TLD5542-1QV
H-Bridge DC/DC Controller
Average model

How to get started
Simulation model features

**Target:** perform AC simulations for converter stability analysis
- The model is a simplified version of the real device showing a reduced number of pins on the symbol and limited test bench components
- Only those elements relevant for stability have been considered inside the model
- For a better understanding of the device operation, please consult the complete transient model available on product web site

**Features:**
- The model is self-detecting the operation mode (BUCK or BOOST) by comparing input and output voltages internally
- Bode plots (Gain and Phase) are automatically opened at the end of simulation

**Model parameters** available on test bench for user control:

- **frequency**: controller switching frequency, range from 200 kHz to 700 kHz
- **inductor**: converter switching inductor
- **rswcs**: switch and inductor current sense resistor

**Note:** the model is guaranteed only in BUCK and BOOST current mode regulation.
Application information – test bench

- The setup is configured as Boost topology in current mode regulation
- Output current is set at 1 A (RFB=150 mΩ), 100% analog dimming
- Equivalent output voltage for 6 LEDs @ 1 A is 26.2 V

Controller Switching Frequency
FREQUENCY = 350kHz;
Converter Switching Inductor
INDUCTOR = 15uH;
Current Sense Resistor
RSWCS = 10mΩ;
Application information – AC results

- DC gain = 70.05 dB
- 0dB cross-over frequency (Hz): 1.92k
- Phase margin: 44.66 at frequency (Hz): 1.92k

Gain (dB)

Frequency (Hz)

Phase [deg]

Copyright © Infineon Technologies AG 2021. All rights reserved.
Part of your life. Part of tomorrow.