



UHC177

Preliminary

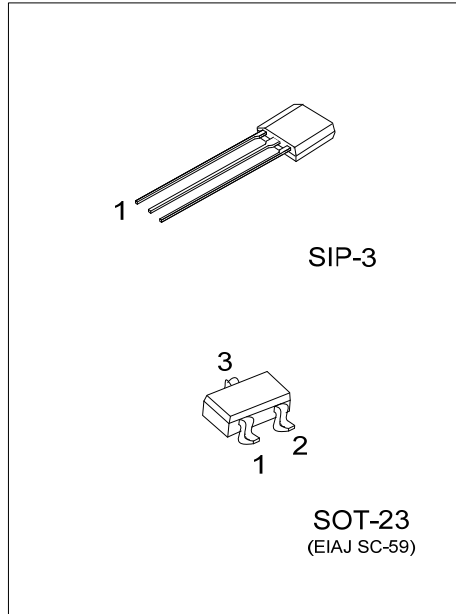
CMOS IC

SINGLE OUTPUT HALL EFFECT LATCH

DESCRIPTION

UTC **UHC177** is an integrated Hall effect latched sensor designed for electronic commutation of brush-less DC motor applications. The device using HVCMOS process includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and open-collector output. An internal band-gap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

If a magnetic flux density larger than threshold B_{op} , OUT is turned on (low). The output state is held until a magnetic flux density reversal falls below B_{rp} causing OUT to be turned off (high).



FEATURES

- * 3.3V~20V DC operation voltage
- * Temperature compensation
- * Wide operating voltage range
- * Open-Drain pre-driver
- * 25mA maximum sinking output current.

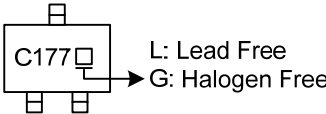
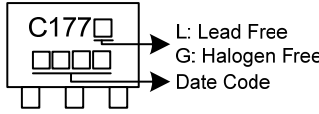
ORDERING INFORMATION

Ordering Number		Package	Pin Assignment			Packing
Lead Free	Halogen Free		1	2	3	
UHC177L-AE3-R	UHC177G-AE3-R	SOT-23	I	O	G	Tape Reel
UHC177L-G03-B	UHC177G-G03-B	SIP-3	I	G	O	Tape Box
UHC177L-G03-K	UHC177G-G03-K	SIP-3	I	G	O	Bulk

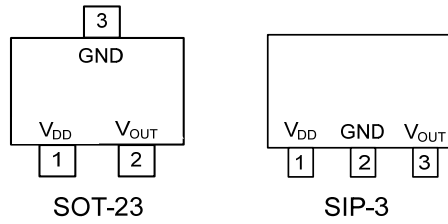
Note: Pin Assignment: I: V_{DD} G: GND O: Output

<p>UHC177G-AE3-R</p> <p>(1) Packing Type (2) Package Type (3) Green Package</p>	<p>(1) R: Tape Reel, B: Tape Box, K: Bulk (2) AE3:SOT-23, G03: SIP-3 (3) G: Halogen Free and Lead Free, L: Lead Free</p>
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MARKING

SOT-23	SIP-3
	

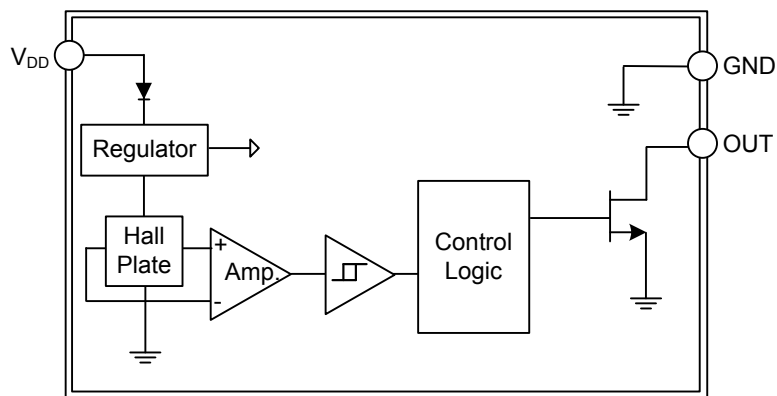
PIN CONFIGURATION



PIN DESCRIPTION

PIN NAME	DESCRIPTION
V _{DD}	Supply voltage
GND	Ground
Output	Output voltage

BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATING ($T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER		SYMBOL	RATINGS	UNIT
Supply Voltage		V_{CC}	24	V
Reverse VCC Polarity Voltage		V_{RCC}	-24	V
Magnetic Flux Density		B	Unlimited	Gauss
Output Current	Continuous	I_o	25	mA
Power Dissipation	SOT-23	P_D	200	mW
	SIP-3		400	mW
Ambient Temperature		T_A	-40 ~ +85	$^{\circ}\text{C}$
Storage Temperature Range		T_{STG}	-65 ~ +150	$^{\circ}\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ ELECTRICAL CHARACTERISTICS ($V_{DD}=12\text{V}$, $T_A=25^{\circ}\text{C}$, unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	V_{DD}	Operating	3.3		20	V
Supply Current	I_{DD}	Operating		3.0	4.5	mA
Output Leakage Current	I_{OFF}	$V_{OUT} = 12\text{V}$		< 0.1	10	μA
Output Saturation Voltage	$V_{DS(SAT)}$	$I_{OUT}=20\text{mA}$		0.3		V

■ MAGNETIC CHARACTERISTICS ($V_{DD}=12\text{V}$, $T_A=25^{\circ}\text{C}$, unless otherwise specified)

For UH177A

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operate Point, BOP	B_{OP}	$B > B_{OP}$, V_{OUT} On	5	20	40	Gauss
Release Point, BRP	B_{RP}	$B < B_{RP}$, V_{OUT} Off	-40	-20	-5	Gauss
Hysteresis	B_{HY}	$ B_{OP} - B_{RP} $		40		Gauss

For UH177B

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operate Point, BOP	B_{OP}	$B > B_{OP}$, V_{OUT} On	5	35	60	Gauss
Release Point, BRP	B_{RP}	$B < B_{RP}$, V_{OUT} Off	-60	-35	-5	Gauss
Hysteresis	B_{HY}	$ B_{OP} - B_{RP} $		70		Gauss

Note: 1mT=10 Gauss.

■ DRIVER OUTPUT VS. MAGNETIC POLE

For UH177A SIP3

PARAMETER	TEST CONDITIONS	DO
North Pole	$B > B_{op}$	Low
South Pole	$B < B_{rp}$	High

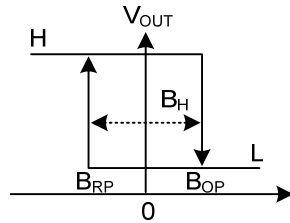
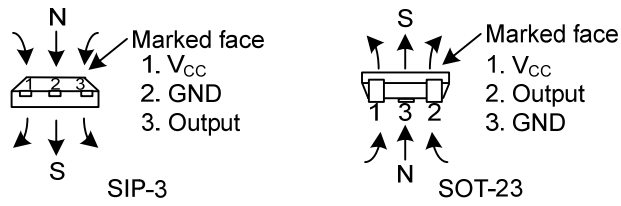
Note: The magnetic pole is applied facing the branded side of the SIP-3 package.

For UH177A SOT-23

PARAMETER	TEST CONDITIONS	DO
North Pole	$B < B_{rp}$	High
South Pole	$B > B_{op}$	Low

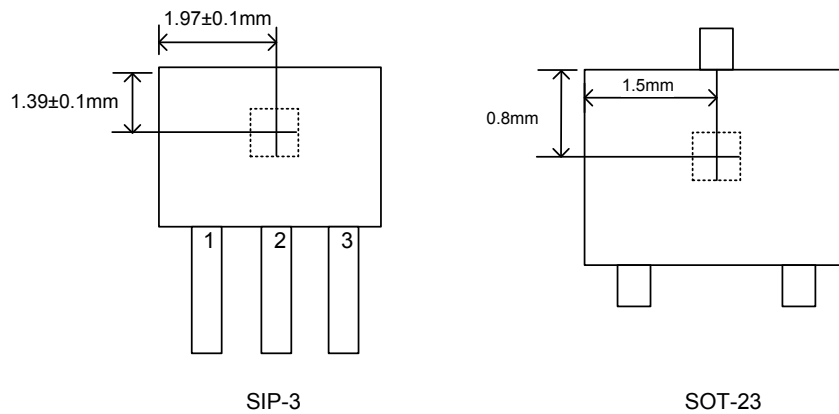
Note: The magnetic pole is applied facing the branded side of the SOT-23 package.

■ CHYSTERESIS CHARACTERISTICS

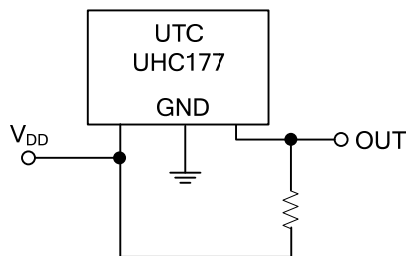


Magnetic Flux Density
Figure 1. Applying Direction of Magnetic Flux

■ TEST CIRCUIT



■ TYPICAL APPLICATION CIRCUIT



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