Ziman should be in every device researchers’ library. See in particular, Chapter 6 on electron dynamics and Chapter 7 on transport.


Ashcroft and Mermin is another classic. In particular, see Chapters 1 and 2 on conduction in metals, Chapter 12 on semiclassical transport, and Chapter 13 on transport.


And a classic treatment of near-equilibrium transport is:


For a thorough treatment of the electron transport at the nanoscale, see


Ridley gives an excellent treatment of electron-phonon and phonon scattering in Chapters 3, 4, and 10 of


Heinzel gives a clear treatment of magneto-transport, see Chapters 2.6.3 and 6 in


Davies gives a nice treatment of the physics of low-dimensional nanostructures. Chapter 8 is a good introduction to scattering in semiconductors, and Sec. 8.8 is a gentle introduction to Feynman diagrams.

For a treatment of electron and phonon transport and an introduction to thermoelectric devices, see Chen:


For a refresher on basic semiconductor physics and devices, see Pierret:
