L6699: Double-ended controller specific to series-resonant half-bridge topology

The new generation of high performance resonant controller
Symmetrical Duty Cycle, variable frequency control of ZVS resonant Half Bridge (HB)

Available in SO16N Halogen Free package
<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
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<tr>
<td>• 600 V high side gate driver with integrated bootstrap diode and high (\frac{dV}{dt}) immunity</td>
<td>• Improved reliability and reduced BOM</td>
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<td>• Non linear soft-start for monotonic output voltage rise</td>
<td>• Prevents any dangerous hard switching at start-up</td>
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<td>• Self-Adjusting adaptive dead-time</td>
<td>• Maximized efficiency at both light and full load</td>
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| • Superior stand-by performance:  
  1. Improved Burst-mode operating at light-load and no-load  
  2. Direct interface with PFC controller | 1. No audible noise  
  2. Reduced BOM |
| • High performance protections:  
  1. Anti-capacitive mode protection  
  2. Two-level OCP: frequency-shift and immediate shutdown  
  3. Latched disable input  
  4. Input for brownout protection or power ON/OFF sequencing | 1. Avoid potential MOSFET cross conduction; avoid hard switching; improve reliability; reduce EMI  
  2. Improved design flexibility  
  3. Improved design flexibility  
  4. Easier system design |
Why move to L6699

It improves efficiency thanks to:
- A reduced internal consumption: 1 mA of quiescent current
- Its internal auto adjusted dead-time which allows the user to optimize the design of the resonant tank so that soft-switching can be achieved with a lower level of reactive energy (i.e. magnetizing current), hence optimizing efficiency under a broader load range, from full to light load.

It improves system reliability and lifetime thanks to:
- The internal Anti-capacitive protection which prevents the converter from working in or too close to the capacitive mode, in order to guarantee soft-switching
- The proprietary smooth start-up circuit that controls the half-bridge to prevent hard-switching from occurring in the initial cycles.

It avoids audible noise when entering burst-mode operation:
- The first driver pulse length is shorter to prevent the initial peak current

Easy to design!
- Full set of both circuit calculation and simulation files (Orcad and Simplis)
90 W/19 V demo
final efficiency data: full load

The board is mounting diodes on secondary side

Complete system: PFC + LLC stages
Efficiency is higher than 53% with $P_{out}$ of 250 mW (ErP lot 6 compliant)

Complete system: PFC + LLC stages
150 W/12 V demo efficiency data: full load

Complete system: PFC + LLC + SRK2000A
150 W/12 V demo
final efficiency data: light load

Efficiency is higher than 51% with $P_{\text{out}}$ of 250 mW (ErP lot 6 compliant)

Complete system: PFC + LLC + SRK2000A
ST stands for life.augmented