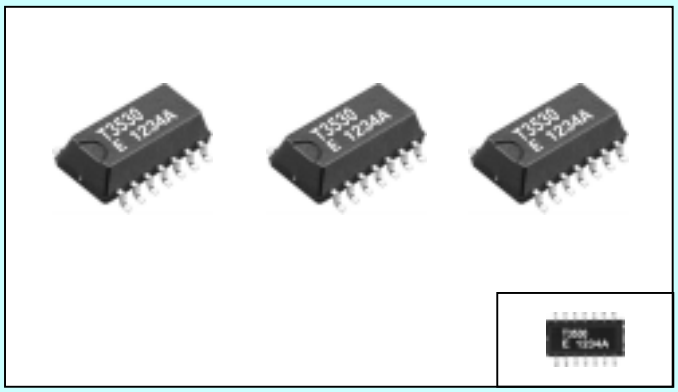
32 kHz TCXO

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 lord : CL = 15 pF
- Comply with EU RoHS directive



Actual size

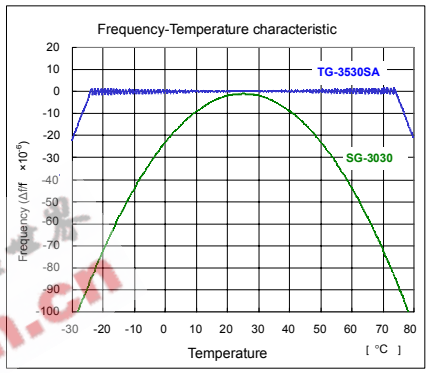
■ Specifications (characteristics)

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	Δ f / f	± 3.8 × 10^{-6} ∗ Equivalent to 10 seconds of monthly deviation	T_a = -10 °C to +60 °C, V_{DD} = 3.0 V
		± 5.0 × 10^{-6} ∗ Equivalent to 13 seconds of monthly deviation	T_a = –20 °C to +70 °C, V_{DD} = 3.0 V
Frequency voltage characteristics	f / V	± 1.0 × 10^{-6} / V Max.	T_a = +25 °C, V_{DD} = 2.2 V to 5.5 V
Current consumption	I_{DD}	6.0 µA (Max.) 3.0 µA (Typ.)	V_{DD} = 5.0 V , No load condition
		4.0 µA (Max.) 1.7 µA (Typ.)	V_{DD} = 3.0 V , No load condition
Output voltage (“H” level)	V_{OH}	V_{DD} - 0.4 V Min.	I_{OH} = –0.1 mA, V_{DD} = 3.0 V
Output voltage (“L” lebel)	V_{OL}	0.4 V Max.	I_{OL} = 0.1 mA, V_{DD} = 3.0 V
Output load condition	C_L	15 pF Max.	CMOS load
Duty	tw / t	40 % to 60 %	V_{DD} = 1.5 V to 5.5 V, 1 / 2 V_{DD} level
Output rise time	t_{TLH}	200 ns Max.	CMOS load, 20 % V_{DD} → 80 % V_{DD}
Output fall time	t_{THL}	200 ns Max.	CMOS load, 80 % V_{DD} → 20 % V_{DD}
Oscillation start-up time	t_{OSC}	1.0 s Max. ∗1)	T_a = +25 °C, V_{DD} = 3.0 V
		3.0 s Max. ∗1)	T_a = –40 °C to +85 °C, V_{DD} = 3.0 V
Aging	fa	± 3.0 × 10^{-6} / year	T_a = +25 °C, V_{DD} = 3.0 V , first year

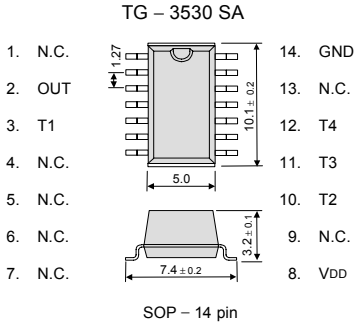
∗1) V_{DD} rise time< 10ms (10 % V_{DD} – 90 % V_{DD})

∗2) If not specifically indicated, Ta = –40 °C to +85 °C.

■Frequency temperature characteristics (Ex.)



■Terminal connection



SOP – 14 pin

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.)

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

RX-4574 SG

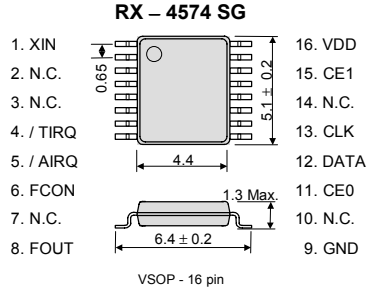
Product Number (please refer to Application guide)

RX-4574 SG : Q414574Bxxxxx00

- 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



VSOP - 16 pin