

**PERFORMANCE CHARACTERIZATION
OF THE
SUNPOWER CRYOCOOLER**

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The Sunpower 140K cryocooler was characterized by JPL in a number of performance areas including thermal, vibration, resonance, EMI, and off-state parasitic. The results of these measurements are presented. Where possible, the measurements are compared with calculated performance curves.

The Sunpower 140K cryocooler is an integral in-line single compressor/single displacer configuration that features the use of low friction gas bearings on all running surfaces. The design is very compact, simple, and light-weight. This type of cryocooler was originally intended for use in the electronics industry. The original machine provided 35 watts of cooling from 223 K to 318 K with 65 watts of input power. The 140 K cooler, characterized by JPL, is a modified version of the original cooler and achieves 4 to 8 watts of cooling over the temperature range 120 K to 140 K with less than 70 watts of input power.

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