

# 32.768kHz SMD CRYSTAL

ABS13

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RoHS/RoHS II compliant.  
Pb in high temperature solder  
(exempt 7(a) per 2015/863/EU Annex)

6.9 x 1.4 x 1.4 mm

Moisture Sensitivity Level: Level 1

## FEATURES:

- Low frequency
- Plastic package with embedded heat resistant crystal in cylinder package
- Extended temperature -40°C to +85°C for industrial applications
- Suitable to RoHS compliant reflow

## APPLICATIONS:

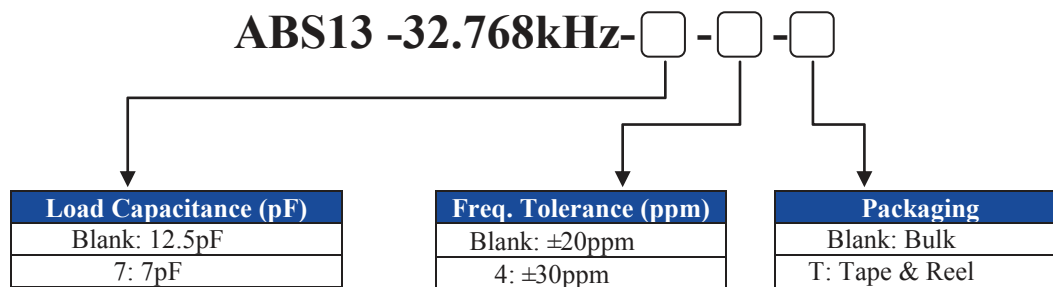
- Commercial & Industrial applications
- Wireless communications
- PDA and Palm Pilots

## STANDARD SPECIFICATIONS:

Parameters	Minimum	Typical	Maximum	Units	Notes
Nominal Frequency	-----	32.768	-----	kHz	
Operating Temperature	-40	-----	+85	°C	
Turnover Temperature	+20	+25	+30	°C	
Storage Temperature	-55	-----	+125	°C	
Frequency Tolerance @+25°C	-20	-----	+20	ppm	See options
Frequency Coefficient (β)		-0.035±0.01		ppm/°C <sup>2</sup>	
Equivalent series resistance (R1)	-----	-----	65	kΩ	
Load capacitance (CL)	-----	12.5	-----	pF	See options
Drive Level	-----	-----	1	μW	
Aging	-3	-----	+3	ppm	@25°C±3°C First year
Insulation Resistance	500	-----	-----	MΩ	@ 100Vdc ± 15V

## OPTIONS AND PART IDENTIFICATION:

(Left blank if standard)



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## OUTLINE DRAWING:

Dimension Table	
A	0.10
B	0.10
C	6.70
D	6.9 ± 0.1
E	1.4 ± 0.1
F	0.15 ± 0.03
G	1.4 ± 0.1
J	0.55
K	0.65 ± 0.1
L	0.3 ± 0.1
M	0.3 ± 0.1
N	0.3 ± 0.1
P	0.3 ± 0.1
Q	0.55 ± 0.15
R	0.55 ± 0.15

**Recommended Land Pattern**

Do not connect to external with #2 and #3.

**Note 1:**  
The part of the cylinder inside the resin mold may sometimes be exposed on the top or bottom of this crystal unit. This aspect is purely cosmetic and does not have any effect on the quality, reliability, or electrical performance of the crystal unit.

**Dimensions: mm**

## TAPE & REEL: T = Tape and reel 3,000pcs/reel

## REFLOW PROFILE

Dimension Table	
S	13.2 ± 0.5
U	60 ± 1.0
V	16.4 ± 1.5
W	18.8 ± 0.2
X	178 ± 2.0

**Dimensions: mm**

Zone	Description	Temperature	Times
1	Preheat	$T_{SMIN} \sim T_{SMAX}$ 170 °C ~ 190 °C	60 ~ 120 sec.
2	Reflow	$T_L$ 230 °C	55 sec. MAX
3	Peak Heat	$T_P$ 260 °C	10 sec. MAX

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