#### 2. Maximum Rated Values

Items	Specified value			
Power Supply Voltage	−0.3~4.5V DC			
Usable Ambient Temperature	-20~+60°C (-4~+140°F)  Do not use in a freezing or condensation environment.			
Storage Temperature	-20~+70°C (-4~+158°F)			

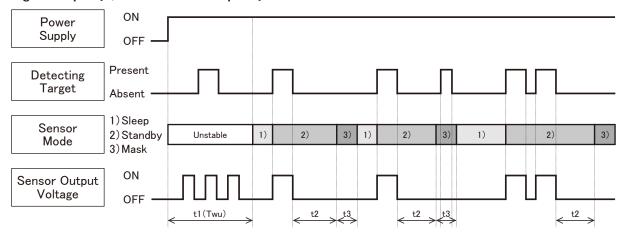
#### 3. Electrical Characteristic [Measuring conditions: Ambient temperature 25°C(77°F)]

Items		Symbol	$1 \mu A type$	$2 \mu$ A type	$6 \mu$ A type	Measured Conditions
Operating Voltage	Min.	Vdd	2.3V DC	2.3V DC	2.3V DC	_
	Max.		4.0V DC	4.0V DC	4.0V DC	_
Electrical Current Consumption (Sleep mode) (*4)	Avg.	Iw	1.0 <i>μ</i> A	_	_	Iout=0
	Max.		1.6 μ A			
Electrical Current Consumption (Standby mode) (*4)	Avg.	Iw	1.9 μ A	1.9 μ A	6.0 μ A	· Iout=0
	Max.		3.0 μ A	3.0 μ A	12.0 <i>μ</i> A	
Output Current	Max.	Iout	100 μ A	100 μ A	100 μ A	Vout≧Vdd-0.5
Output Voltage	Min.	Vout	Vdd-0.5VDC	Vdd-0.5VDC	Vdd-0.5VDC	_
Circuit Stability Time (When voltage is applied)	Avg.	Twu	<b>25</b> s	<b>25</b> s	_	_
	Max.		210s	210s	30s	

(\*4)(\*5) : "Sleep mode" or "Standby mode" is for  $1\mu$  A current consumption version. Please refer to "TIMING CHART" below.

# **TIMING CHART**

### 1. Digital output (1 $\mu$ A current consumption)



#### [Modes]

1) Sleep Mode :When the output is OFF. The electrical current consumption is approximately 1  $\mu$  A.

2) Standby Mode: After the sensor's output reaches ON status, the sensor switches to standby mode.

The electrical current consumption is  $^{\sim}$  1.9  $\mu$  Å . When the sensor's output returns to an OFF value

after expiration of the "hold time", the sensor switches again to sleep mode.

3) Mask Mode : Time during which the output is forced to OFF after the end of the standby mode.

(no detection is possible during this period.)

#### [Durations]

t1(Twu): Circuit Stability Time: ~ 25s (typ.)

During this stage, the output's status is undefined (ON/OFF) and detection is not guaranteed.

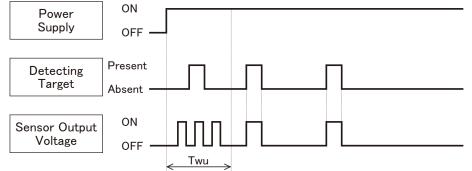
: Standby Hold Time: ~ 2.6s (typ.) t2

Depending on the number of output occurrences during standby mode, the hold time can differ (X1)

t3 : Mask Time ~ 1.3s (typ.)

During this stage, even if the sensor detects something, output will not switch ON.(X2)

# 2. Digital Output (2 $\mu$ A and 6 $\mu$ A current consumption)

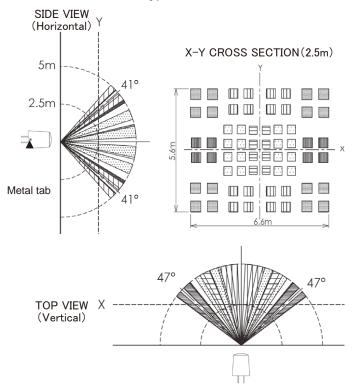


## [Durations]

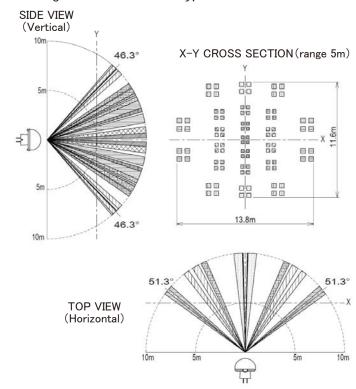
Twu: Circuit Stability Time (2  $\mu$  A):  $^{\sim}$  25s (typ.) Circuit Stability Time (6  $\mu$  A):  $^{\sim}$  30s (max.) During this stage, output status is undefined (ON/OFF) and detection is not guaranteed.

# **DETECTION PERFORMANCE**

## 1) Standard detection type



### 2) Long Distance detection type



## 2. Detection Zone Notes

As shown on the diagram, the detection zone is polarized. If a target enters the detection zones + and – at the same time, the signals are respectively cancelled and detection could become impossible at maximum detection range. (Please refer to the detection area diagram for details)

