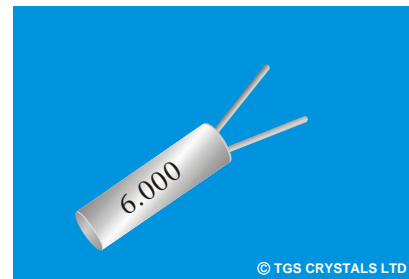


## FEATURES

- Heat-resisting package, Reflowsoldering
- Emboss Taping package

## APPLICATIONS

- Communication Equipment ● AV Equipment
- OA Equipment ● Measuring instruments.



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## SPECIFICATION \*

Parameters	Product	Option Code
<b>Frequency Range:</b> 3.579545~5.9990MHz 6.0000~9.99990MHz 10.000~60.0000MHz	SMD Φ3X10 SMD Φ3X8 SMD Φ3X9	CCMF CCMG CCMH
<b>Oscillation Mode:</b> AT Fund.(3.579545~20.0MHz) BT Fund.(20~27MHz) 3rd OT(27~60.0000MHz)	△ △ △	A B C
<b>Frequency Tolerance:</b> ±20ppm ±30ppm ±50ppm Other Values	△ △ ▲ △	20 30 50 Specify
<b>Load Capacitance:</b> 16pF 20pF 30pF Other Values	△ ▲ △ △	16 20 30 Specify
<b>Frequency Stability:</b> ±30ppm ±50ppm Other Values	△ ▲ △	30 50 Specify
<b>Operating Temp. Range:</b> -40℃~+85℃ Other Values	▲ △	40 Specify
<b>Turnover Temp. (To):</b> +25℃+5℃	▲	
<b>Equivalent Series Resistance (ESR):</b> See Table 1	△	Specify
<b>Drive Level:</b> 100 uW Max.	▲	
<b>Shunt Capacitance (C 0):</b> 5.0pF Max.	▲	
<b>Aging:</b> ±5ppm Max.	▲	
<b>Package:</b> Tape/Reel	△	T

▲ Standard \* Specifications Subject to Change Without Notice  
△ Optional: please specify required code when inquiring or ordering

## ESR VALUES

Table 1

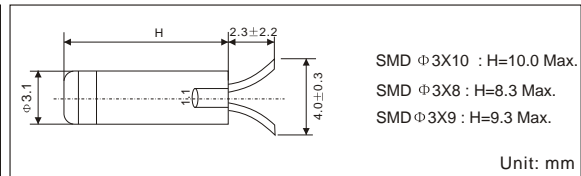
Frequency Range (MHz)	ESR Max (ohm)	Frequency Range (MHz)	ESR Max (ohm)
3.579545~3.999000	180	10.00000~11.99000	70
4.000000~4.490000	150	12.00000~13.99000	60
4.500000~4.990000	120	14.00000~15.99000	50
5.000000~6.990000	100	16.00000~60.00000	40
7.000000~9.990000	80		

## PART NUMBER GUIDE

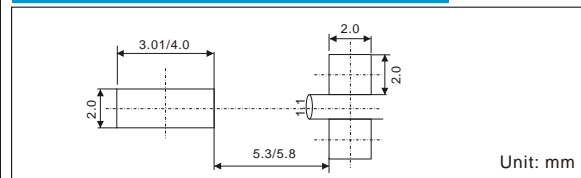
TGS	CC	M	F	12M0	A	50	-16	-50	-40	-70	-B
Mark	Cylindrical Crystals	SMD Type	F: SMD Φ3X10 G: SMD Φ3X8 H: SMD Φ3X9	Frequency Range	Oscillation Mode	Freq. Tolerance	Load Capacitance	Freq. Stability	Operating Temp. Range	ESR	Package

e.g. Full P/N.: TGS CCMF 12M0A50-16-50-40-70 T  
Short P/N.: CCMF 12M0A16T (Others is standard Spec.)

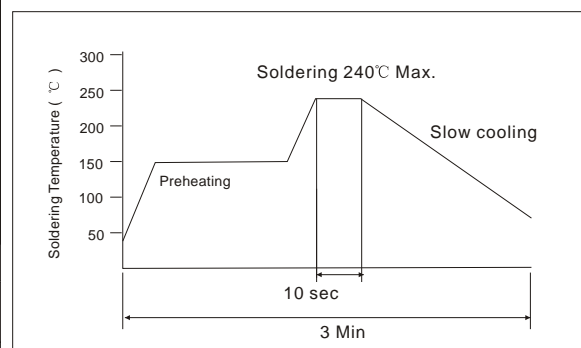
## DIMENSIONS



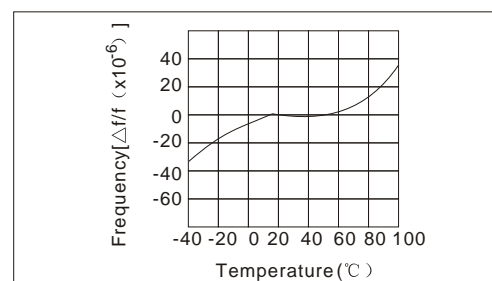
## RECOMMENDED SOLDER PAD LAYOUT



## SOLDER REFLOW PROFILE



## AT-CUT CRYSTAL UNITS



## PACKAGE

- Standard package in T/R: 3000pcs/Reel, 2Reel/box, 5box/carton
- See page 89 for detail dimensions