We investigate critical scaling for Schwinger pair production in spatially inhomogeneous electric fields, and find features of universality analogous to continuous phase transitions in critical phenomena, with the pair production rate as an order parameter. The critical point is the threshold where fields barely provide enough electrostatic energy to produce electron-positron pairs. Close to the critical point, we find scaling laws for pair production, including power-law scaling, power-law scaling with log corrections, and essential BKT-type scaling. We show that the type of scaling and the critical exponents only depend on the large-scale features of the electric field; this independence of the criticality on the microscopic details means that electric fields can be divided into universality classes.