



TX3141MR

Unipolar Hall Effect Switch

For N-Pole Induction

Features

- Hall effect Switch Sensor
- Wide operating voltage range :3.5V~35V
- Open Collector Pre-Driver
- Maximum output sink current: 50mA
- Operating Temperature:-40°C~+125°C
- Package: SOT23-3L
- N-pole induction

Applications

- Rotor Position Sensing
- Current Switch
- Brush-less DC Motor
- Revolution counting
- Encoder
- RPM Detection
- Brush-less DC Fan
- Speed measurement

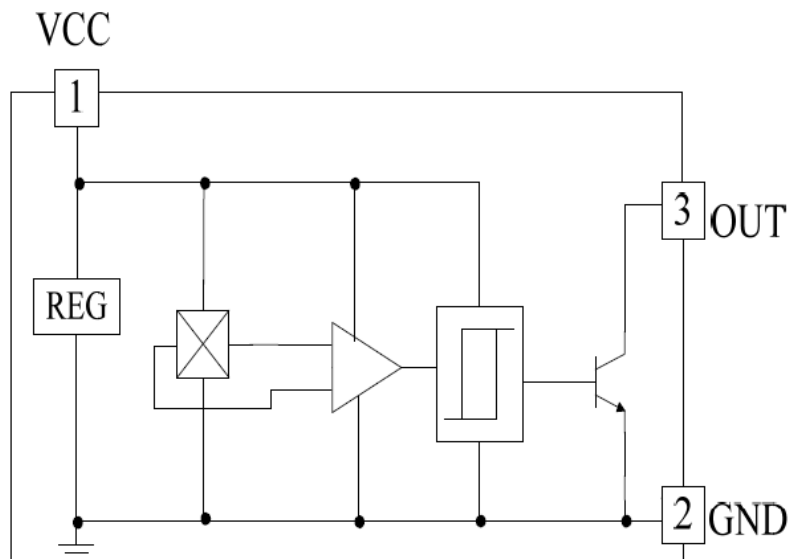
General Description

The TX3141MR series is an integrated Hall Effect position sensor designed for electronic commutation of brush-less DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, and a Schmitt to provide switching hysteresis for noise rejection, and open-collector output. An internal band gap regulator is used to provide temperature

compensated supply voltage for internal circuits and allows a wide operating supply range.

In the absence of a magnetic field, the output pin is "OFF" (High). A north pole of sufficient strength will turn the output "ON"(Low). While the magnetic flux density (B) is larger than threshold B_{op} , the output is "ON". If B removed toward B_{rp} , the output pin is latched "ON" state prior to $B < B_{rp}$. When $B < B_{rp}$, the output pin goes into "OFF" state.

Block Diagram



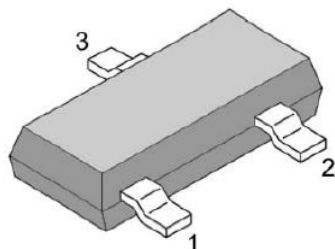


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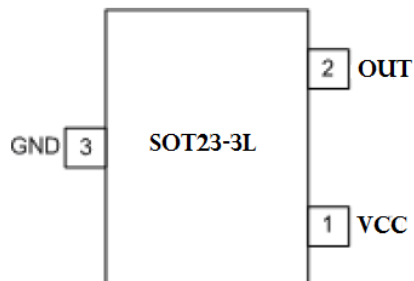
TX3141MR

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Pin Assignment



SOT23-3L (Top View)



Pin Description

Pin No	Name	Type	Function
1	VCC	Supply	Supply Voltage pin
2	OUT	Output	Open Drain Output pin
3	GND	Ground	Ground pin

Absolute Maximum Ratings

Symbol	Parameter	Parameter Values	Unit
V _{CC}	Supply Voltage	-0.5~38	V
B	Magnetic Induction	不限	Gauss
I _{OL}	Low Level Output Current	50	m A
PD	Maximum Power Dissipation	450	m W
TA	Operating Temperature	-40~+125	°C
TS	Storage Temperature	-65~+150	°C

Note: These are stress ratings only. Stresses exceeding the range specified under “Absolute Maximum Ratings” may cause substantial damage to the device. Functional operation of this device at other conditions beyond those listed in the specification is not implied and prolonged exposure to extreme conditions may affect device reliability.



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Electrical Characteristics

VCC=5V, Ta=25°C, unless otherwise specified

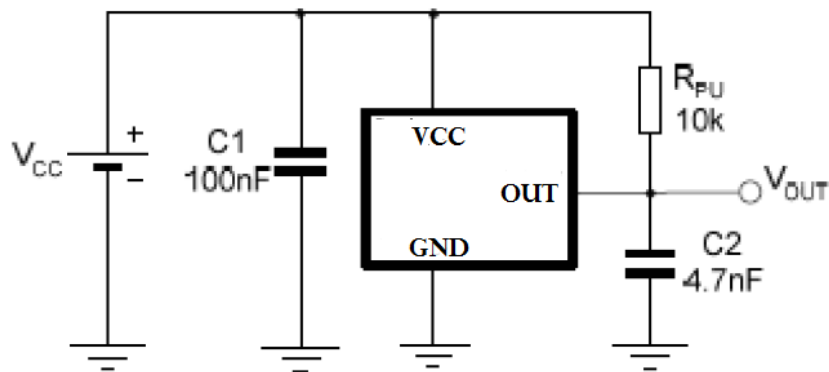
Symbol	Parameter	Test Conditions	Min.	Typ.	Max.	Unit
V _{CC}	Supply Voltage		3.8		35	V
V _{OL}	Low Level Output Voltage	I _{OUT} =25mA B<Bop	-	-	250	mV
		I _{OUT} =40mA B<Bop	100	-	500	mV
I _{OH}	High Level Output Current	V _{OUT} =30V B>Brp		0.1	10	uA
I _{CC}	Source Current	The Output Circuit	-	3.5	9.0	mA
Tr	Output Rise Time	R _L =820Ω C _L =20PF	-	0.2	-	uS
Tf	Output Fall Time	R _L =820Ω C _L =20PF	-	0.5	-	uS

Magnetic Figures

VCC=5V, Ta=25°C, unless otherwise specified

Characteristics	Symbol	Low Limit	Typ	Upper Limit	Unit
Working Point	Bop	60		185	Gauss
Release Point	Brp			15	Gauss
Hysteresis	Bhys	20	35	60	Gauss

Application Circuits



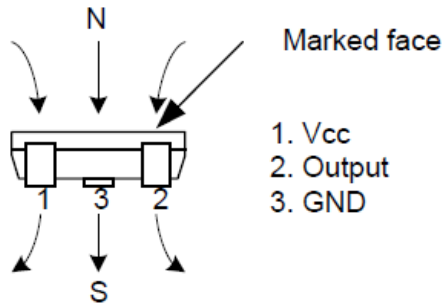


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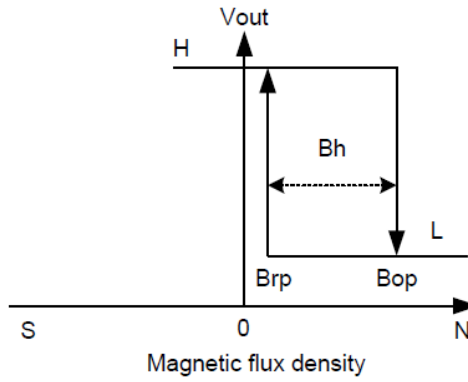
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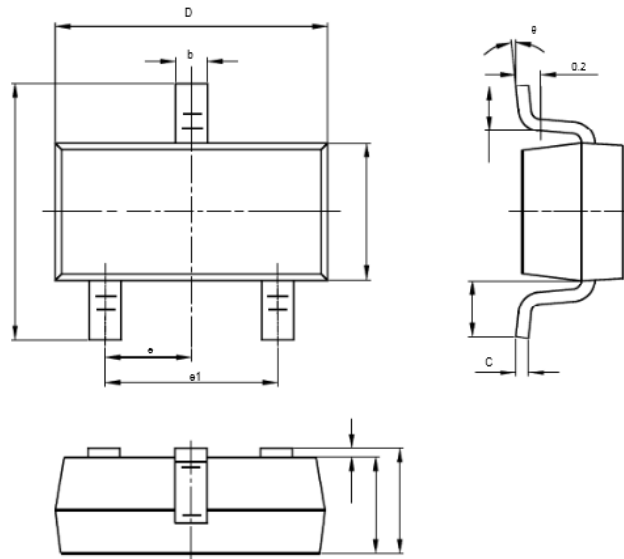
Package Information



SOT-23



SOT-23-3L PACKAGE OUTLINE DIMENSIONS



Symbol	Dimensions In Millimeters		Dimensions In Inches	
	Min	Max	Min	Max
A	1.050	1.250	0.041	0.049
A1	0.000	0.100	0.000	0.004
A2	1.050	1.150	0.041	0.045
b	0.300	0.400	0.012	0.016
c	0.100	0.200	0.004	0.008
D	2.820	3.020	0.111	0.119
E	1.500	1.700	0.059	0.067
E1	2.650	2.950	0.104	0.116
e	0.950TPY		0.037TPY	
e1	1.800	2.000	0.071	0.079
L	0.700REF		0.028REF	
L1	0.300	0.800	0.012	0.024
θ	0°	8°	0°	8°



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