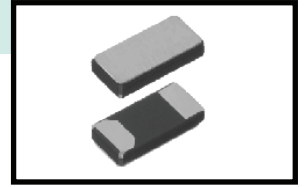


## Quartz Crystal Resonator (32.768KHz)

**TF3215LA****LOW ESR, AUTOMOTIVE, AEC-Q200****General Description**

The TF3215LA Low ESR is a low frequency SMT Quartz Crystal Unit that incorporates a tuning fork Quartz Crystal Resonator. It operates under vacuum in a hermetically sealed ceramic package with metal lid.

**Features**

Maximum ESR value of 50 k $\Omega$  for low power designs.  
 Outstanding hermetic sealing with gold-tin preform.  
 High stability and low aging guaranteed by hermetic sealing.  
 Available for extended operating temperature range.  
 Small size, low profile, lightweight (10.3 mg).  
 High shock and vibration resistant.  
 100% Pb-free, RoHS-compliant.

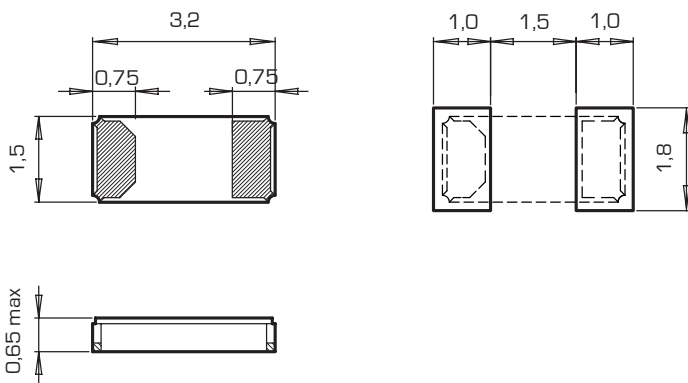
**Main Applications**

AUTOMOTIVE dashboard

## Electrical characteristics

Item	Symbol	Values
Part number		TF3215LA
Nominal frequency	F	32.768 KHz
Frequency tolerance (@ +25°C)	$\Delta f/F$	$\pm 20$ ppm
Frequency stability	$\Delta f/F$	-0.034 ppm/°C <sup>2</sup>
Operating temp. range	To	-40°C / +85°C
Storage temp. range	Ts	-55°C / +125°C
Load capacitance	Cl	6.0 / 7.0 / 9.0 / <b>12.5</b>
Equivalent serie resistance	ESR	40 / 50 K $\Omega$
Shunt capacitance	CO	1.3pF [typical]
Motional capacitance	C1	0.0047pF [typical]
Drive level	P	0.5 $\mu$ W max
Turnover temperature	Tt	+25°C $\pm$ 5°C
Quality factor	Q	30000 min.
Aging	$\Delta f/F$	$\pm 3$ ppm max @ +25°C

## Dimensions



# TF3215LA

## Part Number Generator

**TF3215LA - 0.032768 P12.5 C N TR xxx**

1            2            3            4            5            6

**1** : Frequency (MHz)

□□□.□□□□□□□□

max 10 digits including comma

**2** : Load capacitance

P6 = 6pF  
P7 = 7pF  
P9 = 9pF  
P12.5 = 12.5pF

**3** : Tolerance

C=  $\leq \pm 20$ ppm

**4** : Op. Temp. range

N=-40/+85

**5** : Packing

TR = Tape & Reel (3K pcs)

**6** : Customized code

Note : factory use