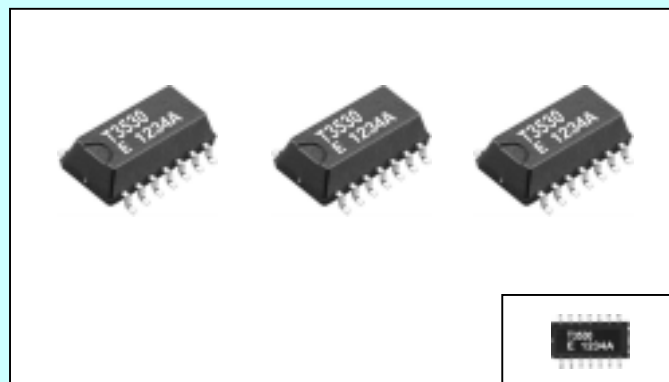


32 kHz TCXO

# TG - 3530 SA

Product Number (please contact us)  
**TG-3530 SA : Q3721SA01xxxx00**

- Built-in 32.768 kHz crystal oscillator with high accuracy. (adjustment-free efficient operation)
- Temperature compensated circuit : Frequency tolerance that stabilized irrespective of use temperature.
- Oscillation output voltage : 1.5 V to 5.5 V
- Temperature Compensated Voltage : 2.2 V to 5.5 V
- 32.768 kHz output : C-MOS output, output load : CL = 15 pF
- Comply with EU RoHS directive

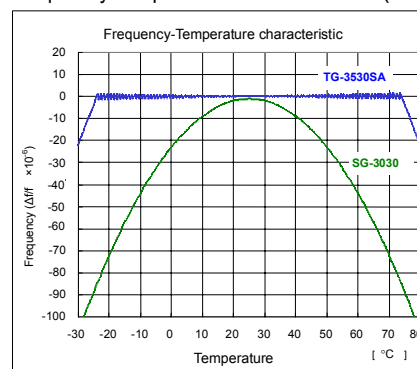


Actual size

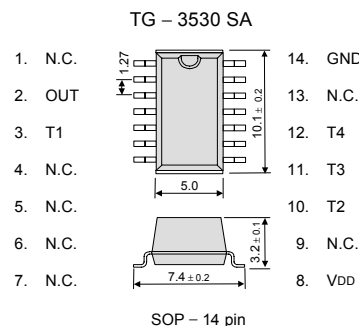
## Specifications (characteristics)

Item	Symbol	Specifications	Condition
Output frequency	$f_o$	32.768 kHz	
Max. supply voltage	$V_{DD} - GND$	-0.3 V to +7.0 V	
Oscillation output voltage	$V_{DD}$	1.5 V to 5.5 V	
Temperature compensated voltage	$V_{DD}$	2.2 V to 5.5 V	
Storage temperature	$T_{STG}$	-55 °C to +125 °C	Stored as bare product after unpacking
Operating temperature	$T_{OPR}$	-40 °C to +85 °C	Operating temperature
Frequency tolerance	$\Delta f / f$	$\pm 3.8 \times 10^{-6}$ * Equivalent to 10 seconds of monthly deviation	$T_a = -10 \text{ °C to } +60 \text{ °C}$ $V_{DD} = 3.0 \text{ V}$
		$\pm 5.0 \times 10^{-6}$ * Equivalent to 13 seconds of monthly deviation	$T_a = -20 \text{ °C to } +70 \text{ °C}$ $V_{DD} = 3.0 \text{ V}$
Frequency voltage characteristics	$f / V$	$\pm 1.0 \times 10^{-6} / V$ Max.	$T_a = +25 \text{ °C}$ $V_{DD} = 2.2 \text{ V to } 5.5 \text{ V}$
Current consumption	$I_{DD}$	6.0 $\mu A$ (Max.) 3.0 $\mu A$ (Typ.)	$V_{DD} = 5.0 \text{ V}$ , No load condition
		4.0 $\mu A$ (Max.) 1.7 $\mu A$ (Typ.)	$V_{DD} = 3.0 \text{ V}$ , No load condition
Output voltage ("H" level)	$V_{OH}$	$V_{DD} - 0.4 \text{ V}$ Min.	$I_{OH} = -0.1 \text{ mA}$ $V_{DD} = 3.0 \text{ V}$
Output voltage ("L" level)	$V_{OL}$	0.4 V Max.	$I_{OL} = 0.1 \text{ mA}$ $V_{DD} = 3.0 \text{ V}$
Output load condition	$C_L$	15 pF Max.	CMOS load
Duty	$tw / t$	40 % to 60 %	$V_{DD} = 1.5 \text{ V to } 5.5 \text{ V}$ 1 / 2 $V_{DD}$ level
Output rise time	$t_{TLH}$	200 ns Max.	CMOS load 20 % $V_{DD} \rightarrow 80 \%$ $V_{DD}$
Output fall time	$t_{THL}$	200 ns Max.	CMOS load 80 % $V_{DD} \rightarrow 20 \%$ $V_{DD}$
Oscillation start-up time	$t_{OSC}$	1.0 s Max. *1)	$T_a = +25 \text{ °C}$ $V_{DD} = 3.0 \text{ V}$
		3.0 s Max. *1)	$T_a = -40 \text{ °C to } +85 \text{ °C}$ $V_{DD} = 3.0 \text{ V}$
Aging	$f_a$	$\pm 3.0 \times 10^{-6} / \text{year}$	$T_a = +25 \text{ °C}$ $V_{DD} = 3.0 \text{ V}$ , first year

## Frequency temperature characteristics ( Ex. )



## Terminal connection



Signal Name	Input / Output	Function
$V_{DD}$	—	Connected to a positive power supply.
OUT	OUTPUT	32.768 kHz clock output pin (C-MOS).
GND	—	Connected to a ground.
T1, T2 T3, T4	—	* Used by the manufacture for testing. (Do not connect externally.)

\*1)  $V_{DD}$  rise time < 10ms ( 10 %  $V_{DD}$  - 90 %  $V_{DD}$  )  
 \*2) If not specifically indicated,  $T_a = -40 \text{ °C to } +85 \text{ °C}$ .

REAL TIME CLOCK IC. of the TG-3530SA exclusive use

# RX - 4574 SG

Product Number ( please refer to Application guide )  
**RX - 4574 SG : Q414574Bxxxx00**

- By causing the high accuracy 32.768kHz clock (C-MOS input) such as TG-3530 SA input, the construction of the system of the high performance timekeeper is possible. ( Level adjustment by the C/R etc. at the time of the joint is unnecessary )
- Functions are compatible with RX-4574 LC and RTC-4574 series ( except 32 kHz oscillation function ).
- Comply with EU RoHS directive

Note) RX-4574 SG is not including the crystal unit.  
 The external clock resources (C-MOS) of 32.768 kHz is necessary.  
 Please input it from a/the XIN terminal.

## Terminal connection

