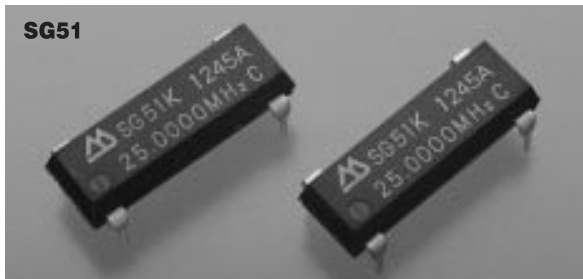
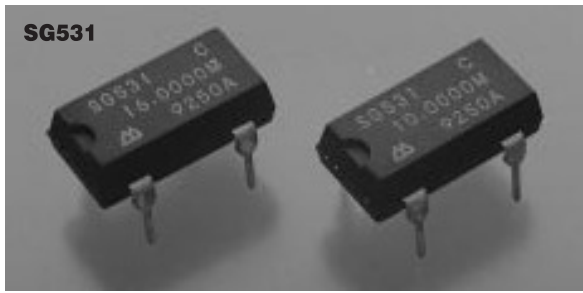


Crystal Oscillators - Seiko Epson

HCMOS/TTL DUAL IN LINE PLASTIC FULL SIZE SG-51/ HALF SIZE SG-531

SG-51/Half Size SG531



Features

- Frequency range 1.025MHz-125.0MHz
- Cylindrical type AT cut crystal quartz built in, thereby assuring high reliability
- Suitable for automatic insertion
- Use of CMOS IC enables reduction of current consumption
- Output load 10LSTTL/30-50pF
- Available with output enable and standby functions - SG51P and SG531P series
- Pin compatible with 8 pin and 14 pin metal can versions
- Packaged in plastic DIP package saves board space
- Extensive stock holding on SG531 series

Specifications

| Item | Symbol | Specifications | | | Remarks | |
|-------------------------------------|---------------------|----------------------------|--------------------------|----------------------|--|--|
| | | SG-51P/531P | SG-51PTJ/531 PTJ | SG-51PH/531PH | | |
| Output frequency range | f_o | 1.0250MHz to 26.0000MHz | 26.0001MHz to 66.6667MHz | | | |
| Power source voltage | Max. supply voltage | $V_{DD} - GND$ | -0.3V to +7.0V | | | |
| | Operating voltage | V_{DD} | 5.0V±0.5V | | | |
| Temperature range | Storage temp. | T_{STG} | -55°C to +125°C | | | |
| | Operating temp. | T_{OPR} | -10°C to +70°C | | | |
| Soldering condition (lead part) | T_{SOL} | Under 260°C within 10 sec. | | | Don't heat up the package more than 150°C | |
| Frequency stability | $\Delta f/f_o$ | B: ±50ppm C: ±100ppm | | | -10°C to +70°C B Type is possible up to 55.0MHz | |
| Current consumption | I_{OP} | 23mA MAX. | 35mA MAX. | | No load condition | |
| Duty | C-MOS level | T_w/T | 40% to 60% | - | 40% to 60% | 1.2 V_{DD} level |
| | TTL level | | 45% to 55% | | - | 1.4V level |
| Output voltage | V_{OH} | $V_{DD} - 0.4V$ MIN. | 2.4V MIN. | $V_{DD} - 0.4V$ MIN. | | |
| | (I_{OH}) | | -400µA | | -4µA | |
| | V_{OL} | | 0.4V MAX. | | | |
| | (I_{OL}) | 16mA | 8mA | 4mA | | |
| Output load condition (fan out) | C-MOS | CL | 50pF MAX. | - | 50pF MAX. | |
| | TTL | N | 10TTL MAX. | 5TTL MAX. | - | |
| Output enable/disable input voltage | V_{IH} | 2.0V MIN. | 3.5V MIN. | 2.0V MIN. | | $I_{IH} = 1\mu A$ MAX. (OE= V_{DD}) |
| | V_{IL} | 0.8V | 1.5V MAX. | 0.8V MAX. | $I_{IL} = -100\mu A$ MIN. (OE=GND), PTJ: -500µA | |
| Output disable current | I_{OE} | 12mA MAX. | 28mA MAX. | 20mA MAX. | | OE=GN |
| Output rise time | C-MOS level | T_{rH} | 8nsec. MAX. | 5nsec. MAX. | 7nsec. MAX. | C-MOS load : 20% to 80% V_{DD} |
| | TTL level | | | | | TTL load : 0.4V to 2.4V |
| Output fall time | C-MOS level | T_{fL} | 8nsec. MAX. | 5nsec. MAX. | 7nsec. MAX. | C-MOS load : 80% to 20% V_{DD} |
| | TTL level | | | | | TTL load : 2.4V to 0.4V |
| Oscillation start up time | t_{OSC} | 4msec. MAX. | 10msec. MAX. | | More than for 1ms until $V_{DD} = 0V$ to 4.5V Time at 4.5V to be 0sec. | |
| Aging | f_a | | ±5ppm/year MAX. | | $T_a = 25^\circ C$, $V_{DD} = 5V$, first year | |
| Shock resistance | S.R. | | ±20ppm MAX. | | Drop Test of three times on hard board from 75cm height or excitation test with 3000G x 0.3ms x 1/2 sine wave in 3 directions. | |

Notes

- Unless otherwise stated, characteristics (specifications) shown in the above table are based on the rated operating temperature and voltage condition.
- External by-pass capacitor is recommended.

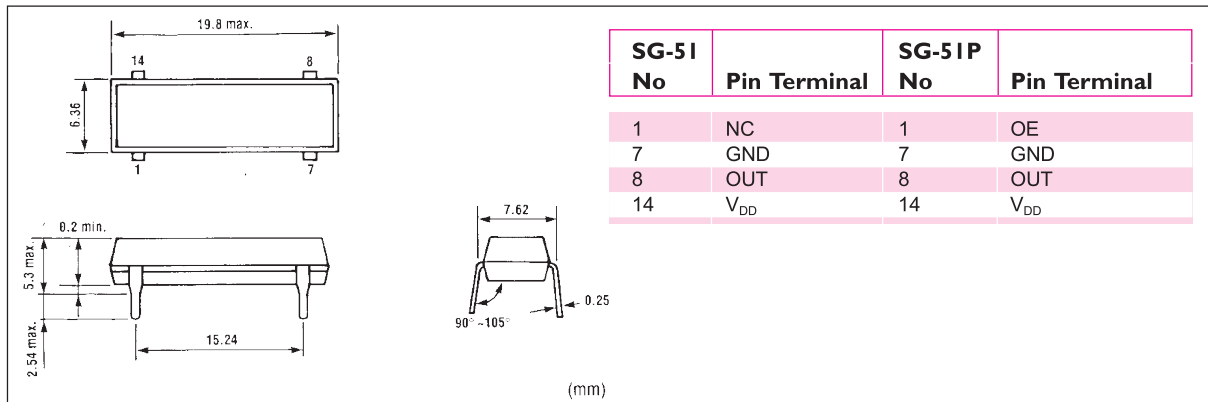


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Crystal Oscillators - Seiko Epson

HCMOS/TTL DUAL IN LINE PLASTIC FULL SIZE SG51/ HALF SIZE SG531

Dimensions SG51 Series



Frequency correspondence table

| Model | Frequency 1MHz | 26MHz | 40MHz | 67MHz | 125MHz |
|-------------------|----------------|-------|-------|-------|--------|
| SG51P, SG531P | ————— | | | | |
| SG51PTJ, SG531PTJ | | ————— | | | |
| SG51PH, SG531PH | | ————— | | | |
| SG531PCV | | | ————— | | |

Specifications SG-531PCV

| Item | Symbol | Specifications | Remarks |
|-------------------------------------|---------------------|---|--|
| Output frequency range | f_0 | 40.0001MHz to 80.0000MHz 40.0001MHz to 125.0000MHz | V _{DD} =2.7V to 5.5V V _{DD} =4.5V to 5.5V |
| Power source voltage | Max. supply voltage | V _{pp} -GND | -0.5V to +7.0V |
| | Operating voltage | V _{DD} | 2.7V to 5.5V |
| Temperature range | Storage temp. | T _{STG} | -55°C to +125°C |
| | Operating temp. | T _{OPR} | -10°C to +70°C |
| Soldering condition (lead part) | T _{SOL} | Under 260°C within 10sec | Don't heat package more than 150°C |
| Frequency stability | $\Delta f/f_0$ | C: ± 100 ppm | -10°C to +70°C. V _{DD} : 2.7V to 5.5V |
| Current consumption | I _{OP} | 50mA MAX. | No load condition |
| Duty | T _w /T | 35% to 60% | 1/2V _{DD} |
| Output voltage | V _{OH} | V _{DD} -0.5V | |
| | (I _{OH}) | -16mA | |
| | V _{OL} | 0.4V MAX. | |
| Output load condition(fan out) | (I _{OL}) | -16mA | |
| | CL | 25pF MAX. 15pF MAX. | V _{DD} =4.5V to 5.5V V _{DD} =2.7V to 4.5V |
| Output enable/disable input voltage | V _{IH} | 0.7 V _{DD} MIN. | |
| | V _{IL} | 0.2V _{DD} MAX. | |
| Output disable current | I _{OE} | 27mA MAX. | OE=GND |
| Output rise time | T _{TLH} | 4nsec. | 20% to 80% V _{DD} |
| Output fall time | T _{THL} | 4nsec. | 80% to 10% V _{DD} |
| Oscillation start up time | t _{OSC} | 10msec. MAX. | Time at 2.7V to Osec. |
| Aging | fa | ± 5 ppm/year MAX. | Ta = 25°C, first year |
| Shock resistance | S.R. | ± 20 ppm MAX. | Drop test of 3 times on a board from 75cm height or excitation test with 3000G x 0.3ms x 1/2 sine wave in 3 directions |

Notes

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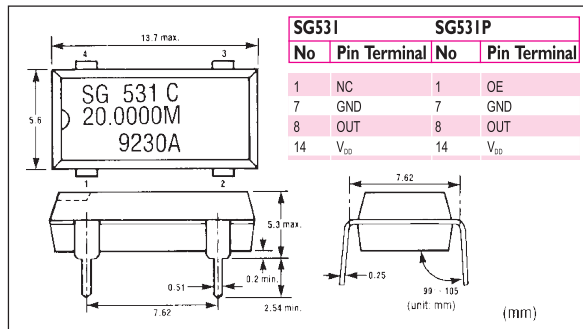


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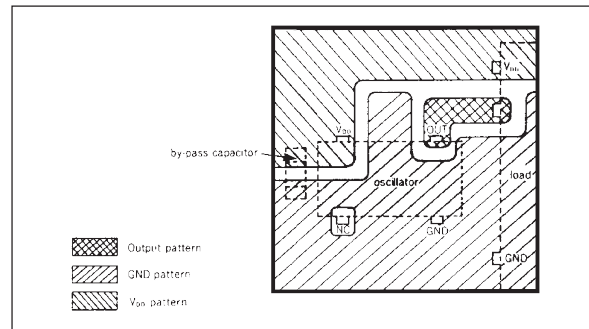
Crystal Oscillators - Seiko Epson

HCMOS/TTL DUAL IN LINE PLASTIC FULL SIZE SG51/ HALF SIZE SG531

Dimensions SG531



Typical Oscillator Application



Standard Frequencies SG-531 Series

| Frequency (MHz) | Description | Stock Number |
|-----------------|-------------|--------------|
| 1.8432 | SG531P | AX0184A |
| 3.6864 | SG531P | AX0368A |
| 4.00 | SG531P | AX0400A |
| 4.9152 | SG531P | AX0491A |
| 5.00 | SG531 | AI0500A |
| 5.00 | SG531P | AX0500A |
| 6.00 | SG531 | AI0600A |
| 6.144 | SG531P | AX0614A |
| 7.3728 | SG531P | AX0737A |
| 8.00 | SG531P | AX0800A |
| 9.8304 | SG531P | AX0983A |
| 10.00 | SG531P | AX1000A |
| 12.00 | SG531P | AX1200A |
| 14.31818 | SG531P | AX1431A |
| 14.7456 | SG531P | AX1474A |
| 16.00 | SG531P | AX1600A |
| 16.257 | SG531P | AX1625A |
| 20.00 | SG531P | AX2000A |
| 20.2752 | SG531P | AX2027A |
| 23.587 | SG531P | AX2358A |
| 24.00 | SG531P | AX2400A |
| 25.00 | SG531 | AI2500A |
| 25.00 | SG531P | AX2500A |
| 25.175 | SG531 | AI2517A |
| 28.322 | SG531T | AK2832A |
| 32.00 | SG531PH | CD3200A |
| 33.33 | SG531PH | CD3333A |
| 36.00 | SG531PH | CD3600A |
| 40.00 | SG531PH | CD4000A |
| 42.00 | SG531H | AJ4200A |
| 44.90 | SG531H | AJ4490A |
| 48.00 | SG531H | AJ4000A |
| 50.00 | SG531 | AJ5000A |
| 50.00 | SG531PH | CD5000A |
| 60.00 | SG531YH | BK6000A |
| 64.00 | SG531PH | CD6400A |
| 66.00 | SG531YH | BK6600A |
| 66.00 | SG531PH | CD6600A |
| 66.66 | SG531PH | CD6666A |



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