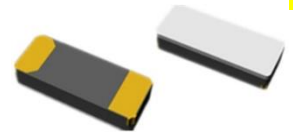


**MAIN FEATURE**

- 32.768KHz • Ultra-Small Package, 2 Pads • High Precision & Reliability

**APPLICATION**

- Smart Meter, PDA, Wave Clock
- Mobile Communication Devices and more

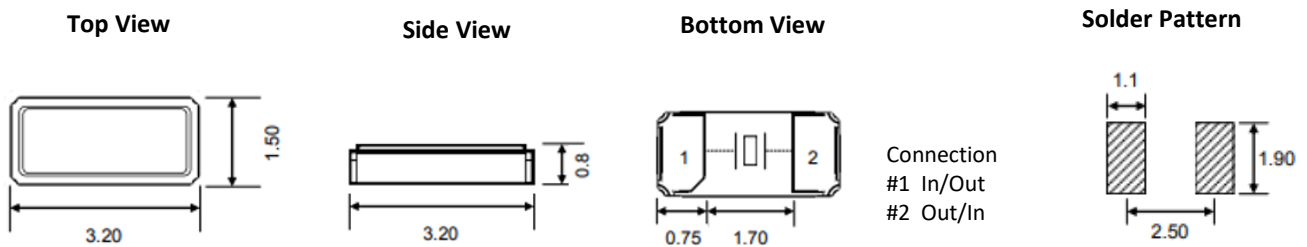


L3.2\*W1.5\*H0.80mm

**STANDARD SPECIFICATION**

Parameter	Value			Unit	Condition
	Min.	Type	Max.		
Frequency Range	-	32.768	-	KHz	@25 °C or Specify  CL: 7.0pF, 9.0pF or Specify ESR: 50 Kohm Max. available
Oscillation Mode	AT Fund.				
Frequency Tolerance	-	±20		ppm	
Operating Temperature Range	-40	-	+85	°C	
Storage Temperature Range	-55	-	+125	°C	
Load Capacitance (CL)	-	12.5	-	pF	
Frequency/Temp Coefficient	0.028	0.034	0.04	ppm/C <sup>2</sup>	
Turnover Temp	+20	+25	+30	°C	
Equivalent Series Resistance	-	-	70	Kohm	
Drive Level	-	-	0.5	µW	
Shunt Capacitance	0.9	0.95	2.0	pF	
Dynamic Capacitance	-	3.4	-	Ff	
Quality Factor	-	60000	-		
Capacitance Ratio	-	450	-		
Aging per year	-	±3	-	ppm/year	
Insulation Resistance	500	-	-	Mohm	@ 100Vdc ± 15V

**DIMENSION (+/-0.1mm)**



**PART NUMBER GUIDE**

Example: TGS CCMM 32K768A20-12.5-40-70 TLF

[Part Number and Part Code Structure](#)

TGS	CCMM	32K768	A	20	-12.5	-40	-70	T	LF	XX
1	2	3	4	5	6	7	8	9	10	11

- 1) TGS: Company Code
- 2) CCMM: KHz SMD Crystals, 2 pads L3.2\*W1.5\*H0.80mm
- 3) 32K768: Frequency Range 32.7680000KHz
- 4) A: Oscillation Mode, AT Fund.
- 5) 20: Frequency tolerance: +/-20ppm or specify
- 6) 12.5: Load Capacitance, 12.5pF; 9: 9.0pF or Specify
- 7) 40: Operating Temp. Range -40°C ~+85°C,
- 8) 70: Equivalent Series Resistance, 70 Kohm Max.; 50 Kohm Max. available
- 9) T: Package in Tape/Reel, 3000pcs/Reel
- 10) LF: RoHS compliant
- 11) XX: Internal Control Code- 2 letter or digits ; Blank: N/A

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