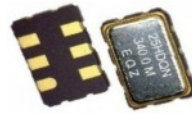


## 'HDJK' Specification Low Jitter Oscillators 100MHz to 250MHz

### FEATURES

- LVDS Output logic
- Wide frequency Range 10.0MHz to 250MHz
- Low phase RMS jitter 50fs [12kHz - 20MHz]
- Supply voltage range 1.8V 2.5V, 3.3Volts
- Tristate function to conserve power



(\*536' package displayed)



### DESCRIPTION

'HDJK' series oscillators have been developed as a precision frequency control component with a short lead time, providing a LVDS output clock oscillator with low current consumption, wide operating frequency range and an integrated RMS phase jitter performance of 50fs r.m.s. Available in 4 industry-standard ceramic packages, 7 x 5mm, 5 x 3.2mm, 3.2 x 2.5mm and 2.5 x 2.0mm SMD.

### GENERAL SPECIFICATION

Output Logic Type:	LVDS
Frequency Range:	100MHz to 250MHz
Load:	LVDS standard 100Ω differential
Power Supply Voltage:	1.8±5%VDC, 2.5±10%VDC or +3.3±10%VDC
Differential Output Voltage:	Hi: 1.4V typ. 1.6 max. Lo: 1.1V typ, 0.9 V min.
Frequency Stability:	See Stability Table
Storage Temperature:	-55°C tp +150°C
Output Swing (single-end):	200mV minimum
Duty Cycle:	50%±5%
Rise Time:	0.15 nsec typical**
Fall Time:	0.3 nssec maximum**
Current Consumption:	22mA typical, 30mA maximum
Current with output disabled:	30uA maximum
Start-up Time:	1.0ms typical, 5.0ms maximum
Ageing:	±3ppm max. first year, ±2ppm max. per year thereafter
OE Control on Pad 1	
Enable:	70% V <sub>DD</sub> min., or no connection
Disable:	30%V <sub>DD</sub> max., (high impedance).
Output Enable Time:	10ms max.
Output Disable Time:	0.2us max.
Phase Jitter r.m.s.:	50fsec typ., 300fsec max. (125MHz, 3.3V)

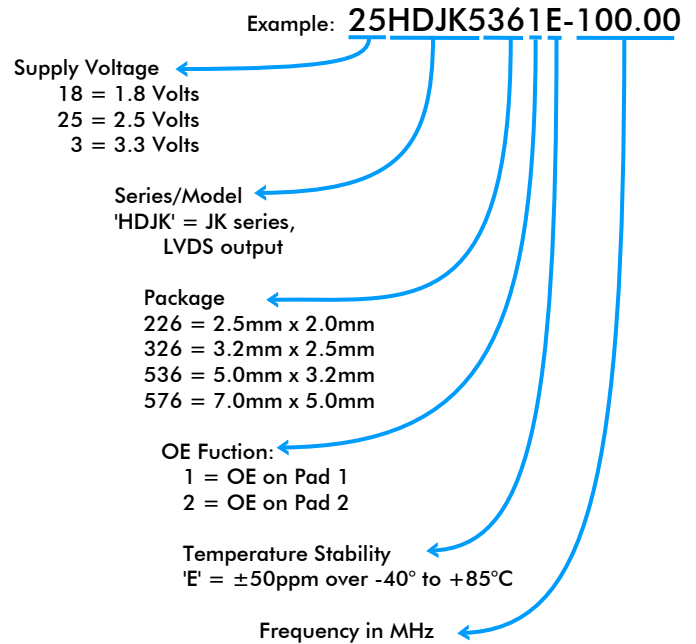
### STABILITY OVER TEMPERATURE RANGE

Stability ±ppm	Temperature Range °C	Order Code
25	-10 to +70	A
50	-10 to +70	B
100	-10 to +70	C
25	-40 to +85	D
50	-40 to +85	E
100	-40 to +85	F

### Notes:

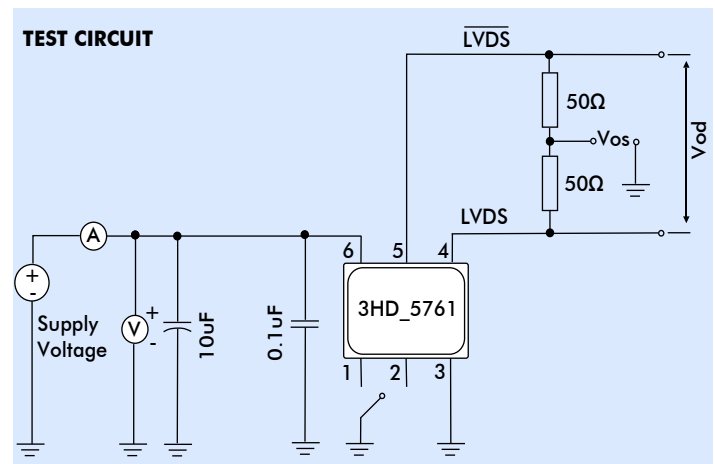
- \* Stability code for ±50ppm over -40° to +85°C is 'E.'
- \* Note that Frequency stability quoted is inclusive of all conditions, Calibration Tolerance at 25°C, stability over operating temperature range, 1st year ageing at 25°C, supply voltage & output load changes and shock & vibration.
- \*\* Rise/Fall times are measure between 20% to 80%V<sub>DD</sub>

### PART NUMBERING



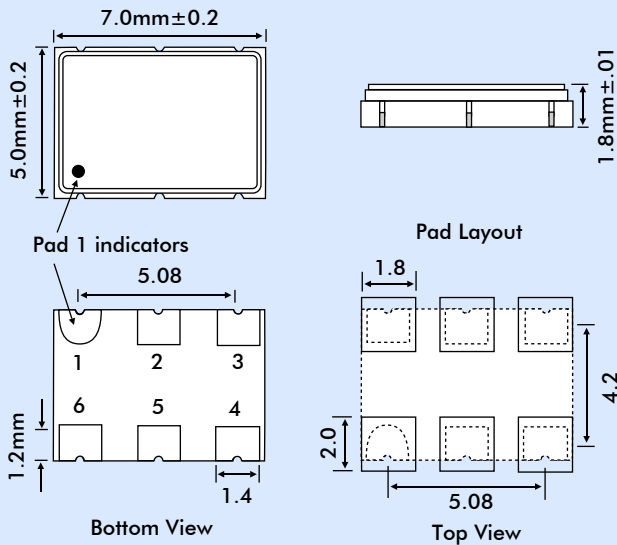
### HDJK SERIES PHASE NOISE & PHASE JITTER DATA

Frequency (MHz)	125.00	156.25
<b>SSB Phase Noise Data (dBc/Hz typical)</b>		
100Hz offset	-114	-108
1kHz offset	-135	-132
10kHz offset	-147	-141
100kHz offset	-157	-152
1MHz offset	-163	-160
10MHz offset	-164	-161



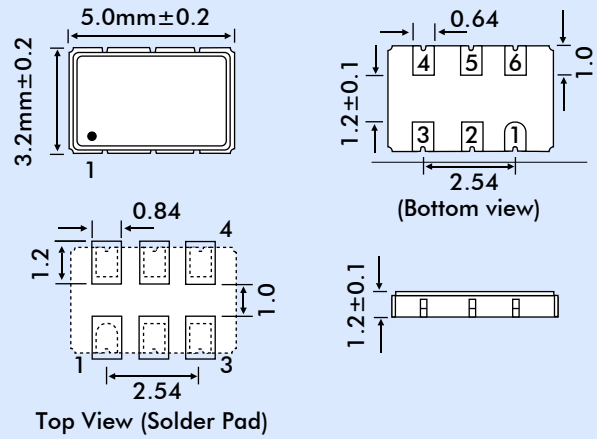
**OUTLINE & DIMENSIONS**

**7.0 x 5.0mm SMD Package**



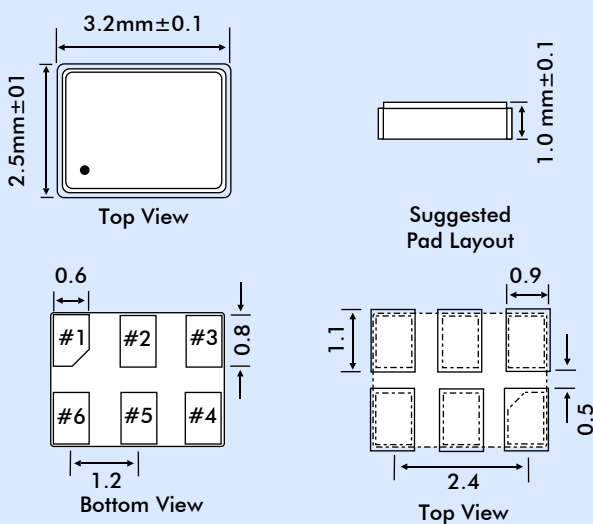
- Pad Connections**
- 1 OE High Enable
  - 2 No connection
  - 3 Ground
  - 4 Output
  - 5 Complimentary
  - 6 Supply Voltage

**5.0 x 3.2mm SMD Package**



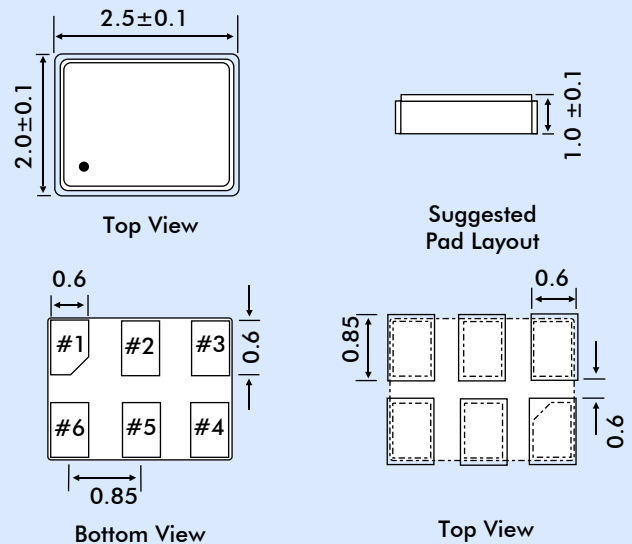
- Pad Connections**
- 1 OE High Enable
  - 2 No connection
  - 3 Ground
  - 4 Output
  - 5 Complimentary
  - 6 Supply Voltage

**3.2 x 2.5mm SMD Package**



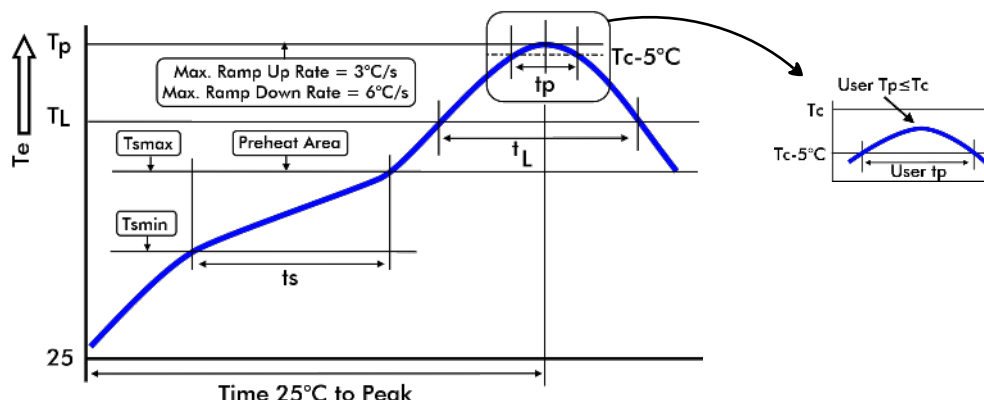
- Pad Connections**
- 1 OE
  - 2 No connection
  - 3 Ground
  - 4 Output
  - 5 Complimentary Output
  - 6 Supply Voltage

**2.5 x 2.0mm SMD Package**



- Pad Connections**
- 1 Voltage Control
  - 2 OE
  - 3 Ground
  - 4 Output
  - 5 No connection
  - 6 Supply Voltage

Suggested Reflow Profile



Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
Preheat/Soak		
- Temperature min. (Ts min.)	100°C	150°C
- Temperature max. (Ts max.)	150°C	200°
- Time (ts) (Ts min. to Ts max.)	60 to 120 seconds	60 to 180 seconds
Ramp-up Rate (Tl to Tp)	3°C/second max.	3°C/second max.
Liquidus temperature (Tl)	183°C	217°C
Time (tL) maintained above Tl	60 to 150 seconds	60 to 150 seconds
Peak package body temperature (Tp)	235°C	260°C
Time (Tp) within 5°C of the classification temperature Tc	10 to 30 seconds	20 to 40 seconds
Ramp-down rate (Tp to Tl)	6°C/second max.	6°C/second max.
Time 25°C to peak temperature	6 minutes max.	8 minutes max.

<b>Environmental Approvals</b>	RoHS Compliant, Pb (lead) free in accordance with EU Directive 2002/95/EC 6/6 (2002/95EC) and WEEE (2002/96/EC). Free of halide, cadmium, hexavalent chromium, lead, mercury, PBBs and PBDEs
<b>Moisture sensitivity Level</b>	Level 1 (infinite) according to IPC/JEDEC J-STF-020D.1
<b>Second Level Interconnect</b>	'e4
<b>Storage Temperature Range</b>	-55° to +125°C
<b>Humidity</b>	85%RH, 85°C, 48 hours
<b>Fine Leak / Gross Leak</b>	MIL-STD-202F Method 1014, Cond. A / MIL-STD-883, Method 1014, Cond C.
<b>Solderability</b>	MIL-STD-202F method 208E
<b>Reflow</b>	260°C for 10s. 2 times
<b>Vibration</b>	MIL-STD-202F Method 204, 35g, 50 to 2000Hz
<b>Shock</b>	MIL-STD-202F, Method 213B, Test Cond. E, 1000gg 1/2 sine wave.
<b>Resistance to Solvents</b>	MIL-STD-202, Method 215
<b>Temperature Cyscling</b>	MIL-STD-883, Method 1010
<b>ESD Rating</b>	Human Body Model (HBM): 1500 V minimum.
<b>Pad Surface Finish</b>	Gold (Au)(0.3µm ot 1.0µm) over nickel (Ni)(1.27µm to 8.89µm)
<b>Weight of the Device</b>	576 package: 0.18gm typical, 536 package: 0.09gm typical.