Supporting information

Anomaly Negative Resistance Phenomena in Highly Epitaxial PrBa0.7Ca0.3Co2O5+δ Thin Films Induced from Superfast Redox Reactions

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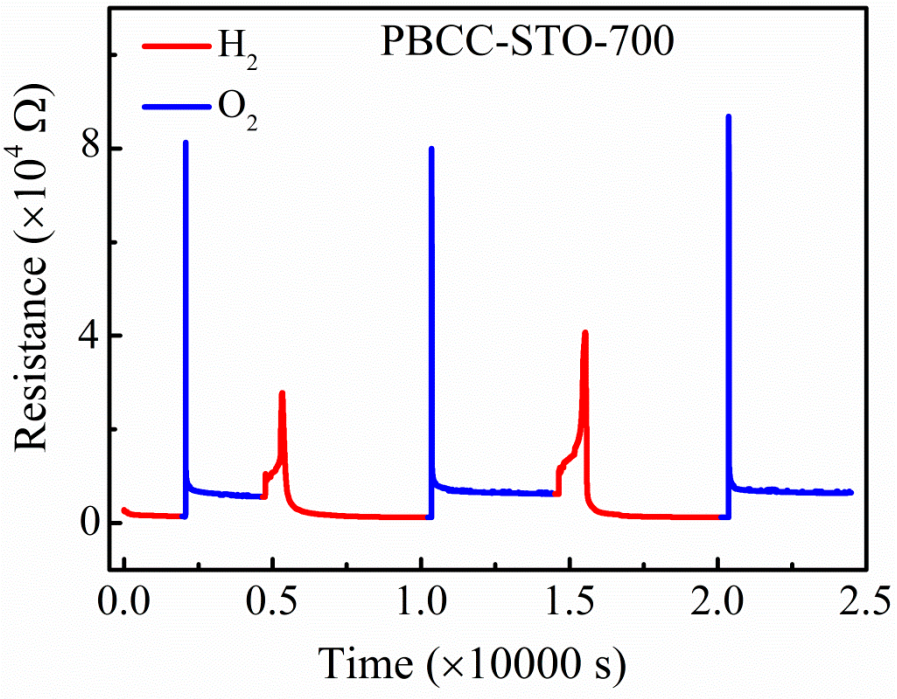

Figure S1. R(t) *vs.* t curves of PBCC thin films grown on (001) STO with switching the flow of H_2 and O_2 gases at 700 ^oC when applied potential is set as 1.0 V.

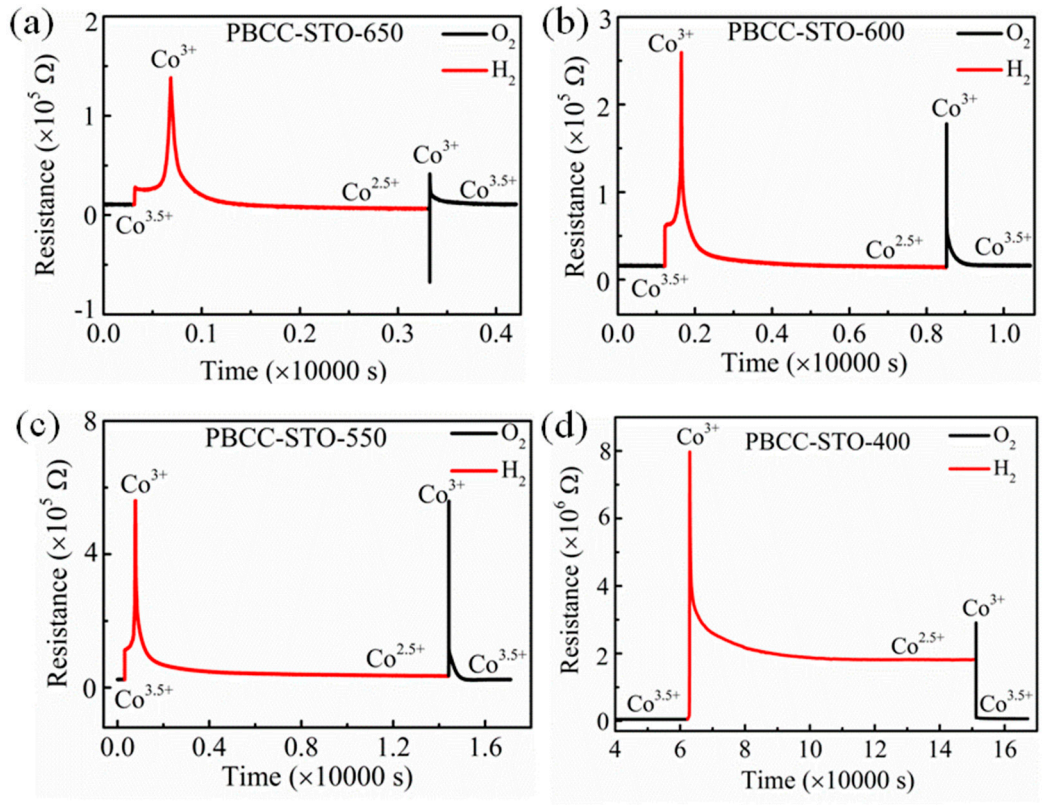

Figure S2. Single redox processes of PBCC thin films grown on STO with switching the flow of H_2 and O_2 gases at various temperatures (650, 600, 550, and 400 °C).

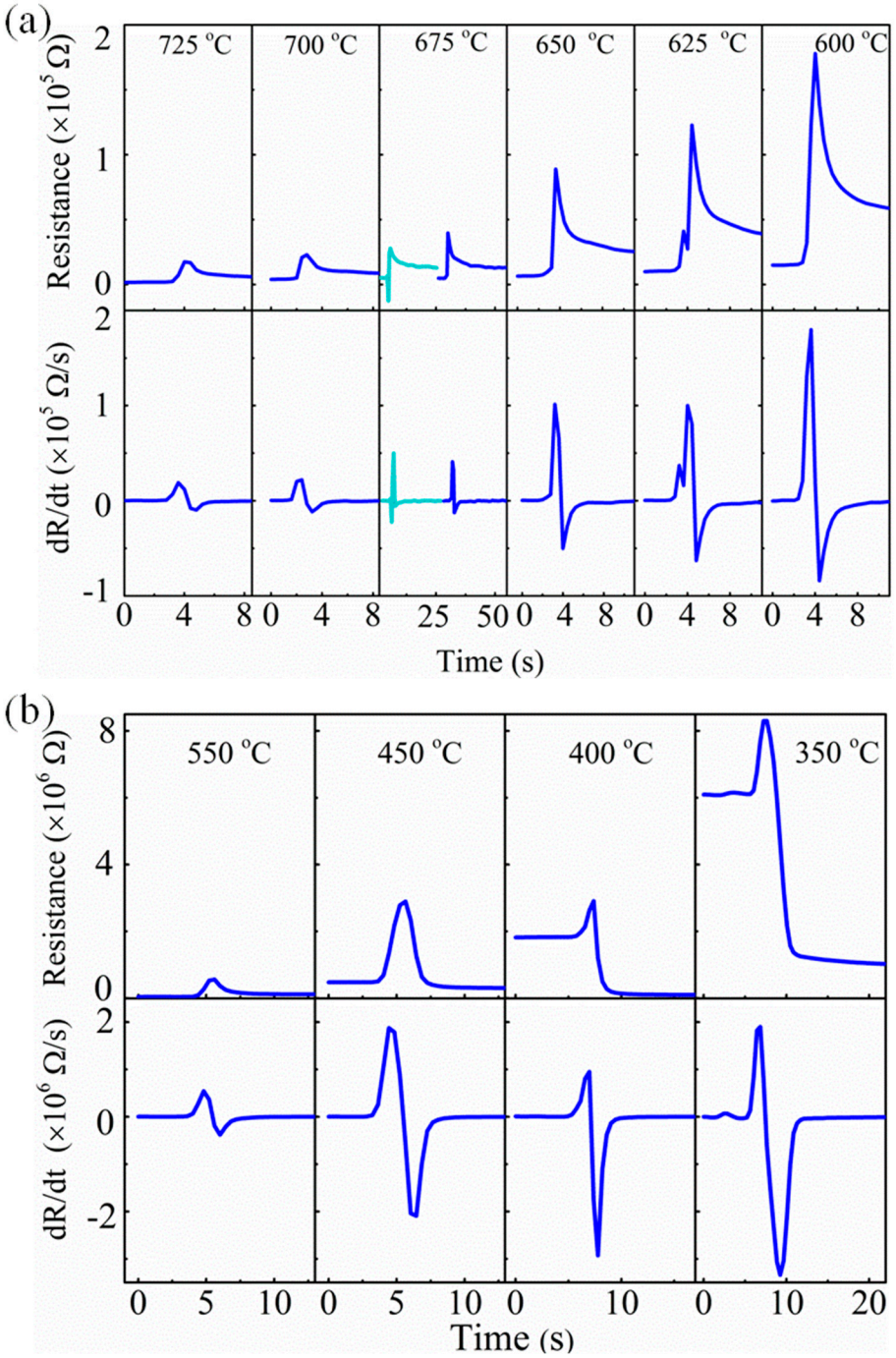

Figure S3. R(t) *vs.* t and dR(t)/dt *vs.* t of the epitaxial PBCC thin film under O_2 at various temperatures.

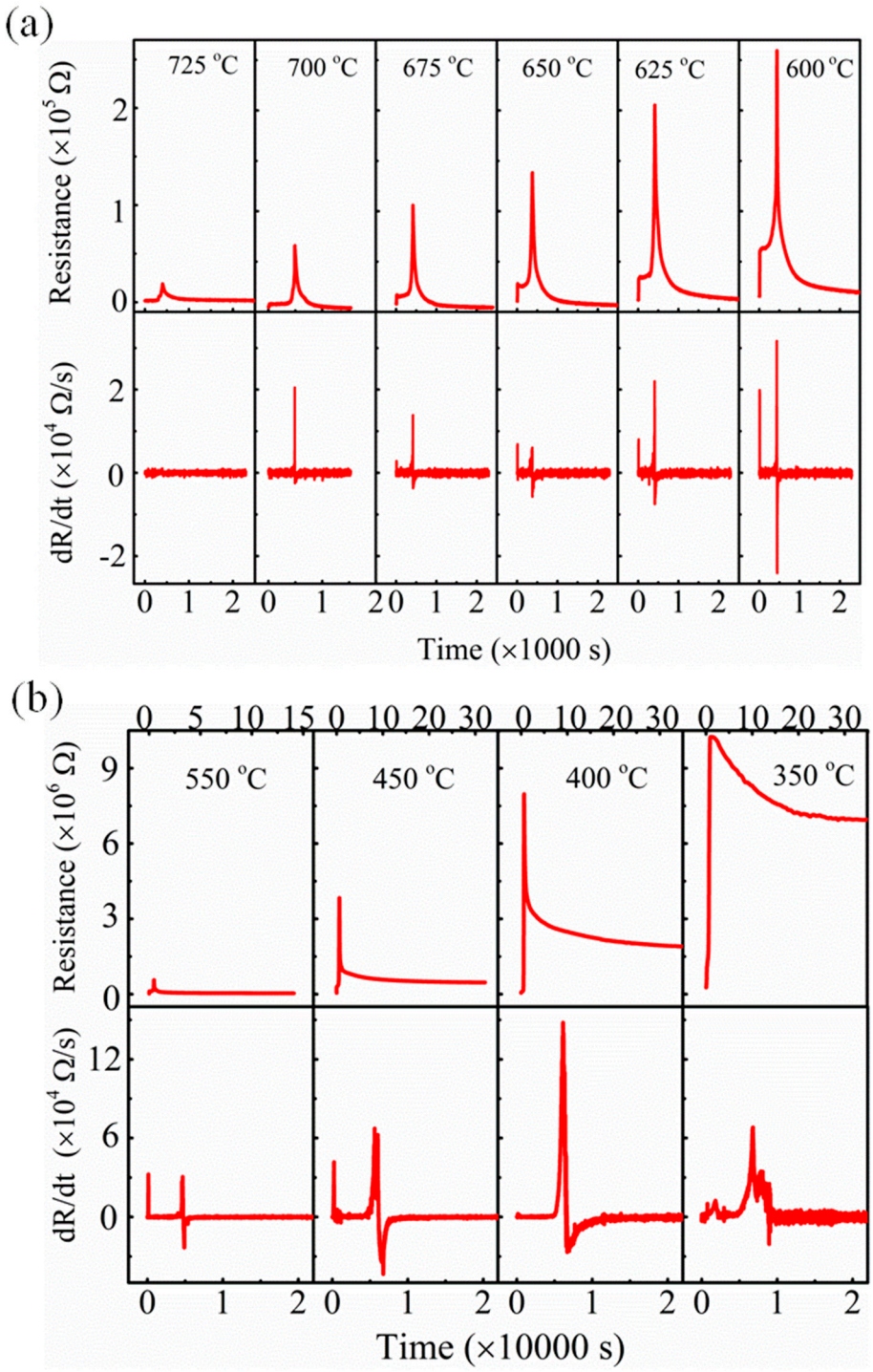

Figure S4. R(t) *vs.* t and dR(t)/dt *vs.* t of the epitaxial PBCC thin film under H_2 at various temperatures.