

JEDEC DESIGN STANDARD

DESIGN REQUIREMENTS FOR OUTLINES OF SOLID STATE AND RELATED PRODUCTS

JEDEC PUBLICATION 95

DESIGN GUIDE 4.23

**PUNCH-SINGULATED, FINE PITCH, SQUARE,
VERY THIN AND VERY-VERY THIN PROFILE,
LEADFRAME-BASED QUAD NO-LEAD
STAGGERED DUAL-ROW PACKAGES
(WITH OPTIONAL THERMAL ENHANCEMENTS)**

(QFN)

**JEDEC
SOLID STATE TECHNOLOGY ASSOCIATION**

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Punch-Singulated, Fine Pitch, Square, Very Thin and Very Very Thin Profile,
Leadframe-based, Quad No-Lead Staggered Dual-Row Packages
(With optional Thermal Enhancements)

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4.23 SCOPE

This Design Guide applies to Punch-Singulated, Fine Pitch, Square, Very Thin and Very Very Thin Profile, Leadframe-based, Quad No-Lead Staggered Dual-Row Packages (With optional Thermal Enhancements). Therefore, the “HP” prefixes will not be referenced when the variation does not have Thermal Enhancements. Refer to JESD-30 for formal package designators.

4.23.1 ILLUSTRATION

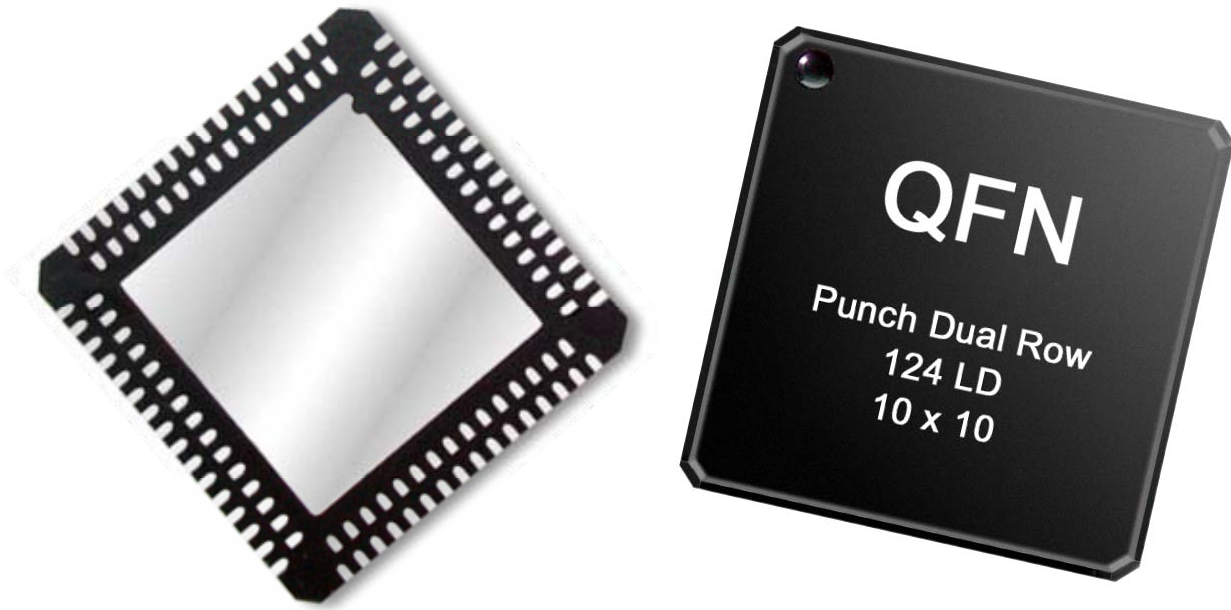


FIGURE 4.23-1

Punch-Singulated, Fine Pitch, Square,
Very Thin and Very Very Thin Profile,
Leadframe-based,
Thermally Enhanced,
Quad No-Lead Staggered Dual-Row Package

4.23.2 PACKAGE DESCRIPTION

The Punch-Singulated, Fine Pitch, Square, Very Thin and Very Very Thin Profile, Leadframe-based, Quad No-Lead Staggered Dual-Row Packages (QFN) are plastic semiconductor packages with metallized terminals located along the peripheral edges of the bottom surface of the package body arranged in 2 rows.

By design the package terminals are flush with the bottom surface of the plastic package body, so the packages are considered to be “leadless” or “no-lead”.

This package has 2 rows of terminals on all four peripheral edges of the bottom surface of the package. The package may have either symmetric or asymmetric terminal patterns.

4.23.3 CONCEPT

This design guide defines the symbology, algorithms, dimensions and tolerances for these Dual-row QFN packages. The guidelines are based on metric dimensions and adhere to the geometric dimensioning and tolerancing principles defined in ASME Y14.5M-1994.

4.23.4 RECOMMENDED PACKAGE OUTLINE SYMBOLOGY AND FORMAT

Refer to Table 4.23-1 and Figures 4.23-2 through 4.23-3 for the recommended symbology and outline format for Dual-row QFN packages. Table 4.23-2 defines the maximum terminal count by terminal pitch and body size

4.23.5 RECOMMENDED PACKAGE OUTLINE VALUES AND TOLERANCES

The following design guide tables define the symbology and recommended algorithms, dimensions and tolerances that shall be used when preparing a Dual-row QFN outline.