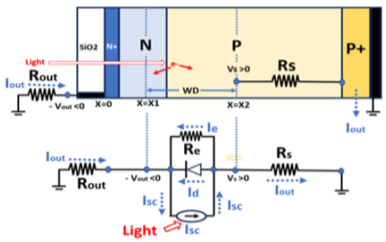
C2025_01_20_MEMO.pdf

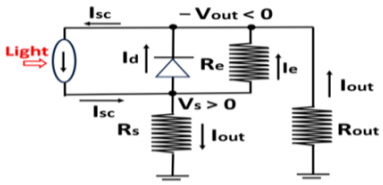
Impurity Atom Density	Resistivity N type Wafer	Resistivity P type Wafer	Substrate Resistance (Rs) 1 cm^2 P type Wafer
$10^{16} cm^{-3}$	~0.5 Ωcm	~ 1 Ωcm	~ 0.02 Ωcm
$10^{15} cm^{-3}$	~5 Ωcm	~ 10 Ωcm	~ 0.2 Ωcm
$10^{14} cm^{-3}$	~50 Ωcm	~ 200 Ωcm	~ 4 Ωcm

$$Rs = (L)(\rho)/(A)$$

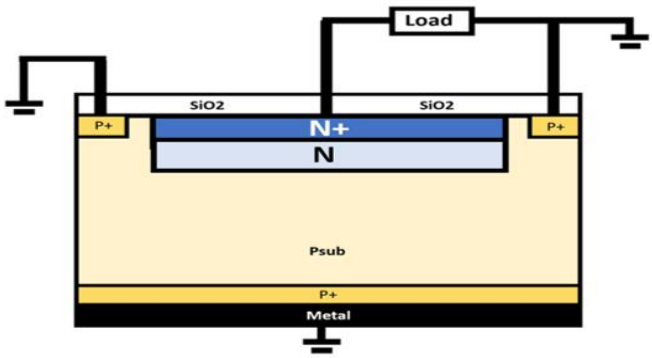
For P-type 1 cm x 1 cm silicon chip with a thickness of 200 μ m,

$$Rs \sim (200\,\mu m)(200\,\Omega cm)/(10^8\,\mu m^2) \sim 4\Omega\ ;$$



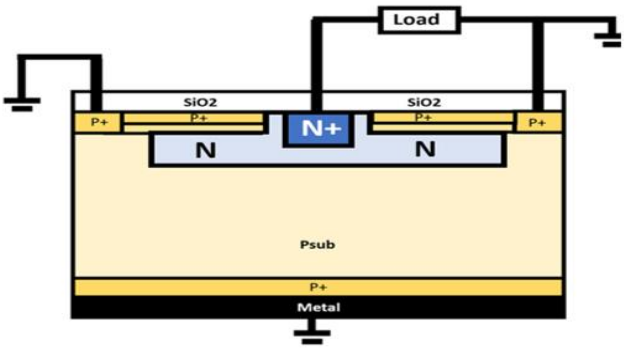


(A) Conventional Low-cost Four-Mask N+NPP+ Single Junction Solar Cell without high-energy ion-implantation



(Mask01) P+ Channel Stop
(Mask02) N+N Charge Outlet
(Mask03) Metal Contact
(Mask04) Metal Wire

(B) P+ Pinned-Surface Six-Mask P+PNPP+ Double Junction Solar Cell with high-energy ion-implantation for Buried N Channel formation



(Mask01) P+ Channel Stop
(Mask02) N+ Charge Outlet
(Mask03) Buried N Channel
(Mask04) Pinned-Surface P+ region
(Mask05) Metal Contact
(Mask06) Metal Wire