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|------------------|
| Approved by: 黄灏东 |
| Checked by: 杨霞   |
| Issued by: 玉静霞   |

# **SPECIFICATION**

**SJK P/N: S71562500233J**

**深圳市晶科鑫实业有限公司**  
**SHENZHEN CRYSTAL TECHNOLOGY INDUSTRIAL CO., LTD.**

Add: 12F, Bldg. 3C, TianAn Cloud Park Phase 1, Bantian, Longgang, Shenzhen 518129, China

Tel: (86) 755 88352809 88352810 Fax: (86) 755 88353718 88352499

E-mail: [jolly@q-crystal.com](mailto:jolly@q-crystal.com) HTTP://[www.q-crystal.com](http://www.q-crystal.com)

# High Performance Differential Oscillator

## 7.0\*5.0mm



### Applications

- 10GB Ethernet, SONET, SATA, SAS, Fibre Channel, PCI-Express
- Telecom, networking, instrumentation, storage, servers

### ELECTRICAL SPECIFICATIONS

| No | Parameters                        | Symbol              | Condition                                                             | Electrical Specifications |     |         |       |
|----|-----------------------------------|---------------------|-----------------------------------------------------------------------|---------------------------|-----|---------|-------|
|    |                                   |                     |                                                                       | MIN                       | TYP | MAX     | UNITS |
| 1  | Nominal Frequency                 | -                   |                                                                       | 156.250000                |     |         | MHz   |
| 2  | Output                            |                     |                                                                       | LVPECL                    |     |         |       |
| 3  | Operating Temperature             | Topr                | Industrial                                                            | -40                       | ~   | 85      | °C    |
| 4  | Storage Temperature               | Tstg                |                                                                       | -55                       | ~   | 125     | °C    |
| 5  | Frequency Stability               | -                   |                                                                       | ±30                       |     |         | ppm   |
| 6  | Supply Voltage                    | VDD                 |                                                                       | 2.97                      | 3.3 | 3.63    | V     |
| 7  | Input Pull-up Impedance           | Z <sub>in</sub>     | Pin 1, OE logic high or logic low, or ST <sub>1</sub> logic high      |                           | 100 | 250     | kΩ    |
| 8  |                                   |                     | Pin 1, ST <sub>1</sub> logic low                                      | 2                         |     |         | MΩ    |
| 9  | Start-up Time                     | T <sub>start</sub>  | Measured from the time Vdd reaches its rated minimum value.           |                           | 6   | 10      | ms    |
| 10 | Resume Time                       | T <sub>resume</sub> | In Standby mode, measured from the time ST pin crosses 50% threshold. |                           | 6   | 10      | ms    |
| 11 | Duty Cycle                        | DC                  | Contact SiTime for tighter dutycycle                                  | 45                        |     | 55      | %     |
| 12 | Current Consumption               | I <sub>dd</sub>     | Excluding Load Termination Current, Vdd = 3.3V or 2.5V                |                           | 61  | 69      | mA    |
| 13 | OE Disable Supply Current         | I <sub>OE</sub>     | OE = Low                                                              |                           |     | 35      | mA    |
| 14 | Output Disable Leakage Current    | I <sub>leak</sub>   | OE = Low                                                              |                           |     | 1       | μA    |
| 15 | Standby Current                   | I <sub>std</sub>    | ST = Low, for all Vdds                                                |                           |     | 100     | μA    |
| 16 | Maximum Output Current            | I <sub>driver</sub> | Maximum average current drawn from OUT+ or OUT-                       |                           |     | 30      | mA    |
| 17 | Input Voltage High                | VIH                 | Pin 1, OE or ST                                                       | 70%VDD                    | -   | -       | V     |
| 18 | Input Voltage Low                 | VIL                 | Pin 1, OE or ST                                                       | -                         | -   | 30%VDD  | V     |
| 19 | Output Voltage High               | VoH                 | See Figure 1(a)                                                       | Vdd-1.1                   | -   | Vdd-0.7 | V     |
| 20 | Output Voltage Low                | VoL                 | See Figure 1(a)                                                       | Vdd-1.9-                  | -   | Vdd-1.5 | V     |
| 21 | Output Differential Voltage Swing | V <sub>Swing</sub>  | See Figure 1(b)                                                       | 1.2                       | 1.6 | 2.0     | V     |
| 22 | Rise/Fall Time                    | Tr, Tf              | 20% to 80%, see Figure 1(a)                                           |                           | 300 | 700     | ps    |
| 23 | OE Enable/Disable Time            | T <sub>oe</sub>     |                                                                       |                           |     | 115     | ns    |
| 24 | RMS Period Jitter                 | T <sub>jitt</sub>   | f = 156.25 MHz, VDD = 3.3V or 2.5V                                    |                           | 1.2 | 1.7     | ps    |
| 25 | RMS Phase Jitter (random)         | T <sub>phj</sub>    | f = 156.25 MHz, Integration bandwidth = 12 kHz to 20 MHz, all Vdds    |                           | 0.6 | 0.85    | ps    |

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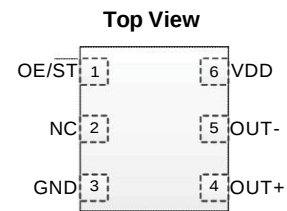
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### Pin Description

| Pin | Map                    |        | Functionality                                                                                                       |
|-----|------------------------|--------|---------------------------------------------------------------------------------------------------------------------|
| 1   | OE                     | Input  | H or Open: specified frequency output<br>L: output is high impedance                                                |
|     | $\overline{\text{ST}}$ | Input  | H or Open: specified frequency output<br>L: Device goes to sleep mode. Supply current reduces to I <sub>std</sub> . |
| 2   | NC                     | NA     | No Connect; Leave it floating or connect to GND for better heat dissipation                                         |
| 3   | GND                    | Power  | VDD Power Supply Ground                                                                                             |
| 4   | OUT+                   | Output | Oscillator output                                                                                                   |
| 5   | OUT-                   | Output | Complementary oscillator output                                                                                     |
| 6   | VDD                    | Power  | Power supply voltage                                                                                                |



### Absolute Maximum

Attempted operation outside the absolute maximum ratings may cause permanent damage to the part. Actual performance of the IC is only guaranteed within the operational specifications, not at absolute maximum ratings.

| Parameter                                                            | Min. | Max. | Unit |
|----------------------------------------------------------------------|------|------|------|
| Storage Temperature                                                  | -65  | 150  | °C   |
| VDD                                                                  | -0.5 | 4    | V    |
| Electrostatic Discharge (HBM)                                        | –    | 2000 | V    |
| Soldering Temperature (follow standard Pb free soldering guidelines) | –    | 260  | °C   |

### Thermal Consideration

| Package     | $\theta_{JA}$ , 4 Layer Board (°C/W) | $\theta_{JC}$ , Bottom (°C/W) |
|-------------|--------------------------------------|-------------------------------|
| 7050, 6-pin | 142                                  | 27                            |
|             |                                      |                               |
|             |                                      |                               |

### Environmental Compliance

| Parameter                  | Condition/Test Method    |
|----------------------------|--------------------------|
| Mechanical Shock           | MIL-STD-883F, Method2002 |
| Mechanical Vibration       | MIL-STD-883F, Method2007 |
| Temperature Cycle          | JESD22, Method A104      |
| Solderability              | MIL-STD-883F, Method2003 |
| Moisture Sensitivity Level | MSL1 @ 260°C             |

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## Waveform Diagrams

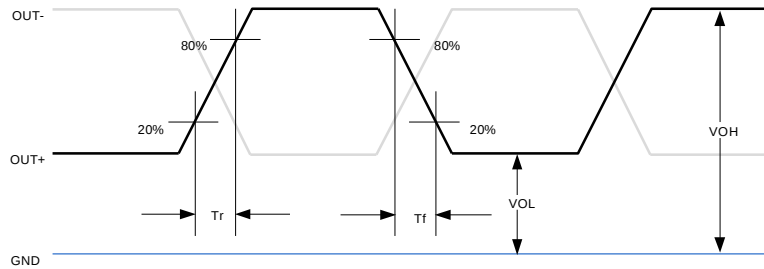


Figure 1(a). LVPECL Voltage Levels per Differential Pin (OUT+/OUT-)

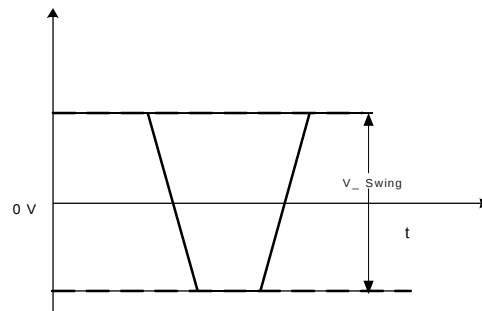


Figure 1(b). LVPECL Voltage Levels Across Differential Pair

## Termination Diagrams

LVPECL:

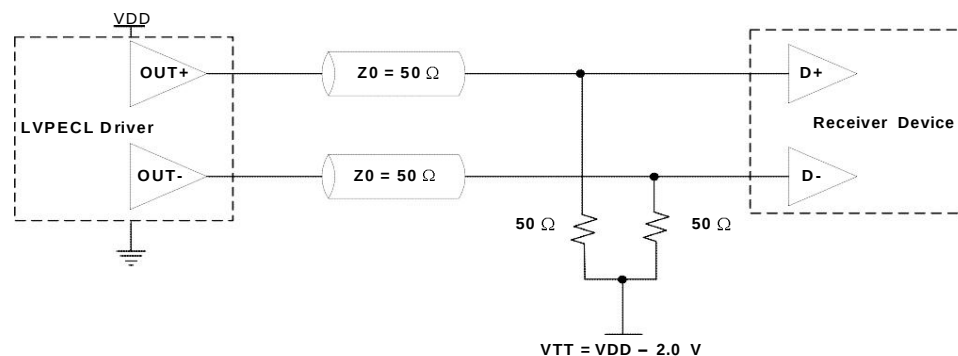


Figure 2. LVPECL Typical Termination

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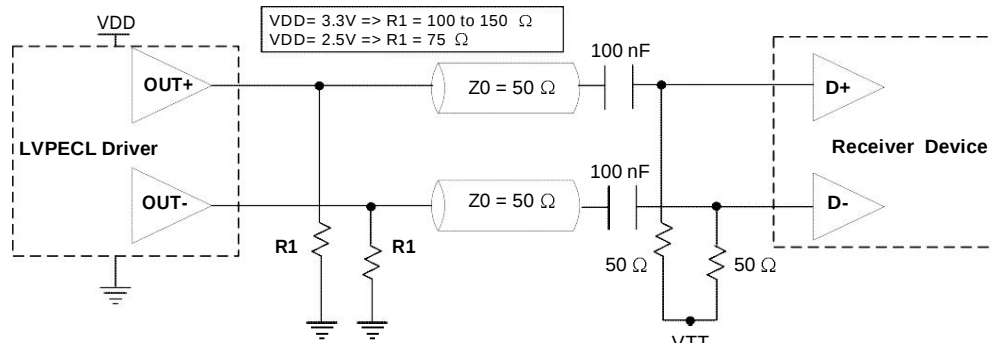


Figure 3. LVPECL AC Coupled Termination

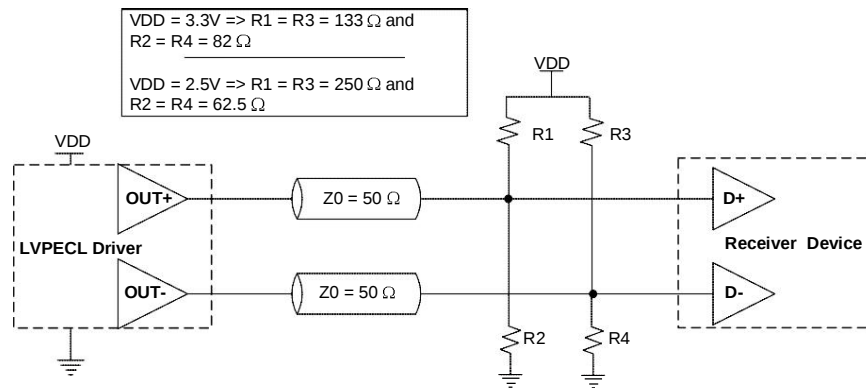
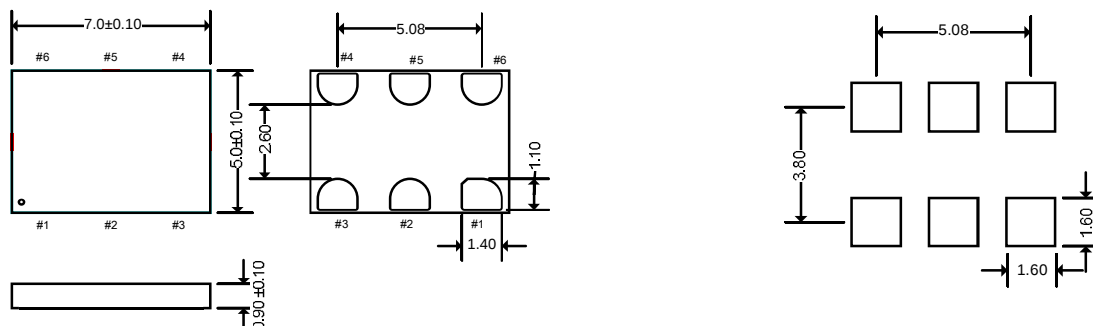


Figure 4. LVPECL with Thevenin Typical Termination

## Dimensions and Patterns

7.0 x 5.0 x 0.90 mm



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