328 BGA					
Reel Box ³ (56 mm tape)	388 BGA, 420 BGD, 492 BGA, & 569 BGA	14.2	13.5	3.25	
Outer Containers	2Q	22.00	4.75	5.25	
	4Q		9.25		
	8Q	23.00	19.125	6.125	
	16Q			11.50	
	24Q			16.625	
	3T ⁵	23.346	16.142	5.906	
	4T ⁵	16.339	15.551	10.630	
	6T ⁵	23.346	16.142	10.630	
	5R ⁶	15.0	14.0	8.5 ⁷	

Notes:

- 1 All dimensions are in inches.
- 2 These boxes are used only when shipping dry packed product in tubes.
- 3 These boxes are used for standard reels for IC packages, as well as for the surtape used for bare die.
- 4 When shipping reels of 44- to 84-lead PLCCs, this box height is 2.8 inches.
- 5 These boxes are used only for packing intermediate tray boxes.
- 6 This is the 5-Reel box used for shipping product in reels.
- 7 When shipping reels of 44- to 84-lead PLCCs, this box height is 15.5 inches.

PACKING FOR TUBES

Tubes are packed loose in Q-PACK™ boxes and are not bound with straps or rubber bands which could cause mechanical damage to the product. Tubes are packed in a 1Q or mini-Q, depending on the package type and leadcount, or a 2K or 4K box when the tubes are in a dry pack bag. Antistatic bubble pack sheets are used to fill excess space within the box to prevent excessive movement of the tubes and provide extra cushioning protection.

Product Date Codes per Tube. There is never more than one product date code in a tube, but there could be up to three product date codes in a Q-PACK™ box.

PACKING FOR TRAYS

As a standard, a stack of six trays is strapped together for shipment with the top tray empty to serve as a cover. The bound trays are loaded into an antistatic bubble pack bag, for extra cushioning protection, and then packed in a tray box. Moisture-sensitive product is first dry packed in a dry pack bag before being packed in the box. The tray box is a standard size for all package and leadcounts.

Product Date Codes per Tray. It is possible that there may be up to three product date codes in one tray. In a tray *box*, however, there is never more than three product date codes.

Single Tray Pack Option. When a single-tray pack option has been requested, all of the pack details provided thus far apply except that only one tray is loaded with product, and a second tray is left empty to serve as a cover. The single tray pack option is available for PQFP, LQFP, TQFP, and select BGA packages.



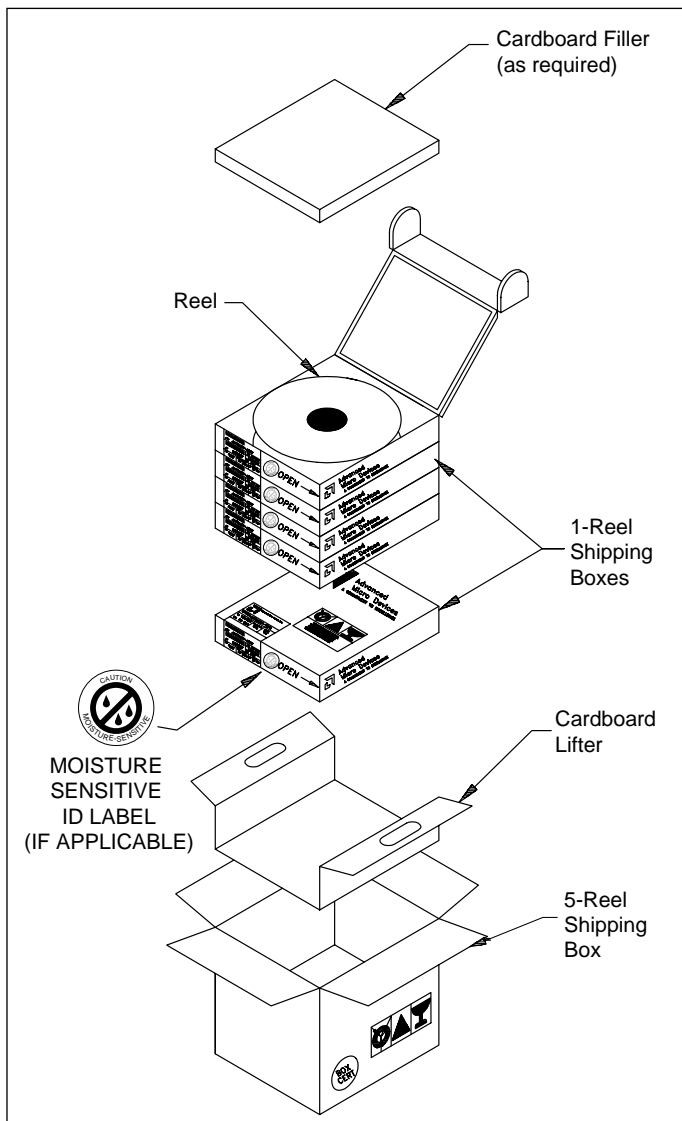
Figure 13.2 Securely strapped trays are put in a bubble pack bag and packed into a Q-PACK™ tray box. Moisture-sensitive product (shown here) is first dry packed in a dry pack bag before packing.

PACKING FOR TAPE AND REELS

Loaded reels are packed into one of two 1R box sizes, depending on the reel size. Product requiring dry pack protection is dry packed in a moisture-barrier bag.

One to five reel boxes are packed in a protective outer container for shipment (referred to as a 5R box). Note that a maximum of only four reels go in the 5R box for all BGA packages requiring 56-mm carrier tape (i.e., 388 BGA, 420 BGD, 492 BGA, and 569 BGA). A cardboard insert is used to facilitate easy loading and unloading of the reel boxes from the outer container. These outer containers are made of strong, corrugated cardboard and custom-sized to accommodate the two different sizes of reel boxes. *Figure 13.3* illustrates the sequence of packing steps.

Product Date Codes per Reel. There is usually only one product date code in a reel. However, it is possible that up to three product date codes could be packed in one reel.



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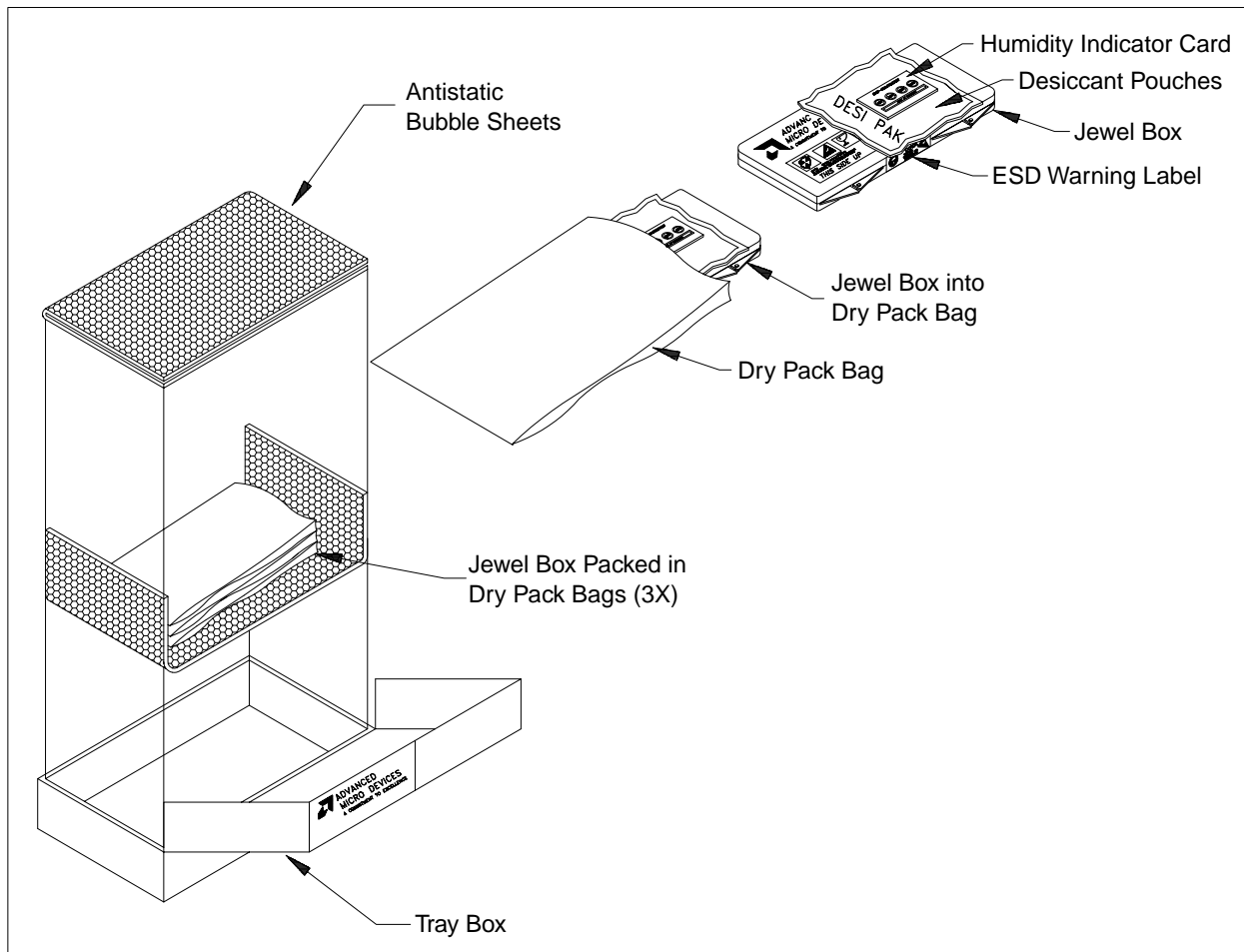
Figure 13.3 Reels (including those that are dry packed) are packed in compact reel boxes which are then placed in an outer container (5R) for shipment.

PACKING FOR JEWEL BOXES

Each loaded jewel box is dry packed and sealed in a moisture barrier bag.

Each dry pack bag contains only one jewel box. Then three bagged jewel boxes are packed in a tray box, and bubble pack is used to fill excess space, as shown in *Figure 13.4*.

Product Date Codes per Jewel Box. There is only one product date code in a jewel box, but there could be up to three date codes in the jewel box.








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Figure 13.4 Product in jewel boxes is dry packed, one jewel box per bag, and then three bagged boxes are packed in a tray

BOX LABELING

The information provided in the following paragraphs represents AMD's standard practice for labeling boxes for shipment. Depending upon the customer and/or shipment destination, these labeling schemes may vary. Information about where these labels appear on the various outer container boxes is provided on *page 13-11*.

Q-PACK™ Inventory Label. An inventory label is applied to the pin-one end of each Q-PACK™ box. (Note: All components are packed so that their pin one is uniformly oriented toward this end of the box.) The inventory label, shown in *Figure 13.5*, gives pertinent information about the contents of the box. This label is both human readable and bar coded to facilitate the automation of warehouse operations. The bar code configuration complies with code 3 of 9 of EIA Standard 556-A.

	(1D)		
	1234567890123456789	1234567	
1	SPEC #:	123456789012	
2	IDV 12345678	PC FULL CONTAINER	4 123
	PKG 123456	12	QTY 1234 CNTRS
	(1P) MFR# 12345678901234567890		
	(P) OPN 12345678901234567890		
7	BOX ID		
	(1) LN 1234567		
	DATE CODE (9D) 1234	TTL QTY (Q) 1234	10
	SEAL 12345678	BOX OF 12345	11
	12	123456789012345678	
	ASSEMBLED IN:	12345678901234567890	
		12345678901234567890	
		12345678901234567890	

- 1 SPEC#: AMD's internal processing specification number.
- 2 IDV: AMD's Internal Device Number.
PKG: Product package and pin count.
- 3 PC: Performance code for the product.
- 4 FULL CONTAINER QTY: Number of devices each full container (tube, tray, reel) holds.
CNTRS: Number of containers in the box. These fields read "N/A" for partial Q-PACK™ boxes.
- 5 MFR#: This field is used in cases when a second, external part number must be recorded on the label (such as for dual-marked commercial product).
- 6 OPN: AMD's Ordering Part Number.
- 7 BOX ID: A bar code field combining the following three fields: lot number, box number and box quantity.
- 8 LN: Production Lot Number; this field reads "combined" when more than one product date code is in the box.
- 9 DATE CODE: This field reflects the oldest product seal date code in the box (year and work week: YYWW).
- 10 TTL QTY: Total number of devices in the box.
- 11 SEAL: This field refers to the oldest seal date code of the product.

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Figure 13.5 A Q-PACK™ inventory label is applied to the outside of every Q-PACK™ box.



Shipping Label. A shipping label, shown in *Figure 13.6* is applied to each outer container box. When a Q-PACK™ box ships alone (e.g., not in an outer container), this label is applied to the top of the Q-PACK™ box (see *page 13-11*). The shipping label is designed to meet the intent of the EIA Standard 556-A, *Figure 2*, on shipping container labels. If a customer requires a specific label, it replaces AMD’s standard shipping label, and the placement of it on the outer container is the same as the placement of AMD’s shipping label.

(3S) PKG ID: 123456 		FROM: AMD, INC. ONE AMD PLACE P.O. BOX 3453 SUNNYVALE, CA. 94088	
(1P) MFR P/N: 		SHIP TO: ABCDEFGHIJKLMNORST ABCDEFGHIJKLMNORST ABCDEFGHIJKLMNORST 2 123456789 12345678901234567890123456	
(Q) QUANTITY: 12345678 EA		PACKAGE COUNT: 001 OF 001	
(K) TRANS ID: 12345678901234567890 		PACKAGE WEIGHT LB	
(P) CUST PROD ID: 12345678901234567890 		DESC: I.C. D/C 1234567890 123456 1234567890 123456 ASSEMBLED IN: ABCDEFGHIJKLMN	
			CNTRY OF DIFFUSION ABCDEFGHIJKLMNO
			CSP NO. 123456

Figure 13.6 A shipping label is applied to the outside of every shipping box, be it an outer container box or a Q-PACK™ box.

Ship-to-Stock Labels. When product ships under a customer’s ship-to-stock program, the shipping label (*Figure 13.6 on page 13-9*), will be yellow, and “SHIP TO STOCK” will appear on the right side of the label, just above the CPS number.

If a customer requires a customized label on the intermediate box (i.e., the Q-PACK™ box inside the outer container), then AMD also applies a smaller ship-to-stock label to the intermediate box (as shown in *Figure 13.7*).

Shipping Form. A Combined Picklist Shipper (CPS) form accompanies every AMD product shipment. This form, shown in *Figure 13.8*, documents the shipment contents, identifying the customer’s part number and the quantity of product per product date code. It also includes such information as the customer’s ship-to address, any customer-specified instructions, the invoice number, and other information pertaining to shipment dates and freight lanes. It also contains AMD’s Certificate of Conformance (C of C). Where appropriate, information is bar coded as well as human readable.

AMD CUSTOMER : 123456789012345678901234567890	
(1P) MFR P/N : 123456789012345678	
SHIP TO STOCK	
(90) DATE CODE : 1234	PACKAGE COUNT 123 OF 123
	DESC : INTEGRATED CIRCUITS
(P) CUST P/N :	123456789012345678
QTY :	(Q) 1234 EA
CPS# 1232456	

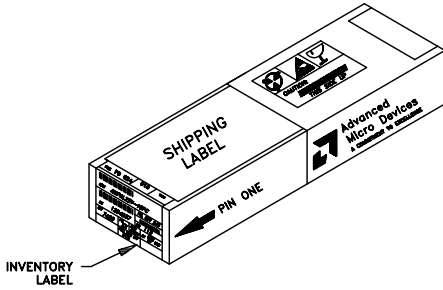
Figure 13.7 If a customer requires a customized label on the intermediate box, AMD also applies this smaller ship-to-stock label to the intermediate box.



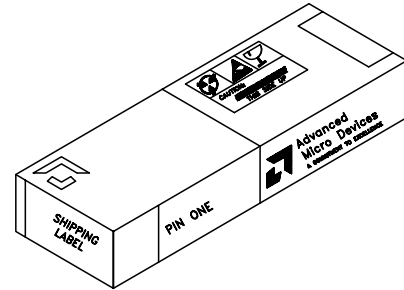
ADVANCED MICRO DEVICES, INC. POST OFFICE BOX 3453 SUNNYVALE, CALIFORNIA 94088-3453						PRINT DATE 07/13/95					
EARLIEST MFG. DATE 07/09/95		1ST MFG. SHIP DATE 07/10/95		CPS NUMBER 106458 		CUSTOMER PART NUMBER AM29F040-120JC			SHIP TO: ABC COMPANY ONE AMD PLACE SUNNYVALE, CA. 94088-3453		
EARLIEST SHIP DATE 07/11/95		FIRST SCHEDULED DATE 07/12/95		INVOICE NUMBER S1113534							
LOAD NO. 824752 				REVISED LOAD		CUSTOMER PURCHASE ORDER NUMBER					
FREIGHT LANE NADC				CURRENT MFG. DATE 07/13/95		CERTIFICATE OF CONFORMANCE AMD CERTIFIES THAT THE PRODUCT BEING SUPPLIED IN THIS SHIPMENT COMPLIES WITH THE CUSTOMER REQUIREMENTS AS DEFINED IN THE AMD SALES ORDER. ALL PRODUCTS CONTAINED IN THIS SHIPMENT ARE AS DESCRIBED ON THIS CERTIFICATE. TRACEABILITY INFORMATION, INSPECTION AND TEST RECORDS ARE ON FILE AT AMD.					
SALES ORDER NUMBER		SHIP VIA		CURRENT SCHEDULED DATE 07/14/95		THE FOLLOWING SECTION APPLIES TO MILITARY PRODUCT. AMD CERTIFIES THAT AUTHORIZED DISTRIBUTORS HAVE HANDLED THE PRODUCT IN ACCORDANCE WITH JEDEC PUBLICATIONS 109 AND EIA 405. A CHECKED BOX INDICATES THIS PRODUCT HAS BEEN MANUFACTURED AND TESTED IN ACCORDANCE WITH MIL-STD-883, PRODUCT ASSURANCE LEVEL B.					
CRD FLAG SHIP		(Q) QUANTITY SHIPPED 10000 				Signed By: _____ (AMD employee designated to sign this certificate on behalf of the president and Chief Operating Officer) Name: _____					
CUSTOMER REQ. DATE 07/12/95											
STRUCTURED OPTIONS / SPECIAL INSTRUCTIONS # D/C: NO OLDER THAN 24 MONTHS: #INTERMEDIATE LABEL REQ'D : C006 #SHIPPING LABEL REQ'D : D006						GOVERNMENT CONTRACT NUMBER PRIORITY		DATE SHIPPED			
						CONTRACT NUMBER/REV		QUANTITY ORDERED 10000			
						NUMBER OF BOXES		TOTAL WEIGHT		SHIPPING CHARGE	
PAGE 1 OF 1		DOCUMENT DATE 07/13/95		LETTER OF CREDIT REFERENCE NUMBER		SHIP TO CUSTOMER		FREIGHT TERMS		LABEL CODES C999 D999	
(19) AMD ORDERING PART NO./REV WVP-90887 L4 4* 		SPEC. NUMBER		* No product returns will be accepted without prior AMD authorization * Claims of error or shortages must be filed in writing with AMD within 30 days of receipt of product							
LOCATION 999999999999		LOT NUMBER T101004		FAB D/C 95400BOB		REINSPEC. DATE		DATE CODE 10000		QUANTITY	

Figure 13.8 AMD's Combined Picklist Shipper (CPS) form accompanies all product shipments.

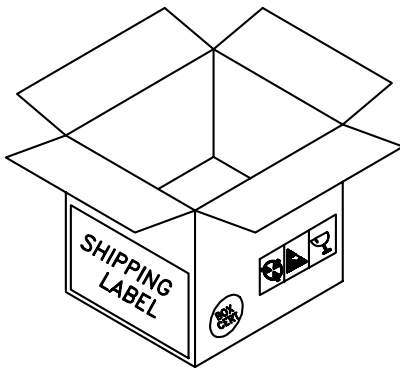
1Q, Mini-Q Boxes
(when shipped alone, not in an outer container)



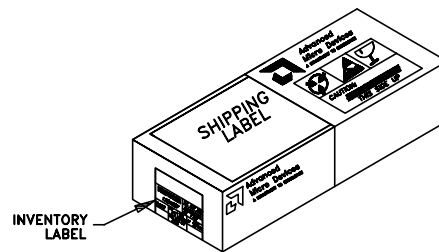
2Q/2K and 4Q/4K Outer
Container Boxes



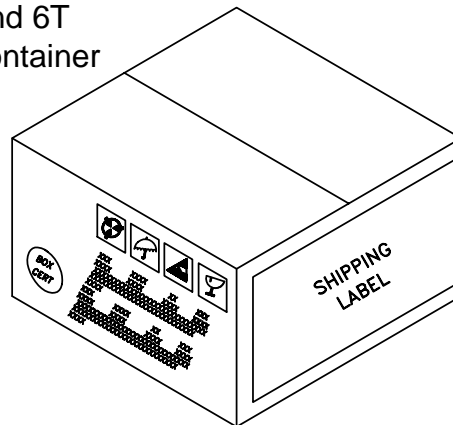
Reel Outer Container Boxes (5R)



Tray Boxes



8Q, 16Q, 24Q,
3T, 4T and 6T
Outer Container
Boxes



3027b