Automotive Grade, 4 Pad 2.5mm x 2.0mm SMD, LVCMOS Oscillator, 32.768kHz

IKA12 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

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

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

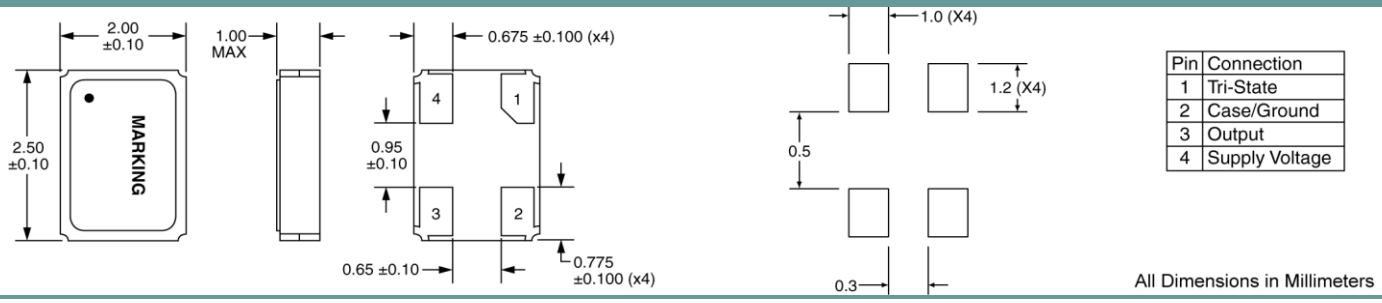
PART NUMBER GUIDE

Series	Supply Voltage	Operating Temperature Range	Frequency Stability	Function	Frequency
IKA12-	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: IKA12-8FCH-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.

MECHANICAL & SOLDER PAD LAYOUT DIMENSIONS



Pin	Connection
1	Tri-State
2	Case/Ground
3	Output
4	Supply Voltage

MARKING

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

Pin 1 Dot

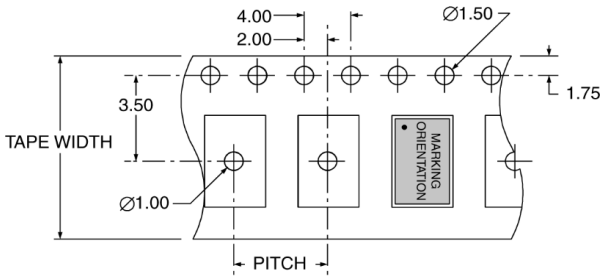
PACKAGE INFORMATION

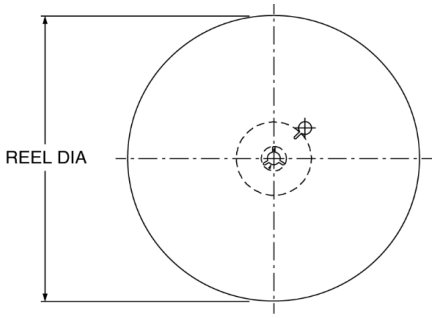
Termination = e4 (Au over Ni over W base metallization
Terminal Plating Thickness:
Gold (0.3µm to 1.0µm), Nickel (1.27µm to 8.89µm)

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

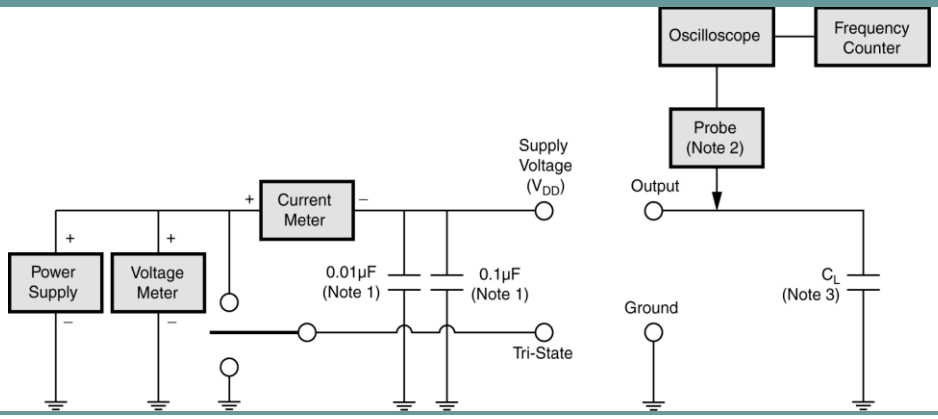




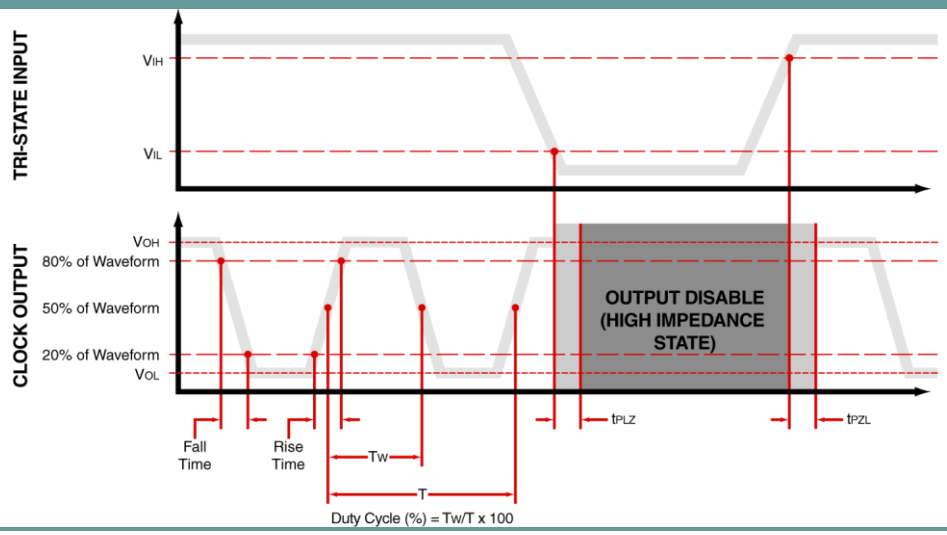
PITCH	4.00
TAPE WIDTH	8.00
REEL DIA	180
QTY PER REEL	1K, 3K

All Dimensions in Millimeters

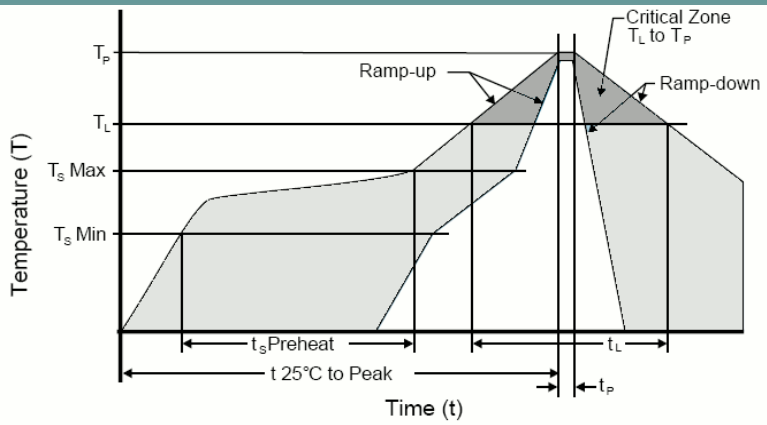
TEST CIRCUIT



WAVEFORM



SOLDER REFLOW PROFILE



Units are backward compatible with +240°C reflow process

Ts max to T_L (Ramp-up Rate)	3ºC / second max
Preheat Temperature min (Ts min) Temperature typ (Ts typ) Temperature max (Ts max) Time (Ts)	 150ºC 175ºC 200ºC 60 to180 seconds
Ramp-up Tate (T_L to Tp	3ºC / second max
Time Maintained Above Temperature (T_L) Time (T_L)	 217ºC 60 to 150 seconds
Peak Temperature (Tp)	260ºC max for 10 seconds
Time within 5ºC to Peak Temperature (Tp)	20 to 40 seconds
Ramp-down Rate	6ºC / second max
Tune 25ºC to Peak Temperature	8 minute max
Moisture Sensitivity Level (MSL)	Level 1