Polprevodniki

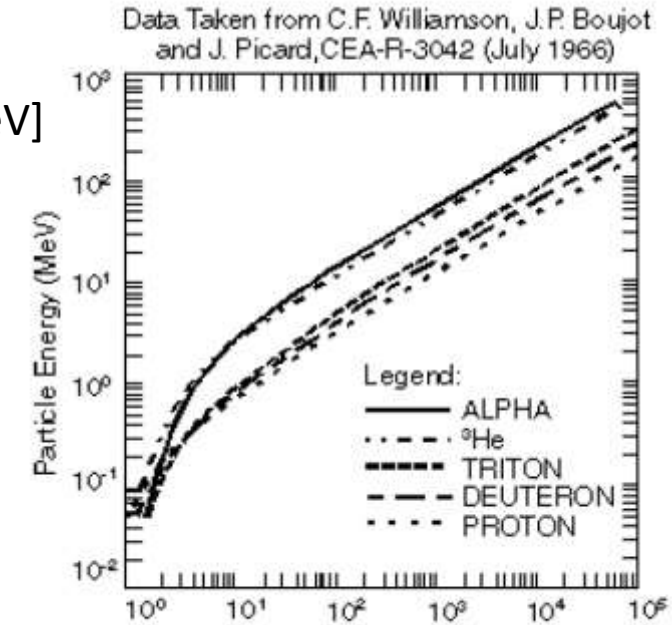
nekatere lastnosti

TABLE 11-1 Properties of Intrinsic Silicon and Germanium

	Si	Ge
Atomic number	14	32
Atomic weight	28.09	72.60
Stable isotope mass numbers	28-29-30	70-72-73-74-76
Density (300 K); g/cm^3	2.33	5.32
Atoms/cm^3	4.96×10^{22}	4.41×10^{22}
Dielectric constant	12	16
Forbidden energy gap (300 K); eV	1.115	0.665
Forbidden energy gap (0 K); eV	1.165	0.746
Intrinsic carrier density (300 K); cm^{-3}	1.5×10^{10}	2.4×10^{13}
Intrinsic resistivity (300 K); Ω · cm	2.3×10^5	47
Electron mobility (300 K); cm^2/V · s	1350	3900
Hole mobility (300 K); cm^2/V · s	480	1900
Electron mobility (77 K); cm^2/V · s	2.1×10^4	3.6×10^4
Hole mobility (77 K); cm^2/V · s	1.1×10^4	4.2×10^4
Energy per electron–hole pair (300 K); eV	3.62	
Energy per electron–hole pair (77 K); eV	3.76	2.96
Fano factor (77 K)	0.143 (Ref. 7)	0.129 (Ref. 9)
	0.084 (Ref. 8)	0.08 (Ref. 10)
	0.085 to 0.137 (Ref. 12)	< 0.11 (Ref. 11)
		0.057 to 0.064 (Ref. 12)
	0.16 (Ref. 13)	0.058 (Ref. 14)

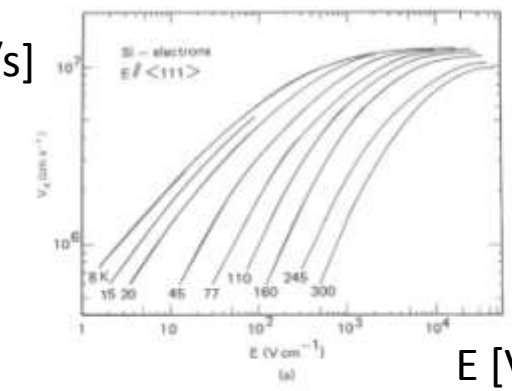
Source: G. Bertolini and A. Coche (eds.), *Semiconductor Detectors*, Elsevier-North Holland, Amsterdam, 1968, except where noted.

E [MeV]



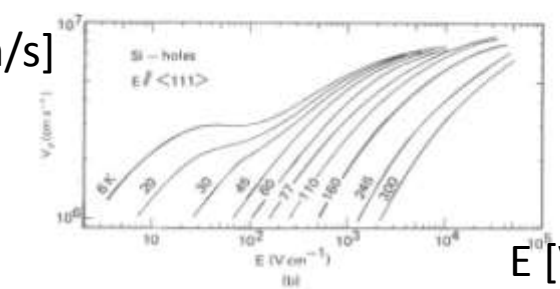
doseg v Si [μm]

v_e [cm/s]



E [V/cm]

v_h [cm/s]



E [V/cm]