

## C3141 SERIES HALL-EFFECT SWITCH IC<sub>S</sub>

C3141 series Hall-effect switch integrated circuits for high temperature operating based on Hall-effect principle, apply the semiconductor monolithic technology, which includes a voltage regulator, Hall voltage generator, differential amplifier, Schmitt trigger and an open-collector output on a single silicon chip. ICs can convert the input magnetic field signal into digital voltage output.

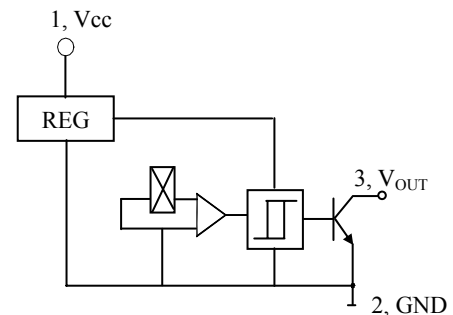
### FEATURES

- ◆ Small size
- ◆ High Sensitivity
- ◆ Quick Response
- ◆ Good Temperature Performance
- ◆ High Accuracy
- ◆ Excellent Reliability

### TYPICAL APPLICATION

- ◆ Non-contact Switch
- ◆ Automotive Ignition
- ◆ Brake ICs
- ◆ Position control
- ◆ Revolution detection
- ◆ Safe alarm device
- ◆ Textile control system

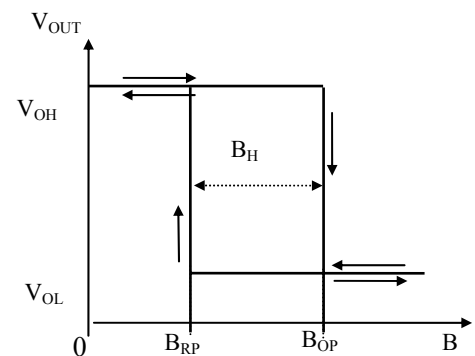
### FUNCTIONAL BLOCK DIAGRAM



### ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Value	Unit
Supply Voltage	V <sub>CC</sub>	28	V
Quiescent Output Voltage	V <sub>O</sub>	28	V
Output Current	I <sub>O</sub>	25	mA
Operating Temperature Range	T <sub>A</sub>	-40~85	°C
Storage Temperature Range	T <sub>S</sub>	-65~150	°C

### Magnetic-Electrical Transfer Characteristics



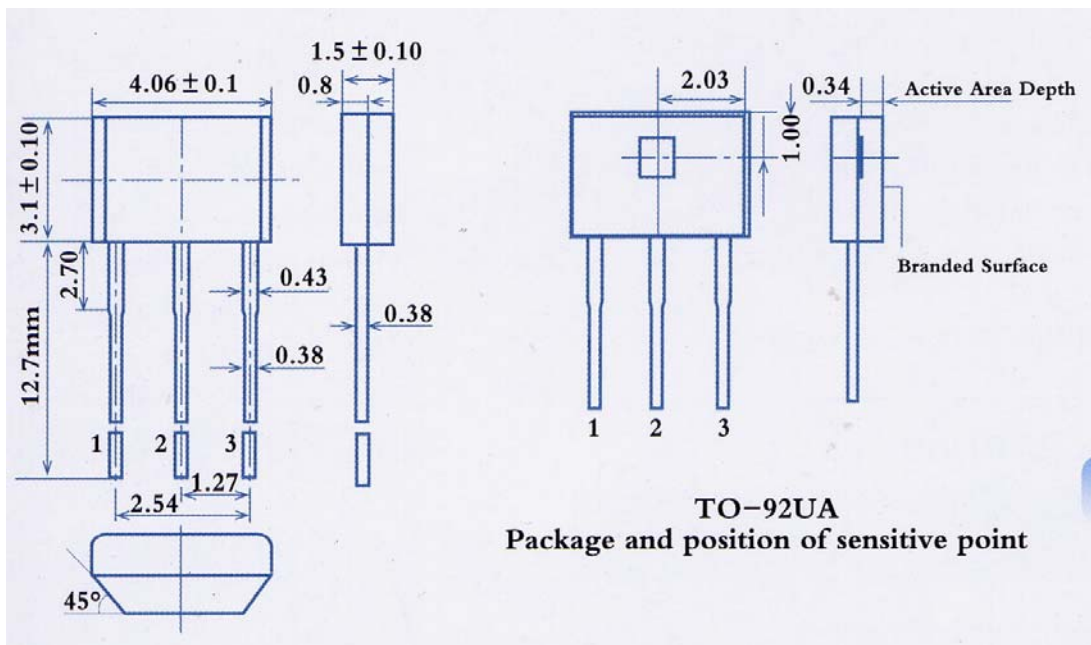
### ELECTRICAL CHARACTERISTICS

Parameter	Test Condition	Symbol	Value			Unit
			Min	Typ	Max	
Supply Voltage	V <sub>CC</sub> =4.5V~24V	V <sub>CC</sub>	4.5	-	24	V
Output Low Voltage	V <sub>CC</sub> =4.5V, V <sub>O</sub> =24V I <sub>O</sub> =20mA, B≥B <sub>OP</sub>	V <sub>OL</sub>	-	175	400	mV
Output Leakage Current	V <sub>O</sub> =24V, B<B <sub>RP</sub>	I <sub>OH</sub>	-	<1.0	10	μA
Supply Current	V <sub>CC</sub> =24V, V <sub>O</sub> open-collector output	I <sub>CC</sub>	-	3.0	9.0	mA
Output Rise time	V <sub>CC</sub> =12V, R <sub>L</sub> =820Ω C <sub>L</sub> =20pF	t <sub>r</sub>	-	0.2	2.0	μS
Output Fall time		t <sub>f</sub>	-	0.18	2.0	μS

## Magnetic Characteristics

Parameter		Min (mT)	Typ (mT)	Max (mT)
Operate Point ( $B_{OP}$ )	$T_A=25^\circ\text{C}$	5.0	10.0	16.0
	Full Operating Temperature Range	3.0	10.0	17.5
Release Point ( $B_{RP}$ )	$T_A=25^\circ\text{C}$	1.0	4.5	13.0
	Full Operating Temperature Range	1.0	4.5	14.5
Hysteresis ( $B_H$ )	$T_A=25^\circ\text{C}$	2.0	5.5	8.0
	Full Operating Temperature Range	2.0	5.5	8.0

## Package Outline Drawing (Unit: mm)



**Pin Notes:** 1. Power Supply, 2. Ground, 3. Output

## Cautions:

- 1) It is possible that outside mechanical stress affects the operating point and the release point of Hall-effect circuit, therefore, mechanical stress should be lessened as far as possible in the process of assembly;
- 2) Pay attention to the soldering temperature at the leads; keep it lower in a short time to guarantee good soldering quality.