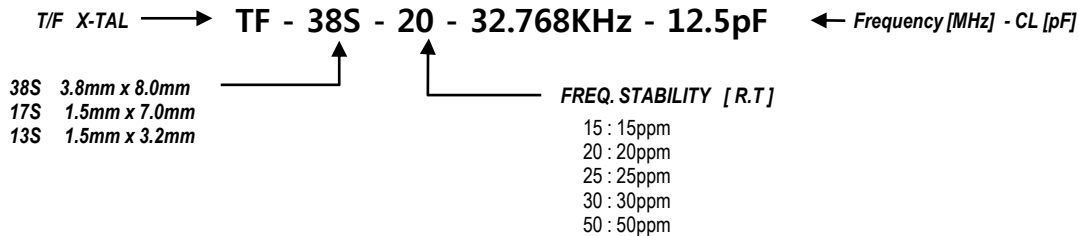


**Features & Applications**

- Fundamental
  - Long term stability
  - SMD Type Plastic PACKAGE
- Clock and Microcomputer
  - Accessories and ECU sub clock
  - Small communications devices
  - Small devices


**Part Numbering Guide**

**Electrical Characteristics**

type	TF - 38S	TF - 17S	TF - 13S	REMARK
frequency range	32.768 KHz			
frequency stability	± 10ppm ~ ± 50ppm			at +25°C ±3°C
operating temperature	STD. -10°C ~ 70°C / Option : -40°C ~ 90°C			-80 ppm / -160 ppm
temperature coefficient	-0.034 ppm/°C <sup>2</sup> TYP. / -0.04 ppm/°C <sup>2</sup> max			typ.
storage temperature	-40°C ~ 90°C			
drive level	1μw max			
load capacitance	12.5 pF typ.	12.5 pF typ.	12.5 pF typ.	
shunt capacitance (Co)	1.4 pF max	1.7 pF max	1.1 pF max	
equivalent series resistance	50 KΩ max	65 KΩ max	70 KΩ max	
aging	±3.0ppm max at +25°C ±3°C for first year			
insulation resistance	500MΩ min @ 100V			

All specifications are subject to change without notice

**Outline**
