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标题: The Cryogenic Multi-Channel Readout System for Submillimeter/Terahertz Cameras

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摘要: Our purpose of this study is to realize the submillimeter/terahertz camera with large number of pixels (> 10 k). To realize such a camera, we have investigated the cryogenic multi-channel readout system with cryogenic ICs (Integrated Circuits) made up with n-channel GaAs-JFETs. Based on previous investigations, we designed and manufactured the multi-chip module with the cryogenic ICs. This multi-chip module is designed to multiplex 32-channel parallel input current signals into 2 serial voltage signals. Estimated maximum reset frequency of current integration amplifiers is 3 kHz and estimated total power dissipation is about 400  $\mu$ W. The size of this module is 40 mmx30 mmx2 mm. We have demonstrated operation of these modules and preparing integration of these modules with the STJ (Superconductor Tunnel Junction) photon direct detectors.

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