

■ FEATURES

- 1) Wide range of supply voltage:3.5V to 28V.
- 2) Internal bandgap regulator allows temperature compensated operations and a wide operating voltage range.
- 3) High sensitivity with a small magnet.
- 4) TTL and MOS ICs directly drivable by output.
- 5) Build in protection diode for chip reverse power connecting.
- 6) Package: SOT25

■ GENERAL DESCRIPTION

A6851 is an integrated Hall effect latched sensor with output pull-high resistor driver designed for electronic commutation of brushless DC motor applications and contactless switches. The device 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 output driver with pull-high resistor. An internal bandgap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

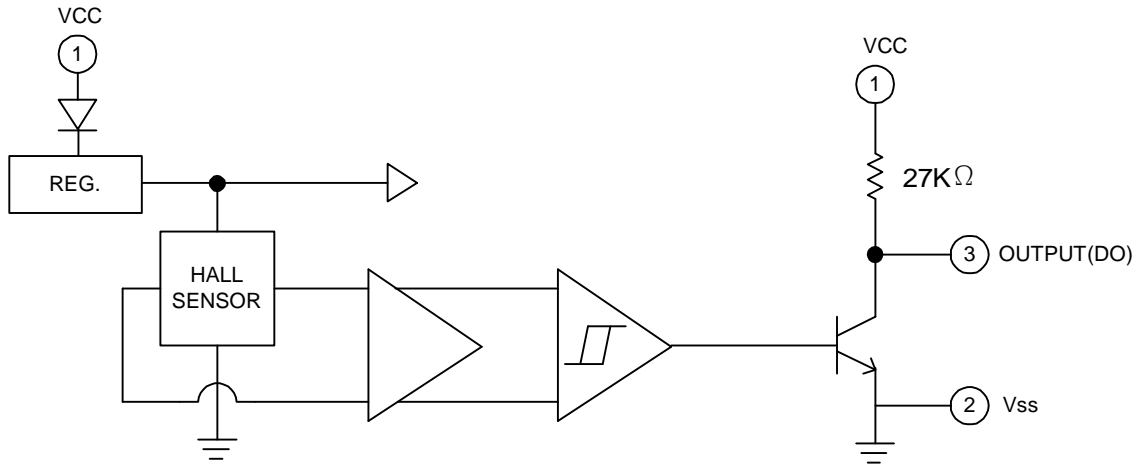
If a magnetic flux density larger than threshold B_{op} , DO is turned on(low). The output state is held until a magnetic flux density reversal falls below B_{rp} causing DO to be turned off(high).

A6851 is rated for operation over temperature range from -20°C to 100°C and voltage range from 3.5V to 28V. The devices are available in low cost die forms or rugged 3 pin SIP packages.

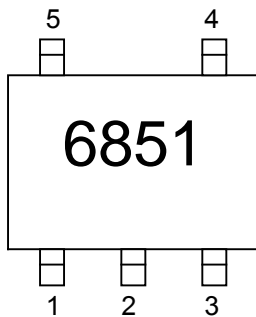
■ APPLICATIONS

- 1) Brushless DC Motor
- 2) Brushless DC Fan
- 3) Position Sensors
- 4) Rotation Sensors
- 5) Revolution Counting
- 6) Speed Measurement
- 7) Keyboard Switches
- 8) Microswitches

FUNCTIONAL BLOCK DIAGRAM



PIN DESCRIPTION



Name	P/I/O	Pin #	Description
Nc		1	NC
Vss	P	2	Ground
FG	O	3	Output Pin
Vcc	P	4	Positive Power Supply
DO	O	5	Output Pin

■ **ABSOLUTE MAXIMUM RATING** (at Ta=25 °C)

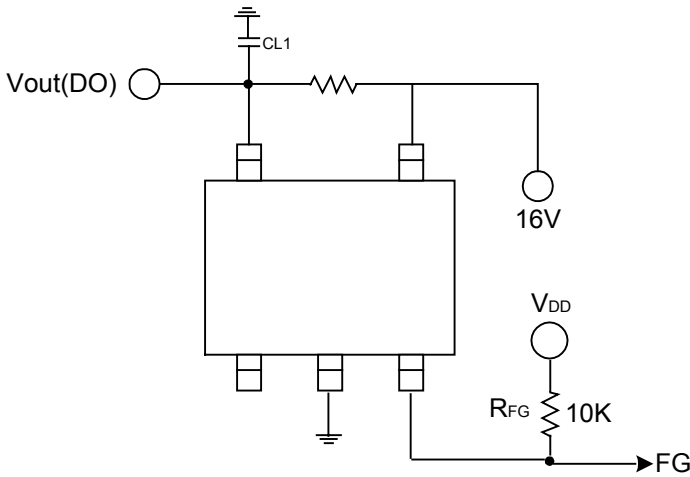
Supply Voltage, Vcc	-----28V
Reverse V _{CC} Polarity Voltage, V _{RCC}	----- -28V
Magnetic flux density, B	-----Unlimited
Output OFF Voltage, Vce	-----35V
Output ON Current, Ic	
Continuous	-----25mA
Operating Temperature Range,	
Ta	-----(-20 °C to +100 °C)
Storage Temperature Range,	
Ts	-----(-65 °C to +150 °C)
Package Power Dissipation,	
Pd	-----250mW
Maximum Junction Temp , Tj	----- 175 °C

*Exceeding the absolute maximum ratings may cause permanent damage. Exposure to absolute maximum rated conditions for extended periods may affect device reliability.

■ **ELECTRICAL CHARACTERISTICS** (Ta =+25 °C)

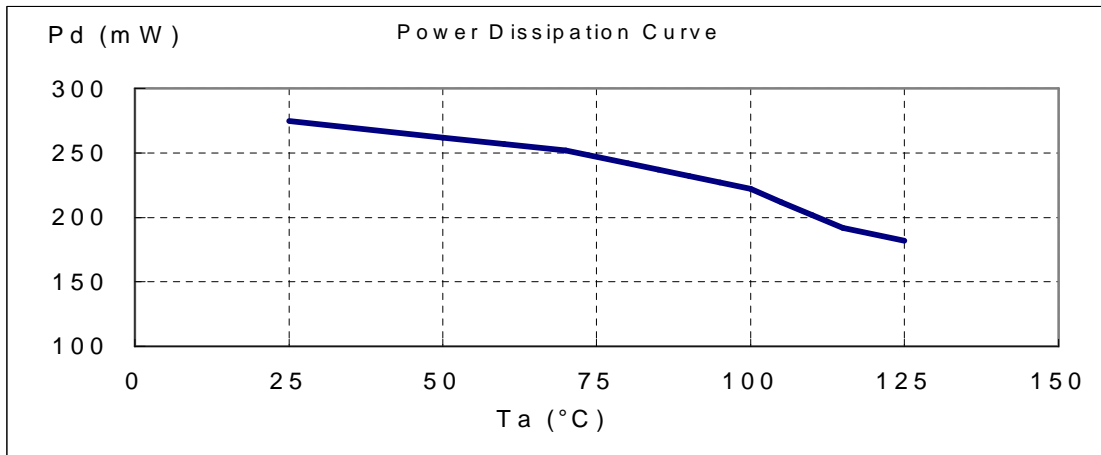
Characteristic	Symbol	Conditions	Min	Typ	Max	Units
Supply Voltage	Vcc	-	3.5	—	28	V
Low output voltage	VOL	Vcc=16V, Io=12mA, B=130 Gauss	—	—	0.4	V
		Vcc=3.6V, Io=12mA, B=130 Gauss	—	—	0.4	V
High output voltage	VOH	Vcc=16V, Io=-30µA, B=-130 Gauss	14.6	—	—	V
		Vcc=3.6V, Io=-30µA, B=-130 Gauss	2.2	—	—	V
Output Leakage Current	Icex	Vce=16V, Vcc=16V	—	< 0.1	10	µA
Output Short-circuit Current	-Ios	Vcc=16V, Vo=0V, B=-130 Gauss	0.4	—	0.9	mA
Supply Current	Icc	Vcc=24V, Output Open	—	5	10	mA
Output Rise Time	tr	Vcc=16V, RL=820Ω, CL=20Pf	—	0.3	1.5	us
Output Falling Time	tf	Vcc=16V, RL=820Ω, CL=20Pf	—	0.3	1.5	us

■ TEST CIRCUIT

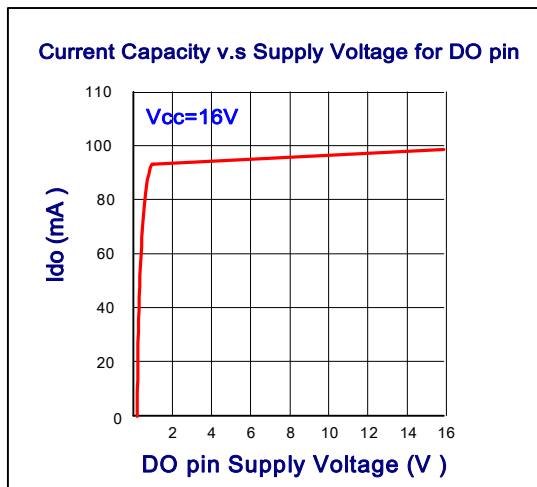


■ PO ER DISSIPATION VS ENVIRONMENT TEMPERATURE

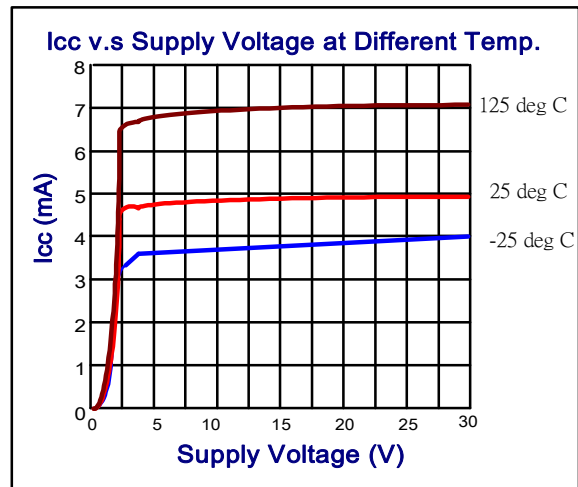
Ta (°C)	25	50	60	70	80	85	90	95	100	105	110	115	125
Pd (mW)	275	262	257	252	242	237	232	227	222	212	202	192	182



■ ELECTRICAL CHARACTERISTIC CURVES



Current capacity vs. supply voltage for DO pin

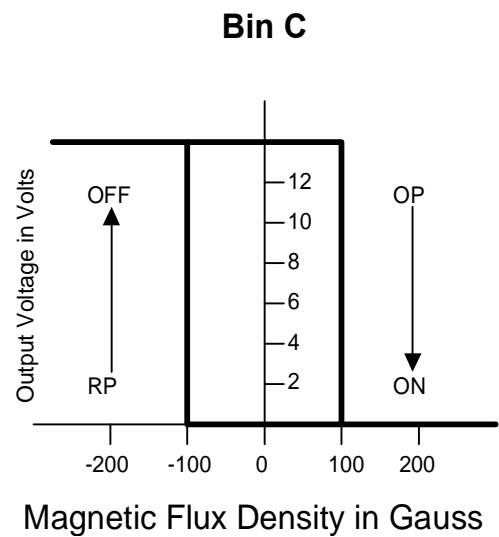
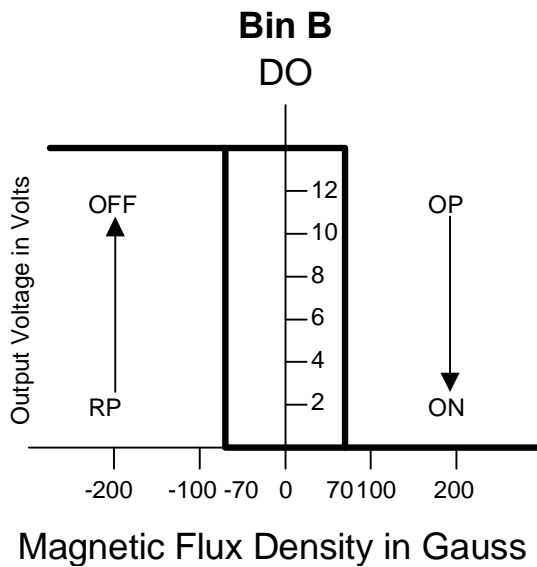
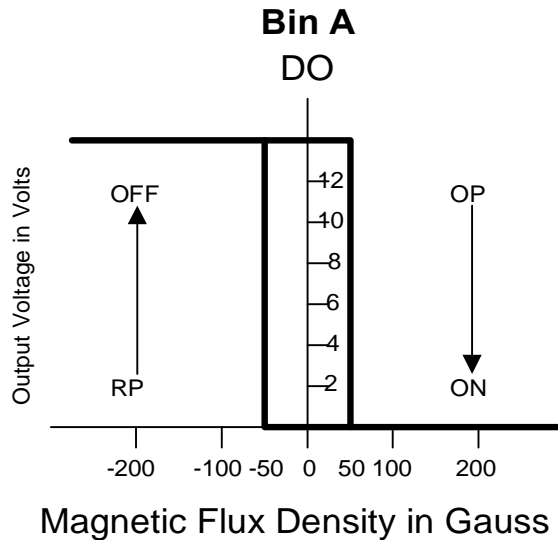


Icc v.s Vcc at Different Temp

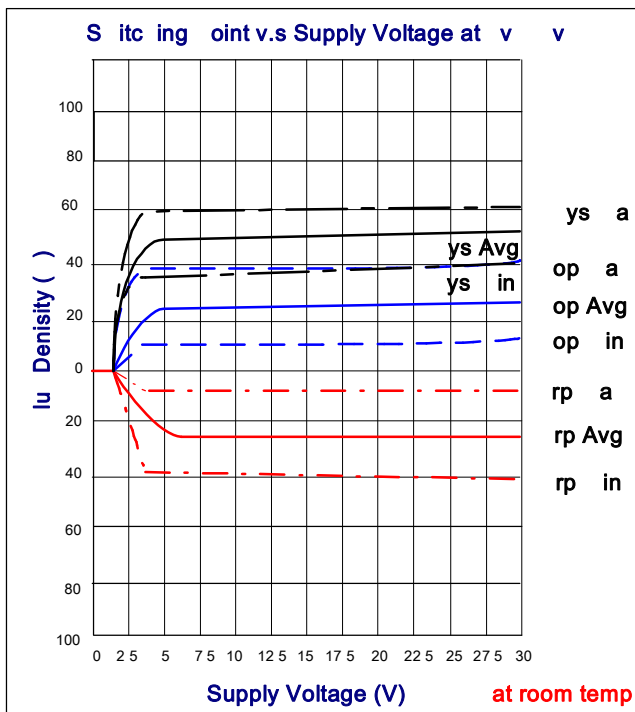
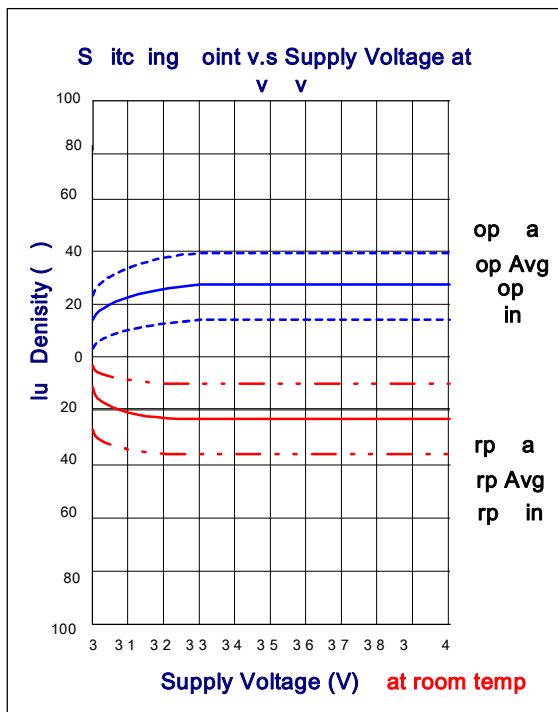
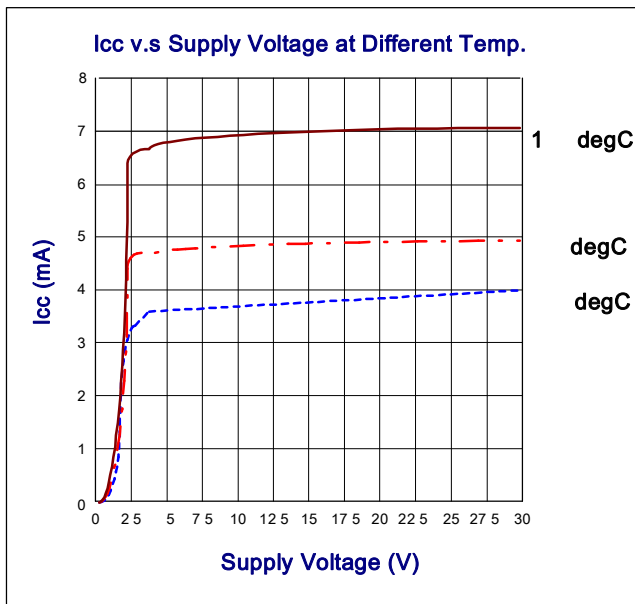
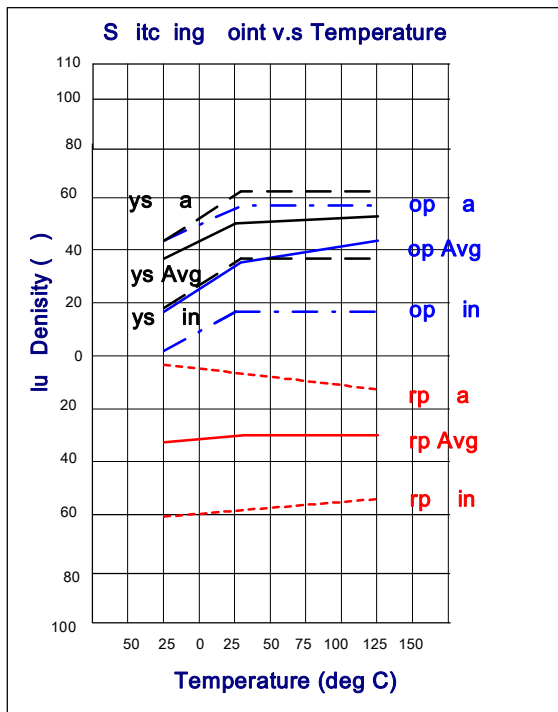
■ MAGNETIC CHARACTERISTICS

Characteristic	Symbol	Ta=+25 °C		Ta=-0 °C to +70 °C		Units	
		Min	Max	Min	Max		
Operate Point	Bin A	Bop	10	50	0	50	G
	Bin B	Bop	-	70	-	70	G
	Bin C	Bop	-	100	-	100	G
Release Point	Bin A	Brp	-50	-10	-50	0	G
	Bin B	Brp	-70	-	-70	-	G
	Bin C	Brp	-100	-	-100	-	G
Hysteresis	Bin A	Bhys	40	110	20	140	G
	Bin B	Bhys	50	150	30	200	G
	Bin C	Bhys	60	160	40	220	G

■ HYSTERESIS CHARACTERISTICS

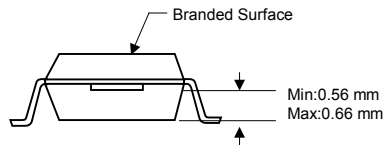


PERFORMANCE GRAPHS

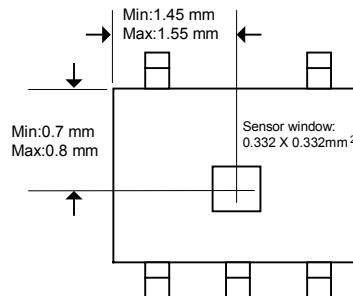


■ PACKAGE INFORMATION

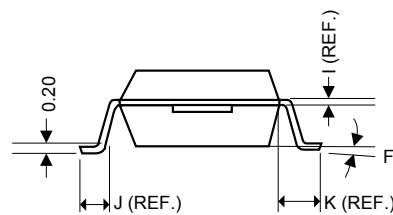
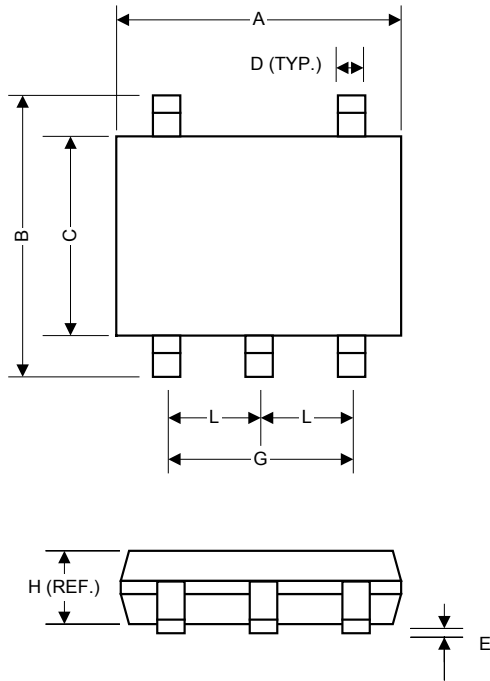
Active Area Depth



Package Sensor Location
(TOP VIEW)



■ PACKAGE DIMENSION



REF.	Millimeter		REF.	DIMENSIONS
	Min.	Max.		Millimeter
A	2.70	3.10	G	1.90 REF.
B	2.60	3.00	H	1.20 REF.
C	1.40	1.80	I	0.12 REF.
D	0.30	0.55	J	0.37 REF.
E	0	0.10	K	0.60 REF.
F	0°	10°	L	0.95 REF.