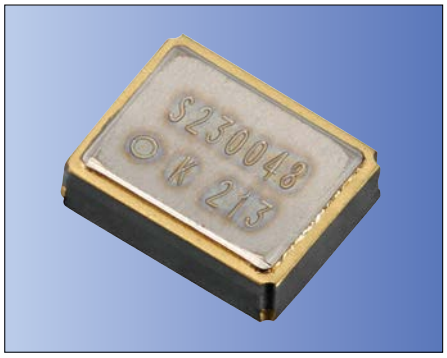
kHz Range Crystal Devices
Digital Temperature Compensated Crystal Oscillator
Surface Mount Type DTCXO KT3225T Series

KYOCERA

CMOS/ 3.0V Typ./ 3.2×2.5mm



RoHS Compliant

Features

- Miniature SMD type (3.2×2.5×1.0mm)
- 32.768kHz D-TCXO
- High frequency stability : ±5.0x10^{-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)
- AEC-Q200 qualified

Applications

- High accuracy time references
- Microcontroller with built in RTC

How to Order

Frequency Tolerance (vs Temp.) : ±3.8×10^{-6}/ –10°C to 60°C

KT3225T 32768 D G R 30 T xx
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

Frequency Tolerance (vs Temp.) : ±5.0×10^{-6}/ –40°C to 85°C

KT3225T 32768 E A W 30 T xx
① ② ③ ④ ⑤ ⑥ ⑦ ⑧

① Series
② Output Frequency
③ Frequency Stability

A	No Temp. Compensated
D	±3.8×10^{-6}
E	±5.0×10^{-6}

④ Lower Temperature

A	–40°C
G	–10°C

⑤ Upper Temperature

W	+85°C
R	+60°C

⑥ Supply Voltage

30	3.0V
33	3.3V
50	5.0V

⑦ Initial Frequency Tolerance

A	5±5×10^{-6}	B	0±5×10^{-6}	T	±3.0×10^{-6}

⑧ Option Code

Packaging (Tape & Reel 3000 pcs./ reel)

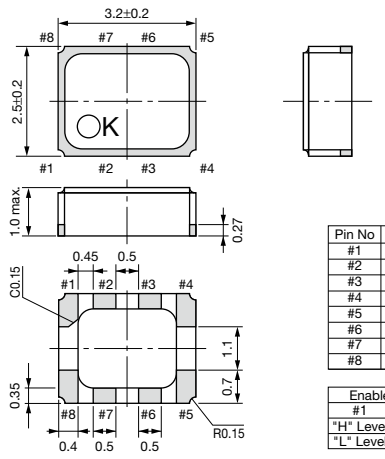
Specifications

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	—	Ta = 25±2°C	–3.0	—	+3.0	×10^{-6}
Frequency Stability vs Temp.	fo-Tc	E : Ta = –40 to +85°C	–5.0	—	+5.0	×10^{-6}
Frequency Stability vs Supply Voltage	df/ fo	V_{DD} = 2.0 to 5.5V, Ta = 25±2°C	–1.0	—	+1.0	×10^{-6}/ V
Frequency Aging	f_age		–3.0	—	+3.0	×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×V_{DD}	V
High Level Input Voltage	V_{IH}	CLKOE pin	0.8×V_{DD}	—	5.5	V
DUTY Ratio	Duty	CL = 15pF	40	—	60	%
Rise Time	tr	20%V_{DD}→80%V_{DD}, CL = 15pF, V_{DD} = 3V	—	—	100	nsec
Fall Time	tf	80%V_{DD}→20%V_{DD}, CL = 15pF, V_{DD} = 3V	—	—	100	nsec
Start-up Time	t_str	Ta = 25°C	—	—	1.0	sec
		Ta = –40 to 85°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)

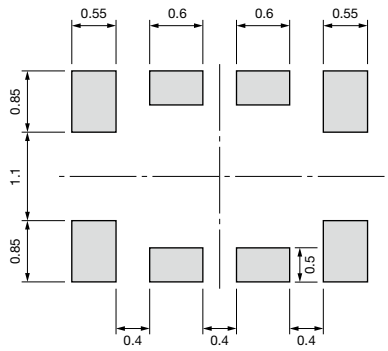


Pin No	Function
#1	CLKOE
#2	N.C
#3	N.C
#4	V_{SS}
#5	CLKOUT
#6	N.C
#7	N.C
#8	V_{DD}

Enable/ Disable Function	
#1	#5(Output)
"H" Level	Oscillation
"L" Level	High Z

Recommended Land Pattern

(Unit: mm)



Note: A capacitor of value 0.01µF between V_{DD} and GND is recommended.