Adjustment-Free 8-Bit DACs

FEATURES

- No Zero Or Gain Adjusts
- t/LSB Linearity
- Internal Reference and Output Amplifier
- Low Power

DESCRIPTION

The DAC337 Series digital-to-analog converters are designed for completely adjustment-free operation. The word “simplicity” best characterizes the DAC337 Series. All models are housed in hermetically sealed DIP style packages and operate on ±15V power supplies. Each model incorporates a precision reference, highly stable thin-film nichrome resistor network, output amplifier, and switches. ±1/2 LSB linearity is achieved without the use of external zero and gain adjustment circuits.

Four output voltage ranges are offered — 0 to +10, 0 to -10 (unipolar) and ±5, ±10 (bipolar).

Spectrum Microwave offers the DAC337 for industrial and commercial applications.
**SPECIFICATIONS**

(Typical for all models @ +25°C and nominal power supplies unless otherwise noted)

<table>
<thead>
<tr>
<th>SERIES</th>
<th>DAC337</th>
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<tbody>
<tr>
<td>TYPE</td>
<td>Fixed Ref., Volt, Output</td>
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</table>

**DIGITAL INPUT**

- Resolution 8 Bits
- Coding
  - DAC337-0: Complementary Binary
  - DAC337-1.6: Offset Binary
  - DAC337-2: Binary
- Logic Compatibility
  - TTL, DTL, CMOS (from 5V supply)
  - Vih = 2.4V typ., 3.5V min.
  - Vil = 0.8V max.

**ANALOG OUTPUT**

- Voltage
  - DAC337-0: 0 to −10V@ −5mA
  - DAC337-1: +5V ±5mA
  - DAC337-2: 0 to +10V@ +5mA
  - DAC337-6: ±10V@ ±5mA
- Impedance <0.1

**REFERENCE**

Internal

**STATIC PERFORMANCE**

- Integral Linearity ±1/2 LSB, max.
- Differential Linearity ±1/2 LSB, typ.; ±1 LSB max.

**DYNAMIC PERFORMANCE**

- Settling Time to 1/2 LSB for Full Scale Change
  - DAC337−0,−1,−2: 20µs
  - DAC337−6: 40µs
- For 1 LSB change
  - 5µs typ.; 10µs max
- Slew Rate 0.5V/µs

**STABILITY (Tmin TO Tmax)**

- Accuracy 1 LSB
- Linearity ±1/1 LSB, max.
- Offset ±1 LSB, max.

**POWER SUPPLY**

- Voltage @ Current
  - +15V ±20% @ +6mA, max.
  - −15V ±20% @ −13mA, max.
- Power Supply Rejection Ratio
  - +15V Supply, 0.1% FSR/Volt
  - −15V Supply, 0.2% FSR/Volt

**TEMPERATURE RANGE**

- Operating 0°C to +70°C
- Storage −65°C to +150°C

**MECHANICAL**

- Case Style Metal or ceramic at manufacturer’s option

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**DAC337** -0, -1, -2, -6

**APPLICATION INFORMATION**

**RECOMMENDED POWER SUPPLY BY-PASS CIRCUIT**

**TRANSFER CHARACTERISTICS**

<table>
<thead>
<tr>
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<tr>
<td>INPUT PIN</td>
<td>OUT3</td>
</tr>
<tr>
<td>01111111</td>
<td>0V</td>
</tr>
<tr>
<td>10000000</td>
<td>−9.91V</td>
</tr>
<tr>
<td>11111111</td>
<td>0V</td>
</tr>
<tr>
<td>00000000</td>
<td>−9.91V</td>
</tr>
</tbody>
</table>

**CAUTION:** ESD (Electro-Static Discharge) sensitive device. Permanent damage may occur when unconnected devices are subjected to high energy electrostatic fields. Unused devices must be stored in conductive foam or shunts. Protective foam should be discharged to the destination socket before devices are removed.

Devices should be handled at static safe workstations only. Unused digital inputs must be grounded or tied to the logic supply voltage. Unless otherwise noted, the supply voltage at any digital input should never exceed the supply voltage by more than 0.5 volts or go below −0.5 volts. If this condition cannot be maintained, limit input current on digital inputs by using series resistors or contact SatCon for technical assistance.

Specifications subject to change without notice.