

## Automotive Grade, 4 Pad 5.0mm x 3.2mm SMD, LVCMOS Oscillator, 32.768kHz

**IKA20 Series**

### Product Features:

- AEC-Q200 qualified
- IATF 16949 certified production lines
- LVCMOS compatible output
- Low 50µA Input Current
- AT Cut Temperature Stability Characteristic
- Six supply voltages options, 1.8V, 2.5V, 2.8V, 3.0V, 3.3V, 1.62V to 3.63V (Continuous)
- RoHS and REACH compliant

### Typical Applications:

- Real Time Clock
- Infotainment System
- Instrument Panel, Ethernet
- ADAS, Camera, Video
- LIDAR Systems, Navigation
- Engine Control Units

### ELECTRICAL SPECIFICATIONS

<b>Frequency Range</b>	32.768kHz	
<b>Frequency Stability</b>	±25ppm Maximum ±50ppm Maximum ±100ppm Maximum	Inclusive of Initial Tolerance, Stability over Operating Temperature Range, Load (±5%), Voltage (±5%), and Aging (First Year at +25°C)
<b>Operating Temperature Range</b>	-40°C to +85°C -40°C to +105°C -40°C to +125°C	
<b>Supply Voltage (Vdd)</b>	1.8V, 2.5V, 2.8V, 3.0V, 3.3V, or 1.62V to 3.63V	
<b>Input Current</b>	50µA Typical, 100µA Maximum	No Load, Vdd = 3.3V
<b>Output Logic Type</b>	LVCMOS	
<b>Output Drive Capability</b>	15pF Maximum	
<b>Aging</b>	±3ppm/year Maximum	at +25°C
<b>Duty Cycle</b>	50 ±5(%)	Measured at 50% of waveform
<b>Rise / Fall Time</b>	15nSec Maximum	Measured from 10% to 90% of waveform
<b>Output Voltage Logic High</b>	90% of Vdd Minimum	
<b>Output Voltage Logic Low</b>	10% of Vdd Maximum	
<b>Input Voltage Logic High</b>	70% of Vdd Minimum or No Connect to Enable Output	
<b>Input Voltage Logic Low</b>	30% of Vdd Maximum to Disable Output (High Impedance)	
<b>Standby Current</b>	1µA Typical, 3µA Maximum	Disabled Output, High Impedance
<b>Startup Time</b>	2mSec Maximum	

**NOTES:**

- All minimum and maximum limits are specified over temperature and rated operating voltage with 15pF output unless otherwise stated.
- A 0.1µF bypass capacitor is recommended between Vdd (pad 4) and GND (pad 2) to minimize power supply noise.

### ABSOLUTE MAXIMUM LIMITS

<b>Storage Temperature Range</b>	-55°C to +125°C
<b>Supply Voltage Range</b>	-0.3Vdc to Vdd +0.5Vdc
<b>Electrostatic Discharge</b>	2000V Maximum
<b>Solder Temperature</b>	260°C Maximum
<b>Junction Temperature</b>	150°C Maximum

**NOTE:** If the part is used beyond absolute maximum ratings, it may cause internal destruction. The part should be used under the recommended operating conditions or the reliability of this part may be damaged if those conditions are exceeded.

### PART NUMBER GUIDE

Series	Supply Voltage	Operating Temperature Range	Frequency Stability	Function	Frequency
IKA20-	1 = 1.8V 6 = 2.5V 2 = 2.8V 7 = 3.0V 3 = 3.3V 8 = 1.62V to 3.63V	2 = -40°C to +85°C E = -40°C to +105°C F = -40°C to +125°C	A = ±25ppm * B = ±50ppm ** C = ±100ppm	H = Output Enable	-32.768 kHz

**Sample Part Number: IKA20-8FCH-32.768 kHz**

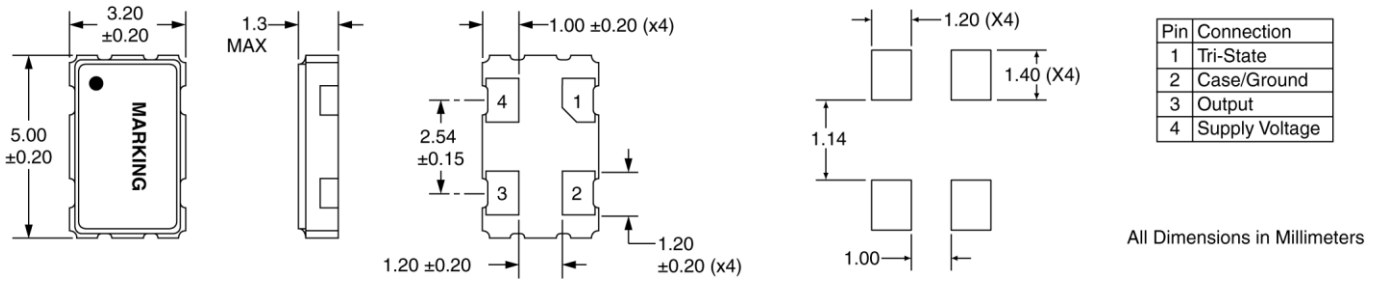
**NOTES:**

- \* Only available with Operating Temperature Range option 2.
- \*\* Only available with Operating Temperature Range option 2 and E.
- Please consult with Sales Department any other parameters or options.

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**MECHANICAL & SOLDER PAD LAYOUT DIMENSIONS**



**MARKING**

Line 1: 32.768K  
Line 2: Date Code (YWW)  
Pin 1 Dot

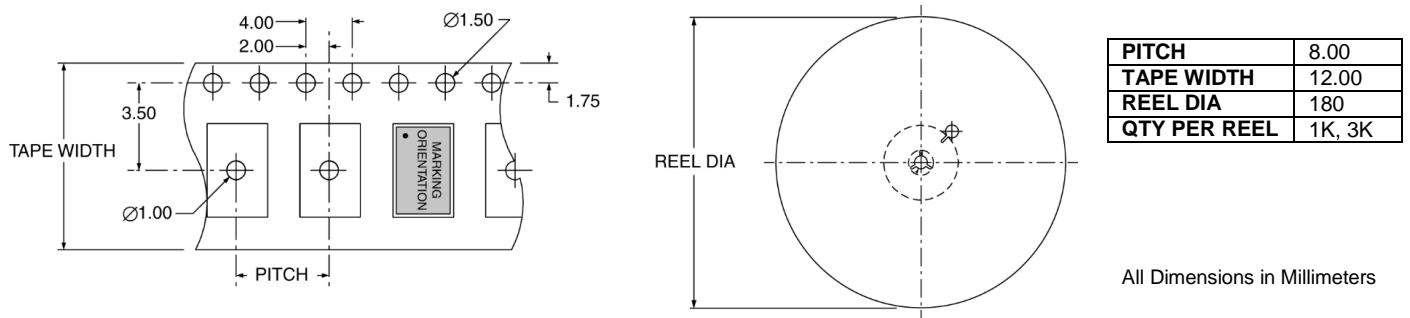
**PACKAGE INFORMATION**

Termination = e4 (Au over Ni over W base metallization)  
Terminal Plating Thickness:  
Gold (0.3µm to 1.0µm), Nickel (1.27µm to 8.89µm)

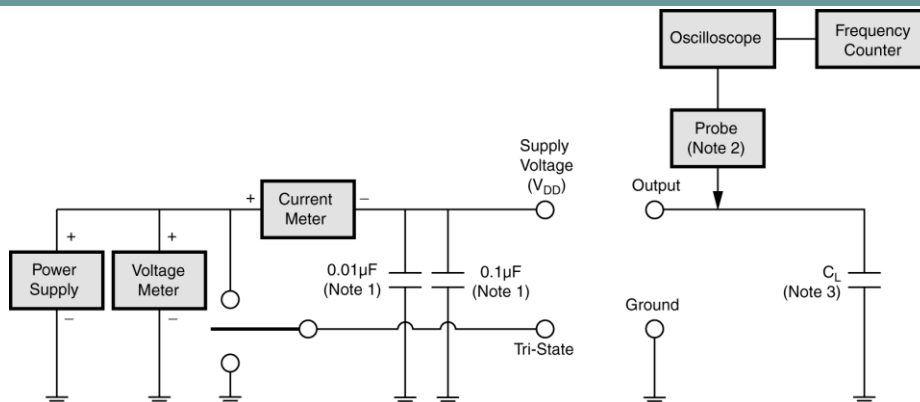
**ENVIRONMENTAL SPECIFICATIONS**

Mechanical Shock	MIL-STD-202, Method 213
Mechanical Vibration	MIL-STD-202, Method 204
Resistance to Soldering Heat	MIL-STD-202, Method 210
Solderability	J-STD-002
Gross Leak	MIL-STD-883, Method 1014
Fine Leak	MIL-STD-883, Method 1014
Moisture Sensitivity Level	MSL 1 (+260°C)

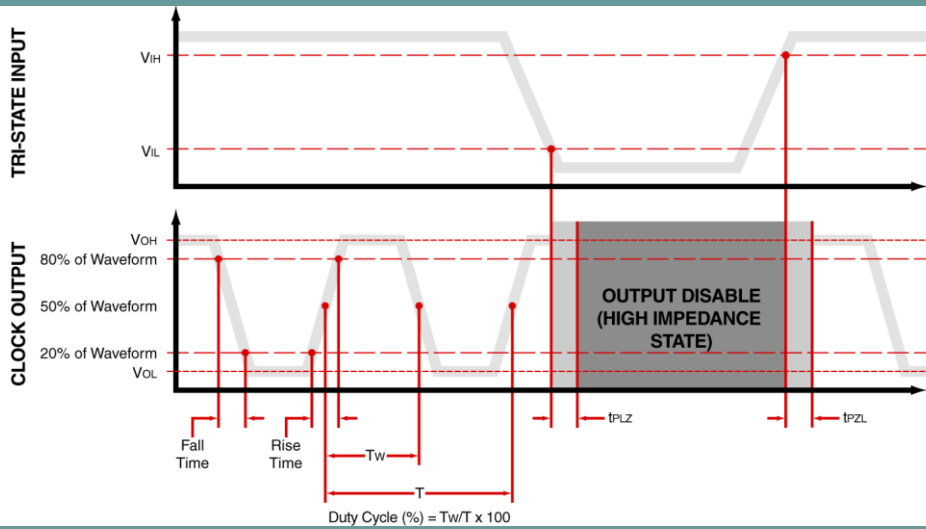
**TAPE & REEL DIMENSIONS**



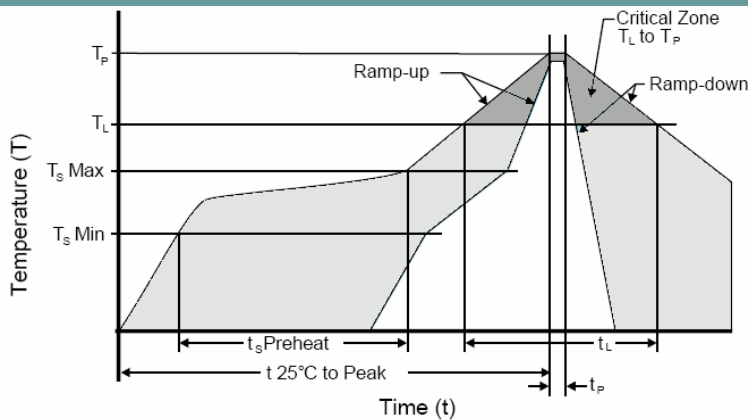
**TEST CIRCUIT**



**WAVEFORM**



**SOLDER REFLOW PROFILE**



Units are backward compatible with +240°C reflow process

Ts max to T <sub>L</sub> (Ramp-up Rate)	3°C / second max
Preheat	
Temperature min (Ts min)	150°C
Temperature typ (Ts typ)	175°C
Temperature max (Ts max)	200°C
Time (Ts)	60 to 180 seconds
Ramp-up Rate (T <sub>L</sub> to Tp)	3°C / second max
Time Maintained Above Temperature (T <sub>L</sub> )	217°C
Time (T <sub>L</sub> )	60 to 150 seconds
Peak Temperature (Tp)	260°C max for 10 seconds
Time within 5°C to Peak Temperature (Tp)	20 to 40 seconds
Ramp-down Rate	6°C / second max
Tune 25°C to Peak Temperature	8 minute max
Moisture Sensitivity Level (MSL)	Level 1

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