CLAIMS

1. A semiconductor on insulator (SOI) device, comprising:

a semiconductor handle substrate comprising a porous semiconductor layer, and an etch stop layer proximate the porous semiconductor layer;

an insulator layer on the etch stop layer;

a bulk semiconductor layer between the insulator layer and the etch stop layer; and

a device semiconductor layer on the insulator layer.

2. The device of claim 1, in which the etch stop layer comprises implanted germanium.

3. The device of claim 1, in which the etch stop layer comprises a trap rich layer.

4. The device of claim 1, in which the device semiconductor layer comprises radio frequency (RF) switch devices.

5. The device of claim 1, in which the etch stop layer comprises a counter-doped layer.

6. The device of claim 5, further comprising a trap rich layer as the bulk semiconductor layer between the insulator layer and the counter-doped layer.

7. The device of claim 1, integrated into an RF front end module, the RF front end module incorporated into at least one of a music player, a video player, an entertainment unit, a navigation device, a communications device, a personal digital assistant (PDA), a fixed location data unit, a mobile phone, and a portable computer.

8. A semiconductor on insulator (SOI) device, comprising:

an insulator layer having a backside surface on a semiconductor handle substrate;

a device semiconductor layer on a front-side surface of the insulator layer; and

the semiconductor handle substrate including an etch stop layer proximate the insulator layer and a bulk semiconductor layer between the insulator layer and the etch stop layer, the semiconductor handle substrate comprising means for reducing radio frequency (RF) harmonics contacting the etch stop layer.

9. The device of claim 8, in which the etch stop layer comprises implanted germanium.

10. The device of claim 8, in which the etch stop layer comprises a trap rich layer.

11. The device of claim 8, in which the device semiconductor layer comprises radio frequency (RF) switch devices.

12. The device of claim 8, in which the etch stop layer comprises a counter-doped layer.

13. The device of claim 8, integrated into an RF front end module, the RF front end module incorporated into at least one of a music player, a video player, an entertainment unit, a navigation device, a communications device, a personal digital assistant (PDA), a fixed location data unit, a mobile phone, and a portable computer.