actuator is electrically isolated but mechanically connected to and integrated with the transistor through the gate electrode of the transistor, wherein the cantilever actuator comprises at least two electrodes separate from the source electrode, the drain electrode, and the gate electrode, wherein the at least two electrodes comprise a first electrode and a second electrode, and wherein the at least two electrodes allow for simultaneous actuating of the cantilever actuator separate from accessing of the transistor through the source electrode, the drain electrode, and the gate electrode.

[0011] According to another embodiment, an electronic device capable of providing haptic feedback to a user is disclosed. The electronic device may include an array of haptic feedback devices, wherein at least one haptic feedback device of the array of haptic feedback devices includes a transistor comprising at least a source electrode, a drain electrode, and a gate electrode, and a cantilever actuator comprising a piezoelectric material. The cantilever actuator may be electrically isolated but mechanically connected to and integrated with the transistor through the gate electrode of the transistor. The cantilever actuator may include at least two electrodes separate from the source electrode, the drain electrode, and the gate electrode. Further, the at least two electrodes may allow for simultaneous actuating of the cantilever actuator separate from accessing of the transistor through the source electrode, the drain electrode, and the gate electrode. The electronic device may include a mobile device, a cellular phone, a laptop, a tablet, a media player, a global positioning system (GPS) device, an e-book reader, a patch, and/or a glove.

[0012] According to a further embodiment, a method, comprising:

detecting, through a transistor, a change in induced charge of a piezoelectric film of indicative of a user input to an electronic device, wherein the piezoelectric film is electrically isolated from the transistor but mechanically connected to the transistor;

determining, by a processor coupled to the transistor, whether a pressure was to the sensor based, at least in part, on the change in induced charge, wherein the change in induced charge is determined based, at least in part, on a threshold voltage of a transistor coupled to the piezoelectric film;

processing, by the processor, the user input based, at least in part, on the determined pressure at the sensor,

performing, by the processor, an operation based, at least in part, on the received user input; and

outputting a signal to the piezoelectric film of the sensor, wherein the signal induces movement an actuator of the sensor, wherein the signal comprises a direct current (DC) signal selected to move the actuator a determined distance or outputting a signal to the piezoelectric film of the sensor, wherein the signal comprises an alternating current (AC) signal selected to induce vibration in the actuator.

[0013] According to yet another embodiment, a method of manufacturing the single semiconductor component for an electronic device may include depositing a top gate

wherein the at least two electrodes allow for simultaneous actuating of the cantilever actuator separate from accessing of the transistor through the source electrode, the drain electrode, and the gate electrode.

16. The haptic feedback-enabled device of claim 15, further comprising a processor coupled to the array of haptic feedback devices, wherein the processor is configured to receive signals from the array of haptic feedback devices and is configured to determine a user input based on the received signals or the processor is configured to determine a haptic feedback sensation to provide to a user and configured to generate signals that when provided to the array of haptic feedback devices cause the user to receive the determined haptic feedback sensation.

17. The haptic feedback-enabled device of claim 15, further comprising a display device, wherein the array of haptic feedback devices is positioned above the display device.

18. A method, comprising:

detecting, through a transistor, a change in induced charge of a piezoelectric film of indicative of a user input to an electronic device, wherein the piezoelectric film is electrically isolated from the transistor but mechanically connected to the transistor;

determining, by a processor coupled to the transistor, whether a pressure was to the sensor based, at least in part, on the change in induced charge, wherein the change in induced charge is determined based, at least in part, on a threshold voltage of a transistor coupled to the piezoelectric film;

processing, by the processor, the user input based, at least in part, on the determined pressure at the sensor,

performing, by the processor, an operation based, at least in part, on the received user input; and

outputting a signal to the piezoelectric film of the sensor, wherein the signal induces movement an actuator of the sensor, wherein the signal comprises a direct current (DC) signal selected to move the actuator a determined distance or outputting a signal to the piezoelectric film of the sensor, wherein the signal comprises an alternating current (AC) signal selected to induce vibration in the actuator.

19. The method of claim 18, wherein the step of detecting the change in induced charge and the step of outputting the signal to the piezoelectric film are performed simultaneously.