

### MOLDED SMD PLASTIC PACKAGE CRYSTAL (12.5 x 4.6 x 3.7mm)

**FEATURES:**

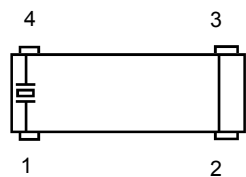
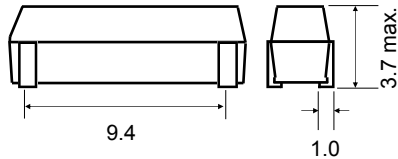
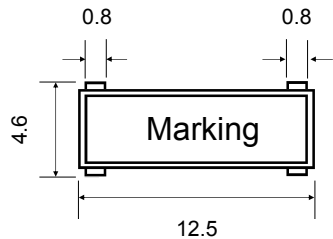
- HIGH FREQUENCY RANGE
- LOW COST
- LOW PROFILE



**■ SPECIFICATION**

FREQUENCY RANGE	3.579MHz ~ 70.000MHz	
FREQUENCY TOLERANCE @ 25°C	±15ppm ~ ±50ppm (See P/N guide for other options)	
FREQUENCY STABILITY	±20ppm ~ ±50ppm (See P/N guide for other options)	
OPERATING TEMPERATURE RANGE	STD: 0°C to 70°C, Option: -40°C to 85°C (See P/N guide for other options)	
STORAGE TEMPERATURE RANGE	-55°C to 125°C	
LOAD CAPACITANCE	STD: 18pF (See P/N guide for other options)	
SHUNT CAPACITANCE	7.0pF max.	
INSULATION RESISTANCE	500MΩ min. at 100V <sub>DC</sub> ± 15V <sub>DC</sub>	
DRIVE LEVEL	100uW max.	
AGING	±5.0ppm / 1 <sup>st</sup> year max.	
EQUIVALENT SERIES RESISTANCE	<b>Fundamental:</b>	3.579MHz ~ 4.500MHz: 150Ω max.    4.501MHz ~ 5.000MHz: 130Ω max. 5.001MHz ~ 7.000MHz: 120Ω max.    7.001MHz ~ 10.000MHz: 100Ω max. 10.001MHz ~ 12.000MHz: 80Ω max.    12.001MHz ~ 14.000MHz: 70Ω max. 14.001MHz ~ 16.000MHz: 50Ω max.    16.001MHz ~ 27.000MHz: 30Ω max.
	<b>3<sup>rd</sup> overtone:</b>	27.001MHz ~ 70.000MHz: 100Ω max.
OPERATION MODE	Fundamental or 3 <sup>rd</sup> overtone	

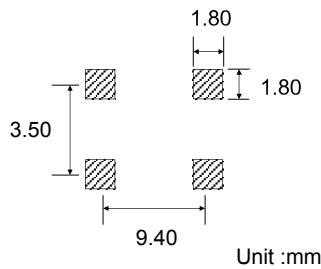
**■ PACKAGE DIMENSIONS**



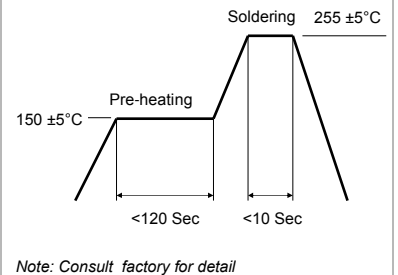
Unit : mm

Pin Configuration	
1	Xtal
2	GND
3	GND
4	Xtal

**■ SOLDER PATTERN**



**■ REFLOW PROFILE**



**■ PART NUMBERING GUIDE**

**TS-SMD – F 00 00 HM 08 – 20.000M – TR**

<p><b>Mode</b></p> <p>F: Fundamental T: 3<sup>rd</sup> overtone</p>	<p><b>Stability</b></p> <p>00: ± 100ppm 50: ± 50ppm 25: ± 25ppm 15: ± 15ppm 10: ± 10ppm XX: Two digit for Stability</p>	<p><b>Load Capacitance</b></p> <p>08: 8pF    20: 20pF 10: 10pF    22: 22pF 12: 12pF    24: 24pF 16: 16pF    28: 28pF 18: 18pF    32: 32pF S: Series</p>	<p><b>Other Options</b></p> <p>TR: Tape and reel</p>																				
<p><b>Tolerance @ 25°C</b></p> <p>00: ± 100ppm 50: ± 50ppm 30: ± 30ppm 25: ± 25ppm 10: ± 10ppm XX: Two digit for Tolerance</p>	<p><b>Operating Temperature</b></p> <table> <tr> <td>A: -55</td> <td>F: -20</td> <td>M: 70</td> <td>S: 100</td> </tr> <tr> <td>B: -50</td> <td>G: -10</td> <td>N: 75</td> <td>T: 105</td> </tr> <tr> <td>C: -40</td> <td>H: 0</td> <td>P: 80</td> <td>U: 125</td> </tr> <tr> <td>D: -35</td> <td>J: 50</td> <td>Q: 85</td> <td>X: custom</td> </tr> <tr> <td>E: -30</td> <td>K: 60</td> <td>R: 90</td> <td></td> </tr> </table>			A: -55	F: -20	M: 70	S: 100	B: -50	G: -10	N: 75	T: 105	C: -40	H: 0	P: 80	U: 125	D: -35	J: 50	Q: 85	X: custom	E: -30	K: 60	R: 90	
A: -55	F: -20	M: 70	S: 100																				
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D: -35	J: 50	Q: 85	X: custom																				
E: -30	K: 60	R: 90																					
<p><b>Frequency</b></p> <p>M: MHz</p>																							

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