actual size

Oscillator JO22 · 32.768 kHz · AT-cut

- SMD Oscillator with Stop Function • 2.5 x 2.0 mm
- High frequency stability up to +125 °C
- Variable supply voltage 1.8 V ~ 3.3 V
- Extremely low current consumption
- Seam sealed ceramic/metal package

RoHS compliant · Pb free · REACH compliant · Conflict mineral free

GENERAL DATA

TYPE		JO22 32.768 kHz AT-cut 1.8 V ~ 3.3 V
frequency		32.768 kHz
frequency stability over all*		± 25 ppm ~ ± 100 ppm (table 1)
current consumption		see table 2
supply voltage V_{DC}		1.8 V -10 % ~ 3.3 V +10 % variable
temperature	operating	-20 °C ~ +70 °C up to -40 °C ~ +125 °C (table 1)
	storage	-55 °C ~ +125 °C
output	rise & fall time	10 ns typ. / 50 ns max.
	load max.	15 pF
	current max.	1.0 mA
	low level max.	0.4 V
	high level min.	VDC - 0.4 V
output enable time max.		5 ms
output disable time max.		1 µs
start-up time max.		5 ms (t0 when V_{DC} > 1.62 V)
standby function		stop
standby current max.		5 µA (T1) / 10 µA (T2, T3)
symmetry at 0.5 x V_{DC}		45 % ~ 55 % max. (ref. +25 °C)

note: rise time: 0.1 VDC ~ 0.9 VDC / fall time: 0.9 VDC ~ 0.1 VDC

TABLE 1: FREQUENCY STABILITY CODE

stability code / temp. code		A ± 100 ppm	B ±50 ppm	G ± 30 ppm	C ± 25 ppm
-20 °C ~ +70 °C		O	O	O	O
-40 °C ~ +85 °C	T1	O	O	O	Δ
-40 °C ~ +105 °C	T2	O	O		
-40 °C ~ +125 °C	T3	O			

O available Δ excludes aging

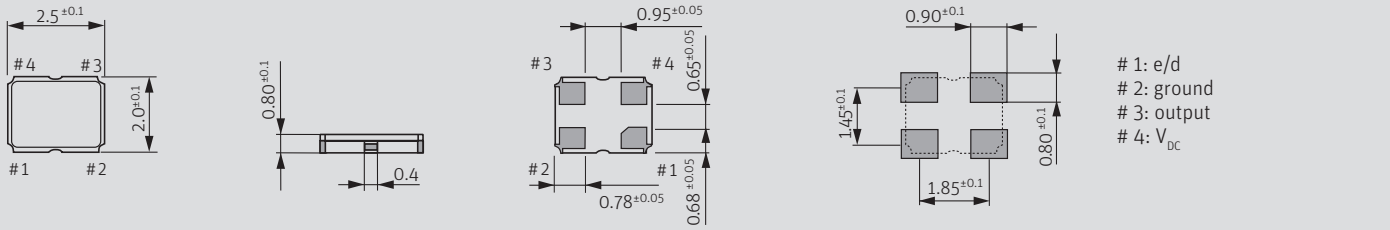
* includes stability at 25 °C, operating temp. range, supply voltage change, shock and vibration, aging 1st year

TABLE 2: CURRENT CONSUMPTION MAX.

Supply current max.	load	1.8 V	2.5 V	3.3 V
at 32.768 kHz	5 pF	31.0 µA	32.0 µA	32.5 µA
	10 pF	31.5 µA	32.5 µA	33.0 µA
	15 pF	32.0µA	33.0 µA	33.5 µA

note: please also refer to I/V plots showing typical supply current at 5 pF / 10 pF / 15 pF

DIMENSIONS



top view · side view · bottom view · pad layout · pin connection · in mm

ORDER INFORMATION

0	frequency	– type	– frequency stability code	– supply voltage code	– output load code	– option	– power option identification
Oscillator	0.032768 = 32.768 kHz	JO22	see table 1	1V3 = 1.8 V ~ 3.3 V	1 = 15 pF	blank = -20 °C ~ +70 °C T1 = -40 °C ~ +85 °C T2 = -40 °C ~+105 °C T3 = -40 °C ~ +125 °C	OP = optimized power consumption

Example: O 0.032768-JO22-G-1V3-1-T1-OP-LF (Suffix LF = RoHS compliant / Pb free)

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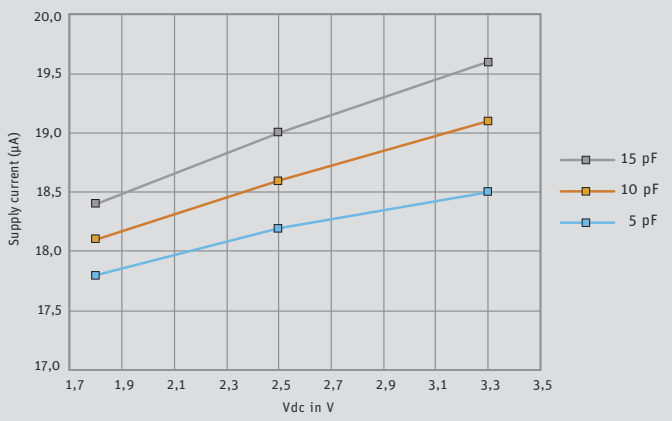
Oscillator JO22 · 32.768 kHz · AT-cut · Stop Function

TYPICAL SUPPLY CURRENT VS. V_{DC} AT DIFFERENT LOAD CAPACITANCES



ENABLE / DISABLE FUNCTION

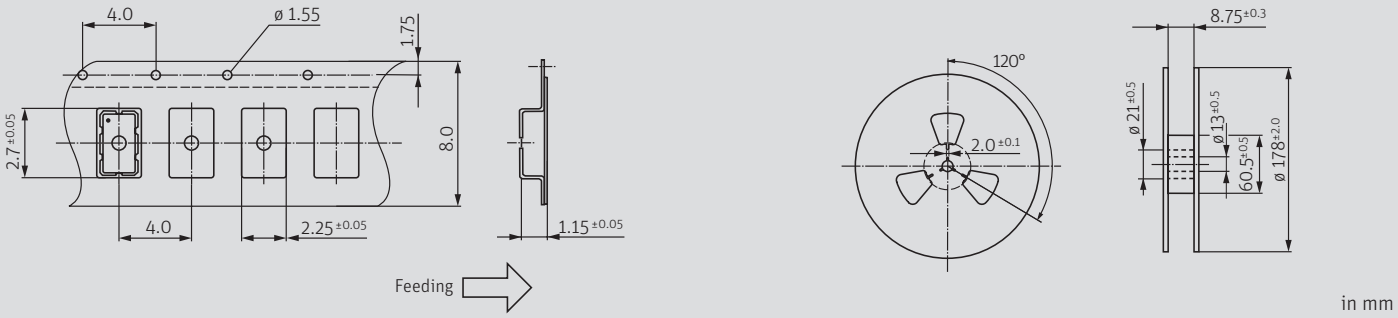
pin #1 (e/d control)	pin #3 (output)
open	active
high "1" ($V_{IH} \geq 0.7\ V_{DC}$)	active
low "0" ($V_{IL} \leq 0.3\ V_{DC}$)	high impedance

stop function:
- oscillator stops
- output high impedance

PACKAGING NOTE

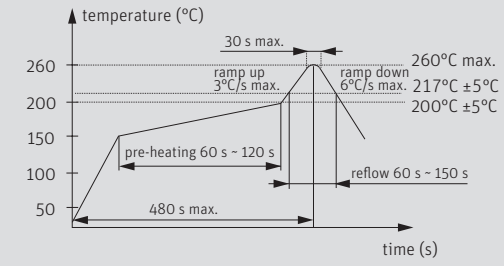
– standard packing unit is 500 pieces per reel
– customized quantities on request

TAPING SPECIFICATION



in mm

REFLOW SOLDERING PROFILE



note: parts are also suitable for soldering systems with lead (Pb) content

MARKING

frequency
company / stability code / date code

date code: A ~ M: Jan. - Dec.

6: 2026 7: 2027 8: 2028 9: 2029 0: 2030 1: 2031

Jan.	Febr.	Mar.	Apr.	May	June
A	B	C	D	E	F
July	**Aug.**	**Sept.**	**Oct.**	**Nov.**	**Dec.**
G	H	J	K	L	M

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