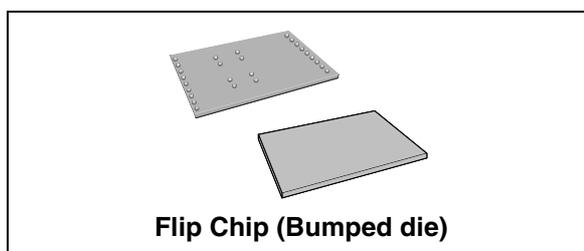


## 4-Channel ultra low power GMR-TMR preamplifier for HDD applications

Data Brief

### Feature summary

- Flip Chip package
- 4-channel configuration
- Dual Power Supplies of +3V, +20% -10% and -2.1V, ±6%
- Operating Temperature Range -25°C to +85°C
- Supports xGMR heads from 50 to 500 Ohms and perpendicular write heads
- Data Rate up to 600Mb/s
- Sleep mode power consumption < 200µW
- Sleep-to-read recovery time < 500ns
- Read mode power consumption < 60mW (RMR=250Ohm, I<sub>bias</sub> =400µA, NF<2dB)
- Read Bandwidth (-3dB): 50kHz - 450MHz
- Read Gain selectable from 20dB to 38dB
- Write mode power consumption < 200 mW @ 600Mb/s measured with single head 100% Write mode duty cycle, 127b PRBS, I<sub>w</sub> = 40mA, OSC = 100mA (0-pk), OSD = 500ps (PW50), with Heater off
- Write voltage launched up to 6V differential
- Accurate Flying Height Control using voltage or power output
- ESD diodes for MR head protection
- Differential Current and Voltage Bias / Voltage Sense architecture
- Bi-directional 16-bit serial interface 2.5V and 3.3V CMOS compatible



This part is specially designed to have minimum dissipation in all the modes of operation (Sleep <200mW, Read <60mW, Write <200mW) and very fast Sleep to Read recovery time (S2R <500ns).

It is designed for use with 4-terminal Giant Magneto Resistance / Tunnel Magneto Resistance read and Perpendicular write heads. In read mode, the device consists of a fully differential amplifier, offering: current or voltage bias, voltage-sense input, programmable input impedance, a wide-range read gain, low-noise and high-bandwidth. In write mode, it includes fast current switching differential write drivers, which support data rates up to 600 Mb/s, overshoot amplitude and duration programmability. In all the modes of operations Fly Height Control circuit is available. This circuit delivers an accurate programmable voltage or power to a resistive element near the write head to match write current induced heating and subsequent expansion or protrusion of the pole tip which effect the media spacing.

The part is further comprehensive of an extensive analog/digital measurement scheme for the read, write, heater heads and die temperature, of an extensive fault detection and reporting scheme, thermal asperity detection and correction, write degauss function.

### Description

The L6440 is a BICMOS Silicon Germanium monolithic integrated circuit differential preamplifier for Ultra Low Power Hard Disk Drive applications.

### Order code

| Part number | Package                | Operating temp. range |
|-------------|------------------------|-----------------------|
| L6440       | Flip Chip (Bumped die) | -25°C to +85°C        |

# 1 Revision history

**Table 1. Document revision history**

| Date        | Revision | Changes          |
|-------------|----------|------------------|
| 12-Jul-2006 | 1        | Initial release. |

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