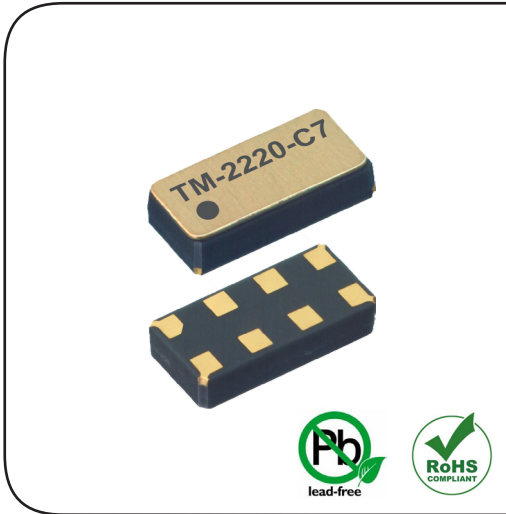
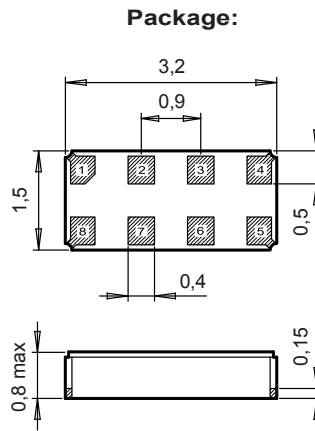


TM-2220-C7

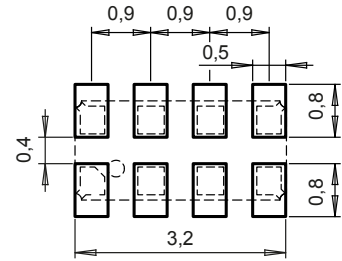
32.768 kHz TCXO



DIMENSIONS



Recommended Solder Pad:



Metal lid is connected to V_{SS} (pin #8)

All dimensions in mm typical

APPLICATIONS

IoT
Metering
Industrial
Automotive
Health Care
Wearables, Portables

DESCRIPTION

The TM-2220-C7 is a Analog TCXO Module that incorporates an integrated CMOS circuit together with an XTAL. It operates under vacuum in a hermetically sealed ceramic package with metal lid.

FEATURES

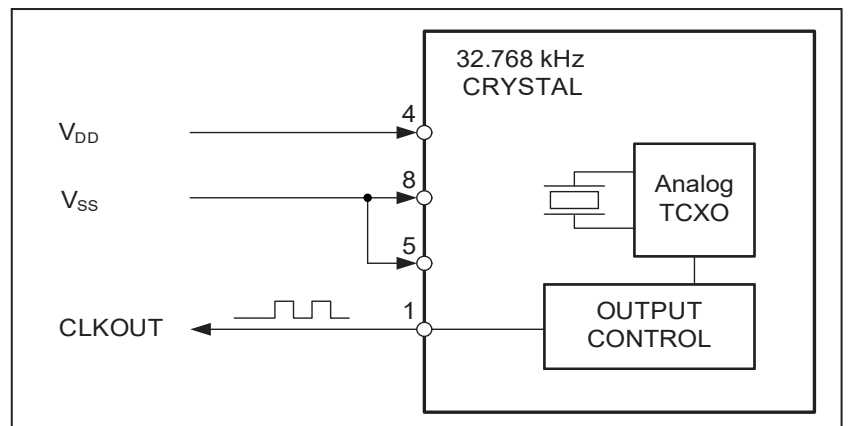
Low power consumption: $1.0 \mu A @ 3.3 V$.
Operating voltage range: 1.1 V to 3.63 V.
Frequency accuracy, 32.768 kHz: $-10^{\circ}C$ to $+60^{\circ}C$, ± 3.8 ppm.
 $-40^{\circ}C$ to $+85^{\circ}C$, ± 5.0 ppm.

Analog TCXO, no frequency jumps.

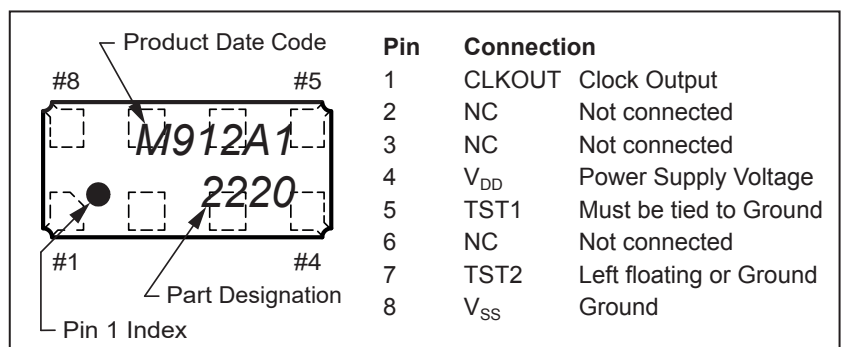
100% Pb-free, RoHS-compliant.

Automotive qualification according to AEC-Q200 available.

BLOCK DIAGRAM



PIN CONNECTIONS TOP VIEW



ELECTRICAL CHARACTERISTICS AT 25°C

More detailed information can be found in the Application Manual.

	Symbol	Condition	Min.	Typ.	Max.	Unit
Supply voltage	V_{DD}	Temp. comp.	1.1		3.63	V
Current consumption	I_{DD}	$V_{DD} = 3.3\text{ V}$		1.0	1.5	μA
Output Frequency	F_{CLKOUT}		32.768			kHz
Frequency accuracy	$\Delta F/F$	-10 to +60°C	± 3.8			ppm
		-40 to +85°C	± 5.0			
Duty cycle	δ_{CLKOUT}		40		60	%
Start up time	t_{START}				0.6	s
Voltage coeff. max.	$\Delta f/V$	$1.1 \leq V_{DD} < 1.5\text{V}$	± 5			ppm /V
		$1.5 \leq V_{DD} \leq 3.63\text{V}$	± 1			
Aging first year max.	$\Delta F/F$	@ 25°C	± 3			ppm

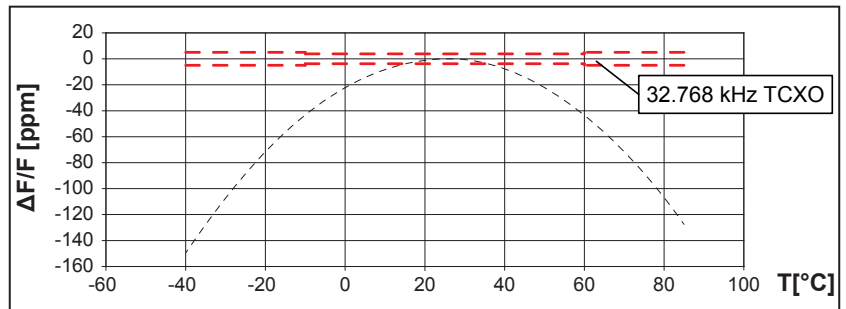
ENVIRONMENTAL CHARACTERISTICS

		Conditions	Max. Dev.
Storage temp. range		-55 to +125°C	
TA Operating temperature range		-40 to +85°C	
Shock resistance	$\Delta F/F$	5000 g, 0.3 ms, 1/2 sine	± 5 ppm
Vibration resistance	$\Delta F/F$	20 g / 10–2000 Hz	± 5 ppm

TERMINATIONS AND PROCESSING

Package	Termination	Processing
SON-8	Au flashed pads	IPC/JEDEC J-STD-020C 260°C / 20 - 40 s

FREQUENCY TEMPERATURE CHARACTERISTICS



ORDERING INFORMATION

<p>T M - 2220 - C7 TA QC</p> <p>TCXO ———— Metal lid ———— Frequency ———— 2220 = 32.768 kHz Package size ———— C7 = 3.2 x 1.5 x 0.8 mm</p> <p>Qualification QC = Commercial Grade (Standard) QA = Automotive Grade AEC-Q200</p> <p>Temperature range TA = -40 to +85°C (Standard)</p>	
<p>A unique part number will be generated for each product specification, i.e.:</p>	
20xxxx-MG01	1'000 pcs (in 12 mm tape on 7" reel)
20xxxx-MG03	3'000 pcs (in 12 mm tape on 7" reel)

All specifications subject to change without notice.



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