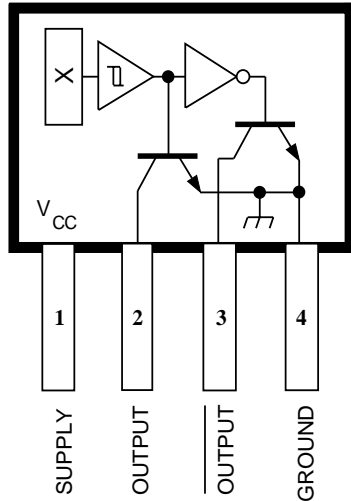


COMPLEMENTARY-OUTPUT HALL-EFFECT LATCH



Dwg. PH-002

Pinning is shown viewed from branded side.

ABSOLUTE MAXIMUM RATINGS

Power Supply, V_{CC}	25 V
Magnetic Flux Density, B	Unlimited
Output OFF Voltage, V_{OUT}	25 V
Output ON Current, I_{OUT}	50 mA
Operating Temperature Range,	
T_A	-20°C to +85°C
Storage Temperature Range,	
T_S	-65°C to +150°C

Type UGN3275K latching Hall-effect sensors are bipolar integrated circuits designed for electronic commutation of brushless dc motors. They feature dual complementary outputs. The latches are typically used to sense matched magnetic flux densities of alternating polarity from multipole ring magnets.

Each sensor IC includes a Hall voltage generator, operational amplifier, Schmitt trigger, voltage regulator, and dual bipolar output transistors. The regulator allows use of the integrated circuit with supply voltages of 4.5 V to 24 V.

If the Hall cell is exposed to a magnetic flux density greater than the operate threshold (B_{OP}), OUTPUT goes low (turns ON) and OUTPUT goes high (turns OFF). The outputs will hold (latch) this state until magnetic field reversal exposes the Hall cell to a magnetic flux density below the release threshold (B_{RP}) when OUTPUT will go high (OFF) and OUTPUT will go low (ON). This state is also latched. Under any condition one output is ON while the other is OFF. Because the operating state switches only with magnetic field reversal, and not merely with a change in the strength, these integrated circuits qualify as true Hall-effect latches.

Similar devices, with a 500 mA continuous output current rating, are available as the UGN5275K.

These complementary-output Hall-effect latches are supplied in a four-pin plastic SIP, 0.200" (5.08 mm) wide, 0.130" (3.3 mm) high, and 0.060" (1.54 mm) thick.

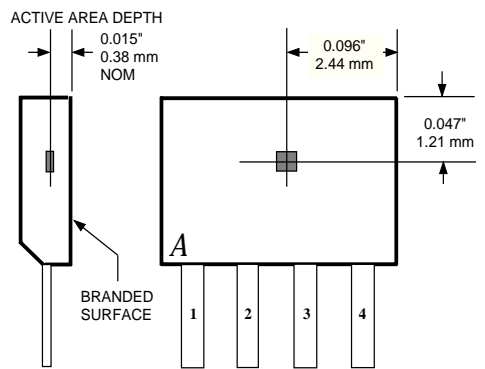
FEATURES

- Operable with Multipole Ring Magnets
- High Reliability
- Small Size
- Output Compatible with All Digital Logic Families
- 4.5 V to 24 V Operation
- High Hysteresis Level Minimizes Stray-Field Problems
- Complementary Outputs

Always order by complete part number: **UGN3275K**.

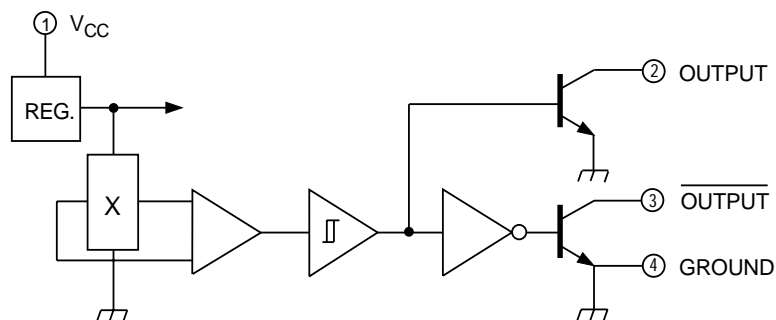
3275 COMPLEMENTARY-OUTPUT HALL-EFFECT LATCH

SENSOR LOCATION



Dwg. MH-001-2A

FUNCTIONAL BLOCK DIAGRAM



Dwg. FH-002

ELECTRICAL CHARACTERISTICS at $T_A = +25^\circ\text{C}$, $V_{CC} = 4.5\text{ V to }24\text{ V}$ (unless otherwise noted).

Characteristic	Symbol	Test Conditions	Min.	Typ.	Max.	Units
Supply Voltage	V_{CC}	Operating	4.5	—	24	V
Output Saturation Voltage	$V_{OUT(SAT)}$	$V_{CC} = 4.5\text{ V}$, $I_{OUT} = 20\text{ mA}$, $B > B_{OP}$	—	—	400	mV
Output Leakage Current	I_{OFF}	$V_{OUT} = 24\text{ V}$, $V_{CC} = 24\text{ V}$, $B < B_{RP}$	—	—	10	μA
Supply Current	I_{CC}	$V_{CC} = 24\text{ V}$, $B < B_{RP}$	—	—	7.0	mA
Output Rise Time	t_r	$V_{CC} = 12\text{ V}$, $R_L = 820\ \Omega$, $C_L = 20\text{ pF}$	—	0.04	0.4	μs
Output Fall Time	t_f	$V_{CC} = 12\text{ V}$, $R_L = 820\ \Omega$, $C_L = 20\text{ pF}$	—	0.18	0.4	μs

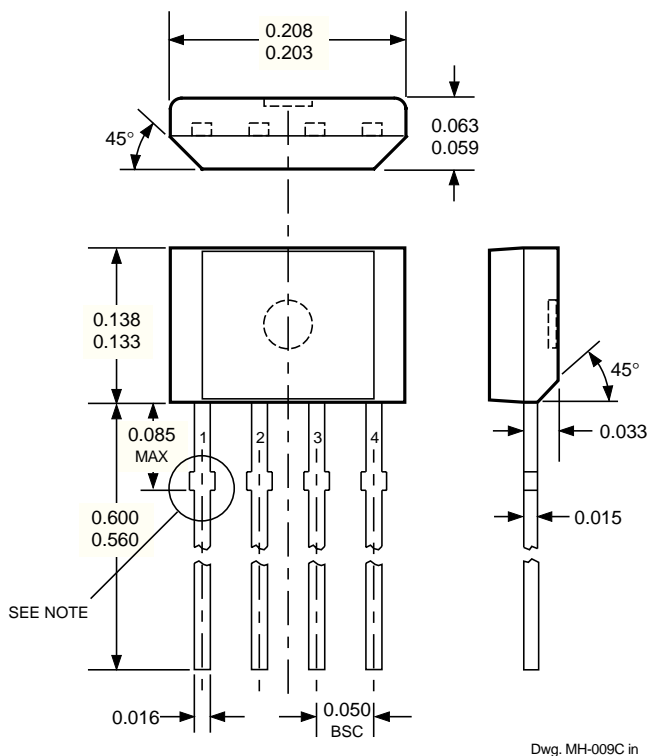
MAGNETIC CHARACTERISTICS

Characteristic	Symbol	$T_A = +25^\circ\text{C}$		$T_A = -20^\circ\text{C to }+85^\circ\text{C}$		Units
		Min.	Max.	Min.	Max.	
Operate Point	B_{OP}	25	250	15	250	G
Release Point	B_{RP}	-250	-25	-250	-15	G
Hysteresis	B_{hys}	100	—	100	—	G

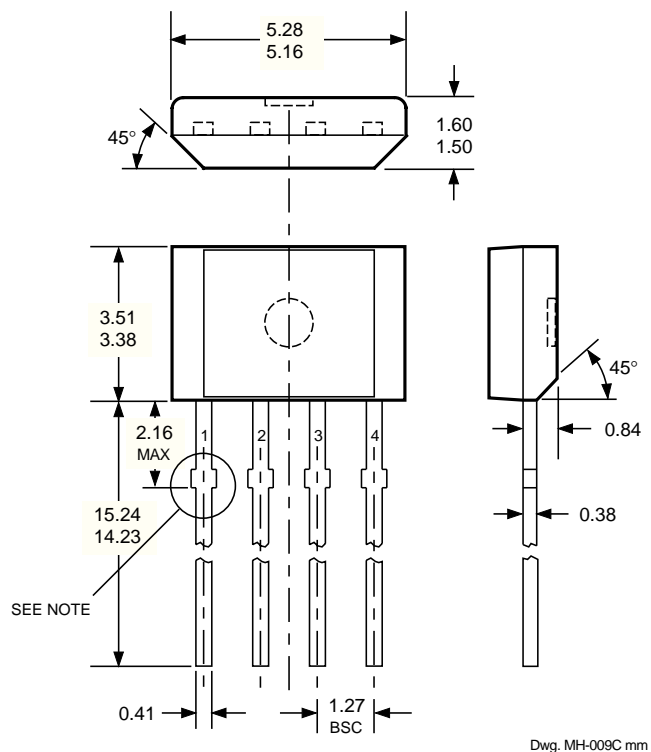
NOTE: As used here, negative flux densities are defined as less than zero (algebraic convention).

3275 COMPLEMENTARY-OUTPUT HALL-EFFECT LATCH

Dimensions in Inches
(controlling dimensions)



Dimensions in Millimeters
(for reference only)



- NOTES: 1. Tolerances on package height and width represent allowable mold offsets. Dimensions given are measured at the widest point (parting line).
 2. Exact body and lead configuration at vendor's option within limits shown.
 3. Height does not include mold gate flash.
 4. Recommended minimum PWB hole diameter to clear transition area is 0.035" (0.89 mm).
 5. Where no tolerance is specified, dimension is nominal.

Allegro MicroSystems, Inc. reserves the right to make, from time to time, such departures from the detail specifications as may be required to permit improvements in the design of its products.

The information included herein is believed to be accurate and reliable. However, Allegro MicroSystems, Inc. assumes no responsibility for its use; nor for any infringements of patents or other rights of third parties which may result from its use.

3275
COMPLEMENTARY-OUTPUT
HALL-EFFECT LATCH

HALL-EFFECT SENSORS SELECTION GUIDE

Partial Part Number	Avail. Oper. Temp.	Operate Limits Over Temp.			Function†	Notes
		B _{OP} max	B _{RP} min	B _{hys} min		
3046	E/L	+200	-200	15	Gear-Tooth Sensor	
3054	K/S	+300	+5	5.0	Unipolar Multiplex	1
3056	E/L	+225	-225	15	Gear-Tooth Sensor	
3058	E/L	+300	-300	150	Gear-Tooth Sensor	
3059	K/S	+100	-100	20	AC Gear-Tooth Sensor	
3060	K/S	+35	-35	10	AC Gear-Tooth Sensor	
3121	E/L	+500	+80	60	Unipolar Switch	
3122	E/L	+430	+120	70	Unipolar Switch	
3123	E/L	+470	+160	70	Unipolar Switch	
3132	K/L/S	+95	-95	30	Bipolar Switch	
3133	K/L/S	+75	-75	30	Bipolar Switch	
3134	E/L	+50	-40	10	Bipolar Switch	
3141	E/L	+175	+10	20	Unipolar Switch	
3142	E/L	+245	+60	30	Unipolar Switch	
3143	E/L	+355	+150	30	Unipolar Switch	
3144	E/L	+450	+25	20	Unipolar Switch	
3161	E	+160	+30	5.0	2-Wire Unipolar Switch	
3175	S	+180	-180	80	Bipolar Latch	
3177	S	+150	-150	50	Bipolar Latch	
3185	E/L	+300	-300	280	Bipolar Latch	
3187	E/L	+175	-175	100	Bipolar Latch	
3188	E/L	+200	-200	160	Bipolar Latch	
3189	E/L	+250	-250	100	Bipolar Latch	
3195	E/L	+200	-200	110	Bipolar Latch	2, 3
3197	L	+200	-200	110	Bipolar Latch	3
3235	S	+200	+15	15	Unipolar Switch	4
		-200	-15	15	Unipolar Switch	
3275	S	+250	-250	100	Bipolar Latch	5
3421	E/L	+300	-300	240	Direction Detection	
3422	E/L	+85	-85	10	Direction Detection	
3503	S	Typ. 1.3 mV/G	–	–	Linear Sensor	
3515	E/L	Typ. 5.0 mV/G	–	–	Chopper-Stabilized Linear Sensor	
3516	E/L	Typ. 2.5 mV/G	–	–	Chopper-Stabilized Linear Sensor	
3517	L/S	Typ. 5.0 mV/G	–	–	Chopper-Stabilized Linear Sensor	
3518	L/S	Typ. 2.5 mV/G	–	–	Chopper-Stabilized Linear Sensor	
3625	S	+150	-150	200*	900 mA Bipolar Latch	3, 5, 6
3626	S	+150	-150	200*	400 mA Bipolar Latch	3, 5, 6
5140	E	+240	+25	20	300 mA Unipolar Switch	3, 6

Operating Temperature Ranges:

C = 0°C to +70°C, S = -20°C to +85°C, E = -40°C to +85°C, K = -40°C to +125°C, L = -40°C to +150°C

Notes 1. Multiplexed two-wire sensor; after proper address, power/signal bus current indicates magnetic field condition.

2. Active pull down.

3. Protected.

4. Output 1 switches on south pole, output 2 switches on north pole for 2-phase, bifilar-wound, unipolar-driven brushless dc motor control.

5. Complementary outputs for 2-phase bifilar-wound, unipolar-driven brushless dc motor control.

6. Power driver output.

* Typical.

† Latches will not switch on removal of magnetic field; bipolar switches may switch on removal of field but require field reversal for reliable operation over operating temperature range.

