

(4.31) J

$$J = n^2 \cdot eBW_{DH} \quad \dots (1)$$

$$\frac{E_F - E_C}{kT} = \left(\frac{3\sqrt{\pi}}{4} \frac{n}{N_C} \right)^{2/3} \quad (4.32) \quad n$$

$$n = \left(\frac{E_F - E_C}{kT} \right)^3 \left(\frac{4N_C}{3\sqrt{\pi}} \right)^2$$

Overflow가
(4.33) $E_F - E_C = \Delta E_C$ (1)

(4.39)

(4.38) J

$$J = \frac{eB}{W_{QW}} \cdot (n^{2D})^2 \quad \dots (1)$$

(4.36) n^{2D}

$$E_F - E_0 = \frac{\pi\hbar^2}{m^*} n^{2D}$$

or

$$n^{2D} = \frac{m^*}{\pi\hbar^2} (\Delta E_C - E_0)$$

(1) , E_F high injection barrier top

$$J = \frac{eB}{W_{QW}} \left[\frac{m^*}{\pi\hbar^2} \cdot (\Delta E_C - E_0) \right]^2 \quad (4.39)$$