

## Exhibit 1

(12) **United States Patent**  
**Yilmaz et al.**

(10) **Patent No.:** **US 9,256,311 B2**  
(45) **Date of Patent:** **Feb. 9, 2016**

(54) **FLEXIBLE TOUCH SENSOR**

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(73) Assignee: **Atmel Corporation**, San Jose, CA (US)

(\*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 269 days.

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(51) **Int. Cl.**

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**G06F 3/041** (2006.01)  
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**G06F 3/044** (2006.01)  
**G01R 1/073** (2006.01)  
**G01R 31/28** (2006.01)

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(52) **U.S. Cl.**

CPC ..... **G06F 3/0414** (2013.01); **G06F 3/03547** (2013.01); **G06F 3/044** (2013.01); **G01R 1/0735** (2013.01); **G01R 31/2889** (2013.01); **G06F 2203/0339** (2013.01); **G06F 2203/04112** (2013.01)

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(58) **Field of Classification Search**

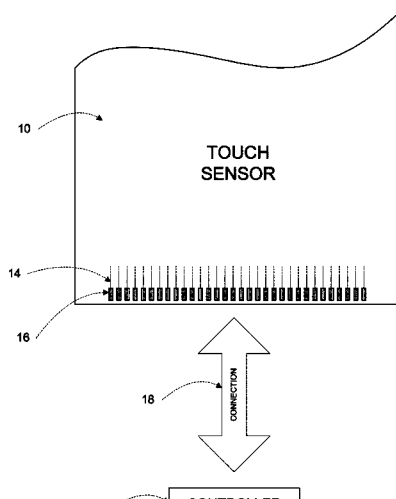
CPC ..... G06F 3/044; G06F 2203/0339; G06F 2203/04112; G06F 3/03547; G01R 1/0735; G01R 31/2889

(57) **ABSTRACT**

In one embodiment, an apparatus include a substantially flexible substrate and a touch sensor disposed on the substantially flexible substrate. The touch sensor comprising drive or sense electrodes made of flexible conductive material configured to bend with the substantially flexible substrate.

USPC ..... 324/654, 658, 663; 345/173-175  
See application file for complete search history.

**20 Claims, 7 Drawing Sheets**



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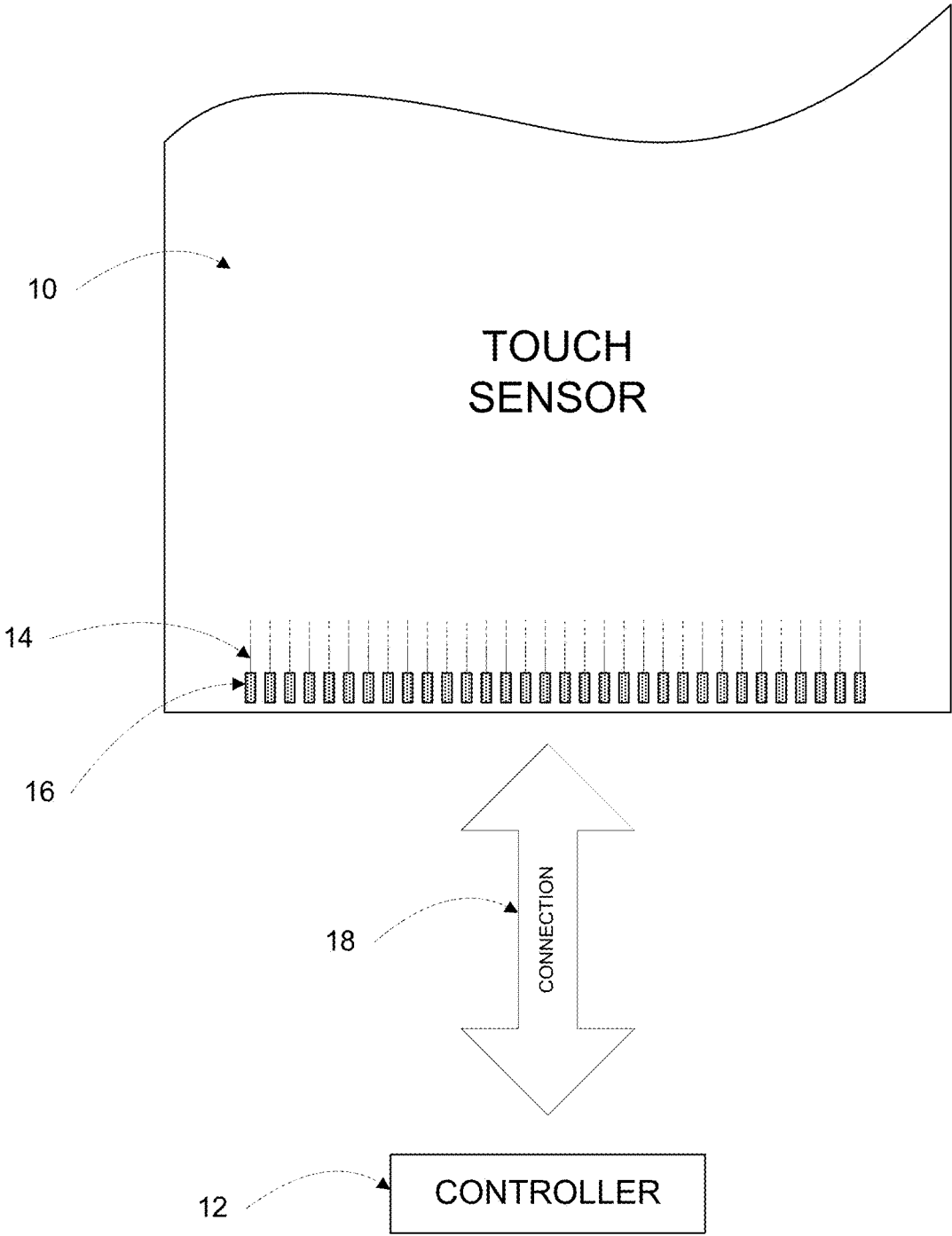


Figure 1

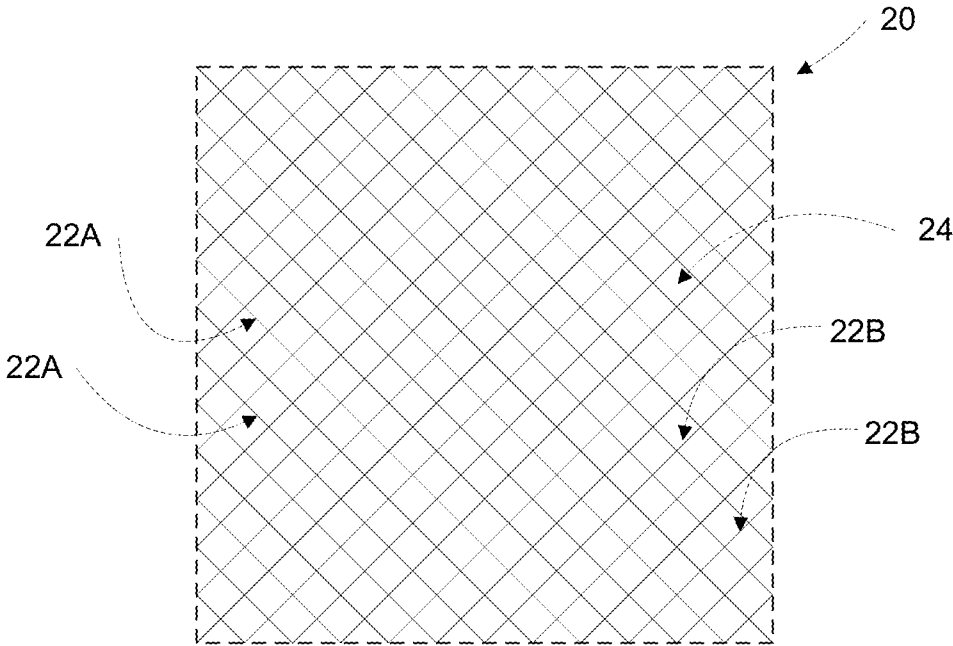


Figure 2A

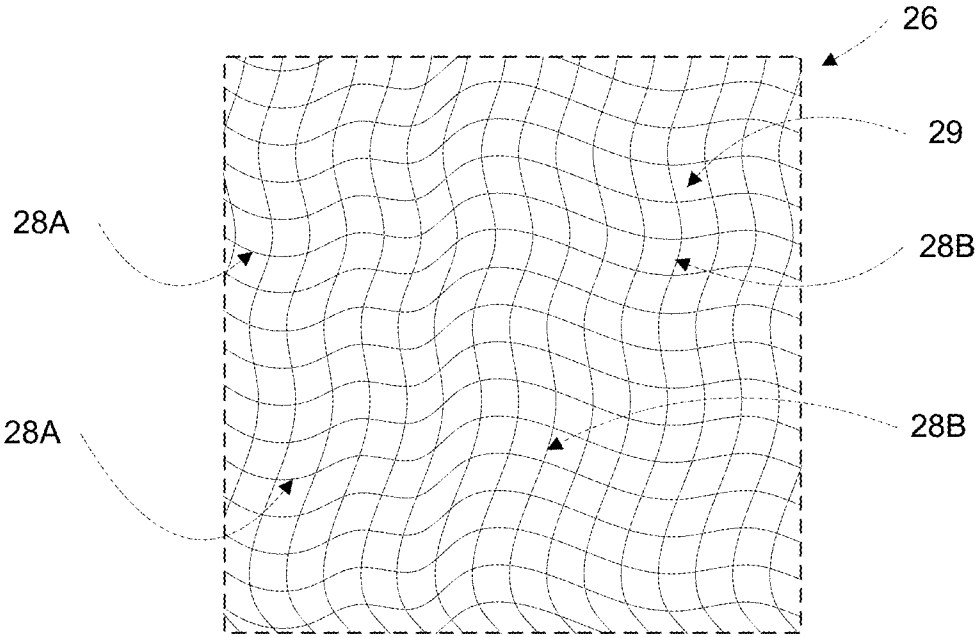


Figure 2B

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