

Automotive LED Driver Provides 4.5-V to 75-V Input

[Taiwan Semiconductor](#)'s TS19503 is a single-channel, continuous-conduction, hysteretic-mode converter for driving single or multiple LEDs. Featuring best-in-class 4.5- to 75-V input and 2-A output, the TS19503 offers up to 97% efficiency and 2% accuracy over a wide range of external conditions. AEC-Q100 qualification assures high reliability while the hysteretic (bang-bang) control technique provides high accuracy and reduced external parts count (see the figure).

Target automotive applications include high- and low-beam headlights, daytime running lights, turn indicators, position indicator lights, fog lights, ATV and four-wheel drive high-brightness lamps. The TS19503 is also well suited for dc input industrial and medical applications where SELV and line isolation considerations are a concern.

Other differentiating features include a wide operating temperature of -40°C to +125°C; PWM and analog dimming with 1000:1 dimming range; adjustable frequency to 1 MHz, enabling design optimization to meet EMI requirements; an MSOP-10EP package, which enables heat sink on package for improved thermal performance; and an internal fault status flag, which provides added protection against damaging faults.

"The TS19503's constant current mode hysteretic control results in a very low parts count," reported Sam Wang, vice president, TSC Products. "And our design calculator tool makes short work of implementing a working solution."

Unit pricing is OEM quantities is \$1.85. For more information, see the [TS19503CB10H page](#).

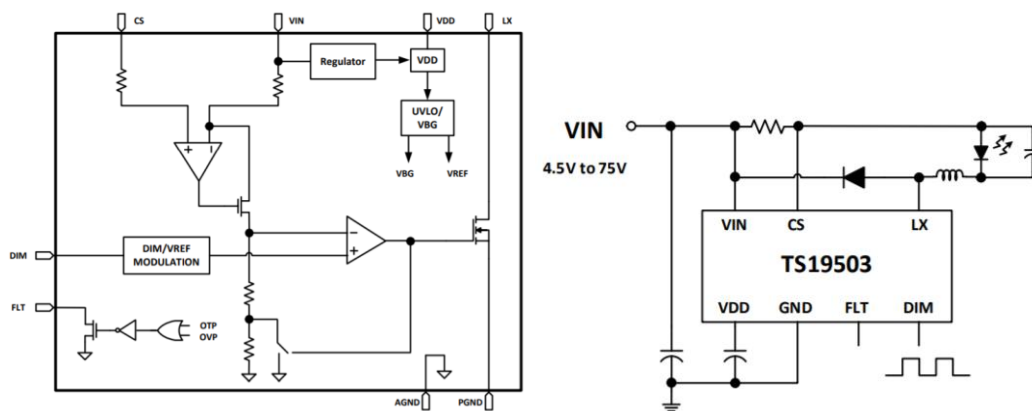


Figure. The TS19503 is a continuous-conduction mode inductive stepdown converter, designed for driving single or multiple LEDs. Operating from an input supply between 4.5 V and 75 V, it provides a high accuracy output current externally adjustable up to 2 A. According to the vendor, the TS19503 is the most highly integrated LED driver IC in its output power class, delivering up to 25 W of driving power. An internal block diagram (left) and application diagram (right) are shown here.