



## U349

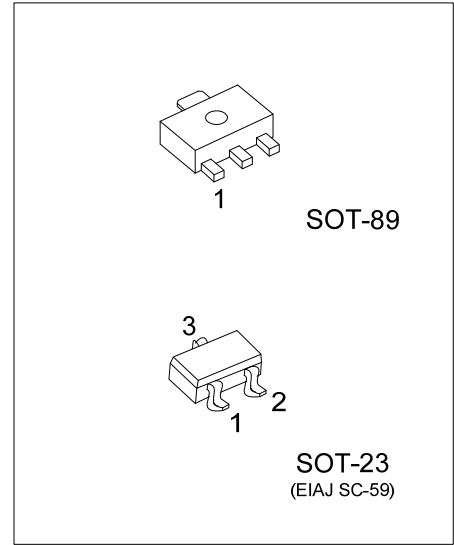
Preliminary

LINEAR INTEGRATED CIRCUIT

### SENSITIVE HALL-EFFECT SWITCHES FOR HIGH-TEMPERATURE OPERATION

#### DESCRIPTION

UTC **U349** is a semiconductor integrated circuit utilizing the Hall effect. It has been so designed as to operate in the alternating magnetic field especially at low supply voltage and operation over extended temperature ranges to +85°C. This Hall IC is suitable for application to various kinds of sensors, contact-less switches, and the like.



#### FEATURES

- \* Wide temperature operation range of -40°C ~ +85°C
- \* Wide supply voltage range of 4.5V to 24V
- \* TTL and MOS IC are directly drivable by the output
- \* Reverse Battery Protection
- \* Activate with Small, Commercially Available Permanent Magnets
- \* Solid-State Reliability
- \* Resistant to Physical Stress

#### ORDERING INFORMATION

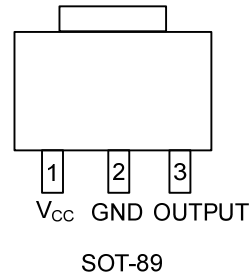
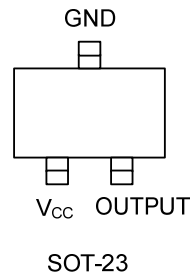
Ordering Number		Package	Packing
Lead Free	Halogen Free		
U349L-AB3-R	U349G-AB3-R	SOT-89	Tape Reel
U349L-AE3-R	U349G-AE3-R	SOT-23	Tape Reel

<p>U349G-AB3-R</p> <p>(1) Packing Type</p> <p>(2) Package Type</p> <p>(3) Green Package</p>	<p>(1) R: Tape Reel</p> <p>(2) AB3: SOT-89, AE3: SOT-23</p> <p>(3) G : Halogen Free and Lead Free, L: Lead Free</p>
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#### MARKING

SOT-89	SOT-23
<p>→ Date Code</p> <p>→ L: Lead Free</p> <p>→ G: Halogen Free</p>	<p>→ L: Lead Free</p> <p>→ G: Halogen Free</p>

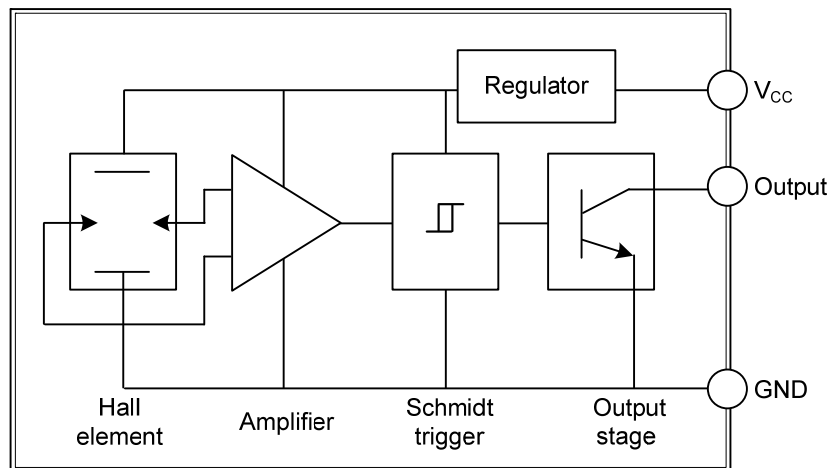
■ PIN CONFIGURATION



■ PIN DESCRIPTION

PIN NO.		PIN NAME	DESCRIPTION
SOT-23	SOT-89		
1	1	V <sub>CC</sub>	Power supply
2	3	OUTPUT	Output pin
3	2	GND	Ground pin

■ BLOCK DIAGRAM



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

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	$V_{CC}$	28	V
Reverse Battery Voltage	$V_{RCC}$	-28	V
Magnetic Flux Density	B	Unlimited	
Output OFF Voltage	$V_{OUT}$	28	V
Reverse Output Voltage	$V_{OUT}$	-0.5	V
Continuous Output Current	$I_{OUT}$	25	mA
Operating Temperature Range	$T_A$	-40 ~ +85	$^\circ\text{C}$
Storage Temperature Range,	$T_{STG}$	-65 ~ +170	$^\circ\text{C}$

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 RESISTANCES CHARACTERISTICS ( $V_{CC}=8\text{V}$  over operating temperature range)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Supply Voltage	$V_{CC}$	Operating	4.5		24	V
Output Saturation Voltage	$V_{OUT(SAT)}$	$I_{OUT}=20\text{mA}$ , $B>BOP$		175	400	mV
Output Leakage Current	$I_{OFF}$	$V_{OUT}=24\text{V}$ , $B<BRP$		<1.0	10	$\mu\text{A}$
Supply Current	$I_{CC}$	$B<BRP$ (Output OFF)		4.4	9.0	mA
Output Rise Time	$t_r$	$R_L=820\Omega$ , $C_L=20\text{pF}$		0.04	2.0	$\mu\text{s}$
Output Fall Time	$t_f$	$R_L=820\Omega$ , $C_L=20\text{pF}$		0.18	2.0	$\mu\text{s}$

■ MAGNETIC CHARACTERISTICS IN GAUSS OVER OPERATING SUPPLY VOLTAGE RANGE

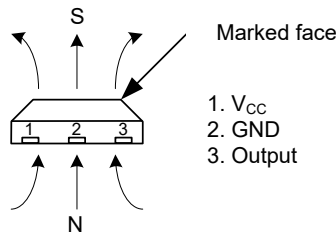
( $T_A = 25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Operate Point	$B_{OP}$		240	350	460	Gauss
Release Point	$B_{RP}$		135	250	370	Gauss
Hysteresis	$B_{hys}$			100		Gauss

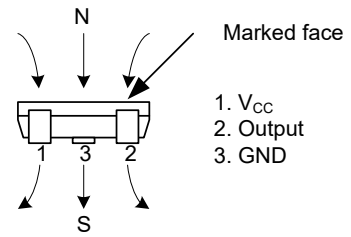
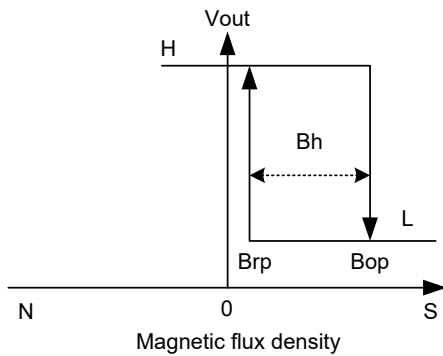
Notes: 1. Typical values are at  $T_A=+25^\circ\text{C}$  and  $V_{CC}=8\text{V}$

2.  $B_{OP}$ =operate point (output turns ON);  $B_{RP}$ =release point (output turns OFF);  $B_{hys}$ =hysteresis ( $B_{OP}-B_{RP}$ )

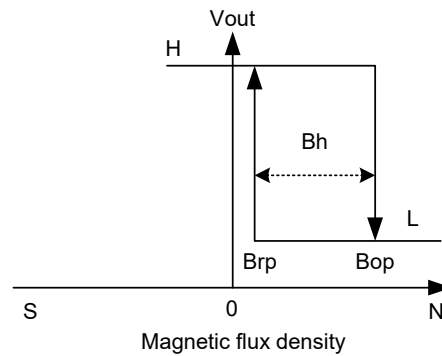
■ PACKAGE INFORMATION



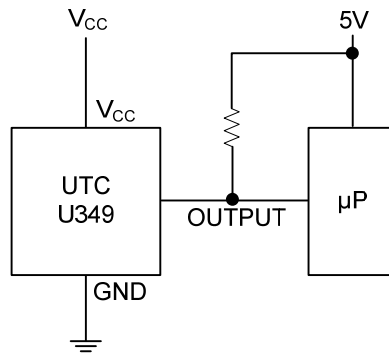
SOT-89



SOT-23



■ TYPICAL APPLICATION CIRCUIT



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