



General Description

The OCH168(OCH168A) is an Integrated Hall effect sensor designed specifically to meet the requirements of low-power devices. e.g. as an On/Off switch in Cellular Flip-Phones, with battery operating voltages of 2.4V~5.5V.

Precise magnetic switching points and high temperature stability are achieved through the unique design of the internal circuit.

An onboard clock scheme is used to reduce the average operating current of the IC.

During the operate phase the IC compares the actual magnetic field detected with the internally compensated switching points. The output is switched at the end of each operating phase.

During the Stand-by phase the output stage is latched and the current consumption of the device reduced to some μA.

The IC switching behavior is Omnipolar, i.e. it can be switched on with either the North or South pole of a magnet.

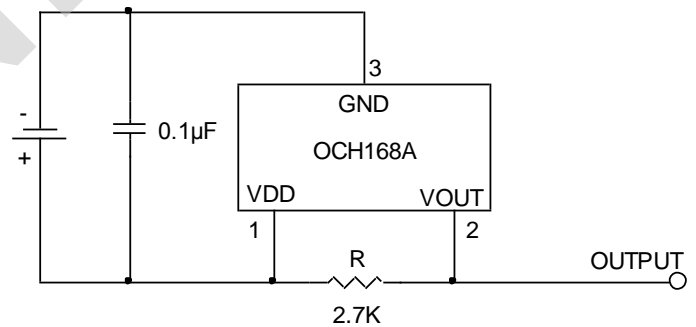
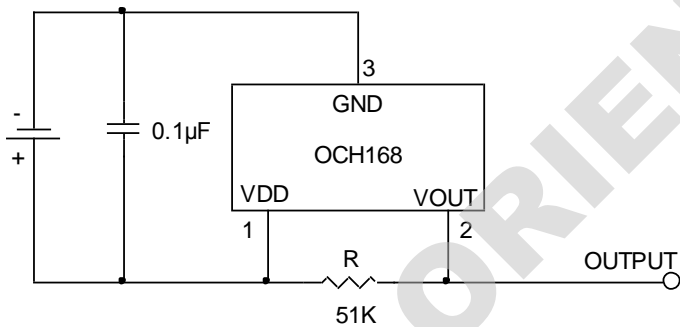
Features

- Micro power design
Operation with North or South pole(omni polar)
2.4V to 5.5V battery operation
High sensitivity and high stability of the magnetic switching points
High resistance to mechanical stress
Digital output signal
Good RF noise immunity
-40°C to 85°C operating temperature
Package: SOT23-3L/TSOT23-3L/SIP3

Applications

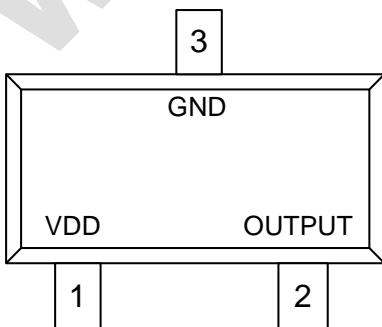
- Cellular Phone
PDA
Cordless Phone

Typical Application

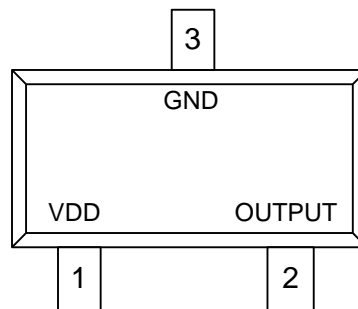


Pin Configuration

1) SOT23-3L

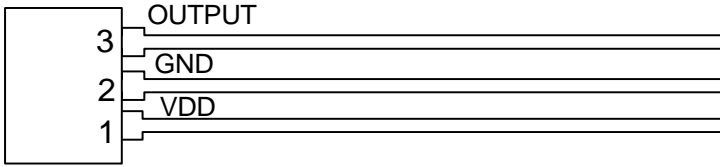


2) TSOT23-3L



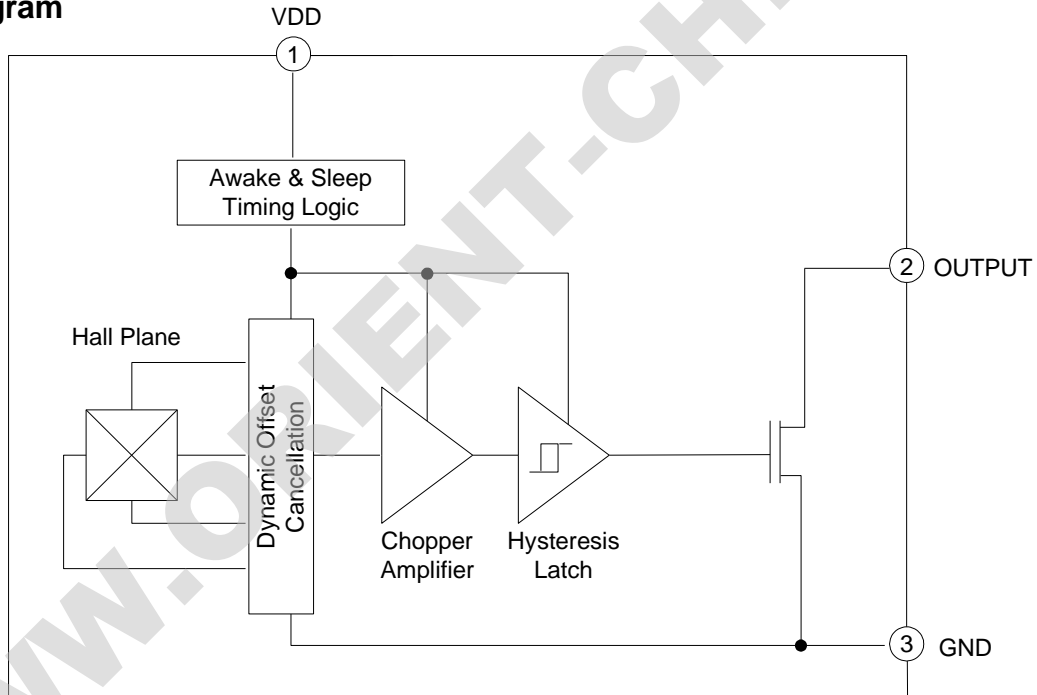


3) SIP3



Symbol	Function
VDD	Supply Voltage
OUTPUT	Signal Output (Open Drain)
GND	Ground

Block Diagram



Absolute Maximum Ratings

Parameter	Symbol	Maximum	Unit
Supply Voltage	V _{DD}	5.5	V
Supply Current	I _{DD}	2.5	mA
Output Voltage	V _O	5.5	V
Output Current	I _O	1	mA
Operating Temperature Range	T _A	-40 to 85	°C
Junction Temperature	T _J	-40 to 150	°C
Storage Temperature	T _{STG}	-40 to 150	°C
Magnetic Flux Density	B	unlimited	mT
Power Dissipation	P _D	230	mW

Note: Stress above the listed absolute maximum rating may cause permanent damage to the device



■ Electrical Characteristics

Parameter	Symbol	Test Condition	Min.	Typ.	Max.	Unit
Averaged Supply Current	I _{DD(AVG)}			3 ¹⁾	20	uA
Supply Current During Operating Time	I _{DD(OP)}			1.1 ¹⁾	-	mA
Supply Current During Standby Time	I _{DD(STB)}			2.5 ¹⁾	-	uA
Output Saturation Voltage	V _{O(SAT)}	I _O =1mA		0.1	0.3	V
Output Leakage Current	I _{O(LEAK)}			0.01	1	uA
Operating Time	T _{OP}			56		us
Standby Time	T _{STB}			140		ms
Duty Cycle	T _{OP} / T _{STB}			0.04		%

¹⁾ Operating voltage is 2.7V.

■ Operating Range

Parameter	Symbol	Min.	Typ.	Max.	Unit
Supply Voltage ²⁾	V _{DD}	2.4	2.7	5.5	V
Output Voltage	V _O	-0.3	2.7	5.5	V
Ambient Temperature	T _A	-40	25	85	°C

²⁾ A Ceramic Bypass Capacitor of 0.1uF at V_{DD} to GND is highly recommended.

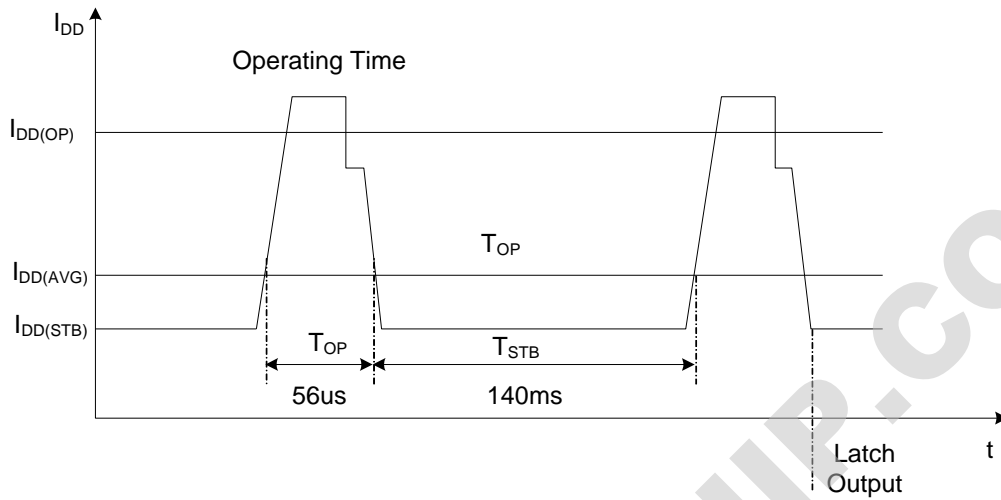
■ Magnetic Characteristics

OCH168		If not other specified, typical characteristics apply at T _A = 25 °C and V _{DD} = 2.7 V				
Parameter	Symbol	Min.	Typ.	Max.	Unit	
Operate Points (Output ON)	B _{OPS}	40	55	70	G	
	B _{OPN}	-70	-55	-40	G	
Release Points (Output OFF)	B _{RPS}	30	45	60	G	
	B _{RPN}	-60	-45	-30	G	
Hysteresis	B _{HYS}	5	10	15	G	

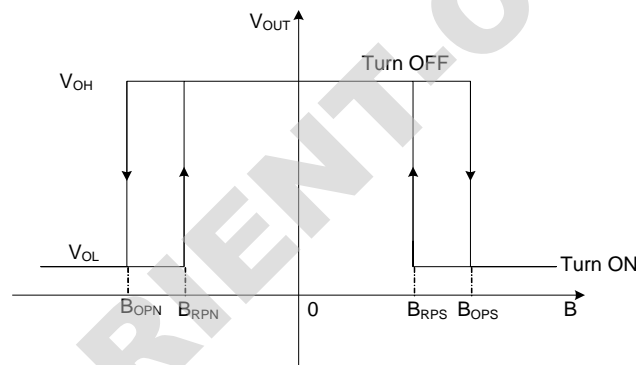
OCH168A		If not other specified, typical characteristics apply at T _A = 25 °C and V _{DD} = 2.7 V				
Parameter	Symbol	Min.	Typ.	Max.	Unit	
Operate Points (Output ON)	B _{OPS}	15	25	35	G	
	B _{OPN}	-35	-25	-15	G	
Release Points (Output OFF)	B _{RPS}	7	15	25	G	
	B _{RPN}	-25	-15	-7	G	
Hysteresis	B _{HYS}	5	10	15	G	



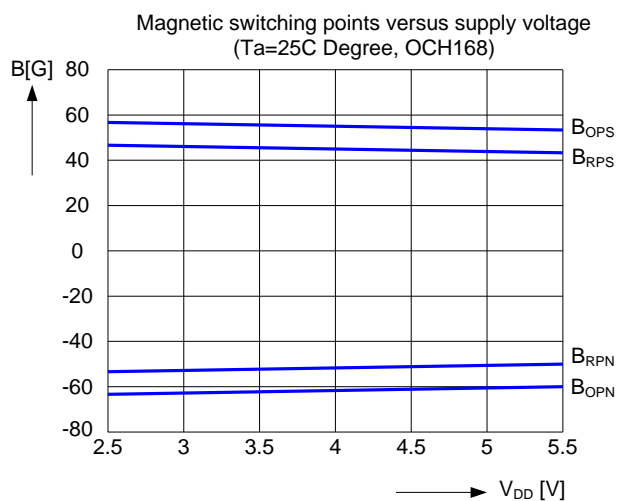
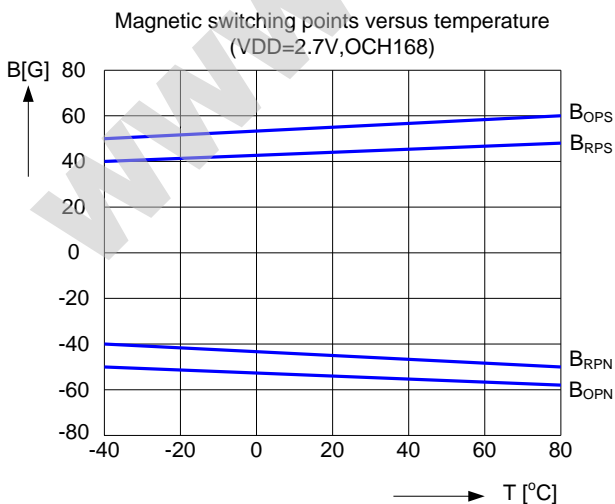
■ Timing Diagram



■ Output-Signal OCH168/OCH168A

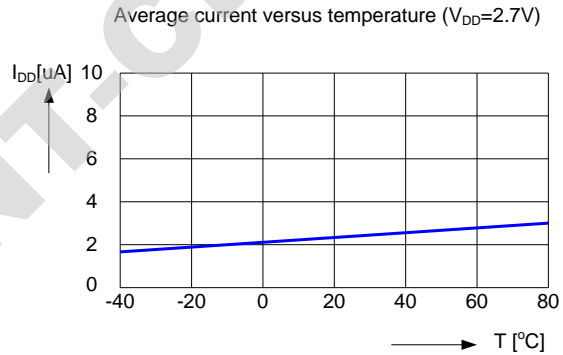
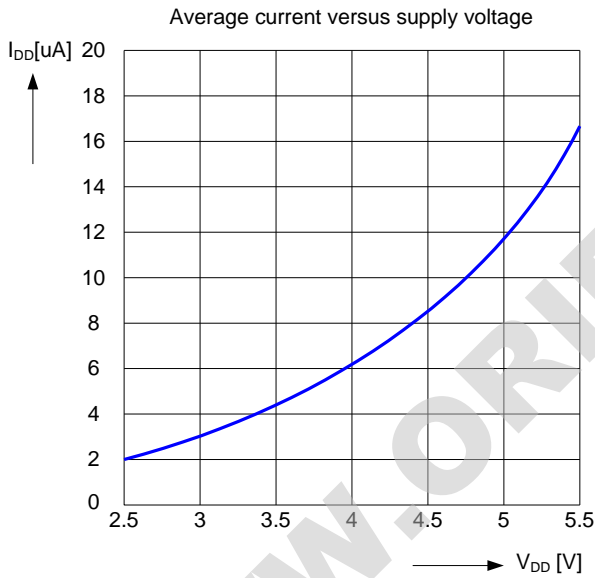
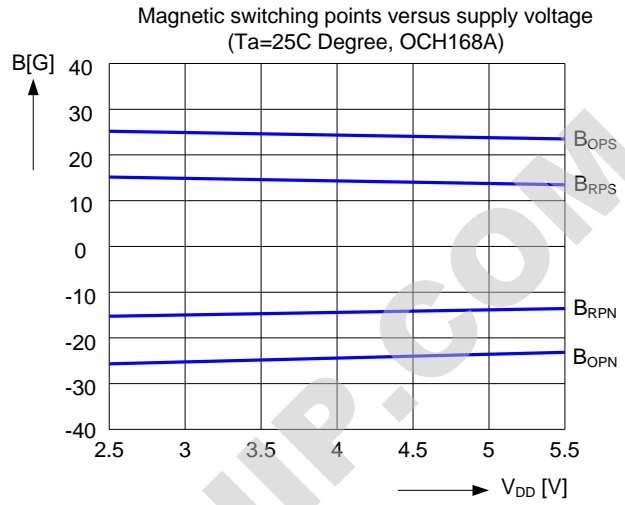
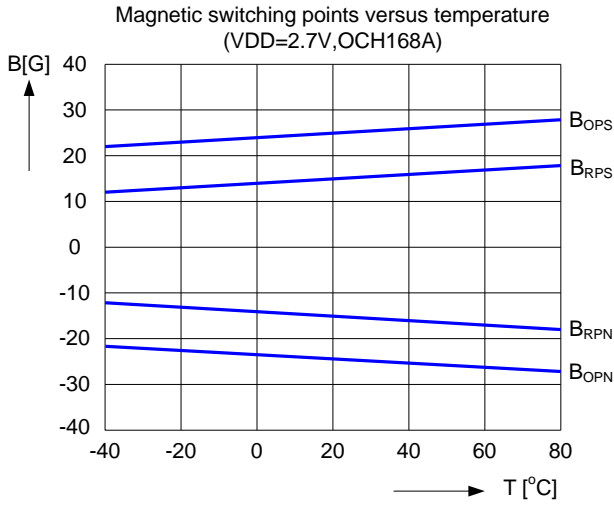


■ Typical Performance Characteristics

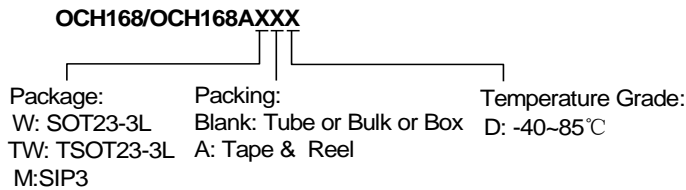




Typical Performance Characteristics(Continued)



Ordering Information



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