

TD310 USED IN A HIGH SIDE DRIVING

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INTRODUCTION

The TD310 is a triple MOS or IGBT driver which integrates all functions suited for compact and highly secure driving such as adjustable Under Voltage Lockout feature (UVLO), sense comparator with alarm output and automatic shutdown, independent operational amplifier, enable pin, and global standby mode (e.g.: for portable applications).

Its wide operating supply voltage range makes it appropriate in many different applications, in particular in 12V supplied automotive field.

The following shows how secure high side driving is easily achievable using few external and low cost components in very common lamp high side driving applications.

PRINCIPLE

The Op Amp is used as an oscillator by means of the R1C1 backloop (blinker frequency ~1Hz) and enables/disables the charge pump that drives the high side MOS Q1.

The charge pump is made using one of the three inverting buffers mounted as an oscillator with the R2C2 backloop (charge pump frequency ~100kHz). The capacitor C is used to transfer the buffer high state voltage to the gate of Q1.

The diode D1 refrains the gate from discharging and the diode D2 shifts the voltage across C above the source of Q1.

Figure 1 shows the blinker application schematic, and figures 2 and 3 show the resulting traces:

- trace 1 : the Op Amp output
- trace 2 : the inverting buffer output
- trace 3 : the transistor Q1 gate (low Ron)
- trace 4 : the load (12V/21W lamp)

Figure 1

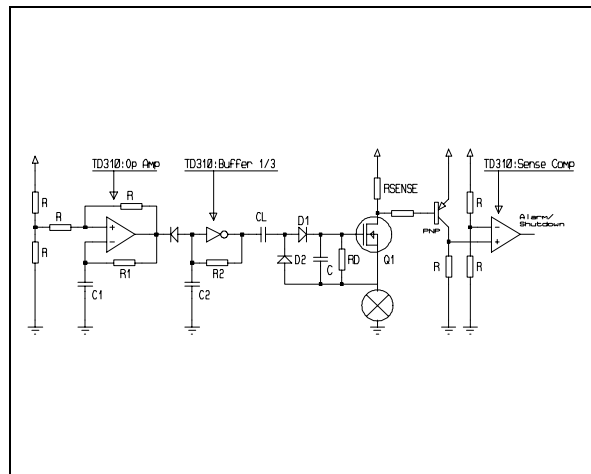


Figure 2

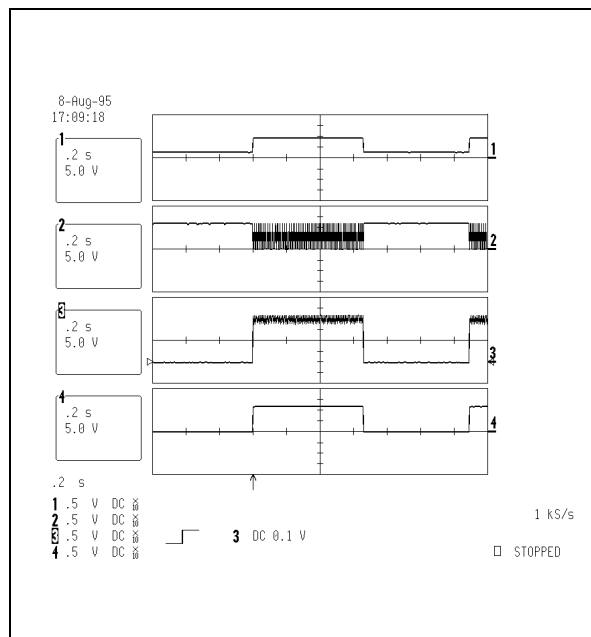
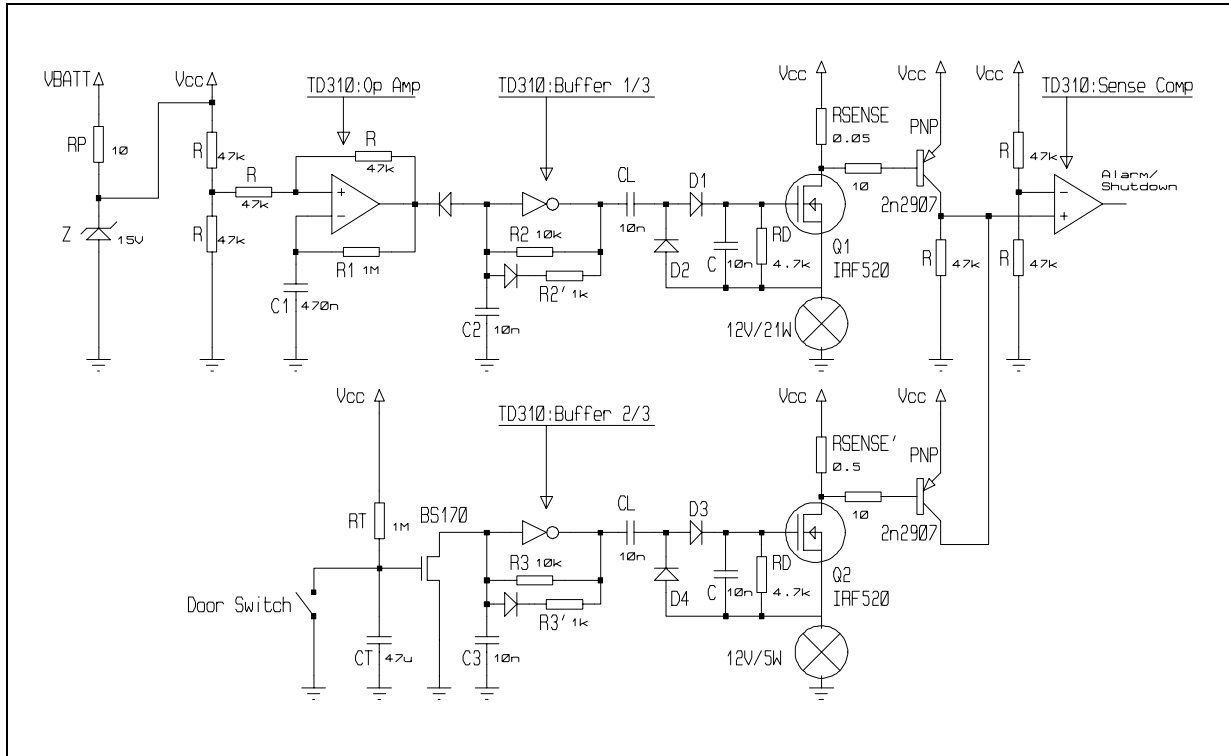


Figure 6 shows the ready to use applications (blinker and timing functions) described above where both applications are short circuit protected by the same sense comparator.

The resistor R2' and diode have been added to balance the duty cycle of the 100kHz oscillator.

Figure 6



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