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United States Patent [19]

Cleeves

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[54] **DISPOSABLE POST PROCESSING FOR SEMICONDUCTOR DEVICE FABRICATION**

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[73] Assignee: **Cypress Semiconductor Corp.**, San Jose, Calif.

[21] Appl. No.: **515,675**

[22] Filed: **Aug. 17, 1995**

Related U.S. Application Data

[62] Division of Ser. No. 179,615, Jan. 10, 1994, abandoned.

[51] Int. Cl.^{6} **H01L 21/283**

[52] U.S. Cl. **437/195**; 437/228; 430/313

[58] Field of Search .... 437/180, 195, 437/203, 228 I, 228 OL, 228 ST, 228 W, 229; 156/636.1; 430/313, 314, 317

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[57] **ABSTRACT**

A disposable post process allows openings to be created in a layer formed over a semiconductor wafer, for example to create self-aligned contacts. A layer of material is formed over a semiconductor wafer and subsequently patterned into posts which define the location and shape of openings to be formed in a subsequently formed planar layer. After the planar layer is formed to surround the posts, the posts are removed to create openings in the planar layer. These openings may then be used to form suitable contacts.
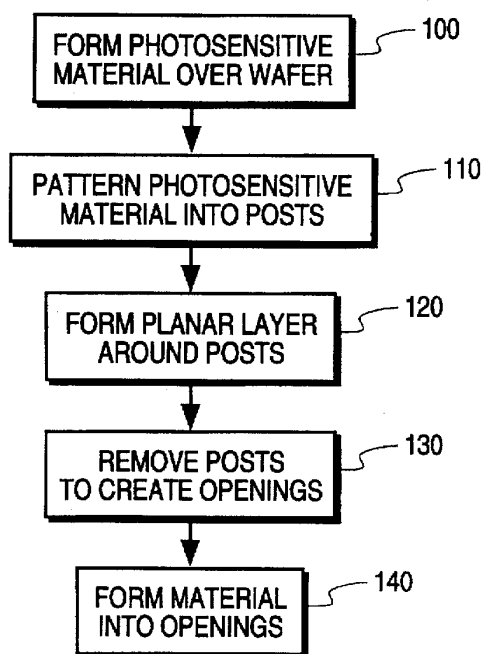
20 Claims, 8 Drawing Sheets
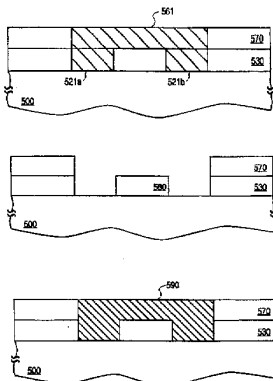
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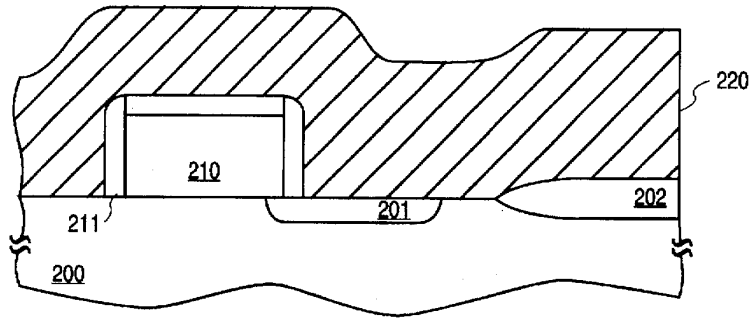
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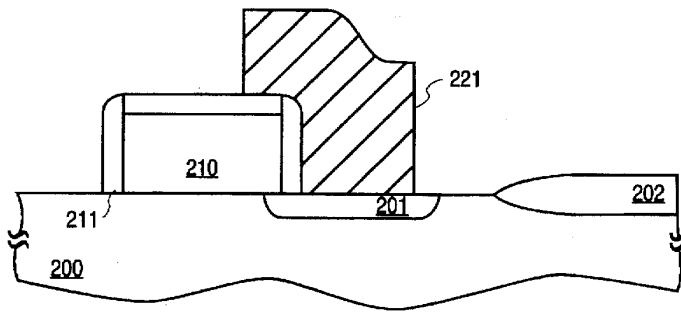
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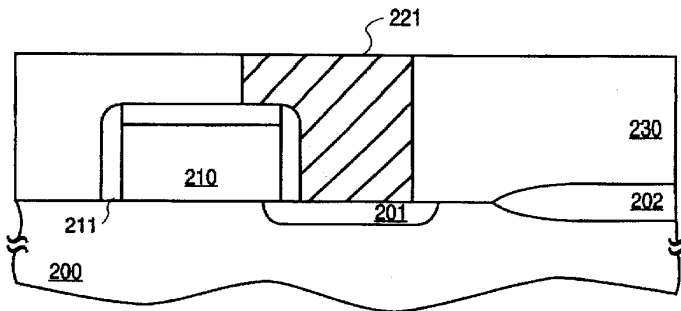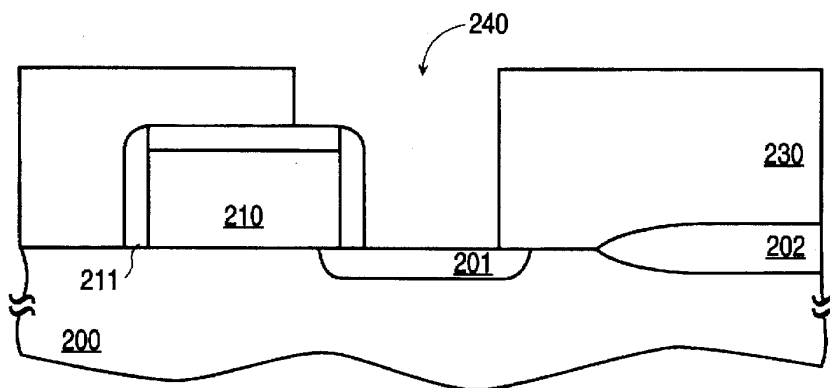
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┌─────────────────────────┐
│ FORM PHOTOSENSITIVE     │ ⌐ 100
│ MATERIAL OVER WAFER     │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ PATTERN PHOTOSENSITIVE  │ ⌐ 110
│ MATERIAL INTO POSTS     │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ FORM PLANAR LAYER       │ ⌐ 120
│ AROUND POSTS            │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ REMOVE POSTS            │ ⌐ 130
│ TO CREATE OPENINGS      │
└─────────────────────────┘
            │
            ▼
┌─────────────────────────┐
│ FORM MATERIAL           │ ⌐ 140
│ INTO OPENINGS           │
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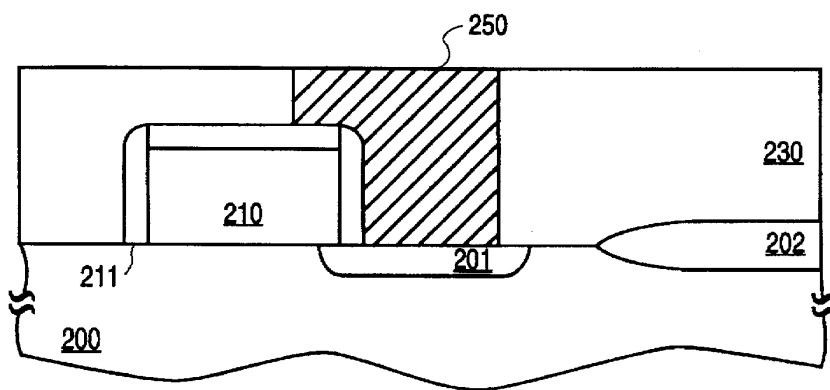
FIG. 1

FIG. 2A

FIG. 2B

FIG. 2C

FIG. 2D

FIG. 2E

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