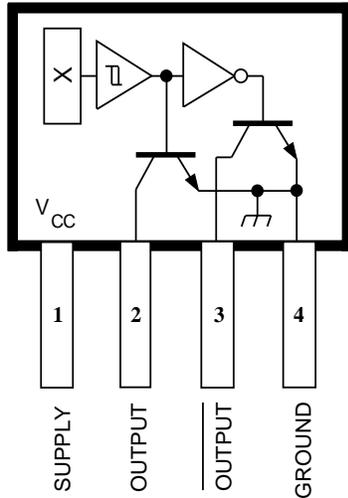


3275

COMPLEMENTARY-OUTPUTS 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.

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.

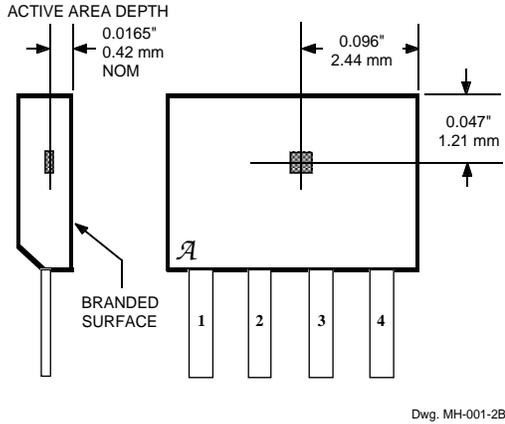
FEATURES

- 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

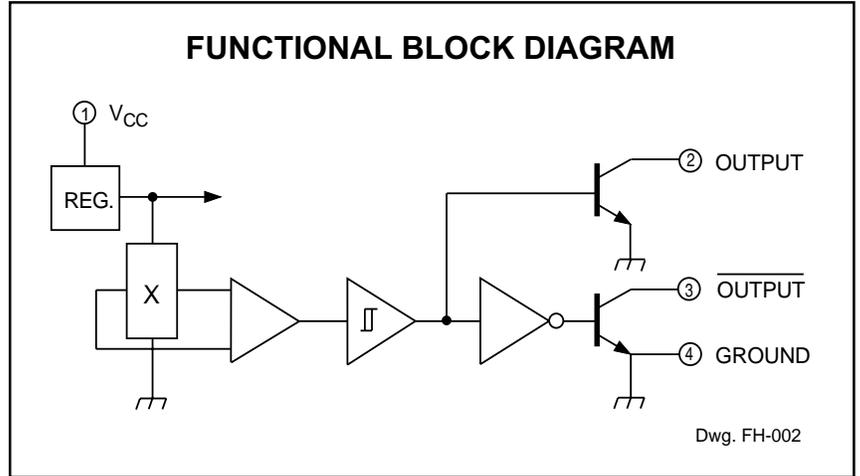
Always order by complete part number: **UGN3275K**.

3275 COMPLEMENTARY-OUTPUTS HALL-EFFECT LATCH

SENSOR LOCATION



FUNCTIONAL BLOCK DIAGRAM



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

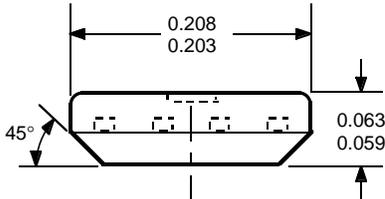
MAGNETIC CHARACTERISTICS

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

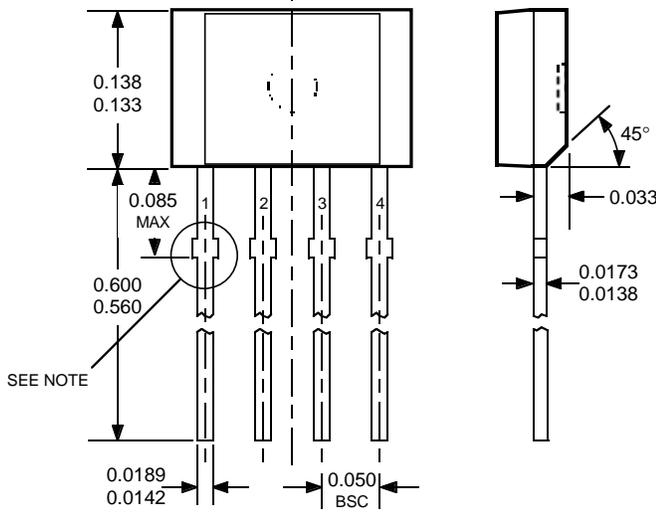
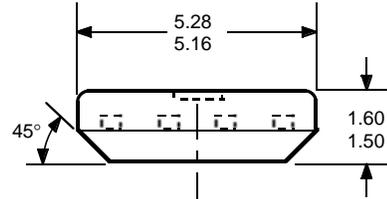
NOTES: 1. As used here, negative flux densities are defined as less than zero (algebraic convention).
2. 1 gauss (G) is exactly equal to 0.1 millitesla (mT).

3275 COMPLEMENTARY-OUTPUTS HALL-EFFECT LATCH

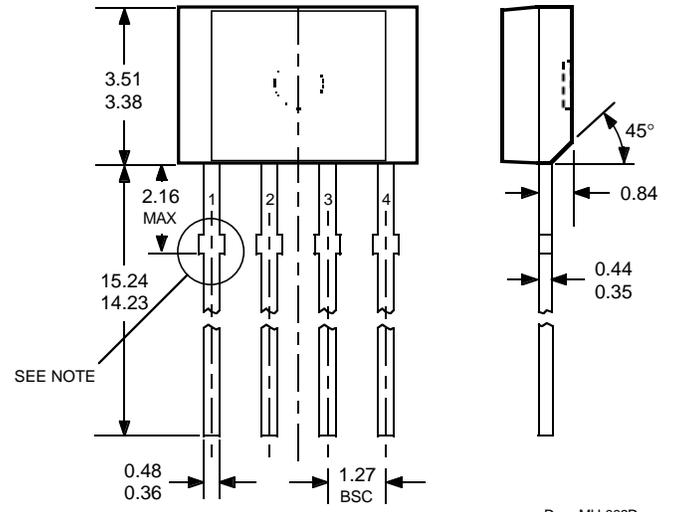
Dimensions in Inches
(controlling dimensions)



Dimensions in Millimeters
(for reference only)

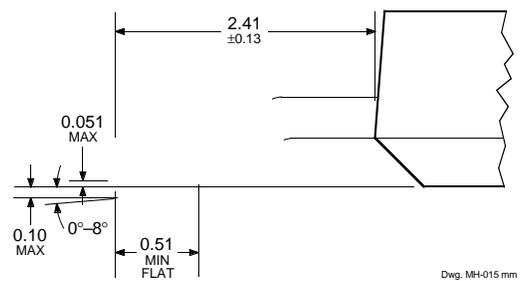
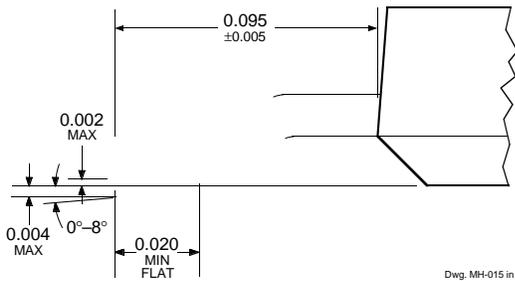


Dwg. MH-009D in



Dwg. MH-009D mm

Surface-Mount Lead Form (Suffix -TL)



- 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.
6. Supplied in bulk pack (500 pieces per bag).

3275 COMPLEMENTARY-OUTPUTS HALL-EFFECT LATCH

HALL-EFFECT SENSORS

LATCHING HALL-EFFECT DIGITAL SWITCHES						
Partial Part Number	Operate Point (G) Over Oper. Voltage	Release Point (G) & Temp. Range	Hysteresis (G) Range	Oper. Temp.	Packages	Replaces and Comments
UGN3175	15 to 180	-180 to -15	>80 (Typ 180)	S	LT, UA	
UGN3177	25 to 150	-150 to -25	>50 (Typ 180)	S	LT, UA	
A3185x	140 to 300	-300 to -140	280 to 600	E/L	LT, UA	
A3187x	50 to 175	-175 to -50	100 to 350	E/L	LT, UA	3077, 3175, 3177
A3188x	80 to 200	-200 to -80	160 to 400	E/L	LT, UA	
A3189x	50 to 250	-250 to -50	100 to 500	E/L	LT, UA	3075, 3076
A3280x	5 to 40	-40 to -5	10 to 80	E/L	LH, LT, UA	chopper stabilized
A3281x	15 to 90	-90 to -15	30 to 180	E/L	LH, LT, UA	chopper stabilized
A3283x	100 to 180	-180 to -100	<400 (Typ 300)	E/L	LH, LT, UA	chopper stabilized
"PROTECTED" LATCHING HALL-EFFECT DIGITAL SWITCHES						
Partial Part Number	Operate Point (G) Over Oper. Voltage	Release Point (G) & Temp. Range	Hysteresis (G) Range	Oper. Temp.	Packages	Comments
A3195x	40 to 200	-200 to -40	>110 (Typ 220)	E, L	U, LT	active pulldown
A3197x	40 to 200	-200 to -40	>110 (Typ 230)	E, L	U, LT	open-collector output

Notes: 1) Typical data is at $T_A = +25^\circ\text{C}$ and nominal operating voltage.

2) "x" = Operating Temperature Range [suffix letter or (prefix)]: S (UGN) = -20°C to $+85^\circ\text{C}$, E = -40°C to $+85^\circ\text{C}$, J = -40°C to $+115^\circ\text{C}$, K (UGS) = -40°C to $+125^\circ\text{C}$, L (UGL) = -40°C to $+150^\circ\text{C}$.

The products described herein are manufactured under one or more of the following U.S. patents: 5,045,920; 5,264,783; 5,442,283; 5,389,889; 5,581,179; 5,517,112; 5,619,137; 5,621,319; 5,650,719; 5,686,894; 5,694,038; 5,729,130; 5,917,320; and other patents pending.

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