

## 7 x 5 x 1.8mm 6 pad SMD

### DESCRIPTION

- Femtosecond integrated phase jitter (200fs typical)
- Ultra-low phase noise -138dBc/Hz at 10kHz
- High performance with surprisingly low price
- Supply voltage 2.5 or 3.3 Volts

### SPECIFICATION

|                        |  |
|------------------------|--|
| Frequency Range:       | 13.5MHz to 200.0MHz  |
| Output Logic:          | Differential PECL square wave  |
| Phase Noise:           | See table  |
| Frequency Stability:   | See table  |
| Operating Temp Range   |  |
| Commercial:            | -10° to +70°C  |
| Industrial:            | -40° to +85°C  |
| Input Voltage:         | +2.5V or +3.3VDC ±5%   |
| Output Voltage         |  |
| High '1':              | Vdd -1.025V min., Vdd -0.95V typ., Vdd -0.88V max., 50Ω to Vdd-2V.                           |
| Low '0':               | Vdd -1.810V min., Vdd -1.70V typ., Vdd -1.621V max., 50Ω to Vdd -2V. (RL = 50Ω to Vdd -2.0V) |
| Output Swing:          | 595mV minimum, 750mV typical<br>930mV maximum  |
| Load:                  | 50Ω into Vcc-2V or Thevenin equivalent. Terminating resistors required on all outputs.       |
| Rise/Fall Times:       | 0.3ns typical, 0.5ns maximum. (from 20% Vdd to 80% Vdd)                                      |
| Duty Cycle:            | 50±5% (measured at 50% waveform)   |
| Current Consumption:   | 35mA typical, 50mA maximum   |
| Enable/Disable (Pad 1) |  |
| Enable:                | No connection or min. 70% Vdd is applied to pad 1.   |
| Disable:               | 30% Vdd max. applied to pad 1. Output: internal pull-up. Oscillation enable time is 2ms max. |
| Start-up Time:         | 3ms typ., 10ms max.  |
| Phase Jitter (RMS):    | 200fs typical<br>(12kHz to 20MHz integrated)   |
| Ageing:                | ±3ppm per year max., ±2ppm thereafter. At T amb +25°C  |
| Packaging:             | 16mm tape, 8.0mm pitch. 180mm dia. reel, 1000 pieces per reel.                               |

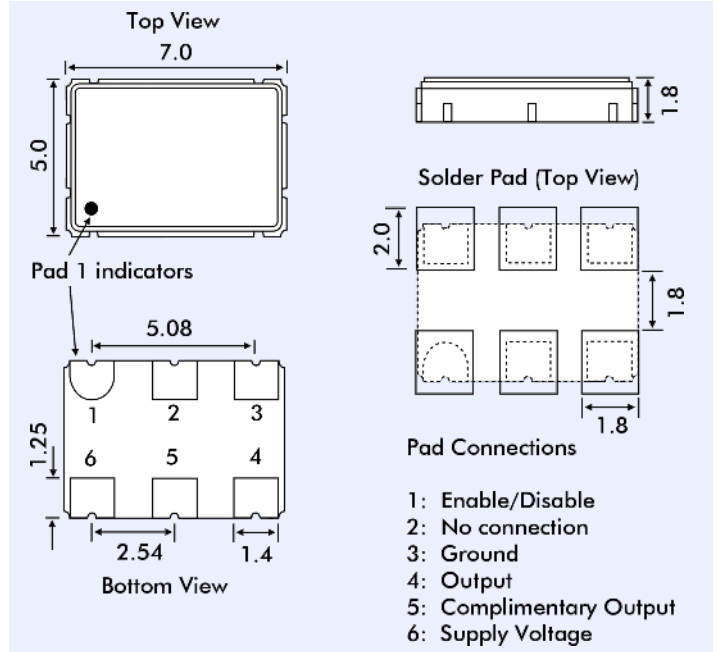
### ABSOLUTE MAXIMUM RATINGS

(Permanent damage may be caused if operated beyond these limits.)

|                 |                                |
|-----------------|--------------------------------|
| Supply Voltage: | Vss -0.5V min., 5.0V max.      |
| Input Voltage:  | Vss -0.5V min., Vdd +0.5V max. |
| Input Voltage:  | Vss -0.5V min., Vdd +0.5V max. |



### OUTLINE & DIMENSIONS



### ENVIRONMENTAL PERFORMANCE SPECIFICATION

|                             |   |
|-----------------------------|---|
| 'Green' Requirements:       | RoHS 6/6 (2002-95/EC) and WEEE (2002/96/EC) Compliant       |
| MSL Level:                  | Level 1 per IPC/JEDEC J-STD-020D.1                          |
| Storage Temperature Range:  | -55°C to +125°C   |
| Humidity:                   | 85% RH, 85°, 48 hours                                       |
| Hermetic Seal:              | Leak rate 2*10 <sup>-8</sup> Atm-cm <sup>3</sup> /sec. max. |
| Solderability:              | MIL-STD-202F Method 208E                                    |
| Reflow:                     | 260°C for 10sec. max., 2 times max.                         |
| Vibration:                  | MIL-STD-202F Method 204, 35g<br>50 to 2000Hz                |
| Shock:                      | MIL-STD-202F Method 213B<br>test condition E, 1000g, ½ sine |
| ESD Protection:             | 2kV max. Human body model                                   |
| Contact pad surface finish: | Gold (Au) (0.3~1.0μm) on Nickel (N) (1.27~8.89μm)           |
| Weight per unit:            | 180mg typical   |

### PART NUMBERS

HPK5761 oscillator part numbers are derived as follows:  
Example: 25HPK5761-A-155.520

### TYPICAL PHASE NOISE (125.0MHz)

| Offset | 10Hz | 100Hz | 1kHz | 10kHz | 100kHz | 1MHz | 10MHz |
|--------|------|-------|------|-------|--------|------|-------|
| dBc/Hz | -50  | -80   | -116 | -138  | -144   | -149 | -155  |

### 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          |

**25 HPK5761 - A - 155.520**

