Infrared Remote Control Receivers

Application Note

AGC6 for Smartphone IR Proximity Interference

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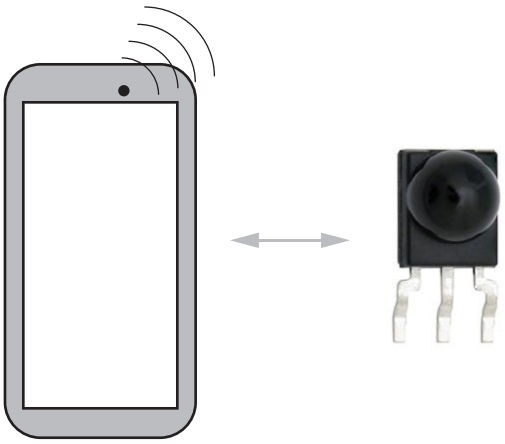
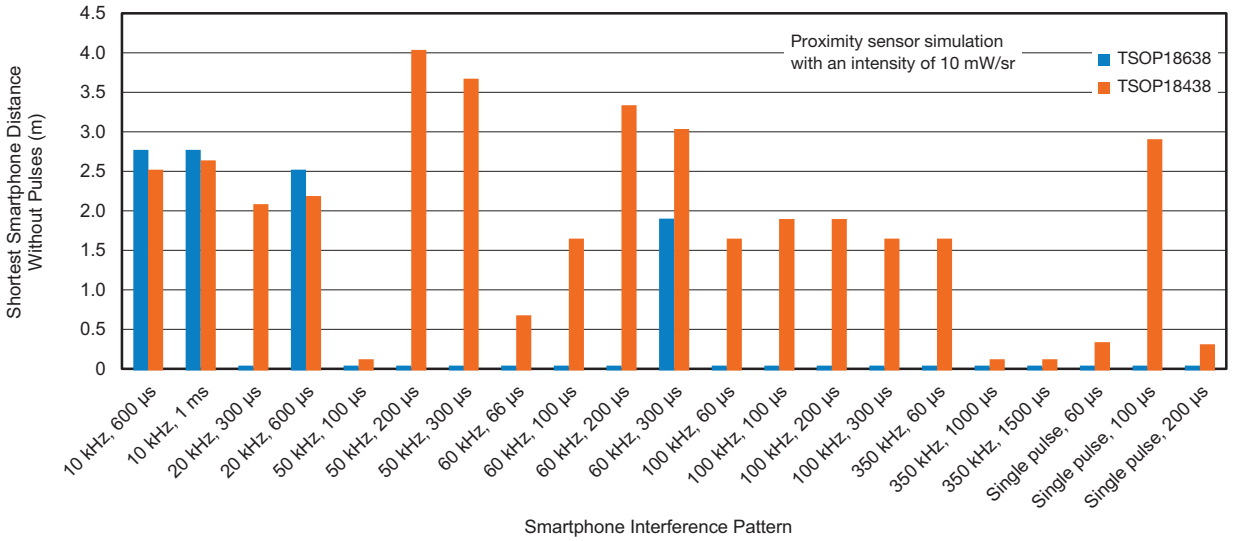


The evolution of IR remote control receivers has to keep pace with technologies such as TV backlighting, compact fluorescent lamps, and Wi-Fi. These technologies bring with them new noise sources, and some modulated IR signals in the kHz range where IR receivers are most sensitive.

One prominent new source of optical disturbance is caused by the proximity sensors integrated into modern smartphones. These sensors are used to switch off the display when the user brings the phone to the ear during a call. The proximity sensors may use modulated or unmodulated signals. Such pulses tend to induce oscillations in the receiver's band pass filter which may in turn cause unwanted pulses at the output of the receiver. The new TSOP1xxxx series receivers with AGC6 setting contain a newly designed, extra-long integrator, which makes the IR receiver more robust against this type of interference.



The interference patterns emitted by various cell phones of commonly used brands were reproduced in the lab and our IR receivers were exposed to them in a controlled environment. The test evaluated the shortest distance between the IR receiver and the interference source without producing spurious output pulses. A comparison of AGC4 and AGC6 settings clearly demonstrates the enhanced performance of AGC6 for most of the signal patterns. The short bars from 50 kHz upward as well as the unmodulated single pulses indicate that the output of the AGC6 receiver stays calm even in extremely close proximity to the cell phone.

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