Forward-biased PN junction also have a depletion region.

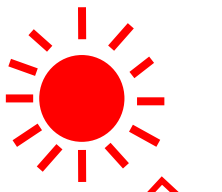
PNP junction type Bipolar Transistor can also have Completed Depleted Base.

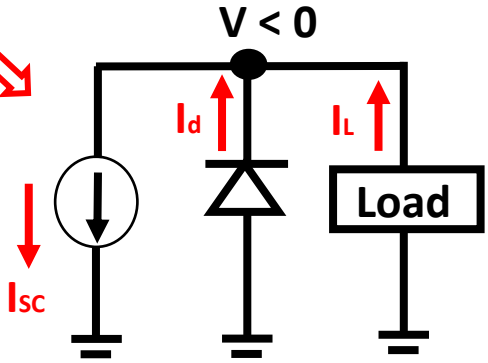
Photo electrons move swiftly without recombination in N- depletion region.

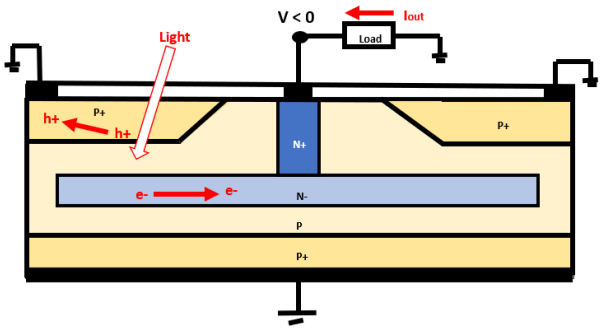
(QE) can be as large as 80% !!

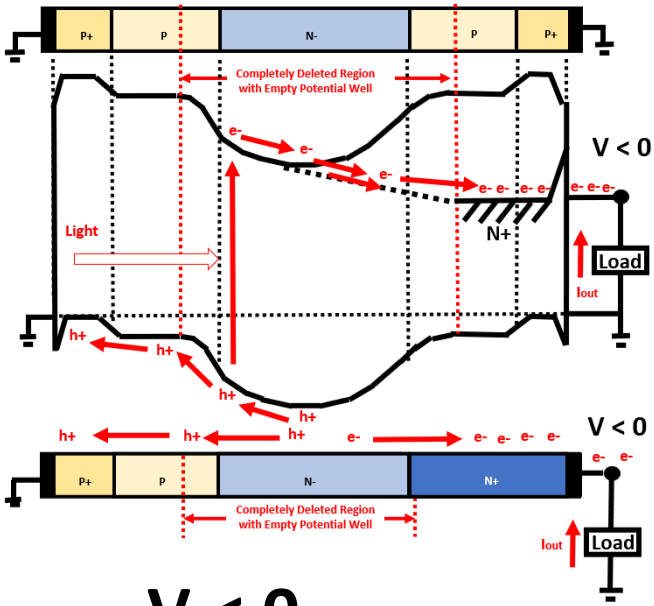
When Vmax ～ - EG/2、

Power out～ - Vmax Isc









$$I_{SC} = I_d + I_L$$

$$(-V)\, I_{SC} = (QE)\,(P_{sun}) \qquad V < 0$$

$$I_d = I_o \exp(-E_G/kT)\{\exp(-V/kT) - 1\}$$

$$(\text{Power Output}) = (-V I_L) = (-V)(I_{SC} - I_d)$$

d(Output Power) /dV = 0 gives

$$(\text{Power Output})_{max} = \frac{(I_{SC})(V_{max}^2/kT)}{1-(V_{max}/kT) - \exp(V_{max}/kT)}$$

When Vmax ～ 0 、 Power output ～ - Vmax Isc/ 2

When Vmax ～ - EG/2、 Power out～ - Vmax Isc