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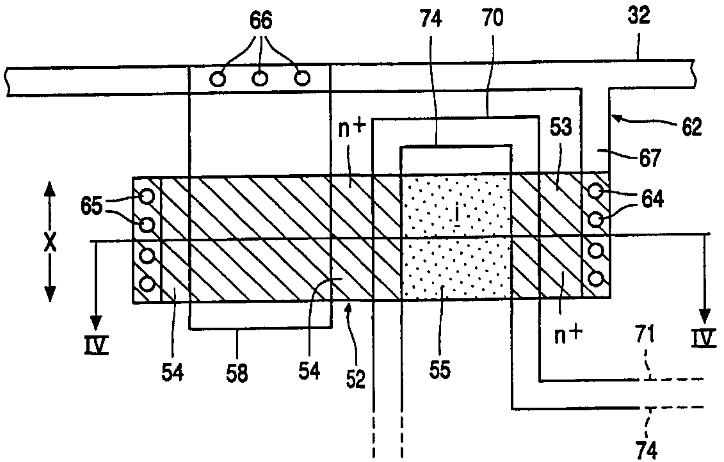
(54) Title: MATRIX ARRAY DISPLAY DEVICES WITH LIGHT SENSING ELEMENTS



(57) Abstract: A matrix array display device has an array of pixels (10) on a substrate (50) which each have a display element (20), for example an electroluminescent display element, and associated control circuit including a storage capacitor (36) and a light sensing element (40) connected thereto for regulating charge stored on the capacitor and responsive, for example, to light emitted from the display element so as to regulate operation of the display element. The light sensing elements (40) comprise thin film semiconductor devices each having a strip of semiconductor material (52) with laterally-spaced, doped, contact regions (53, 54) and the associated storage capacitor (36) is formed by a conductive layer (58) extending substantially transversely of the strip over one contact region with intervening dielectric material. A predetermined relationship between the storage capacitor and photosensitive device characteristics is then ensured even though dimensional variations in component layers may occur due to manufacturing tolerances. Preferably, the photosensitive device comprises a gated device whose gate extends over the semiconductor strip region intermediate the contact regions. The gate dielectric and storage capacitor dielectric may comprise parts of a common layer (56). Alternatively, the conductive layer may be provided at the side of the strip opposite the gate and used also as a shield for ambient light.

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patsnap

专利名称(译)	具有光传感元件的矩阵阵列显示装置		
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摘要(译)

矩阵阵列显示装置在基板（50）上具有像素阵列（10），每个像素具有显示元件（20），例如电致发光显示元件，以及包括存储电容器（36）和灯的相关控制电路连接到其上的传感元件（40），用于调节存储在电容器上的电荷，并响应例如从显示元件发出的光，以便调节显示元件的操作。光敏元件（40）包括薄膜半导体器件，每个薄膜半导体器件具有半导体材料条带（52），其具有横向间隔的掺杂接触区域（53,54），并且相关的存储电容器（36）由导电层形成（58）在一个接触区域上基本上横向于条带延伸，具有插入的介电材料。然后，即使由于制造公差而可能发生组件层的尺寸变化，也确保了存储电容器和光敏器件特性之间的预定关系。优选地，光敏器件包括栅控器件，栅极器件的栅极在接触区域中间的半导体条带区域上延伸。栅极电介质和存储电容器电介质可以包括公共层（56）的一部分。或者，导电层可以设置在条带的与栅极相对的一侧，并且还用作环境光的屏蔽。