N *National Semiconductor*

Description of Boundary-Scan

Boundary-Scan Circuitry

The scan cells used in the Boundary-Scan register are one of the following two types depending upon their location. Scan cell TYPE1 is intended to solely observe system data, while TYPE2 has the additional ability to control system data. (See IEEE Standard 1149.1 *Figure 10–11* for a further description of scan cell TYPE1 and *Figure 10–12* for a further description of scan cell TYPE2.)

Scan cell TYPE1 is located on each system input pin while scan cell TYPE2 is located at each system output pin as well as at each of the two internal active-high output enable signals see *Figure 1.* AOE controls the activity of the A-outputs while BOE controls the activity of the B-outputs. Each will activate their respective outputs by loading a logic high.
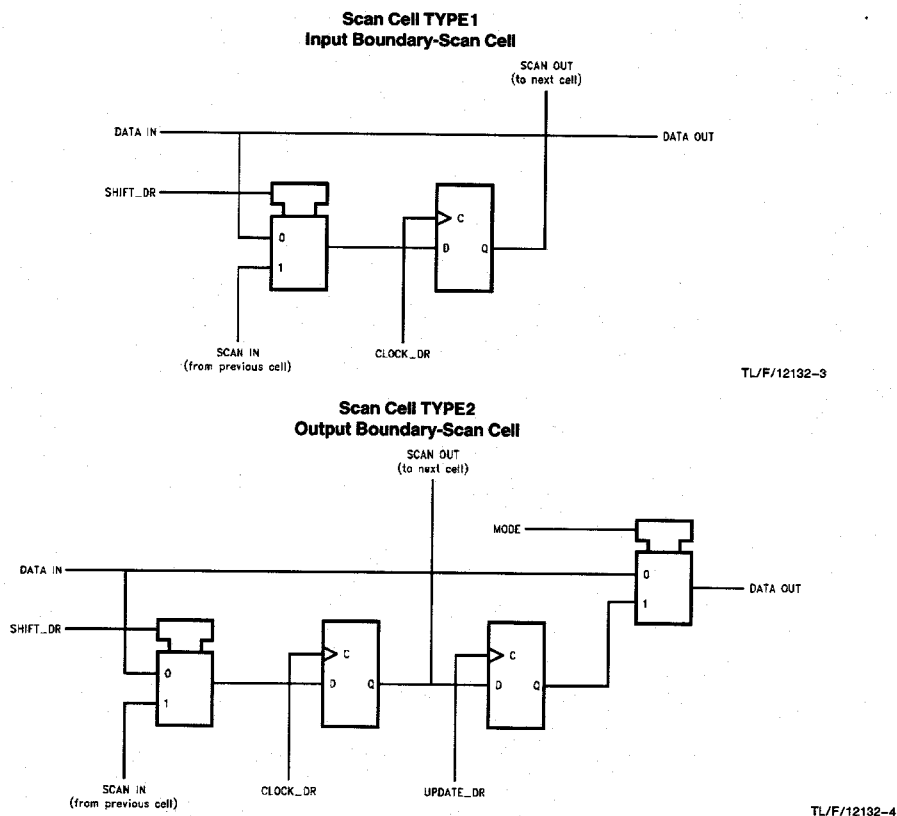

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FIGURE 1. Type 1 and Type 2 Scan Cells are Located at Input and Output Pin, Respectively