

Abstract

Semiconductor device as provided may include a substrate with an NMOS region and a PMOS region, and a first transistor in the NMOS region that includes a first gate stack and a first source/drain region on at least one side of the first gate stack. The semiconductor device may further include a second transistor in the PMOS region that includes a second gate stack and a second source/drain region on at least one side of the second gate stack. The first gate stack may include a first insulating film, a first gate electrode layer of first thickness, additional gate electrode layers, and a first silicon layer, which may be sequentially laminated. The second gate stack may include a second insulating film, a second gate electrode layer of second thickness greater than the first thickness, additional gate electrode layers, and a second silicon layer, which may be sequentially laminated.

FIG. 1