

CLASS H//, an Analog Driverless, High Efficiency Power Topology.

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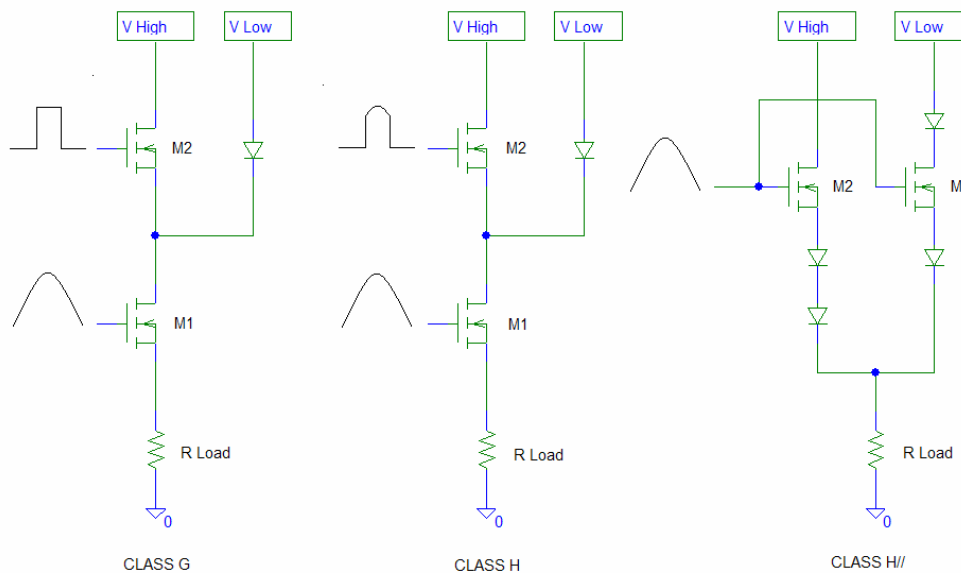
In electronic circuits, the energy efficiency of an analog power stage is related to the power dissipated by the power stage as product of voltage drop and current. If current cannot be manipulated, being it the current of the load, the voltage drop depends on the voltage of the DC power supply in use and the voltage on the load.

-**In class G**, two power supplies are used, V High and V Low. If output voltage is below V Low, the V Low power supply is used, if output voltage is above V Low, the V High power supply is used. This method requires a very fast “low” device to react to the switching of supply voltage.

-**In class H**, two power supplies are used, V High and V Low. If output voltage is below V Low, the V Low power supply is used, if output voltage is above V Low, the V High power supply is used, and the device connected to V High becomes the amplifier and the low device is maintained in full conduction. The “low” device needs not to be very fast.

-Both class G and class H require complex driver circuitry, which is in part floating.

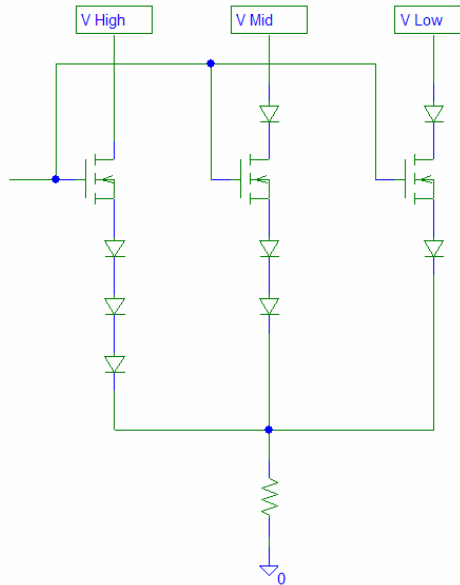
I now introduce a new CLASS H//, or “parallel class H” that does not require any special driving circuitry, thus reducing complexity, promising higher reliability and capability to operate with a large number of supply voltages. Higher frequencies are also possible.



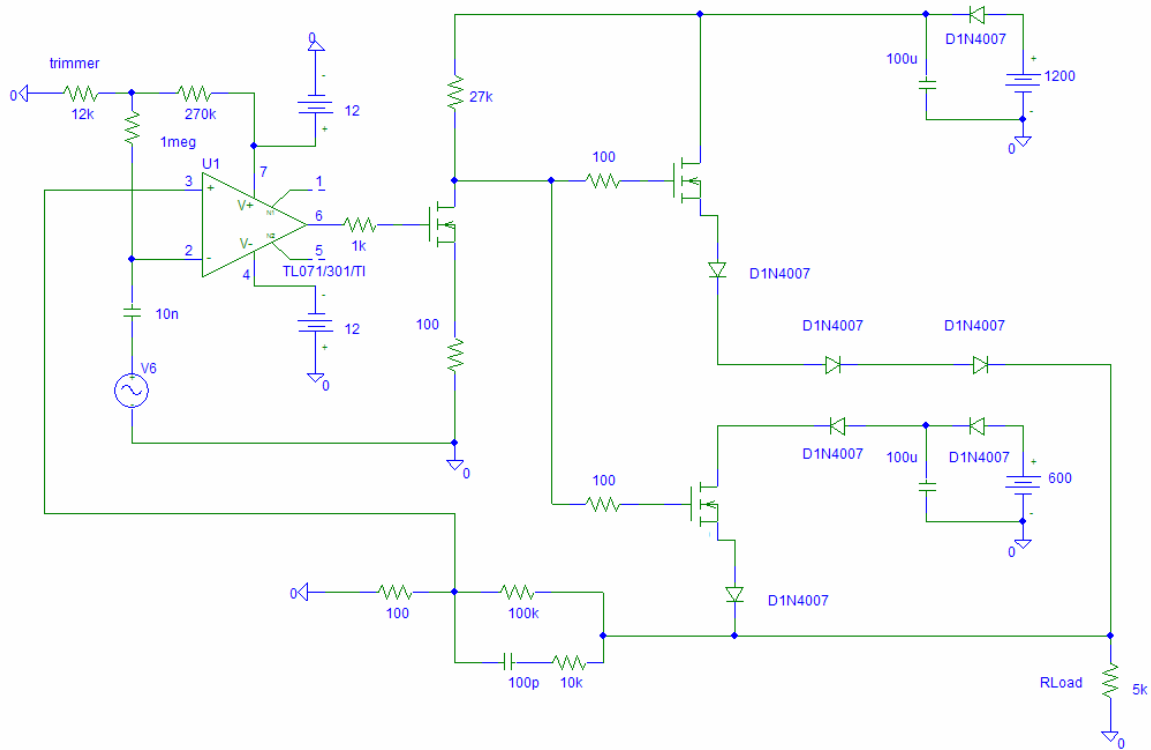
Referring to the circuit on the right, because of the voltage drop of the diodes connected to the sources of M1 and M2, if the output voltage is below V Low, only M1 will conduct even if both Mos are connected to their supply voltages. If the output voltage is above V Low, M1 could not provide current and M2 will start to conduct, the drain diode of M1 will stop conduction and will isolate M1, gate overvoltage in M1 is of no concern.

Going through a supply voltage boundary will introduce an amount of crossover distortion that has to be compensated by feedback if required.

The use of more than two supply voltages is possible:



A proof of concept example of an audio high voltage unipolar amplifier is:



This concept and ClassH// name and definitions are
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