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连接/参考器件

| | |
|--------|-----------------------------|
| AD5752 | 完整的双通道、16 位、单极性/双极性电压输出 DAC |
| REF192 | 2.5V 精密基准电压源 |

利用 AD5752 DAC 提供软件可配置的 16 位、双通道、单极性/双极性电压输出

电路功能与优势

本电路采用双通道、16 位、串行输入、单极性/双极性电压输出 DAC AD5752BREZ 及 2.5 V 精密基准电压源 REF192ESZ，可提供单极性和双极性数据转换。该 16 位 DAC 电路所需的其它外部器件只有电源引脚和基准输入上的去耦电容，从而可以节省成本和电路板空间。本电路非常适合闭环伺服控制应用。

电路描述

AD5752 是一款数模转换器，可保证 16 位单调性，积分非线性(INL)误差为±16 LSB，总非调整误差(TUE)为 0.1%，建立时间为 10 μs。该器件还集成了基准电压缓冲和输出放大器，从而可以进一步节省成本和电路板空间。在以下电源电压范围内能够保证性能：AV_{DD}电源电压范围为+4.5 V至+16.5 V，AV_{SS}电源电压范围为-4.5 V至-16.5 V。如果只需要单极性输出，则可以将AV_{SS}与 0 V相连。

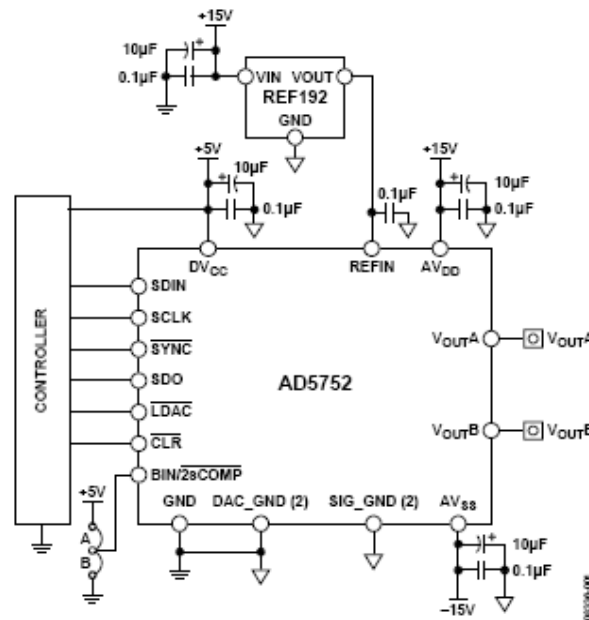


图1. AD5752 DAC的单极性/双极性配置（原理示意图）

Rev.0

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各输出通道的输出范围均可独立编程，提供以下选项：0 V至+5 V、0 V至+10 V、0 V至+10.8 V、-5 V至+5 V、-10 V至+10 V、-10.8 V至+10.8 V。对于双极性输出，输入编码方式为可选的二进制补码或偏移二进制（取决于BIN / $\overline{2sCOMP}$ 引脚的状态）。对于单极性输出，编码方式为标准二进制。图2显示，该电路在 25°C环境温度时的典型输出误差小于 0.06%FSR。

本电路必须构建在具有较大面积接地层的多层电路板上。为实现最佳性能，必须采用适当的布局、接地和去耦技术（请参考教程MT-031—“实现数据转换器的接地并解开AGND和DGND的迷团”，以及教程MT-101—“去耦技术”）。

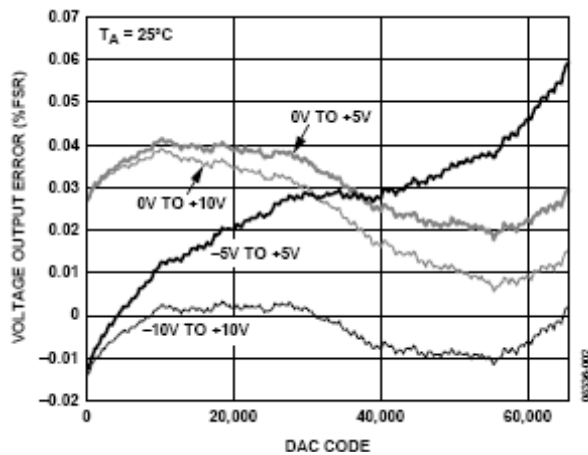


图2. 电压输出误差

进一步阅读

Kester, Walt. 2005. *The Data Conversion Handbook*. Analog Devices. Chapters 3 and 7.
 MT-015 Tutorial, *Basic DAC Architectures II: Binary DACs*. Analog Devices.
 MT-031 Tutorial, *Grounding Data Converters and Solving the Mystery of AGND and DGND*. Analog Devices.
 MT-101 Tutorial, *Decoupling Techniques*. Analog Devices.
 Voltage Reference Wizard Design Tool.

数据手册和评估板

AD5752 Data Sheet.
 REF192 Data Sheet.
 AD5754R Evaluation Board (Compatible with AD5752).

修订历史

7/09—Revision 0: Initial Version

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