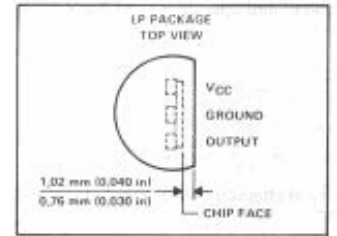


TL173L, TL173C LINEAR HALL-EFFECT SENSORS

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- Output Voltage Linear with Applied Magnetic Field
- Sensitivity Constant Over Wide Operating Temperature Range
- Solid-State Technology
- Three-Terminal Device
- Senses Static or Dynamic Magnetic Fields

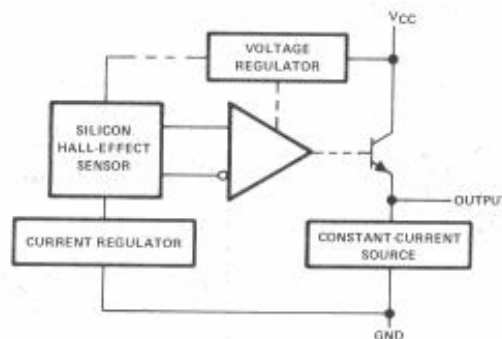


Description

The TL173L and TL173C are low-cost magnetic field sensors designed to provide a linear output voltage proportional to the magnetic field they sense. These monolithic circuits incorporate a Hall element as the primary sensor along with a voltage reference and a precision amplifier. Temperature stabilization and internal trimming circuitry yield a device that features high overall sensitivity accuracy with less than 5% error over its operating temperature range.

The TL173L is characterized for operation from -20°C to 85°C . The TL173C is characterized for operation from 0°C to 70°C .

Functional Block Diagram



Absolute maximum ratings over operating free-air temperature range (unless otherwise noted)

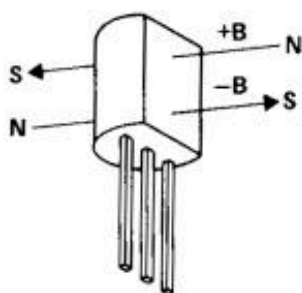
Supply voltage, V_{cc} (see Note 1)	25V
Continuous total dissipation at (or below) 25°C free-air temperature (see Note 2)	775 mW
Operating free-air temperature range:	TL173L -20°C to 85°C
	TL173C 0°C to 70°C
Storage temperature range	-65°C to 150°C
Lead temperature 1,6 mm (1/16 inch) from case for 10 seconds	260°C
Magnetic Flux Density	unlimited

NOTES:

1. Voltage values are with respect to network ground terminal.
2. For operation above 25°C free-air temperature, aerate linearly at the rate of $6.2 \text{ mW}/^{\circ}\text{C}$

Recommended operating conditions

		TL173I			TL173C			UNIT
		MIN	NOM	MAX	MIN	NOM	MAX	
Supply Voltage, V_{cc}		10.8	12	13.2	10.8	12	13.2	V
Magnetic flux density, B		-	-	+/- 50	-	-	+/- 50	mT
Output Current, I_o	Sink	-	-	0.5	-	-	0.5	mA
	Source	-	-	-2	-	-	-2	
Operating free-air temperature, T_A		-20	-	85	0	-	70	°C



The north pole of a magnet is the pole that is attracted by the geographical north pole. The north pole of a magnet repels the north-seeking pole of a compass. By accepted magnetic convention, lines of flux emanate from the north pole of a magnet and enter the south pole.

FIGURE 1. DEFINITION OF MAGNETIC FLUX POLARITY

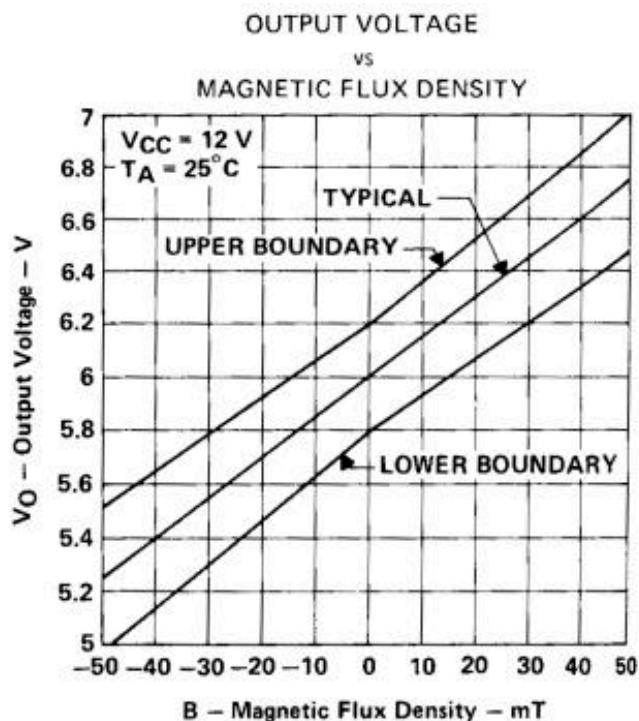


FIGURE 2

TYPICAL APPLICATION DATA

The circuits in Figure 3 may be used to set the output voltage at zero field strength to exactly 6V (using R1), and to set the sensitivity to exactly -15 V/T (using R2), as depicted in Figure 4.

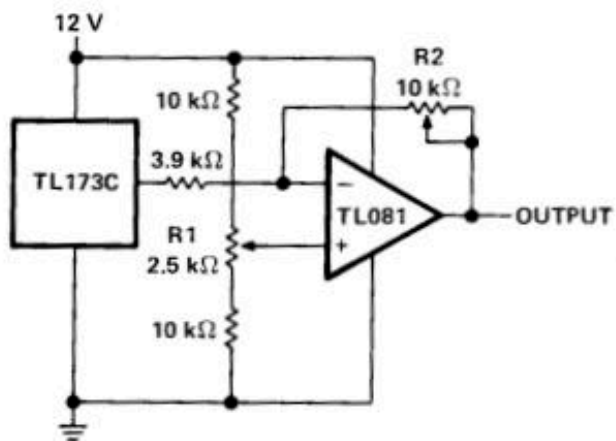


FIGURE 3. COMPENSATION CIRCUIT

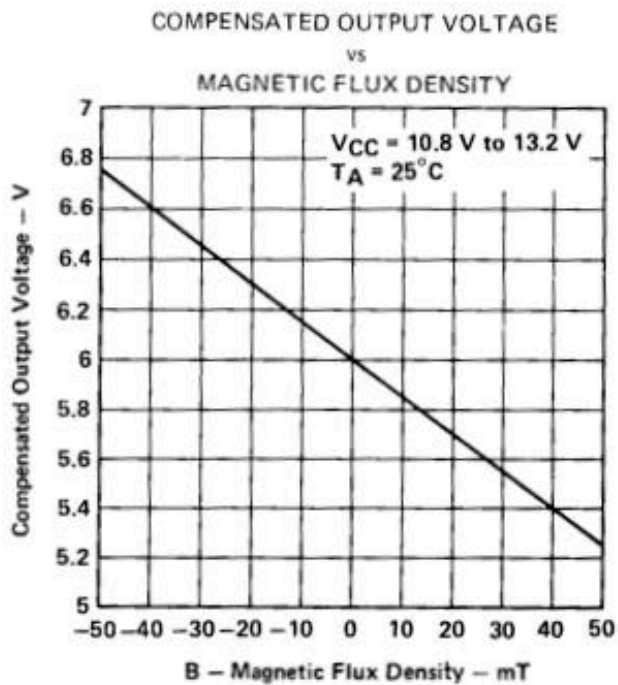


FIGURE 4

last updated November 16, 2001