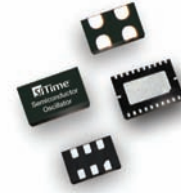


# Applications for SiTime's Silicon MEMS Timing Solutions

- Oscillators, Clock Generators & Embedded Resonators
- Drop-in Quartz Replacement
- 3 Weeks Lead Time
- Best Stability & Reliability



## STORAGE / COMPUTING

±10 PPM Stability, 2 FIT Semiconductor Reliability



## CONSUMER

3 Week Lead Time, Smallest & Thinnest, Lowest Cost



## NETWORKING / COMMUNICATIONS

1 - 800 MHz, 1.8 V Operation, ±10 PPM Stability



## INDUSTRIAL / HI-REL / AUTOMOTIVE

50,000 G Shock & 70 G Vibration, 2 FIT Reliability



# Select SiTime Device by Application, Frequency

|                             |   | High Performance Programmable Oscillators |           | Differential Output (D/E) Programmable Oscillators |               | Low Power Programmable Oscillators |                | Programmable Spread Spectrum Oscillators |                     |                         | Programmable VCXO |          | Programmable Clock Generators |                |                             | Prog. KHz Osc. | Auto. Temp. Prog. Osc. |
|-----------------------------|---|---|-----------|--|---------------|------------------------------------|----------------|--|---------------------|-------------------------|-------------------|----------|-------------------------------|----------------|-----------------------------|----------------|------------------------|
| Device                      |   | SiT8103                                   | SiT8102   | SiT9102  | SiT9107       | SiT8003                            | SiT8033        | SiT9001                                  | SiT9002             | SiT9003                 | SiT3701           | SiT3702  | SiT9103                       | SiT9104        | SiT9105                     | SiT8503        | SiT8002AA              |
| Frequency Range (MHz)       |   | 1 - 110                                   | 1 - 200   | 1 - 220  | 220 - 800     | 1 - 110                            | 2 - 110        | 1 - 200                                  | 1 - 220             | 1 - 110                 | 1 - 110           | 1 - 220  | 1 - 800                       | 1 - 220        | 1-220 (S/E)<br>1-800 (D/E)  | 0.2 - 1.0      | 1 - 125                |
| Number of Outputs           |   | 1   | 1         | 1  | 1             | 1                                  | 1, selectable  | 1  | 1                   | 1                       | 1                 | 1        | 3                             | 6              | 1 (D/E)<br>4 (S/E)          | 1              | 1                      |
| Single-Ended Output         |   | ●   | ●         |  |               | ●                                  | ●              | ●  |                     | ●                       | ●                 |          |                               | ●              | ●                           | ●              | ●                      |
| Differential Output         |   |   |           | ●  | ●             |                                    |                |  | ●                   |                         |                   | ●        | ●                             |                | ●                           |                |                        |
| Spread Spectrum             |   |   |           |  |               |                                    |                | ●  | ●                   | ●                       |                   |          | Contact SiTime                | Contact SiTime | Contact SiTime              |                |                        |
| Frequency Tolerance (± PPM) |   | 20 - 50                                   | 10 - 100  | 10 - 50  | 10 - 50       | 20 - 50                            | 20 - 50        | 50 - 100                                 | 25 - 50             | 50 - 100                | 20 - 50           | 10 - 50  | 25 - 50                       | 25 - 50        | 25 - 50                     | 25 - 50        | 100                    |
| Typical IDD (mA)            |   | 6.7                                       | 25        | 40 - 70  | 40 - 70       | 3.2                                | 3.7            | 25                                       | 40 - 70             | 3.2                     | 6.7               | 40 - 70  | 40 - 70 per output            | 30 per output  | 25 per S/E<br>40 - 70 (D/E) | 6.3            | 20                     |
| When to Use                 |   | ≤ 110 MHz                                 | > 110 MHz | ≤ 220 MHz D/E                                      | > 220 MHz D/E | < 6 mA                             | 2 Freq. Select | Spread Spectrum                          | D/E Spread Spectrum | < 6 mA, Spread Spectrum | Pull              | D/E Pull | 3 D/E                         | 6 S/E          | Mixed S/E, D/E              | F ≤ 1 MHz      | > 85 °C                |
| Application                 | Key Frequencies (MHz)   | Serial I/O Standards                      |           |  |               |                                    |                |  |                     |                         |                   |          |                               |                |                             |                |                        |
| Ethernet (10/100)           | 25  | ●   |           |  |               | ●                                  | ●              |  |                     |                         |                   |          |                               |                | ●                           | ●              |                        |
| Ethernet (1G)               | 25, 50, 62.5  | ●   |           |  |               | ●                                  | ●              |  |                     |                         |                   |          |                               |                | ●                           | ●              |                        |
|                             | 125   |   | ●         | ●  |               |                                    |                |  |                     |                         |                   |          | ●                             | ●              | ●                           |                |                        |
|                             | 250   |   |           |  | ●             |                                    |                |  |                     |                         |                   |          | ●                             |                | ●                           |                |                        |
| Ethernet (10GBase-R)        | 161, 1328   |   | ●         | ●  |               |                                    |                |  |                     |                         |                   | ●        | ●                             | ●              | ●                           |                |                        |
|                             | 322, 2656<br>644, 5313  |   |           |  | ●             |                                    |                |  |                     |                         | Contact SiTime    |          | ●                             |                | ●                           |                |                        |
| Ethernet (10GBase-X) / XAUI | 156.25  |   | ●         | ●  |               |                                    |                |  |                     |                         |                   | ●        | ●                             | ●              | ●                           |                |                        |
|                             | 312.5, 625  |   |           |  | ●             |                                    |                |  |                     |                         | Contact SiTime    |          | ●                             |                | ●                           |                |                        |
| SATA / SAS                  | 31.25, 37.5, 75, 100  | ●   |           | ●  |               | ●                                  | ●              | ●  | ●                   | ●                       |                   |          | ●                             | ●              | ●                           |                |                        |
|                             | 120, 150  |   | ●         | ●  |               |                                    |                | ●  | ●                   |                         |                   |          | ●                             | ●              | ●                           |                |                        |
|                             | 300, 600  |   |           |  | ●             |                                    |                |  |                     |                         |                   |          | ●                             |                | ●                           |                |                        |
| Fibre Channel               | 21.25, 26.5625, 53.125, 106.25  | ●   |           | ●  |               | ●                                  | ●              |  |                     |                         |                   |          | ●                             | ●              | ●                           |                |                        |
|                             | 159.375   |   | ●         | ●  |               |                                    |                |  |                     |                         |                   |          | ●                             | ●              | ●                           |                |                        |
|                             | 212.5   |   |           | ●  |               |                                    |                |  |                     |                         |                   |          | ●                             | ●              | ●                           |                |                        |
|                             | 318.75, 425, 637.5  |   |           |  | ●             |                                    |                |  |                     |                         |                   |          | ●                             |                | ●                           |                |                        |
| 1394B (FireWire, iLink)     | 24, 576, 49, 152, 98, 304   | ●   |           |  |               | ●                                  | ●              |  |                     |                         |                   |          |                               | ●              | ●                           |                |                        |
| Infiniband                  | 125   |   | ●         | ●  |               |                                    |                |  |                     |                         |                   |          | ●                             | ●              | ●                           |                |                        |
| PCI Express (PCI-E)         | 100   | ●   |           | ●  |               | ●                                  | ●              | ●  | ●                   | ●                       |                   |          | ●                             | ●              | ●                           |                |                        |
|                             | 125, 200  |   | ●         | ●  |               |                                    |                | ●  | ●                   |                         |                   |          | ●                             | ●              | ●                           |                |                        |
| RapidIO                     | 100   | ●   |           | ●  |               | ●                                  | ●              |  |                     |                         |                   |          | ●                             | ●              | ●                           |                |                        |
| HDMI                        | 13.513, 27.027, 74.25   | ●   |           | ●  |               | ●                                  | ●              |  |                     |                         |                   |          | ●                             | ●              | ●                           |                |                        |
|                             | 148.5   |   | ●         | ●  |               |                                    |                |  |                     |                         |                   |          | ●                             | ●              | ●                           |                |                        |
|                             | 222.75, 297, 340  |   |           |  | ●             |                                    |                |  |                     |                         |                   |          | ●                             |                | ●                           |                |                        |
| UART                        | 1.8432, 2.4576, 3.6864, 7.3728, 11.0592, 12.288, 14.7456, 18.432, 29.4912 | ●   |           |  |               | ●                                  | ●              |  |                     |                         |                   |          |                               | ●              |                             |                | ●                      |
| USB 1.1 / USB 2.0           | 12, 24, 26, 48  | ●   |           |  |               | ●                                  | ●              |  |                     |                         |                   |          |                               | ●              |                             |                | ●                      |
| FB-DIMM / AMB               | 133.33, 166.67, 200   |   | ●         | ●  |               |                                    |                | ●  | ●                   |                         |                   |          | ●                             | ●              | ●                           |                |                        |
| USB3.0                      | 12, 24, 26, 48, 50  | ●   |           |  |               | ●                                  | ●              | ●  |                     | ●                       |                   |          |                               | ●              | ●                           |                |                        |
|                             | 125   |   | ●         |  |               |                                    |                | ●  |                     |                         |                   |          |                               | ●              | ●                           |                |                        |
|                             | 250, 500 (on FPGA)  |   |           |  | ●             |                                    |                |  |                     | Contact SiTime          |                   |          | ●                             |                | ●                           |                |                        |

D/E = Differential Ended, S/E = Single Ended. Frequency can be specified up to 5 decimal places. 3 - 5 week lead time for production volumes. 500 Million Hours MTBF. All products have an embedded resonator. Please refer to data sheet for exact specifications. Contact SiTime for other custom variations. Subject to change without notice.

# Select SiTime Device by Application, Frequency

| Device   | High Performance Programmable Oscillators   |                      | Differential Output (D/E) Programmable Oscillators |               | Low Power Programmable Oscillators |                | Programmable Spread Spectrum Oscillators |                     |                         | Programmable VCXO |          | Programmable Clock Generators |                |                             | Prog. KHz Osc. | Auto. Temp. Prog. Osc. |
|--|---|----------------------|--|---------------|------------------------------------|----------------|--|---------------------|-------------------------|-------------------|----------|-------------------------------|----------------|-----------------------------|----------------|------------------------|
|  | SiT8103   | SiT8102              | SiT9102  | SiT9107       | SiT8003                            | SiT8033        | SiT9001                                  | SiT9002             | SiT9003                 | SiT3701           | SiT3702  | SiT9103                       | SiT9104        | SiT9105                     | SiT8503        | SiT8002AA              |
| Frequency Range (MHz)                                | 1 - 110   | 1 - 200              | 1 - 220  | 220 - 800     | 1 - 110                            | 2 - 110        | 1 - 200                                  | 1 - 220             | 1 - 110                 | 1 - 110           | 1 - 220  | 1 - 800                       | 1 - 220        | 1-220 (S/E)<br>1-800 (D/E)  | 0.2 - 1.0      | 1 - 125                |
| Number of Outputs                                    | 1   | 1                    | 1  | 1             | 1                                  | 1, selectable  | 1  | 1                   | 1                       | 1                 | 1        | 3                             | 6              | 1 (D/E)<br>4 (S/E)          | 1              | 1                      |
| Single-Ended Output                                  | ●   | ●                    |  |               | ●                                  | ●              | ●  |                     | ●                       | ●                 |          |                               | ●              | ●                           | ●              | ●                      |
| Differential Output                                  |   |                      | ●  | ●             |                                    |                |  | ●                   |                         |                   | ●        | ●                             |                | ●                           |                |                        |
| Spread Spectrum                                      |   |                      |  |               |                                    |                | ●  | ●                   | ●                       |                   |          | Contact SiTime                | Contact SiTime | Contact SiTime              |                |                        |
| Frequency Tolerance (± PPM)                          | 20 - 50   | 10 - 100             | 10 - 50  | 10 - 50       | 20 - 50                            | 20 - 50        | 50 - 100                                 | 25 - 50             | 50 - 100                | 20 - 50           | 10 - 50  | 25 - 50                       | 25 - 50        | 25 - 50                     | 25 - 50        | 100                    |
| Typical IDD (mA)                                     | 6.7   | 25                   | 40 - 70  | 40 - 70       | 3.2                                | 3.7            | 25                                       | 40 - 70             | 3.2                     | 6.7               | 40 - 70  | 40 - 70 per output            | 30 per output  | 25 per S/E<br>40 - 70 (D/E) | 6.3            | 20                     |
| When to Use  | ≤ 110 MHz   | > 110 MHz            | ≤ 220 MHz D/E                                      | > 220 MHz D/E | < 6 mA                             | 2 Freq. Select | Spread Spectrum                          | D/E Spread Spectrum | < 6 mA, Spread Spectrum | Pull              | D/E Pull | 3 D/E                         | 6 S/E          | Mixed S/E, D/E              | F ≤ 1 MHz      | > 85 °C                |
| Application  | Key Frequencies (MHz)   | Serial I/O Standards |  |               |                                    |                |  |                     |                         |                   |          |                               |                |                             |                |                        |
| Zigbee (802.15.4)                                    | 13, 24, 40  | ●                    |  |               |                                    | ●              | ●  |                     |                         |                   |          |                               |                |                             |                |                        |
| HyperTransport                                       | 100   | ●                    |  | ●             |                                    | ●              | ●  |                     |                         |                   |          | ●                             | ●              | ●                           |                |                        |
| DDR1, DDR2, DDR3                                     | < 200   |                      | ●  | ●             |                                    |                | ●  | ●                   | ●                       |                   |          | ●                             | ●              | ●                           |                |                        |
|  | > 200   |                      |  | ●             | ●                                  |                | ●  | ●                   |                         |                   |          | ●                             | ●              | ●                           |                |                        |
| Microprocessor / Microcontroller / DSP / PCI / PCI-X | 1 - 110 (e.g. 14.318, 66.666, 100)  | ●                    |  | ●             |                                    | ●              | ●  | ●                   | ●                       |                   |          | ●                             | ●              | ●                           |                |                        |
|  | 110 - 200 (e.g. 133.33, 166.67, 200)  |                      | ●  | ●             |                                    |                | ●  | ●                   | ●                       |                   |          | ●                             | ●              | ●                           |                |                        |
|  | 200 - 800 (e.g. 266.66, 400, 533.33, 800)   |                      |  | ●             | ●                                  |                |  |                     | ●                       |                   |          | ●                             |                | ●                           |                |                        |
| Application  | Key Frequencies (MHz)   | Audio/Video          |  |               |                                    |                |  |                     |                         |                   |          |                               |                |                             |                |                        |
| Audio (< 1 MHz)                                      | 400 - 800 kHz for PWM Tracking  |                      |  |               |                                    |                |  |                     |                         |                   |          |                               |                |                             |                | ●                      |
| Audio (32kHz Standard)                               | 2.048, 3.072, 4.096, 6.144, 8.192, 12.288, 16.384, 24.576, 32.768, 49.152, 65.536           | ●                    |  |               |                                    | ●              | ●  |                     |                         |                   |          |                               | ●              | ●                           |                |                        |
| Audio (44.1kHz standard)                             | 2.8224, 4.2336, 5.6448, 8.4672, 11.2896, 16.9344, 22.5792, 33.8688, 45.1584, 67.738, 90.317 | ●                    |  |               |                                    | ●              | ●  |                     |                         |                   |          |                               | ●              | ●                           |                |                        |
| Audio (48kHz standard)                               | 3.072, 4.608, 6.144, 9.216, 12.288, 18.432, 24.576, 36.864, 49.152, 73.728, 98.304          | ●                    |  |               |                                    | ●              | ●  |                     |                         |                   |          |                               | ●              | ●                           |                |                        |
| Television (NTSC)                                    | 3.579545, 13.5, 14.31818, 27  | ●                    |  |               |                                    | ●              | ●  |                     |                         |                   | ●        |                               |                | ●                           |                |                        |
| Television (PAL)                                     | 3.57611, 3.58205, 4.43367, 8.86724, 13.5, 13.875, 17.73447, 27                              | ●                    |  |               |                                    | ●              | ●  |                     |                         |                   | ●        |                               |                | ●                           |                |                        |
| Video, HDTV, 1080i, 720p                             | 74.25   | ●                    |  | ●             |                                    | ●              | ●  |                     |                         |                   | ●        | ●                             | ●              | ●                           |                |                        |
|  | 74.17582418   | ●                    |  | ●             |                                    | ●              | ●  |                     |                         |                   | ●        | ●                             | ●              | ●                           |                |                        |
| Video, HDTV, 1080p                                   | 148.5   |                      | ●  | ●             |                                    |                |  |                     |                         |                   | ●        | ●                             | ●              | ●                           |                |                        |
|  | 148.3516484   |                      | ●  | ●             |                                    |                |  |                     |                         |                   | ●        | ●                             | ●              | ●                           |                |                        |
| Video, MPEG-2  | 13.5, 27, 27.027, 54, 54.054, 108, 108.108  | ●                    |  |               |                                    | ●              | ●  |                     |                         |                   | ●        | ●                             | ●              |                             |                |                        |

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# Simplify Your Design With SiTime Tools

## Replace Quartz Now With Our Online Cross Reference Tool

**CROSS REFERENCE**

SiTime is the market leader in all-silicon MEMS timing solutions. SiTime MEMS solutions offer performance, the shortest lead time and the smallest sizes.

Use this tool to get cross references of SiTime devices and request your customized

Select crystal (Quartz) oscillator supplier:

OR

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| 210 SS | <a href="#">SIT9003</a> | 1-110MHz  | <a href="#">View</a> | <a href="#">Configure</a> |
| 210    | <a href="#">SIT8003</a> | 1-110MHz  | <a href="#">View</a> | <a href="#">Configure</a> |

[www.sitime.com/crossreference](http://www.sitime.com/crossreference)

## Your Oscillator, Your Choice Configure Online

**SiT9002 Part Number Generator**

Frequency (MHz)

Output Signaling  LVPECL-0  LVPECL-1  LVDS  CML

Frequency Stability (PPM)  ±25  ±50

Temperature Range (°C)  0 to 70  -20 to 70  -40 to 85

Supply Voltage (V)  3.3  2.5  1.8

Package Size (mm)  5.0x3.2  7.0x5.0  7.0x5.0 (w/o EDP)

Control Pin  ST  OE  SD

Spread Option (%)  -0.5  -1  -2  -4

Swing  ±0.25  ±0.5  ±1  ±2

Swing  Normal  High

Packaging  Bulk  1Ku Reel  3Ku Reel

**SiTime Part number is:**

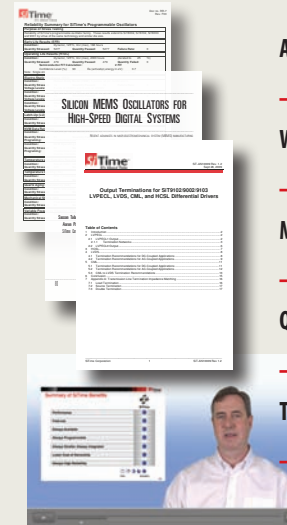
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