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THE POWER MANAGEMENT LEADER

AUDIO

IR2011 and IRS2011 Comparison in Class D Audio Application

By Jun Honda, International Rectifier

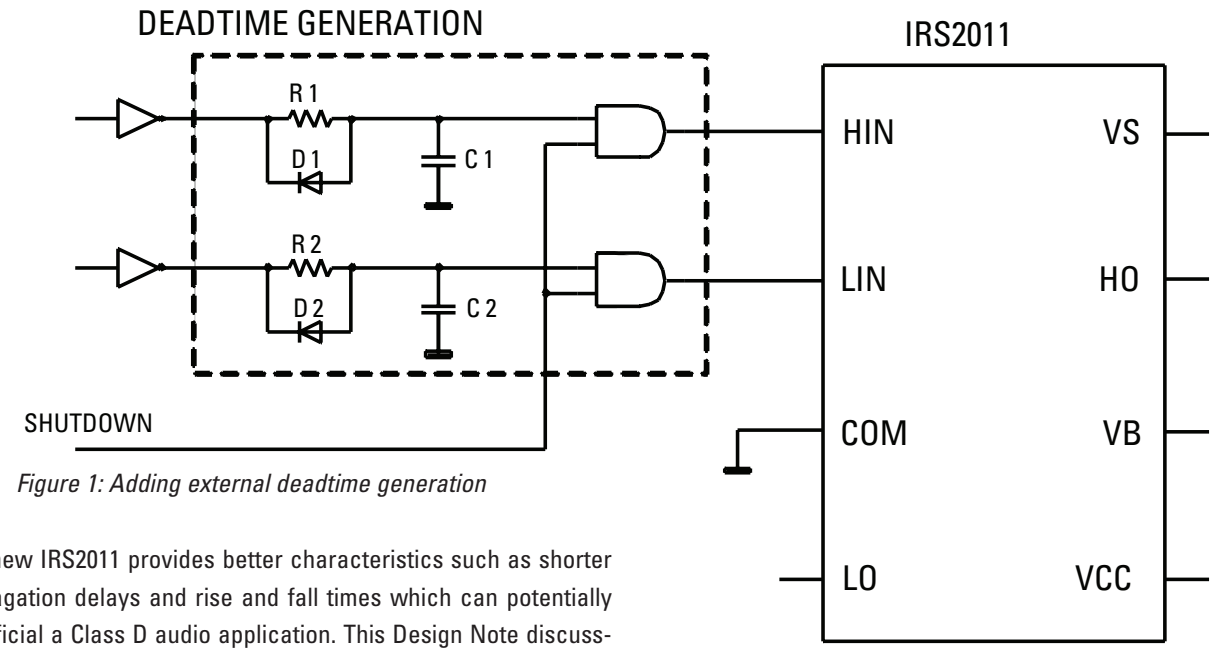

Figure 1: Adding external deadtime generation

The new IRS2011 provides better characteristics such as shorter propagation delays and rise and fall times which can potentially beneficial a Class D audio application. This Design Note discusses the timing differences between the IR2011 and the IRS2011 HVICs.

Timing Difference:

The IR2011 and the IRS2011 are identical in terms of functionality. The major difference is the output timing settings. The IR2011 has 5 ns longer turn-on propagation delay over turn-off propagation delay while the IRS2011 has symmetrical timing (i.e., the same turn-on and turn-off propagation delays).

Component #	Value
D1	1N4148
D2	1N4148
R1	1 kΩ
R2	1 kΩ
C1	(deadtime) / R1
C2	(deadtime) / R2

TABLE 1: Suggested component values

Some applications may desire the asymmetrical timing of the IR2011. In order for the IRS2011 to obtain the same timing setting as the IR2011, International Rectifier suggests adding an external deadtime generation block (as shown in Fig. 1).

The time constants of R1·C1 and R2·C2 add more turn-on delay while D1 and D2 bypass R1 and R2 respectively so as not to impact the turn-off delay time. This results in a longer turn-on propagation delay by the amount of the RC time constant, with minimal changes to the turn-off delay.

Suggested values for each component to obtain a target deadtime are listed in Table 1.