FIG. 1. Transfer *I-V* curves for representative TFTs with ZnO layers annealed at 600, 700, 800, and 900 °C.
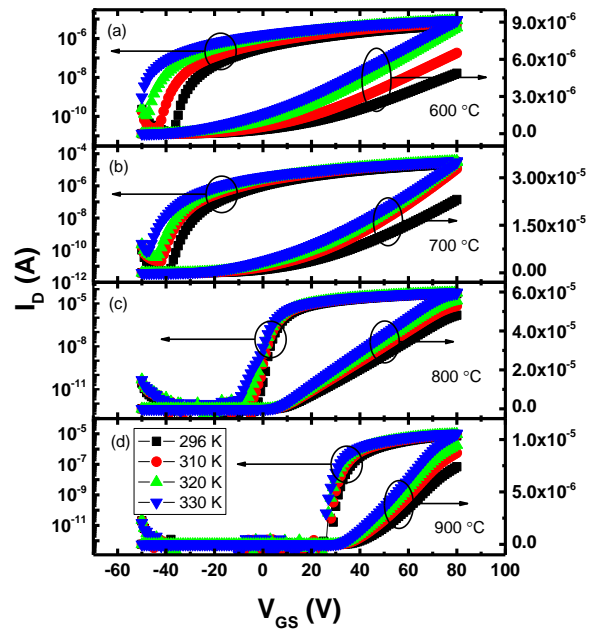

FIG. 2. Temperature-dependent transfer I-V curves for representative TFTs with ZnO layers annealed at (a) 600, (b) 700, (c) 800, and (d) 900 °C.

Arrhenius equation:

$$I_D = I_{DP} \exp\left(-\frac{E_a}{k_B T}\right), \tag{1}$$

where I_{DP} is a pre-factor, E_a is the activation energy, kB is the Boltzmann constant and T is the measurement temperature, respectively.

The Meyer-Neldel (MN) rule:

$$I_{DP} = I_{DPP} \exp(AE_a), \tag{2}$$

where I_{DPP} is the pre-factor of I_{DP} and A is the MN parameter.
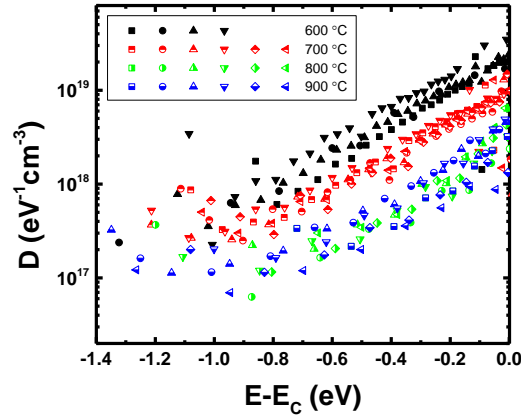

FIG. 3. Calculated DOSs from the subthreshold regime for all measured ZnO TFTs with different annealing temperature. DOSs of 600, 700, 800 and 900 °C annealed ZnO TFTs are black, red, green and blue marks, respectively. Marks with different shapes represent different transistors that have been measured.