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Table Captions

Table 1-1 Material requirements of high-k dielectrics

Table 1-2 illustrates dielectric constant and high-k materials barrier height of electron and holes.

Figure Captions

Chapter 1

Fig. 1-1 LSTP Logic Scaling-up of Gate Leakage Current Density Limit and of Simulated Gate Leakage due to Direct Tunneling.

Fig. 1-2 Illustrates dielectric constant and high-k materials barrier height of electron and holes.

Chapter 2

Figure 2-1 The schematic illustration for measuring of ozone water system

Figure 2-2 AFM measurement results

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Figure 2-3 (b) AFM result of oxide grown by ozone treatment followed by RTP at 800℃ for 30 seconds

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Figure 2-4 the growth curves of the ultra-thin ozone oxide.

Figure 2-5 the etching rate of both ozone oxide and chemical oxide.

Chapter 3

Figure 3-1 MIS capacitor fabrication process flow.

Figure 3-2 MIS capacitor structure.

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Figure 3-23 Effective dielectric constant for various ozone treatments with PDA 700°C and PDA 900°C.