

To: Federal Communications Commission
7435 Oakland Mills Road
Columbia, MD 21046-1609
Timco Engineering, Inc., an IIA Company
849 NW State Road 45
Newberry, Florida 32669

Gentlemen,

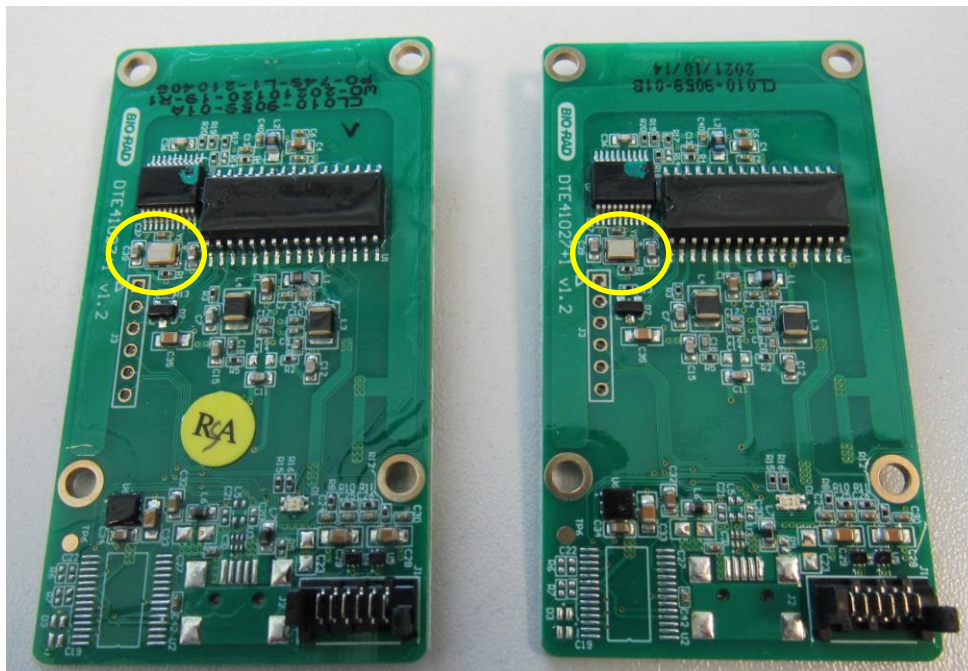
This letter is a request to apply for a Class II Permissive Change for the RFID Reader(BIO-RAD),
FCC ID : 2ABUUDTE41027.

The change filed under this application is:

Current crystal 7M-13.560MAAE-T (13.56MHz,+/- 30ppm) production shortage requires double sourcing for specific part. We will use crystal 7M-13.560MEEQ-T (13.56MHz, +/- 10 ppm) as a second source.

Material.

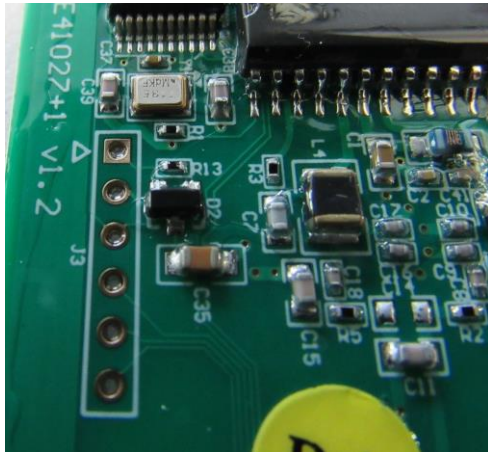
DTE41027+1 Curent and updated board



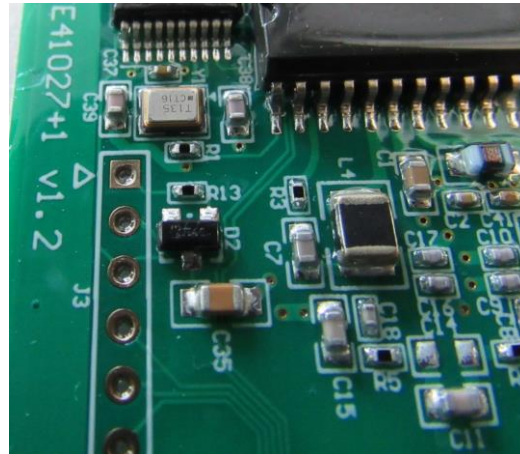
Current electronic

Updated electronic

Detail on crystal.



Current crystal 7M-13.560MAAE-T



Update crystal 7M-13.560MEEQ-T

Crystal datasheet.

TXC
7M
MHz Crystal

Features

- ▣ Frequency range : 10MHz to 114MHz
- ▣ Ceramic SMD package
- ▣ Seam sealing
- ▣ External dimensions (mm)
L : 3.2 x W : 2.5 x H : 0.7
- ▣ RoHS compliant & Pb free

Applications

- ▣ Bluetooth, Wireless LAN
- ▣ Cellular phone, Pager, DSC
- ▣ Display, TV
- ▣ Computer peripherals
- ▣ Consumer products

Electrical Characteristics

Item		7M	Conditions
Frequency Range	F_0	10MHz ~ 114MHz	
Frequency Tolerance	F_{tol}	$\pm 30\text{ppm}$, $\pm 20\text{ppm}$, $\pm 10\text{ppm}$	at 25°C
Frequency Stability over Operating Temperature Range (refer to 25°C)	F_{stab}	$\pm 30\text{ ppm}$	-20°C ~ +70°C
		$\pm 20\text{ ppm}$	
		$\pm 10\text{ ppm}$	
		$\pm 10\text{ ppm}$	-30°C ~ +85°C
		$\pm 30\text{ ppm}$	-40°C ~ +85°C
		$\pm 20\text{ ppm}$	
		$\pm 15\text{ ppm}$	-40°C ~ +125°C
		$\pm 60\text{ ppm}$	
Operating Temperature Range	T_{OTR}	-20°C ~ +70°C	
		-40°C ~ +85°C	
		-40°C ~ +125°C	
Shunt Capacitance	C_0	3pF Max.	
Drive Level	D_L	1 ~ 200μW (100μW Typ.)	
Load Capacitance	C_L	6pF, 8pF, 9pF, 10pF 12pF, 16pF, 18pF, 20pF	
Aging (at 25°C ± 3°C, first year)	F_{aging}	$\pm 3\text{ppm Max.}$	Note [1]
Storage Temperature Range	T_{STR}	-55°C ~ +125°C	

Notes:

[1] Please contact us for low aging +/-1ppm grade crystals.

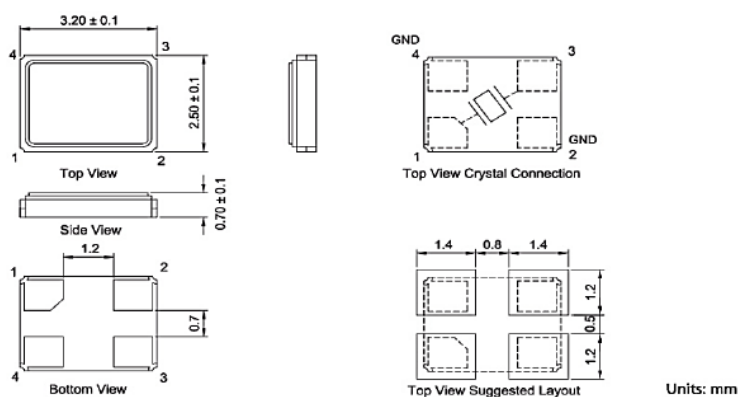
Motional Resistance (ESR)

Fundamental	
10 ~ 12 MHz	150Ω Max.
12 ~ 16 MHz	80Ω Max.
16 ~ 20 MHz	60Ω Max.
20 ~ 64 MHz	50Ω Max.

3rd Overtone	
60 ~ 80 MHz	80Ω Max.
80 ~ 114 MHz	60Ω Max.

TXC
7M
MHz Crystal

Dimensions



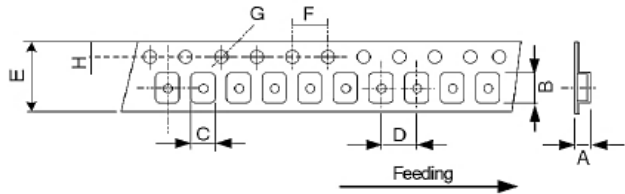
Ordering Information

7M	-	20.000M	A	H	E	-	T
Frequency in Hz		Frequency Tolerance (at 25°C)		Frequency Stability (over Temp.)		Packaging Method	
Please contact us for available frequencies		A ±30 ppm D ±20 ppm E ±10 ppm		A ±30 ppm (-20°C ~ +70°C) D ±20 ppm (-20°C ~ +70°C) E ±10 ppm (-20°C ~ +70°C) T ±10 ppm (-30°C ~ +85°C) H ±30 ppm (-40°C ~ +85°C) I ±20 ppm (-40°C ~ +85°C) J ±15 ppm (-40°C ~ +85°C) K ±60 ppm (-40°C ~ +125°C)		T Tape & Reel	
						Load Capacitance	
						B 6 pF V 8 pF C 9 pF Q 10 pF E 12 pF I 16 pF J 18 pF K 20 pF	

TXC

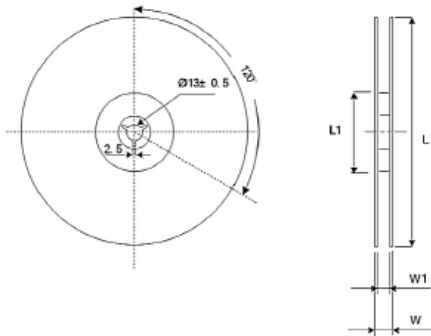
**7M
MHz Crystal**

Packing



DIMENSIONS	A	B	C	D	E	F	G	H
	1.65 ±0.10	3.40 ±0.10	2.70 ±0.10	4.00 ±0.10	8.00 ±0.20	4.00 ±0.10	1.55 ±0.05	1.75 ±0.10

(Unit: mm)

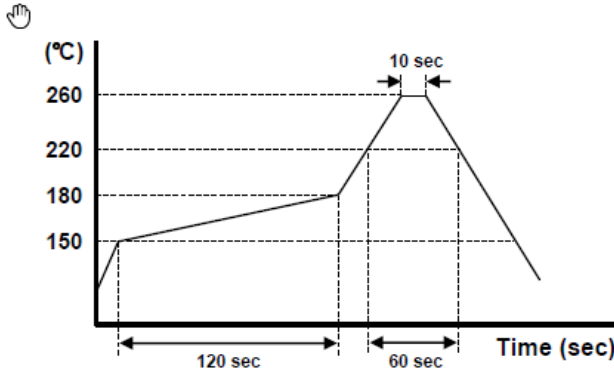


DIMENSIONS	L	L1	W	W1
	178 ±1.00	60.2 ±0.50	11.5 ±0.2	8 ±0.1

(Unit: mm)

Reflow Profile

Solder melting point : 220°C ± 10°C, 60 sec. Min.
Peak temperature : 260°C ± 10°C, 10 sec. Min.



Sincerely,

BIO-RAD
Quality Assurance Manager of Instrumentation sites,
Jean-Michel HENRY

Date: 16 march 2022

DocuSigned by:
Jean Michel Henry
 Nom du signataire : Jean Michel Henry
Motif de la signature : J'approuve ce document
Heure de signature : 24-mars-2022 | 11:37:01 AM CET
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