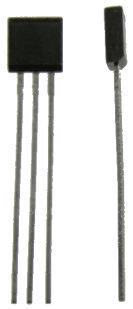
Ratiometric Linear Hall-Effect Sensor

OHS3150U, OHS3151U



Features:

- Ratiometric linear output capable of sinking and sourcing current
- 4.5 V to 6.0 V operation
- Responds equally to positive and negative magnetic fields
- Excellent temperature stability to operate in harsh environments
- Robust package capable of withstanding harsh environments

Description:

Each ratiometric linear Hall-effect sensor contains a monolithic integrated circuit on a single chip. This circuit incorporates a quadratic Hall sensing element, which minimizes the effects of mechanical and thermal stress on the Hall element and temperature compensating circuitry to compensate for the inherent Hall element sensitivity change over temperature current.

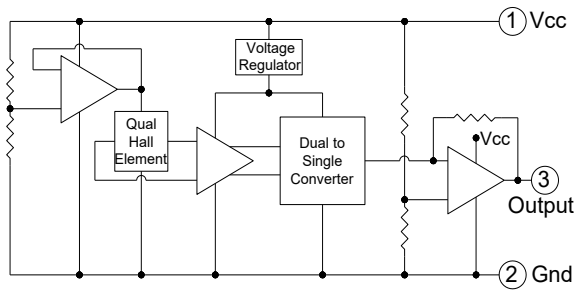
These ratiometric linear Hall-effect sensors provide an output voltage that varies in proportion to the applied magnetic field. The voltage output will increase in response to a south pole (positive) magnetic field applied perpendicular to the package symbolization face, and will decrease in response to a north pole (negative) magnetic field.

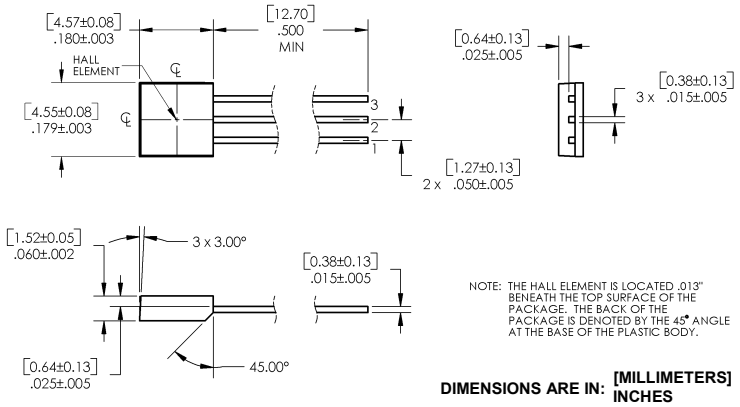
These ratiometric linear Hall-effect sensors can be used as a non-contact sensor for rotary and linear position sensing and for current sensing.

Applications:

- Non-contact magnetic sensing
- Assembly line automation
- Machine automation
- Machine safety
- Door sensor
- Where sensing is required in dirty environments

Ordering Information		
Through Hole	**Temp. Range**	**V_{OQ} Threshold**
OHS3150U	-40°C to +125°C	V_{OQ} Change over T_A = ±35 Gauss
OHS3151U	-40°C to +125°C	V_{OQ} Change over T_A = ±50 Gauss





RoHS

General Note

TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology, Inc.
1645 Wallace Drive, Carrollton, TX 75006|Ph: +1 972 323 2200
sensors@ttelectronics.com | www.ttelectronics.com

© TT electronics plc

Absolute Maximum Ratings

Supply Voltage, V_{CC}	6 V
Storage Temperature Range, T_S	-65°C to +150° C
Operating Temperature Range, T_A	-40°C to +125° C
Lead Soldering Temperature (1/8 inch [3.2 mm] from case for 5 seconds with soldering iron)	260° C(1)
Power Dissipation, P_D	100 mW
Output Current, I_O	5 mA
Magnetic Flux Density, B	Unlimited

Electrical Characteristics (Over Operating Temperature Range at V_{CC} = 5 V, unless otherwise noted)

SYMBOL	PARAMETER	MIN	TYP	MAX	UNITS	TEST CONDITIONS
V_{CC}	Supply Voltage	4.5	5.0	6.00	V	
I_{CC}	Supply Current		5.5	10.00	mA	Vcc = 6 V, I_O = 0 mA, B = OG
V_{OQ}	Quiescent Voltage Output	2.25	2.5	2.75	V	B = OG, T_A = 25° C
		2.10	2.5	2.90	V	B = OG, T_A = -40°C to +125°C
I_O	Sink Current	0.5			mA	
I_O	Source Current	-1.0			mA	

SYMBOL	PARAMETER	OHS3150U			UNITS	OHS3151U			UNITS
		MIN	TYP	MAX		MIN	TYP	MAX	
T_A	Operating Temperature Range	-40	-	125	° C	-40	-	125	° C
Sens	Sensitivity @ T_A = 25° C over T_A	2.25 2.0	2.5 -	2.75 3.0	mV/G mV/G	2.25 2.0	2.5 -	2.75 3.0	mV/G mV/G
$\Delta V_{OQ}(\Delta T)$	V_{OQ} Change over T_A	-	-	±35	G	-	-	±50	G
ΔSens(ΔV)	Ratiometric Sense Change	-	100	-	%	-	100	-	%
$\Delta V_{OQ}(\Delta V)$	Ratiometric V_{OQ} Change	-	100	-	%	-	100	-	%
+Lin	Positive Lin ≥ 25 < 25	99 99	- -	105 110	%	99 99	- -	105 110	%
-Lin	Negative Lin ≥ 25 < 25	95 90	- -	101 101	%	95 90	- -	101 101	%
Sym	Output Symmetry	95	100	105	%	95	100	105	%

Note:
(1) Negative current is defined as a coming out of (sourcing) the output.
(2) See characteristics definitions for test conditions and calculation formulas.

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology, Inc.
1645 Wallace Drive, Carrollton, TX 75006|Ph: +1 972 323 2200
sensors@ttelectronics.com | www.ttelectronics.com

© TT electronics plc

Characteristics Definitions

Quiescent voltage Output: With no magnetic field present the device in the quiescent state and the voltage output is approximately equal to one-half the supply voltage ($V_{OQ} = V_{CC} / 2$) over the operating voltage and temperature range. The change in quiescent voltage output over temperature gives the device's equivalent accuracy and is specified in gauss by the calculation.

$$\Delta V_{OQ\,(T)} = \frac{V_{OQ\,(TA)} - V_{OQ\,(25°C)}}{Sens_{\,(25°C)}}$$

Sensitivity: A magnetic south pole at, and perpendicular to, the device's symbolized package face will increase the voltage output above the quiescent value. Conversely a magnetic north pole will decrease the voltage output below the quiescent value. This change in voltage output with applied magnetic field is sensitivity and is specified in mV/G by the calculation.

$$Sens = \frac{VO_{\,(+500G)} - V_{O\,(-500G)}}{1000}$$

The change is sensitivity over temperature is specified in percent by the calculation

$$\Delta Sens_{\,(\Delta T)} = \frac{Sens_{\,(TA)} - Sens_{\,(25°C)}}{Sens_{\,(25°C)}} \times 100\%$$

Ratiometry: The quiescent voltage output and sensitivity of these ratiometric linear Hall-effect devices are proportional to the supply voltage. The change in quiescent voltage output with supply voltage is specified in percent by the calculation

$$\Delta V_{OQ\,(\Delta V)} = \frac{V_{O\,(VCC)} - V_{O\,(5V)}}{V_{CC} / 5\,V} \times 100\%$$

This change in sensitivity with supply voltage is also specified in percent by the calculation

$$\Delta Sens_{\,(\Delta V)} = \frac{V_{OQ\,(VCC)} / V_{OQ\,(5V)}}{V_{CC} / 5\,V} \times 100\%$$

Linearity & Symmetry: The ability of the voltage output to vary in constant proportion to the applied magnetic field is linearity and is specified in percent by the calculation

$$+\,Linearity = \frac{V_{O\,(+500G)} - V_{OQ}}{2(V_{O\,(250G)} - V_{OQ})} \times 100\%$$

$$-\,Linearity = \frac{V_{O\,(-500G)} - V_{OQ}}{2(V_{O\,(-250G)} - V_{OQ})} \times 100\%$$

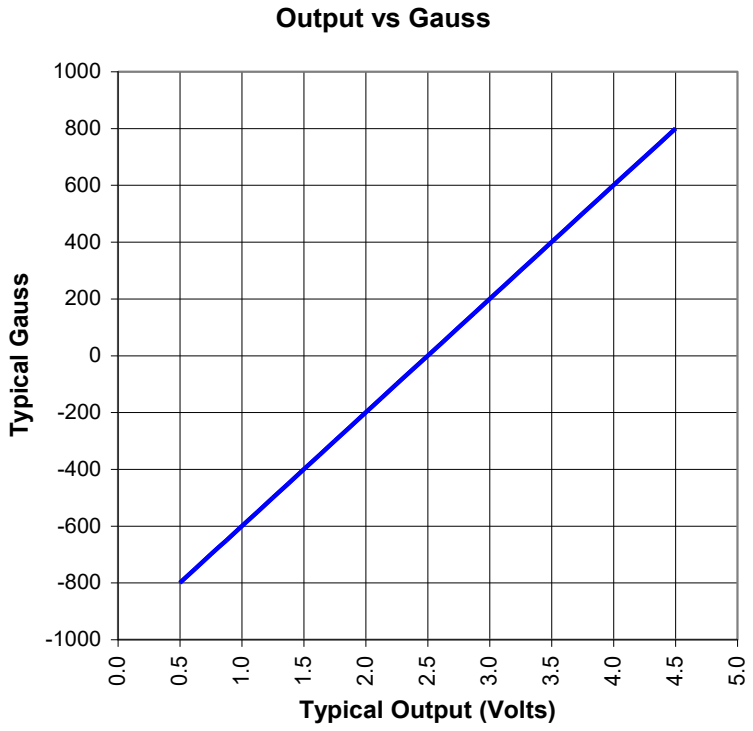
The output is also specified in percent by the calculation

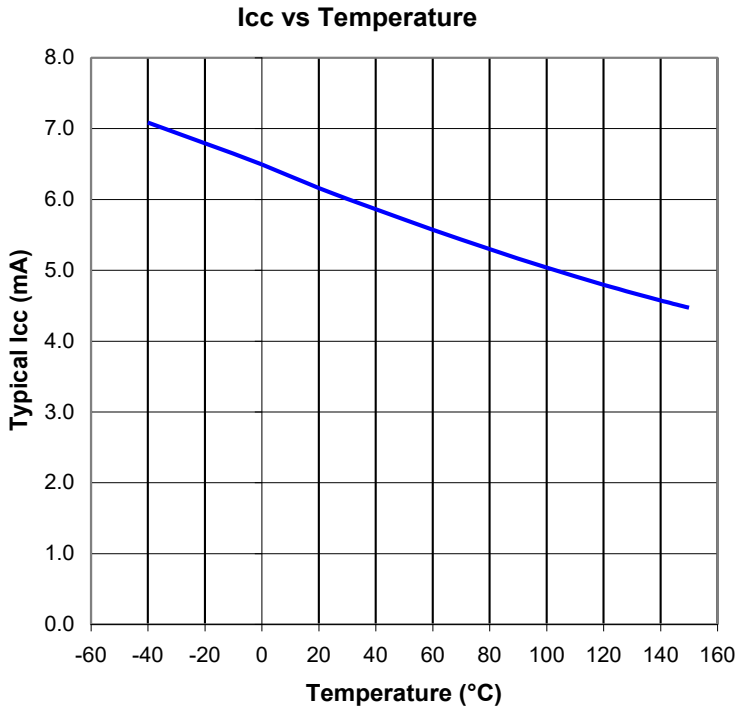
$$-\,Linearity = \frac{V_{O\,(500G)} - V_{OQ}}{V_{OQ} - V_{OQ\,(-500G)}} \times 100\%$$

General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology, Inc.
1645 Wallace Drive, Carrollton, TX 75006|Ph: +1 972 323 2200
sensors@ttelectronics.com | www.ttelectronics.com

© TT electronics plc





General Note
TT Electronics reserves the right to make changes in product specification without notice or liability. All information is subject to TT Electronics' own data and is considered accurate at time of going to print.

TT Electronics | OPTEK Technology, Inc.
1645 Wallace Drive, Carrollton, TX 75006|Ph: +1 972 323 2200
sensors@ttelectronics.com | www.ttelectronics.com

© TT electronics plc

ООО «ЛайфЭлектроникс» “LifeElectronics” LLC

ИНН 7805602321 КПП 780501001 Р/С 40702810122510004610 ФАКБ "АБСОЛЮТ БАНК" (ЗАО) в г.Санкт-Петербурге К/С 30101810900000000703 БИК 044030703

Компания «Life Electronics» занимается поставками электронных компонентов импортного и отечественного производства от производителей и со складов крупных дистрибьюторов Европы, Америки и Азии.

С конца 2013 года компания активно расширяет линейку поставок компонентов по направлению коаксиальный кабель, кварцевые генераторы и конденсаторы (керамические, пленочные, электролитические), за счёт заключения дистрибьюторских договоров

Мы предлагаем:

- *Конкурентоспособные цены и скидки постоянным клиентам.*
- *Специальные условия для постоянных клиентов.*
- *Подбор аналогов.*
- *Поставку компонентов в любых объемах, удовлетворяющих вашим потребностям.*

- *Приемлемые сроки поставки, возможна ускоренная поставка.*
- *Доставку товара в любую точку России и стран СНГ.*
- *Комплексную поставку.*
- *Работу по проектам и поставку образцов.*
- *Формирование склада под заказчика.*

- *Сертификаты соответствия на поставляемую продукцию (по желанию клиента).*
- *Тестирование поставляемой продукции.*
- *Поставку компонентов, требующих военную и космическую приемку.*
- *Входной контроль качества.*
- *Наличие сертификата ISO.*

В составе нашей компании организован Конструкторский отдел, призванный помогать разработчикам, и инженерам.

Конструкторский отдел помогает осуществить:

- *Регистрацию проекта у производителя компонентов.*
- *Техническую поддержку проекта.*
- *Защиту от снятия компонента с производства.*
- *Оценку стоимости проекта по компонентам.*
- *Изготовление тестовой платы монтаж и пусконаладочные работы.*

Тел: +7 (812) 336 43 04 (многоканальный)
Email: org@lifeelectronics.ru

www.lifeelectronics.ru