AH3020、AH3040(3140) Unipolar Hall-Effect Switches

AH3020、AH3040 is the magnetic sensor that consists of voltage regulator,hall voltage generator,differential amplifier, Schmitt trigger and open collector output.When it detects the magnetic flux of density,it output digital voltage singal.It is the magnetic-sensing circuit that works by unipolar,and suitable for the rectangle magnet and the column magnet. It serves many applications within automotive and industrial electronics.The package is SOT-89.。

FEATURES

Wide Supply Voltage Range
Fast Response Time
Wide Frequency (DC~100KHz)
Long Operating Life, Small Size,
Convenient Installing
Direct connect withe transistor,TTL and MOS.

TYPICAL APPLICATIONS

. Contactless Switch . Position Control
. Speed Measurement . Isolation Measurement
. Brushless DC Motor Electric current sensor
. Automotive Ignitor . Alarm system

ABSOLUTE MAXIMUM RATING

Parameter	Symbol	Value	Unit
Supply Voltage	V_{CC}	24	V
Magnetic Flux Density	B	Unlimited	m
Output breakdown reverse voltage	V_{ce}	40	V
Continuous Output Current	I_{OL}	25	m
Operating Temperature Range	T_A	-20~+85	℃
Storage Temperature Range	T_S	150	℃

ELECTRICAL CHARACTERISTICS T_A=25℃

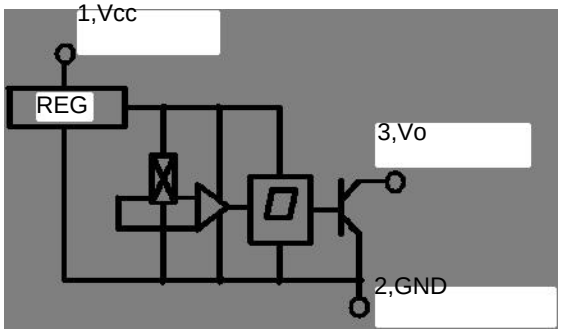
Parameter	Symbol	Test condition	Type and Value						Unit
			AH3020			AH3040			
			min	typ	max	min	typ	max	
Supply Voltage	Vcc		4.5	-	24	4.5	-	24	V
Output Off Voltage	V_{OL}	I_{out}=15mA B>B_{OP}	-	200	400	-	200	400	mV
Output Current	I_{OH}	V_{out}=24V B<B_{RP}	-	0.1	10	-	0.1	10	μA
Supply Current	I_{CC}	Vcc=24V Output Open	--	-	8	-	-	10	mA
Output Rise Time	t_r	R_L=820Ω C_L=20PF	-	0.12	-	-	0.12	-	μS
Output Fall Time	t_f	R_L=820Ω C_L=20PF	- -	0.18	-	-	0.18	-	μS

MAGNETIC CHARACTERISTICS Vcc=4.5～24V

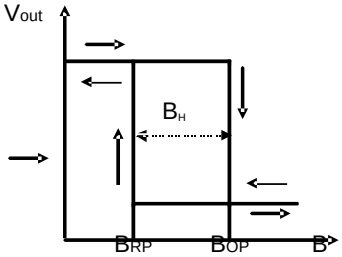
Parameter	Symbol	Type and Value						Unit
		AH3020			AH3040(3140)			
		min	typ	max	min	typ	max	
Operate Point	B_{OP}	-	22	35	-	15	20	mT
Release Point	B_{RP}	3	16	-	3	10	-	mT
Hysteresis	B_H	2	-	-	2	-	-	mT

note：1mT=10GS

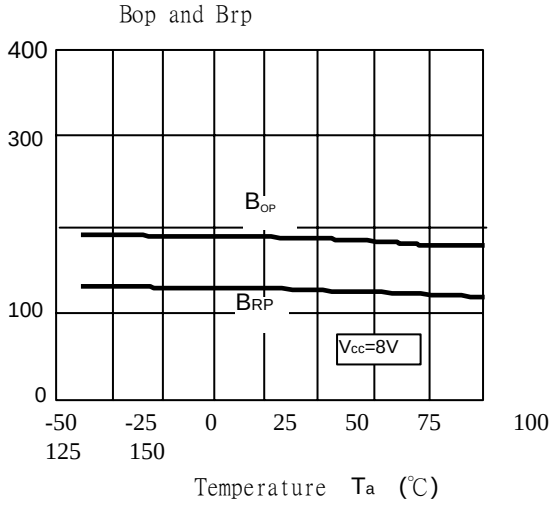
BLOCK DIAGRM

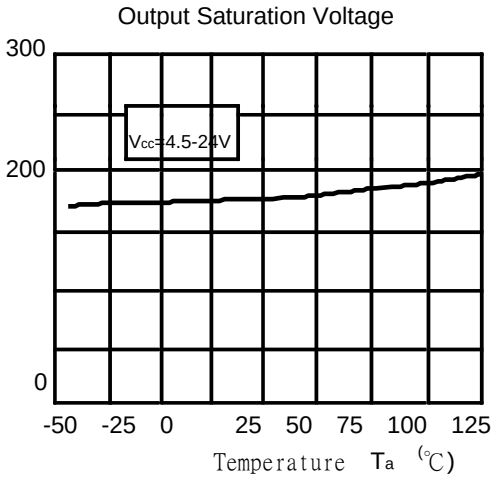


MAGNETIC-ELECTRICAL TRANSFER CHARACTERISTICS

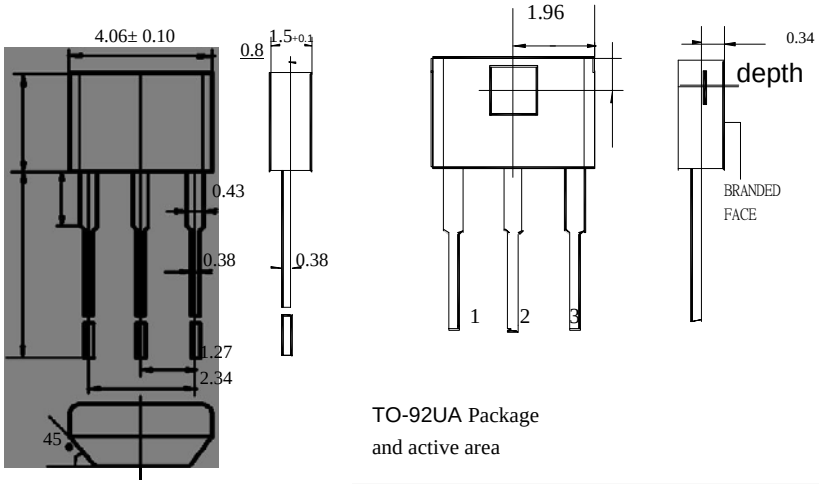


TYPICAL OPERATING CHARACTERISTICS as a function of temperature





Package (unit：mm)



TO-92UA Package and active area

Lead Designator

1. SUPPLY
2. GROUND
3. OUTPUT

Cautions

1. When install, should as full as possible decrease the mechanical stress acting on the Hall IC, to avoid the influence of the operate point and release point.
2. On the premise of ensuring welding quality, use as possible as low welding temperature and short time