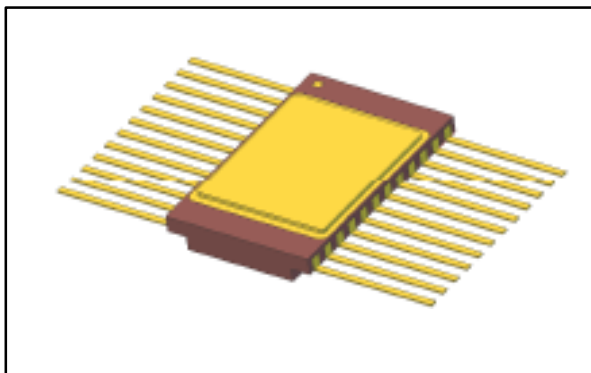


Rad-hard high resolution DAC

Data brief



- High accuracy instrumentation for systems operating in space

Description

The RHRDAC1612 is a very low-noise, low frequency, radiation hardened DAC optimized to operate in a bandwidth up to 3 kHz.

This DAC is a Sigma-Delta ($\Sigma\Delta$) architecture which provides superior linearity performance and features a very good signal to noise ratio of 96 dB @ 3 kHz.

The DAC operates with a standard SPI, input data, and converts it into a single-ended internally filtered voltage output. SPI interface allows write and read modes implementation.

Specifically designed to optimize precision over power consumption, the RHRDAC1612 only dissipates 20 mW at 12 ksp/s clocking. The device employs a variety of radiation hardening strategies and the usage of radiation tolerant standard cells and techniques at layout level.

The RHRDAC1612 has an operating temperature range of -55 °C to +125 °C and is available in a Flat 24-pin ceramic package.

Features

- $\Sigma\Delta$ DAC
- 16-bit resolution at 3 kHz bandwidth
- Designed to fit with 1.2 V voltage reference RHF100
- External master clock: 2.4 to 3.6 MHz
- Internal master clock: 3 MHz
- Sampling frequency: 12 ksp/s at 3 MHz master clock
- Serial peripheral interface (SPI)
- Selectable input format: straight binary or Two's complement
- Single ended output voltage externally filtered
- Output feedback pin dedicated for high precision sensing
- 1.8 V/3.3 V digital interfaces
- 3 V to 3.6 V analog supply
- 15 mW power consumption
- Power down mode
- 100 krad MIL-STD-883 1019.7
- SEL immune (up to 120 MeV.cm²/mg)
- SEU characterized

Table 1: Device summary table

Parameter	RH-DAC1612K1
SMD ⁽¹⁾	–
Quality level	Engineering model
Package	Flat-24
Mass	1.25 g
Temp. range	-55 °C to 125 °C

Notes:

⁽¹⁾SMD = standard microcircuit drawing

Applications

- Telemetry
- Interferometry

1 Revision history

Table 2: Document revision history

Date	Version	Changes
19-May-2016	1	Initial release.

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