

CMOS magtact switch IC  
CMOSマグタクトスイッチIC



TK60011CM5  
(SON2017-6)



TK60011CMC  
(HSON2030-6)



TK60011CS2  
(SOT23-5)



TK60011CS8  
(TSOT23-3)



TK60012CM5  
(SON2017-6)



TK60013CM5  
(SON2017-6)



TK60014CM5  
(SON2017-6)



TK60015CS8  
(TSOT23-3)



TK60016CMC  
(HSON2030-6)

DESCRIPTION

The TK6001xC is a high sensitivity magnetic field sensor and switch.

Its function is a non-contact switch to use with a magnet.

It has excellent reliability under repeated operations and severe use conditions because the Hall element, the sensor and the amplifier, etc. are all solid-state devices on a single silicon chip.

The magnetic polarity (North Pole, South Pole) sensing options available are single output independent of polarity (TK60011C, TK60012C, TK60015C) or independent outputs for each polarity (TK60013C, TK60014C).

The output stage is available in two different configurations, an open drain output or a CMOS output.

The TK60012C output stage uses an output interface supply terminal (I/O V<sub>DD</sub>) that makes the interface to the next stage simple and easy.

The packages available are the small and thin SON2017-6, the common thin type SOT23-3, and the HSON2030-6.

TK6001xCは高感度な磁気センサとスイッチを内蔵したICです。

磁石と組み合わせた使用により、非接触のスイッチとしてご使用頂けます。

センサ・アンプなどがシリコン1チップで構成されているため、繰り返し操作や過酷な使用条件下においての信頼性に優れています。

検出磁性方向(S極・N極)は、磁性方向によらず検出可能な1出力タイプ(TK60011C, TK60012C, TK60015C)と、S極とN極を個別に検出可能な2出力タイプ(TK60013C, TK60014C)があります。

出力形式はオープンドレイン出力とCMOS出力をお選び頂けます。

CMOS出力での次段とのインターフェースを容易にする、出力インターフェース用電源端子付きもご用意しております(TK60012C)。

パッケージは低背小型の6端子SON2017を採用しております。

また、TK60011C, TK60015Cには汎用性の高い3端子薄型SOT23を、更にTK60011Cには6端子HSON2030もご用意しております。

FEATURES

- |   |   |
|---|---|
| ■ Supply current : 2.5μA  | ■ 低消費電流 2.5μA   |
| ■ Sensitivity : 3.6mT   | ■ 高感度 3.6mT   |
| ■ Operation voltage : 2.4V ~ 5.5V   | ■ 低電圧動作 2.4V~5.5V   |
| ■ Using chopper stabilized amplifier  | ■ オフセットキャンセル回路内蔵  |
| ■ Temperature range : -40°C ~ 85°C  | ■ 動作温度範囲 -40°C ~85°C  |
| ■ Dual magnetic version   | ■ 交番磁界対応  |
| ■ Open drain single output (TK60011C)   | ■ オープンドレイン両極1出力 (TK60011C)  |
| ■ CMOS single output<br>[With output interface supply terminal] (TK60012C)<br>[Without output interface supply terminal] (TK60015C) | ■ CMOS両極1出力<br>[出カインターフェース電源端子付] (TK60012C)<br>[出カインターフェース電源端子無] (TK60015C) |
| ■ Open drain dual output (TK60013C)   | ■ オープンドレイン両極2出力 (TK60013C)  |
| ■ CMOS dual output (TK60014C)   | ■ CMOS両極2出力 (TK60014C)  |

ABSOLUTE MAXIMUM RATINGS

Parameter	項目	Symbol	記号	Rating	定格	Unit	単位	Remarks	備考
Operating voltage range	動作電圧範囲	V <sub>OP</sub>		2.4 to 5.5		V			
Operating temperature range	動作温度範囲	T <sub>OP</sub>		-40 to +85		°C			
Power dissipation	許容消費電力	P <sub>D</sub>		400		mW			
Operating frequency range	動作周波数範囲	f <sub>OP</sub>		5		Hz			

**ELECTRICAL CHARACTERISTICS**

V<sub>DD</sub>=3.0V, I/O V<sub>DD</sub>=3.0V, T<sub>A</sub>=25°C

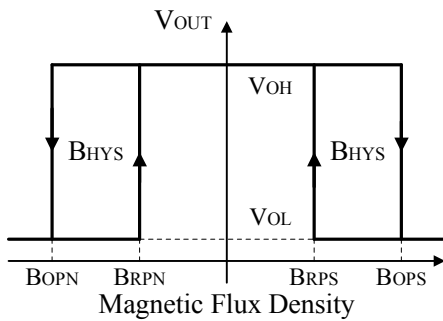
Parameter	項目	Symbol 記号	Value			Unit 単位	Conditions	条件
			MIN.	TYP.	MAX.			
Supply current(average)	電源電流(平均値)	I <sub>DD,AVG</sub>	-	2.5	7.0	μA		
Operate points	動作磁束密度	B <sub>OPS</sub>	-	3.6	5.5	mT	South pole to branded side	
		B <sub>OPN</sub>	-5.5	-3.6	-	mT	North pole to branded side	
Release points	復帰磁束密度	B <sub>RPS</sub>	1.0	3.0	-	mT	South pole to branded side	
		B <sub>RPN</sub>	-	-3.0	-1.0	mT	North pole to branded side	
Hystersis	ヒステリシス幅	B <sub>HYS</sub>	-	0.6	-	mT		
Output low voltage	出力電圧ローレベル	V <sub>OL</sub>	-	0.1	0.3	V	I <sub>OUT</sub> = +2mA*2, B=6mT	
Output high voltage <sup>*1</sup>	出力電圧ハイレベル <sup>*1</sup>	V <sub>OH</sub>	V <sub>DD</sub> -0.3	V <sub>DD</sub> -0.1			I <sub>OUT</sub> = -2mA*3, B=0mT	
Period								

\*1, Output high voltage refers only to TK60012CM5, TK60014CM5 and TK60015CS8.

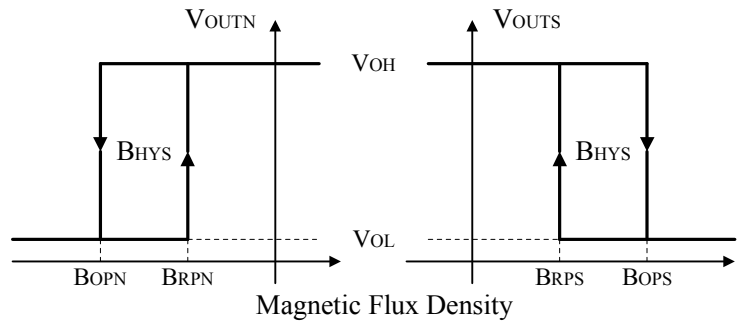
\*2, TK60013, 14CM5 I<sub>OUT</sub> = +1mA

\*3, TK60013, 14CM5 I<sub>OUT</sub> = -1mA

■ Output operating and symbols



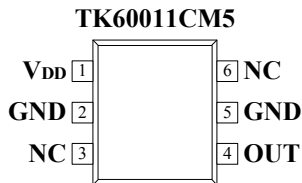
Single output to both poles  
TK60011C, TK60012C, TK60015C



Dual output to each pole  
TK60013C, TK60014C

**PIN DESCRIPTION**

■ TK60011CM5

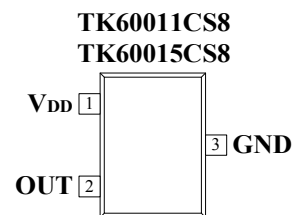


■ TK60011CMC

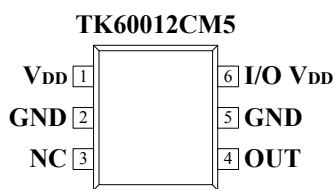


\*Pin 3 and Pin 4 are connected in the IC.

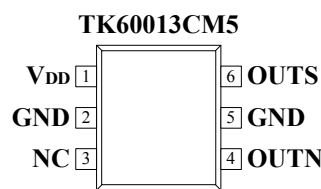
■ TK60011CS8, TK60015CS8



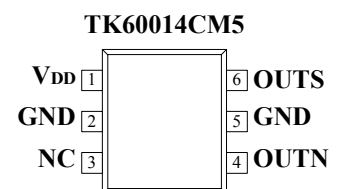
■ TK60012CM5



■ TK60013CM5



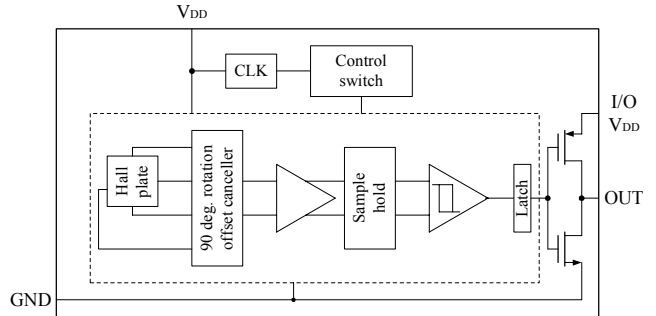
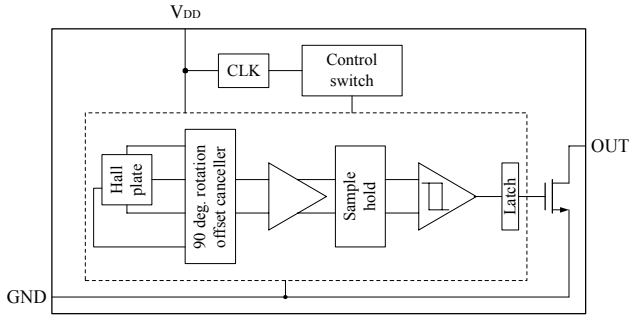
■ TK60014CM5



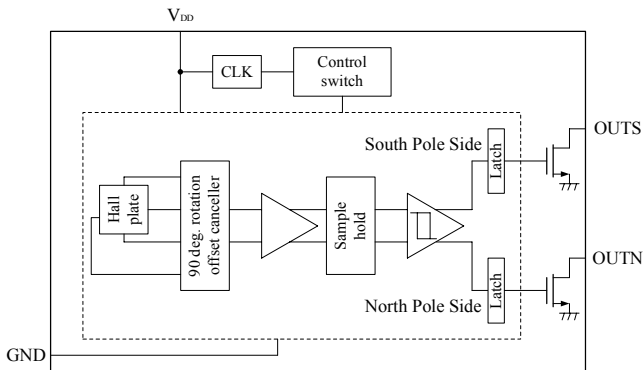
\*Pin 2 and Pin 5 are connected in the IC.

**BLOCK DIAGRAM**

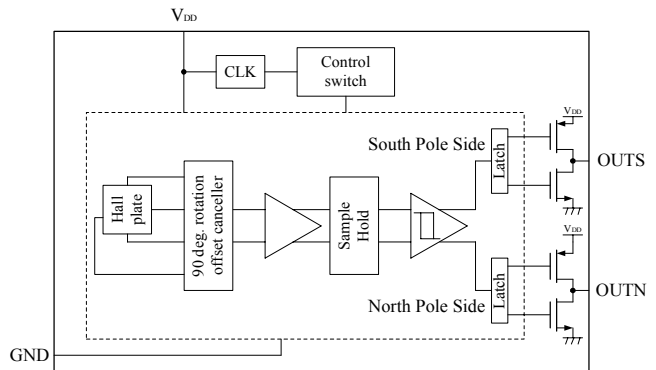
■ TK60011CMC, TK60011CM5, TK60011CS2, TK60011CS8 ■ TK60012CM5



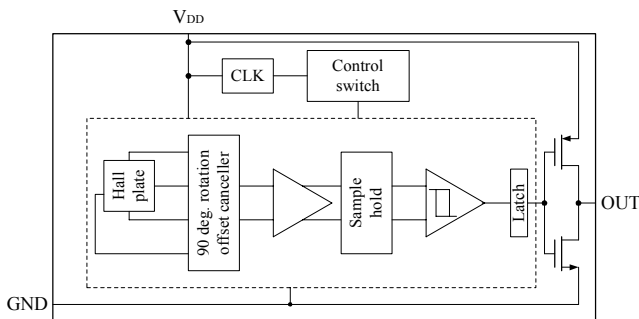
■ TK60013CM5



■ TK60014CM5

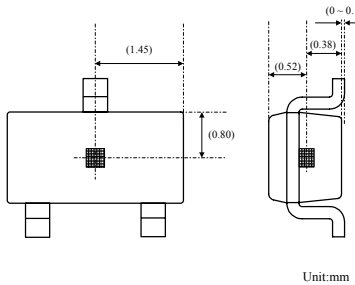


■ TK60015CS8



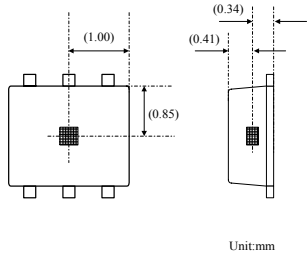
POSITION OF SENSOR

■ TSOT23-3



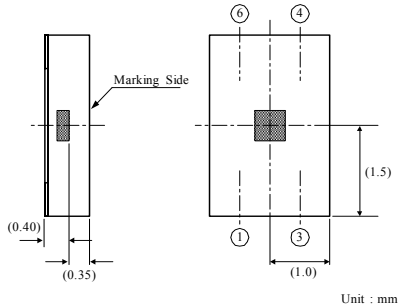
Unit:mm

■ SON2017-6



Unit:mm

■ HSON2030-6



Unit : mm