



40WLEDBULBGEVB: Dimmable 120 Vac, 6.5 W Input Parallel-to-Series Lighting Circuit Evaluation Board

The 40WLEDBULBGEVB showcases an enhanced parallel-to-series LED lighting circuit. It uses updated control circuitry that allows the ability to accommodate multiple LED voltages by simply adjusting a single resistor (R3) as well as compensating for drift in LED voltage with temperature. It also has superb PF, THD performance, dimmability, and efficiency at a low cost.



ON Semiconductor's parallel-to-series topology dynamically adjusts LED load voltage as the instantaneous bridge output voltage varies. While a switch-mode power supply (a buck converter) reconfigures the input voltage to match the load, this circuit reconfigures the load to match the input voltage. When the instantaneous input voltage is relatively low, the LEDs are configured in parallel. When the instantaneous input voltage is relatively high, the LEDs are configured in series.

The circuit is designed for input voltages between 100 Vac and 140 Vac. ON Semiconductor CCRs are used to provide constant LED current and to protect LEDs from over-voltage conditions. The circuit employs an additional CCR (shown as CCR2) to increase LED current at high voltages for improved PF and THD performance.

Evaluation/Development Tool Information				
Product	Status	Compliance	Short Description	Parts Used
40WLEDBULBGEVB	Active	Pb-free	Dimmable 120 Vac, 6.5 W Input Parallel-to-Series Lighting Circuit Evaluation Board	NSIC2020JBT3G , NSIC2030JBT3G