

Rad Hard Spacecraft Power Driver with Rotation and Position Sensing

Description

The LX7720 provides four half-bridge drivers with floating current sense for motor coil driving, six bi-level inputs for sensing rotary encoders, and a resolver to digital interface with primary coil driver. When used with an FPGA, the LX7720 provides a complete closed loop motor driver with coil current feedback and rotation or linear position sensing. With flexible FPGA programming, the combined system can provide motor control for Stepper motors, Brushless DC and Permanent Magnet motors. Position sensing supports encoders, Hall sensors, resolvers, synchros, and LVDTs. FPGA IP modules are available to support motor driving functions from open loop cardinal step driving to space vector modulation using field oriented control.

The LX7720 contains 7 sigma delta modulators for analog sampling; the sinc3 filters and decimation is performed in the FPGA with available IP module. Four of the modulators sample the voltage across floating current sense inputs and three modulators sample differential analog inputs such as the outputs of a resolver transformer. Speed versus accuracy tradeoffs can be exploited.

The LX7720 supports a ground potential difference between the motor and signal grounds of up to 10V and motor supply voltages up to 200V. Resolver carrier frequencies from 360Hz to 20kHz are supported. The LX7720 offers 2kV HBM ESD pin protection on all sensor and bi-level pins. It is packaged in a 132 pin ceramic quad flat pack and operates over a -55°C to 125°C temperature range. It is radiation tolerant to 100krad TID and 50krad ELDRs as well as single event latch up immune up to 87.85MeV·cm²/mg and 125°C (fluence of 1e8 particle/cm²).

Features

- Four half-bridge NCH MOSFET drivers
- Four floating differential current sensors
- Sigma-delta resolver transformer driver
- Three differential resolver sense inputs
- Six bi-level logic inputs
- Fault detection
- Radiation Tolerant: 100krad TID, 50kad ELDRS, Single Event

Applications

- Motor driver servo control
- Linear actuator servo control
- Stepper, BLDC, PMSM motor driver

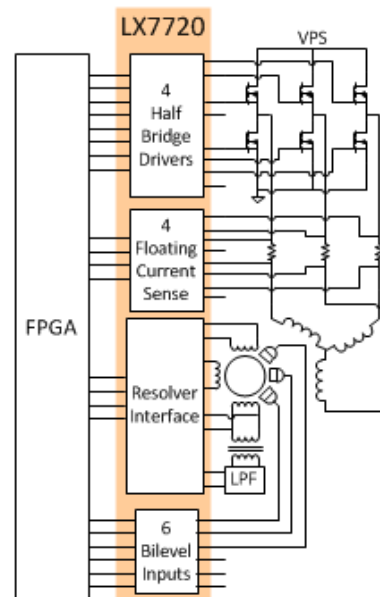


Figure 1 • Product Highlight

Package Outline Dimensions

Controlling dimensions are in inches, metric equivalents are shown for general information.

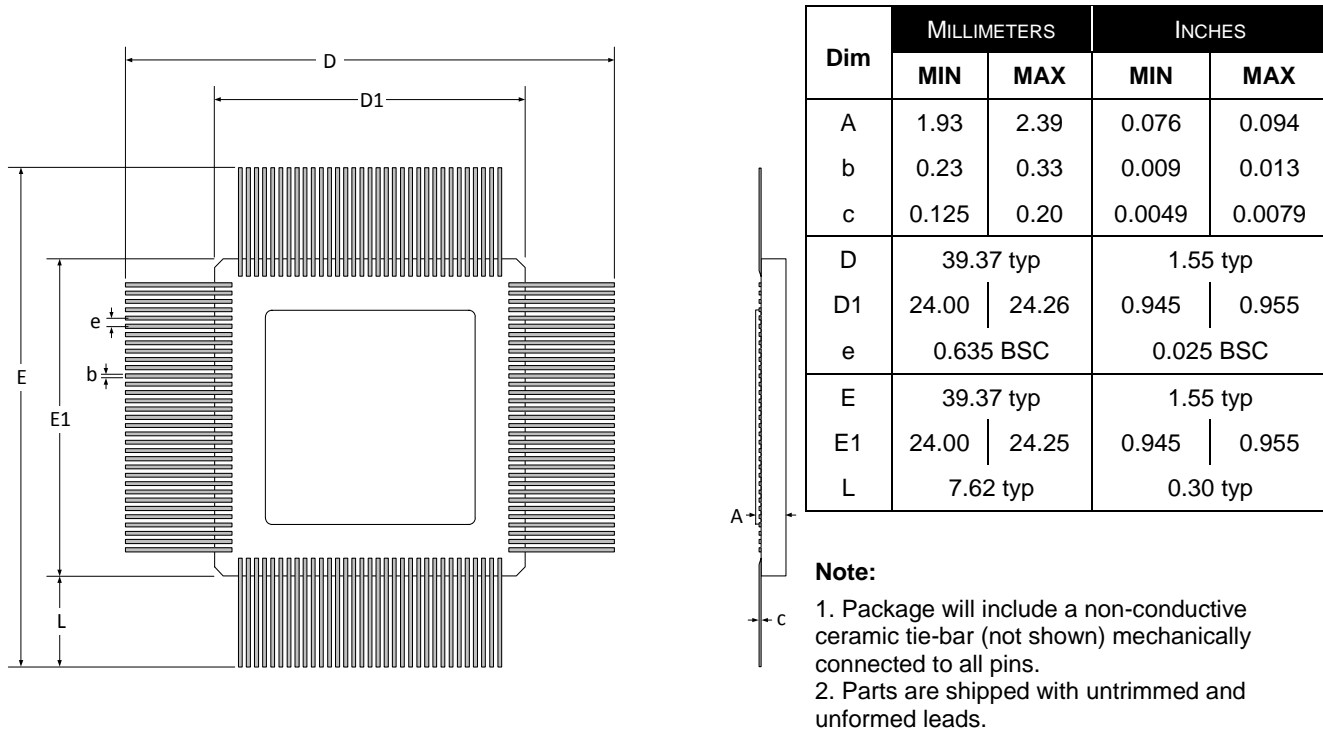


Figure 2 - Ceramic Quad Flat Package Dimensions



Microsemi

Microsemi Corporate Headquarters
One Enterprise, Aliso Viejo,
CA 92656 USA

Within the USA: +1 (800) 713-4113
Outside the USA: +1 (949) 380-6100
Sales: +1 (949) 380-6136
Fax: +1 (949) 215-4996

E-mail: sales.support@microsemi.com

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