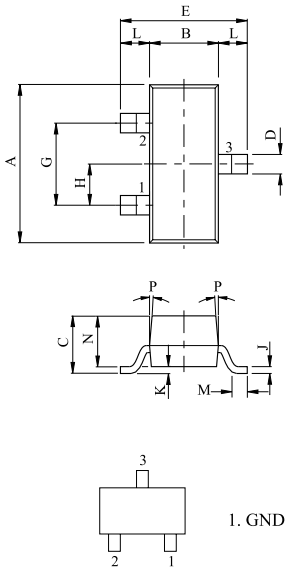
IC for CMOS Detector Monolithic IC KIC75** Series

This IC functions in a variety of CPU systems and other logic systems, to detect supply voltage and reset the system accurately when the power is turned on or interrupted.

To 2% of detection voltage accuracy of the conventional models, a maximum of 1% of super-high precision is realized, and it is more suitable for battery detection ets.



DIM	MILLIMETERS
A	2.93±0.20
B	1.30+0.20/-0.15
C	1.30 MAX
D	0.40+0.15/-0.05
E	2.40+0.30/-0.20
G	1.90
H	0.95
J	0.13+0.10/-0.05
K	0.00 ~ 0.10
L	0.55
M	0.20 MIN
N	1.00+0.20/-0.10
P	7°

SOT-23

FEATURES

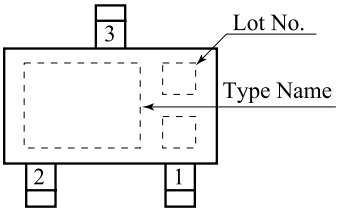
- High Accuracy : ±1%
- Ultra-low current consumption: 0.25 μA(Typ)
- Operating temperature range : -40~ + 105℃
- Detecting voltage rank : 1.9 ~ 6.0V(0.1V step)
- Output configuration : Open drain output

Applications

- Reset circuits for microcomputers, CPUs and MPUs
- Reset circuits for logic circuits
- Battery voltage check circuits
- Back-up power supply switching circuits
- Level detection circuits

Pin Configuration

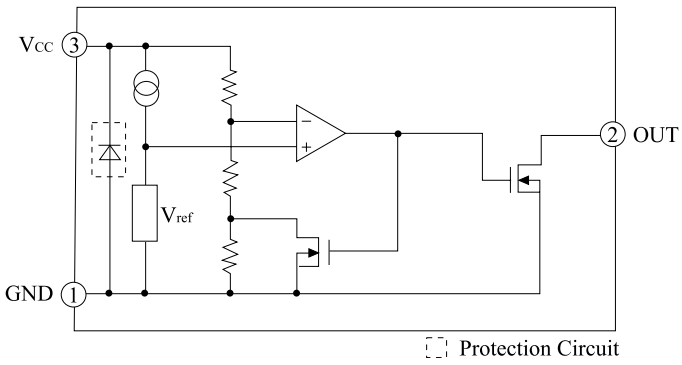
(TOP VIEW)



SOT-23

Pin No	Symbol	Function
1	GND	GND
2	V_{OUT}	Detector Output
3	V_{DD}	Power Supply Voltage

Block Diagram



Pin No	Symbol	Function
1	GND	GND
2	V_{OUT}	Detector Output
3	V_{DD}	Power Supply Voltage

Figure. 1

Selection Guide

The output voltage, package type for the ICs can be selected at the user's request.
The selection can be made with designating the part number as shown below

KIC7 5 □□ □
① ② ③

NO.	Specifications		Description
①	Voltage Detector Code		-
②	Detection Voltage		0.8 ~ 6.0V
③	Package	M	SOT - 23

ABSOLUTE MAXIMUM RATINGS (Ta=25℃)

ITEM	SYMBOL	RATING	UNITS
Supply voltage	$V_{DD\ MAX.}$	-0.3 +12.0	V
Output voltage	V_{OUT}	-0.3 (V_{DD}+0.3)	V
Input current (V_{DD})	I_{DD}	20	mA
Output current ($\overline{RESET}$)	I_{OUT}	20	mA
Power Dissipation	P_D	350 * Note)	mW
Operating temperature	T_{OPR}	-40~+105	℃
Storage temperature	T_{STG}	-65~+150	℃

* Note) Package mounted on 99.5% Alumina 10×8×0.6mm.

Recommended Operating Conditions

ITEM	SYMBOL	RATINGS	UNITS
Operating Temperature	T_{opr}	-40 +105	℃
Supply voltage	V_{DD}	0.70 ~ 10.0	V

Electrical characteristics : UnlessOtherwise Specified Ta=25℃

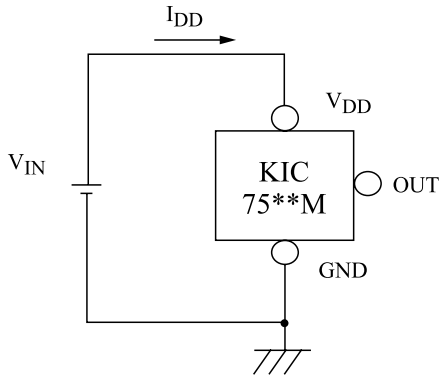
ITEM	SYMBOL	MEASUREMENT CONDITIONS	MIN.	TYP.	MAX.	UNITS	CIRCUIT
Supply current	I_{DD}	$V_{DD} = V_{TH} + 1V$	-	0.25	1.0	uA	(1)
Reset threshold	V_{TH}	Ta = +25℃ $V_{TH} \leqq 1.9V$	V_{TH} -1%	V_{TH} 0.8~ 6.0V (0.1Vstep)	V_{TH} +1%	V	(2)
		Ta = -40~+85℃ (note1)	V_{TH}-2.5%		V_{TH}+2.5%		
		Ta = +25℃ $V_{TH} \geqq 2.0V$	V_{TH} -1%		V_{TH} +1%		
		Ta = -40~+85℃ (note1)	V_{TH}-2.5%		V_{TH}+2.5%		
Reset threshold hysteresis	ΔV_{TH}	V_{DD}=0V→V_{TH} +1V→0V	V_{TH}×0.03	-	V_{TH}×0.08	V	(2)
Reset threshold temp. coefficient	$\Delta V_{TH}/℃$	Ta=-40~+85℃ (note1)	-	±100	-	ppm/℃	(2)
L transfer delay time	t_{PHL}	V_{DD}=V_{TH}+0.4V→V_{TH}-0.4V(note2)	-	-	100	us	(4)
H transfer delay time	t_{PLH}	V_{DD}=V_{TH}+0.4V→V_{TH}-0.4V(note2)	-	-	100	us	(4)
"L" output current	I_{OL1}	V_{DD}=0.7V, V_{DS}=0.05V	0.01	0.10	-	mA	(3)
	I_{OL2}	V_{DD}=1.2V, V_{DS}=0.5V V_{TH} 1.3V	0.23	2.00			
	I_{OL3}	V_{DD}=2.4V, V_{DS}=0.5V V_{TH} 2.5V	1.60	8.00			
	I_{OL4}	V_{DD}=3.6V, V_{DS}=0.5V V_{TH} 3.7V	3.20	12.0			
Output leakage current	Ileak	V_{DD}=10V, V_{OUT}=10V	-	-	0.1	uA	(3)

note1: This device is tested at Ta=25℃, over temperature limits guaranteed by design only.

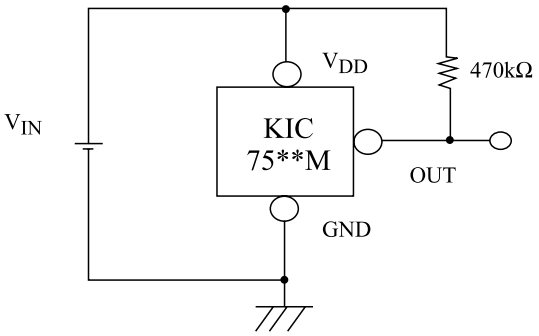
note2: The parameter is guaranteed by design.

Test Circuits

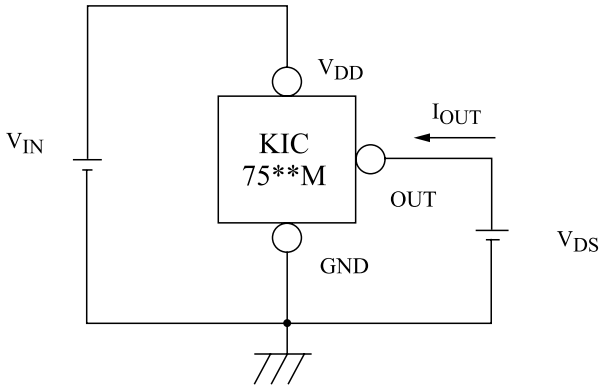
(1) I_{DD}



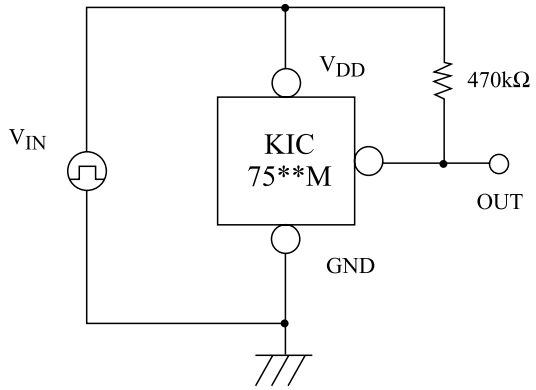
(2) V_{TH}, ΔV_{TH}, $\Delta V_{TH}/℃$



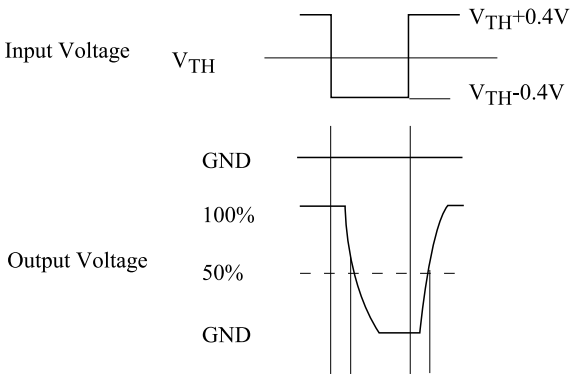
(3) I_{OL1}, I_{OL2}, I_{OL3}, I_{OL4}, I_{LEAK}



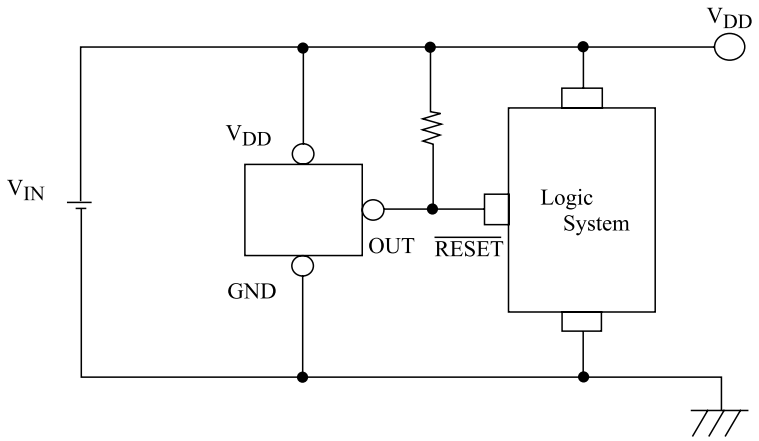
(4) T_{PLH}, T_{PHL}



Test Wave



Application Circuits



· We shall not be liable for any trouble or damage caused by using this circuit.
· In the event a problem shich may affect industrial property or any other rights of us or a third party is encountered during the use of information described in thses circuit, KEC shall not be liable for any such problem, nor grant a license therefore.

Typical Characteristics (Typical Performance Characteristics 2.8V)

note : These are typical characteristics

Fig1. Detecting Voltage

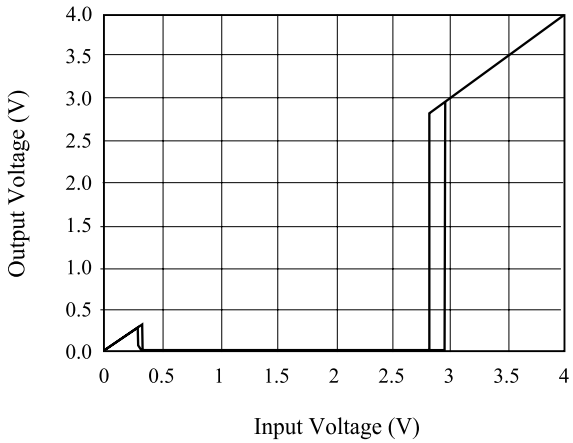


Fig2. Supply Current

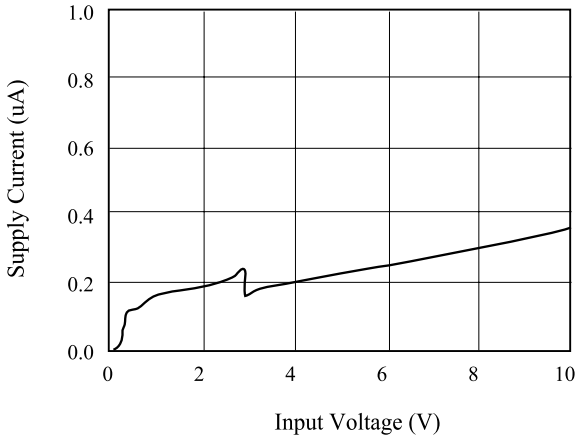


Fig3. Detecting Voltage vs Temperature

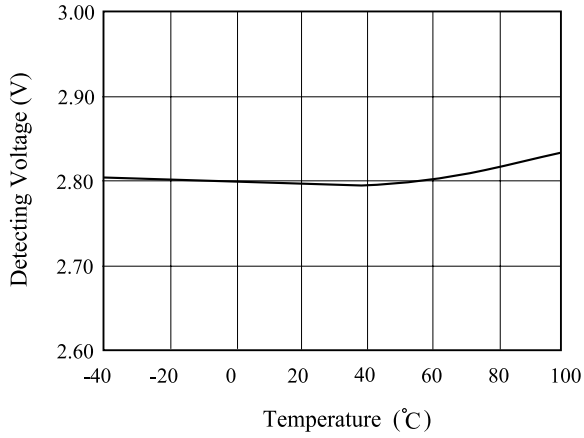


Fig4. Hysteresis Voltage vs Temperature

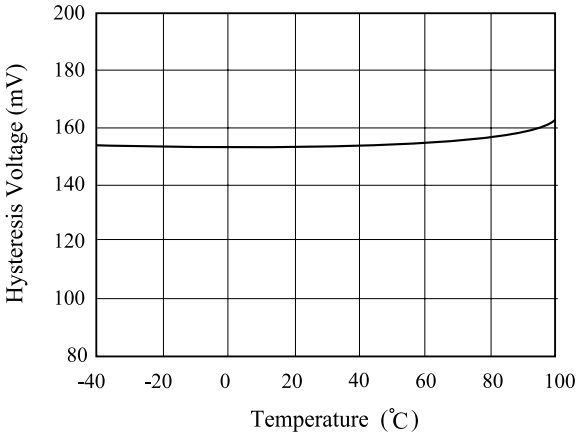


Fig5. "L" Output Current 1 vs Temperature

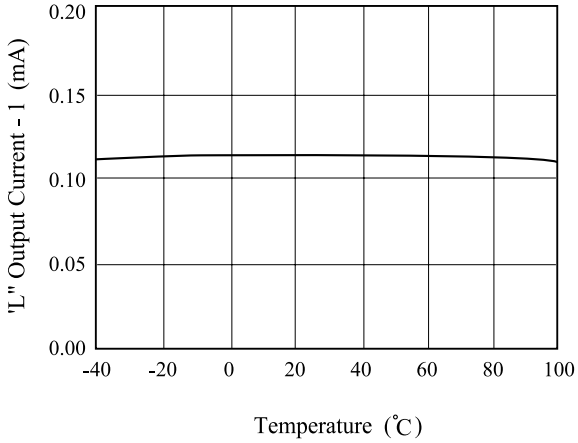


Fig6. "L" Output Current 2 vs Temperature

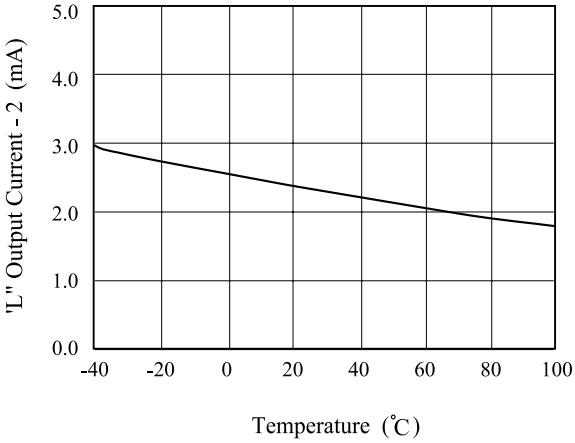


Fig7. "L" Output Current 3 vs Temperature