

MTF32

MMTF32

SM26F

actual size

Quartz Crystal · MTF

Tuning Fork Quartz Crystal

Features

■ RoHS compliant

■ three different package versions

General Data

type	MTF32		MMTF32		SM26F	
frequency	32.768 kHz (15.0 ~ 150.0 kHz)		32.768 kHz (28.0 ~ 80.0 kHz)		32.768 kHz (28.0 ~ 80.0 kHz)	
frequency tolerance at 25 °C ±2 °C	± 10 ppm	± 20 ppm	± 10 ppm	± 20 ppm	± 20 ppm	± 30 ppm
load capacitance C _L	10 pF	12.5 pF	10 pF	12.5 pF	12.5 pF	12.5 pF
frequency temperature characteristic	f (ppm) = -0.04 (25°C -T*) ²		f (ppm) = -0.04 (25°C -T*) ²		f (ppm) = -0.04 (25°C -T*) ²	
operating temperature range	-20°C ~ +70°C / -40°C ~ +85°C		-20°C ~ +70°C / -40°C ~ +85°C		-20°C ~ +70°C / -40°C ~ +85°C	
shunt capacitance C ₀	1.3 pF typical		1.1 pF typical		1.1 pF typical	
ratio C ₀ / C ₁	530 typical		470 typical		570 typical	
series resistance max. (ESR)	30.0 kΩ		30.0 kΩ		50.0 kΩ	
storage temperature	-40 °C ~ +90 °C		-40 °C ~ +90 °C		-40 °C ~ +90 °C	
drive level max.	1 μW		1 μW		1 μW	
aging first year	< ± 5 ppm		< ± 5 ppm		< ± 5 ppm	

* T = requested temperature

Frequency Stability vs. Temperature

		- 80 ppm	- 160 ppm	
-20 °C ~ +70 °C	STD.	●		
-40 °C ~ +85 °C	T1		●	
● standard				

Marking

KDS / date code (month / year)

date code:

A ~ M: Jan.- Dec.

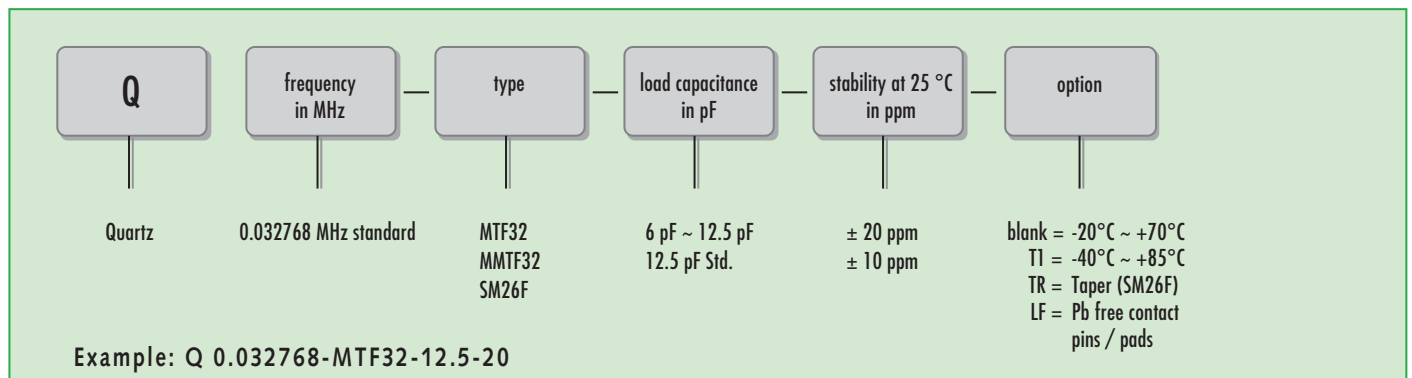
4: 2005

5: 2005

6: 2006

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

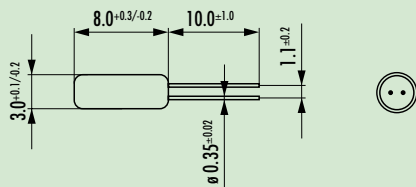
Order Information



Quartz Crystal · MTF32 · MMTF32 · SM26F

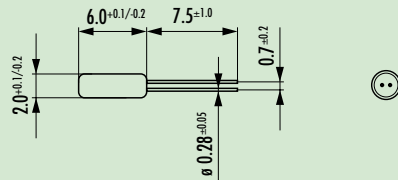
Dimensions

MTF32



in mm

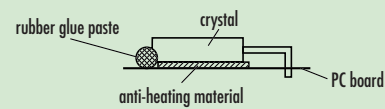
MMTF32



in mm

handling note for through hole types

- 1. mounting:**
- if the crystal is mounted on board directly (orientation: lay down) or fixed by metal parts, the body of the crystal will be heated up
 - recommended mounting:



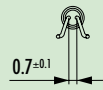
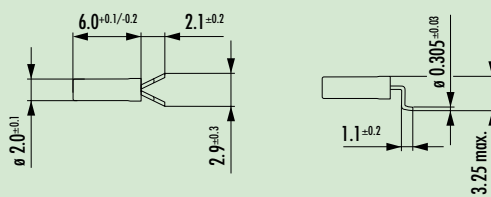
- 2. soldering:**
- pre-heating +130 °C ~ +150 °C for 1 to 3 minutes
 - soldering +230 °C ~ +250 °C for 5 seconds maximum

- 3. cleaning:**
- ultrasonic cleaning with organic solvents
 - ultrasonic frequency should not be equal to the resonance frequency of the crystal

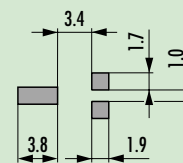
- 4. handling:**
- handle the crystal carefully, it cannot stand heavy shock

- 5. testing:**
- if you test the whole board automatically do not apply pulse to the crystal oscillator circuit, especially high pulse level can break the crystal blank

SM26F type A (1000 pcs per reel)

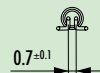
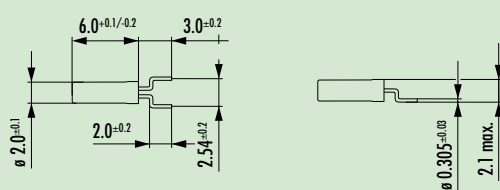


pad layout

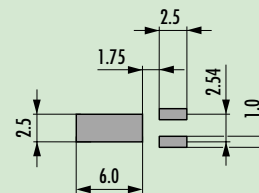


in mm

SM26F type B (1000 pcs per reel)

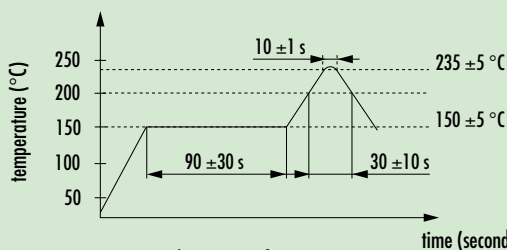


pad layout



in mm

Reflow Soldering Profile



note: temperatures are measured on PCB surface