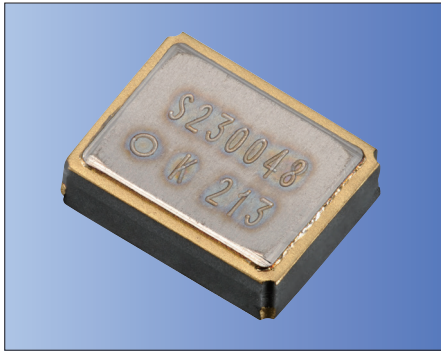




CMOS/ 3.0V Typ./ 3.2×2.5mm



AEC-Q200 RoHS Compliant

**Features**

- Miniature SMD type (3.2×2.5×1.0mm)
- 32.768kHz D-TCXO
- High frequency stability :  $\pm 5.0 \times 10^{-6}$  / -40 to +85°C
- Low supply current : 1.5µA typ ( $V_{DD}=3.0V$ , Output at no load)
- Temperature compensated voltage Range : 2.0V to 5.5V
- Operating Temp. -40 to +105°C (option)

**Applications**

- High accuracy time references
- Microcontroller with built in RTC

**How to Order**

Frequency Tolerance (vs Temp.) :  $\pm 3.8 \times 10^{-6}$  / -10°C to 60°C

KT3225T 32768 D G R □ □ T xx  
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Frequency Tolerance (vs Temp.) :  $\pm 5.0 \times 10^{-6}$  / -40°C to 85°C

KT3225T 32768 E A W □ □ T xx  
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

- ① Series
- ② Output Frequency
- ③ Frequency Stability
- ④ Lower Temperature
- ⑤ Upper Temperature

	③	④	⑤
DGR	$\pm 3.8 \times 10^{-6}$	-10°C	+60°C
EAW	$\pm 5.0 \times 10^{-6}$	-40°C	+85°C

⑥ Supply Voltage	⑦ Initial Frequency Tolerance
30 3.0V	T $\pm 3.0 \times 10^{-6}$
33 3.3V	
50 5.0V	

⑧ Individual Specification

Packaging (Tape & Reel 3000 pcs./ reel)

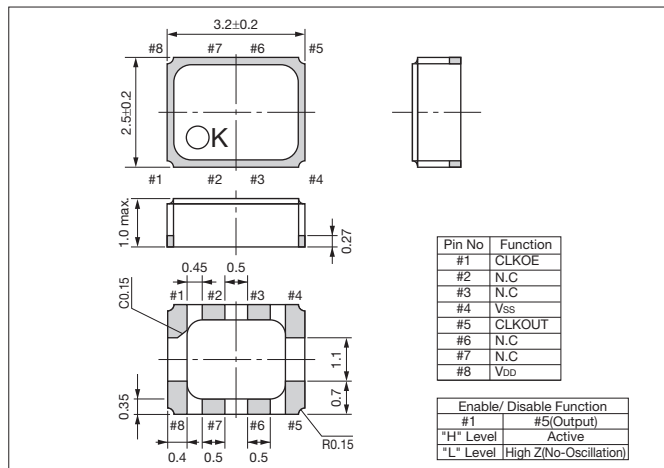
**Specifications**

Item	Symbol	Conditions	Specifications			Units
			Min.	Typ.	Max.	
Nominal Frequency	$f_{nom}$		—	32.768	—	kHz
Oscillation Output Voltage	$V_{DD}$		1.3	3.0	5.5	V
Temperature Compensated Voltage	$V_{TEM}$		2.0	3.0	5.5	V
Storage Temperature	$T_{stg}$		-40	+25	+85	°C
Operating Temperature	$T_{use}$		-40	+25	+85	°C
Initial Frequency Tolerance		$T_a=25 \pm 2^\circ C$	-3.0	—	+3.0	$\times 10^{-6}$
Frequency Stability vs Temp.	fo-Tc	E: $T_a=-40$ to $+85^\circ C$	-5.0	—	+5.0	$\times 10^{-6}$
Frequency Stability vs Supply Voltage	df/ fo	$V_{DD}=2.0$ to $5.5V$ , $T_a=25 \pm 2^\circ C$	-1.0	—	+1.0	$\times 10^{-6}/V$
Frequency Aging	$f_{age}$		-3.0	—	+3.0	$\times 10^{-6}$
Low Level Output Voltage	$V_{OL}$	$I_{OL}=+1.0mA$ , $V_{DD}=3V$	0.0	—	0.8	V
High Level Output Voltage	$V_{OH}$	$I_{OH}=-1.0mA$ , $V_{DD}=3V$	2.2	—	3.0	V
Low Level Input Voltage	$V_{IL}$	CLKOE pin	0.0	—	$0.2 \times V_{DD}$	V
High Level Input Voltage	$V_{IH}$	CLKOE pin	$0.8 \times V_{DD}$	—	5.5	V
DUTY Ratio	Duty	$CL=15pF$	40	—	60	%
Rise Time	$T_r$	20% $V_{DD}$ 80% $V_{DD}$ , $CL=15pF$ , $V_{DD}=3V$	—	—	100	ns
Fall Time	$T_f$	80% $V_{DD}$ 20% $V_{DD}$ , $CL=15pF$ , $V_{DD}=3V$	—	—	100	ns
Start-up Time	$t_{str}$	$T_a=25^\circ C$	—	—	1.0	sec
		$T_a=-40$ to $85^\circ C$	—	—	3.0	sec
Power Supply Current1	$I_{cc1}$	CLKOE= $V_{SS}$ , $V_{DD}=3V$	—	0.6	2.0	µA
Power Supply Current2	$I_{cc2}$	CLKOE= $V_{DD}$ , $V_{DD}=3V$ , Output at no load	—	1.5	4.0	µA
		CLKOE= $V_{DD}$ , $V_{DD}=3V$ , $CL=15pF$	—	2.7	5.5	µA
Output Load Condition	$L_{CMOS}$	CMOS Output	—	—	15.0	pF

\* Please contact us for other specifications.

**Dimensions**

(Unit: mm)



**Recommended Land Pattern**

(Unit: mm)

