

CS3140 SERIES HALL-EFFECT SWITCH ICs

CS3140 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.



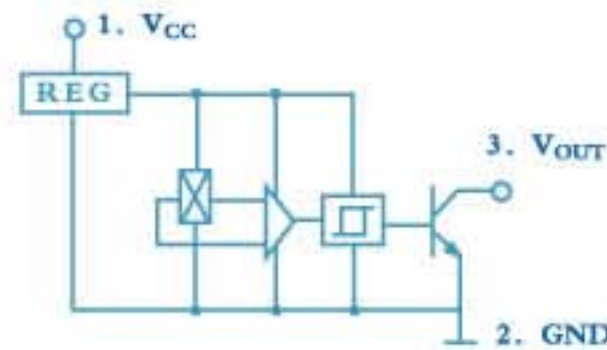
FEATURES

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

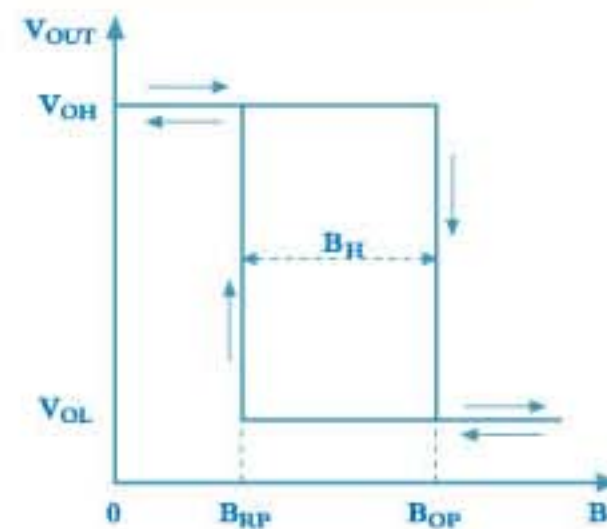
TYPICAL APPLICATION

- ◆ Non-contact Switch
- ◆ Automotive Ignition
- ◆ Brake ICs
- ◆ Position Control, Revolution Detection
- ◆ Safe Alarm Device
- ◆ Textile Control System

FUNCTIONAL BLOCK DIAGRAM



MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS



ABSOLUTE MAXIMUM RATINGS

Parameter	Symbol	Type	Value	Unit
Supply Voltage	V _{CC}		28	V
Quiescent Output Voltage	V _O		28	V
Output Current	I _O		25	mA
Operating Temperature Range	T _A	suffix "E"	-40~85	°C
		suffix "L"	-40~150	
Storage Temperature Range	T _S		-65~150	°C

ELECTRICAL CHARACTERISTICS

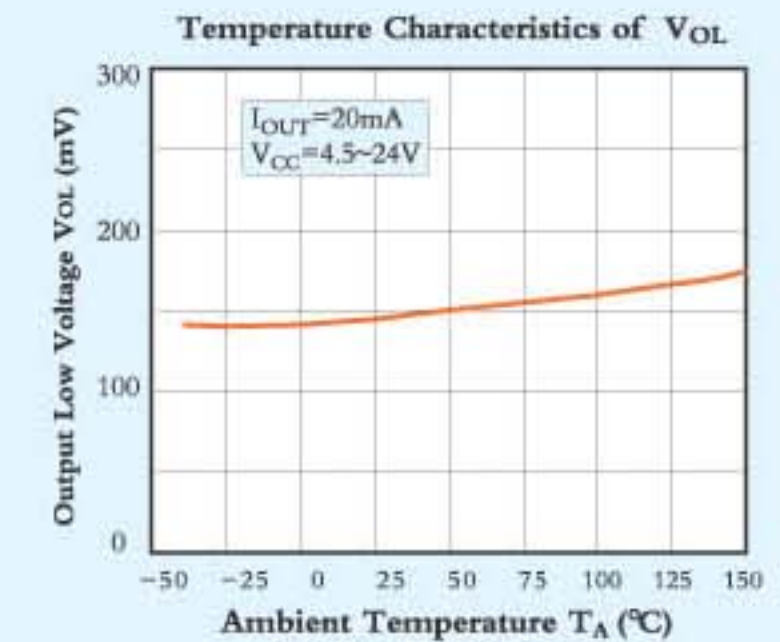
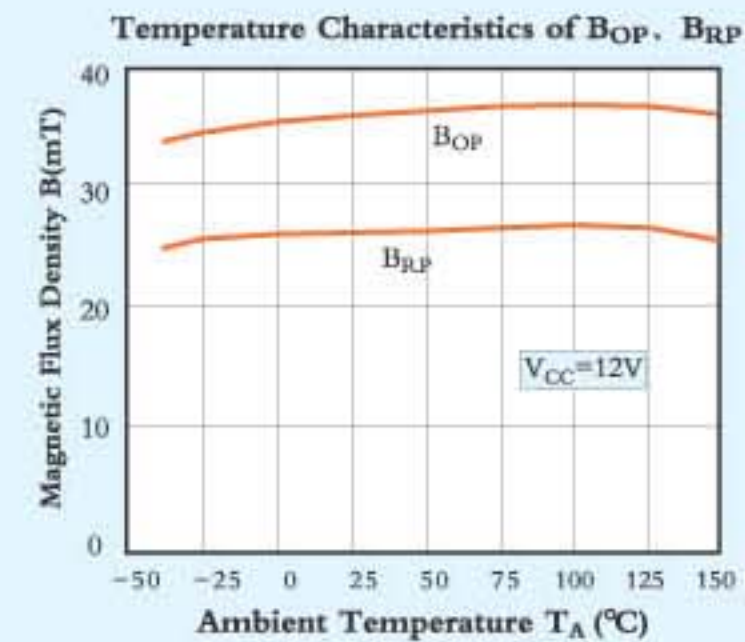
Parameter	Test Condition	Symbol	Value			Unit
			Min.	Typ.	Max.	
Supply Voltage	V _{CC} = 4.5V~24V	V _{CC}	4.5	-	24	V
Output Low Voltage	V _{CC} = 4.5V, V _O = 24V, I _O = 20mA, B ≥ B _{OP}	V _{OL}	-	175	400	mV
Output Leakage Current	V _O = 24V, B < B _{RP}	I _{OH}	-	<1.0	10	μA
Supply Current	V _{CC} = 24V, V _O open-collector output	I _{CC}	-	3.0	9.0	mA
Output Rise Time	V _{CC} = 12V	t _r	-	0.2	2.0	μS
Output Fall Time	R _L = 820Ω, C _L = 20pF	t _f	-	0.18	2.0	μS

CS3140 SERIES HALL-EFFECT SWITCH ICs

MAGNETIC CHARACTERISTICS (Unit :mm)

Parameter	Type	Type											
		CS3141(E, L)			CS3142(E, L)			CS3143(E, L)			CS3144(E, L)		
		Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.	Min.	Typ.	Max.
Operate Point (B _{OP})	T _A = 25°C	5.0	10.0	16.0	13.0	18.0	23.0	22.0	28.0	34.0	7.0	-	35.0
	Full Operating Temperature Range	3.0	10.0	17.5	11.5	18.0	24.5	20.5	28.0	35.5	3.5	-	45.0
Release Point (B _{RP})	T _A = 25°C	1.0	4.5	13.0	7.5	12.5	17.5	16.5	22.5	28.5	5.0	-	33.0
	Full Operating Temperature Range	1.0	4.5	14.5	6.0	12.5	19.0	15.0	22.5	30.0	2.5	-	43.0
Hysteresis (B _H)	T _A = 25°C	2.0	5.5	8.0	3.0	5.5	8.0	3.0	5.5	8.0	2.0	5.5	-
	Full Operating Temperature Range	2.0	5.5	8.0	3.0	5.5	8.0	3.0	5.5	8.0	2.0	5.5	-

CHARACTERISTICS CURVES



PACKAGE OUTLINE DRAWING (Unit :mm)

Please Referring to Page7 ①. ②. ③

- ◆ TO-92UA Package and position of sensitive point
- ◆ TO-92T Package and position of sensitive point
- ◆ TO-92U Package and position of sensitive point

CAUTIONS:

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

PIN NOTES:

- (TO-92UA, TO-92T, TO-92U package)
1. Power Supply
 2. Ground
 3. Output

