Objective:
Traditional soft start circuits use NTC resistor or resistor and relay to limit the inrush current. These methods will decrease the reliability of the circuit or cause losses. The proposed soft start circuit integrates the control circuit and switches together as a rectifier. With such an approach, the inrush current is eliminated without introducing an auxiliary circuit or additional loss.

Feature:
- No additional loss
- No inrush current
- Self contained, no power supply needed for control circuit

Application examples:
- All single phase and three phase rectifiers

Circuit performance of traditional diode rectifier

Circuit performance with soft start circuit