



**THE DATASHEET OF  
7M-13.560MAAE-T**



## 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
		$\pm 20\text{ ppm}$	
		$\pm 15\text{ ppm}$	
$\pm 60\text{ ppm}$	-40°C ~ +125°C		
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 ~ 200 $\mu$ W (100 $\mu$ W Typ.)	
Load Capacitance	$C_L$	6pF, 8pF, 9pF, 10pF 12pF, 16pF, 18pF, 20pF	
Aging (at 25°C $\pm$ 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	150 $\Omega$ Max.
12 ~ 16 MHz	80 $\Omega$ Max.
16 ~ 20 MHz	60 $\Omega$ Max.
20 ~ 64 MHz	50 $\Omega$ Max.

3rd Overtone	
60 ~ 80 MHz	80 $\Omega$ Max.
80 ~ 114 MHz	60 $\Omega$ Max.

## Dimensions



## Ordering Information



## Packing



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

(Unit: mm)



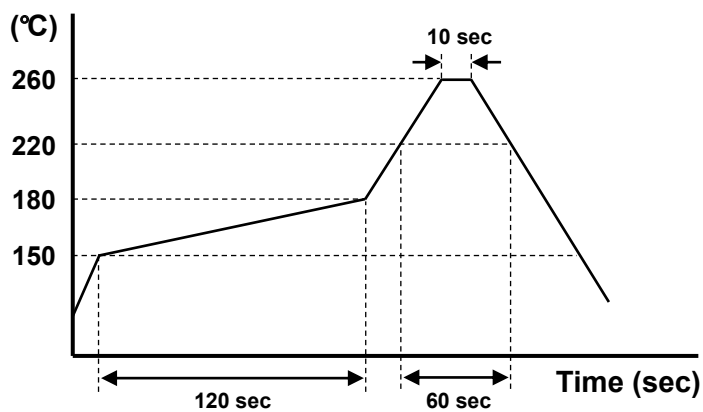
DIMENSIONS	L	L1	W	W1
	178	60.2	11.5	8
	±1.00	±0.50	±0.2	±0.1

(Unit: mm)

## Reflow Profile



Solder melting point :  $220^{\circ}\text{C} \pm 10^{\circ}\text{C}$ , 60 sec. Min.

Peak temperature :  $260^{\circ}\text{C} \pm 10^{\circ}\text{C}$ , 10 sec. Min.



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-  Cost Control Management
-  Shortage Management
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