Large Signal Analysis Of The Infrared Semiconductor Mercury-Cadmium-Telluride Detectors

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Summary

A mathematical model for the relationship between the output voltage and incident radiation of the infrared semiconductor mercury-cadmium-telluride (MCT) detector is presented. The model, basically a sine-series function, can easily yield closed-form expressions for the harmonic and intermodulation performance of the MCT detector with large-amplitude multisinusoidal incident radiation. The special case of two-tone equal-amplitude incident radiation is considered in detail. The results show that the second-order harmonic and intermodulation products are always higher than the third-order components. Moreover, the results show that the second-order intermodulation is always dominant.

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