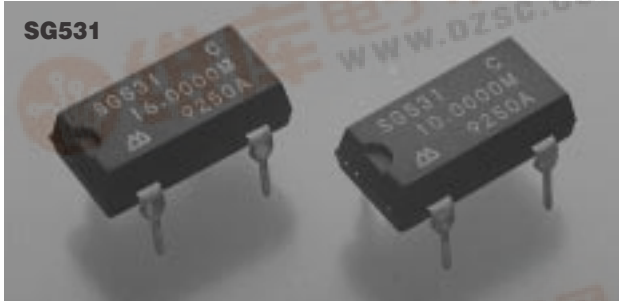


Crystal Oscillators - Seiko Epson

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_{FP} -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%	1.2V _{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_{TLH}	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_{THL}	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

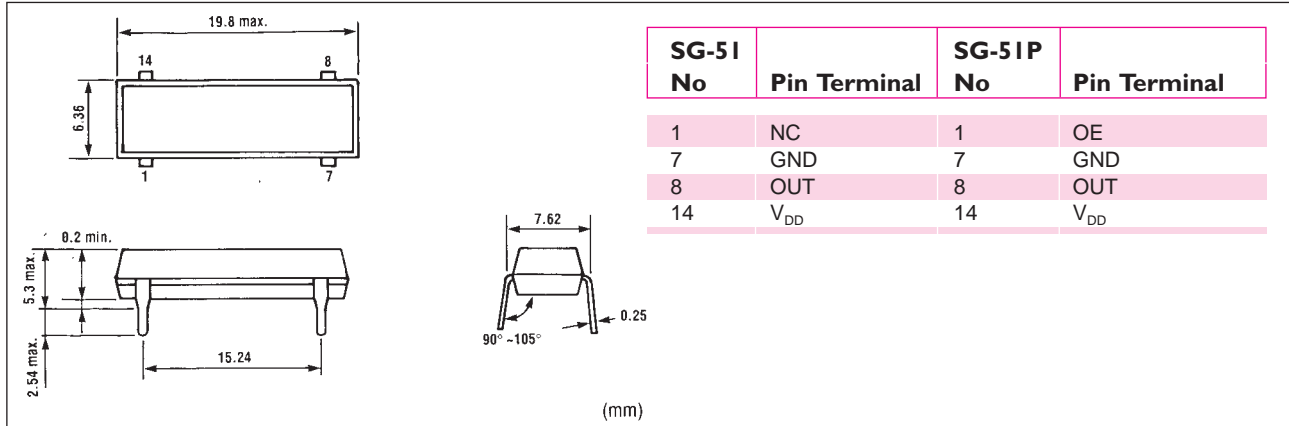
- Unless otherwise stated, characteristics (specifications) shown in the above table are based on the rated operating temperature and voltage condition.
- External by-pass capacitor is recommended.



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 Operating voltage	V _{pp} -GND V _{DD}	-0.5V to +7.0V 2.7V to 5.5V
Temperature range	Storage temp. Operating temp.	T _{STG} T _{OPR}	-55°C to +125°C -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: ±100ppm	-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} (I _{OH})	V _{DD} -0.5V -16mA	
	V _{OL} (I _{OL})	0.4V MAX. -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} V _{IL}	0.7 V _{DD} MIN. 0.2V _{DD} MAX.	
Output disable current	I _{OE}	27mA MAX.	OE=GND
Output rise time	T _{RLH}	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	f _a	±5ppm/year MAX.	T _a = 25°C, first year
Shock resistance	S.R.	±20ppm 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

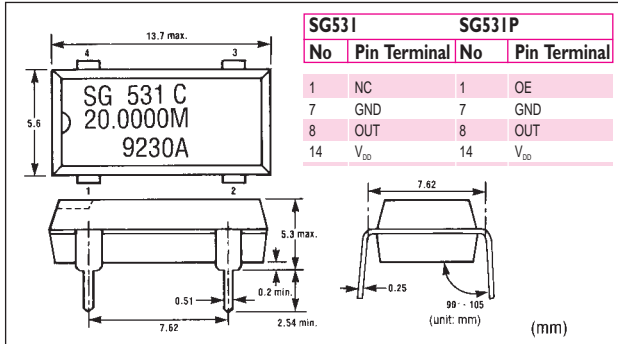
Notes

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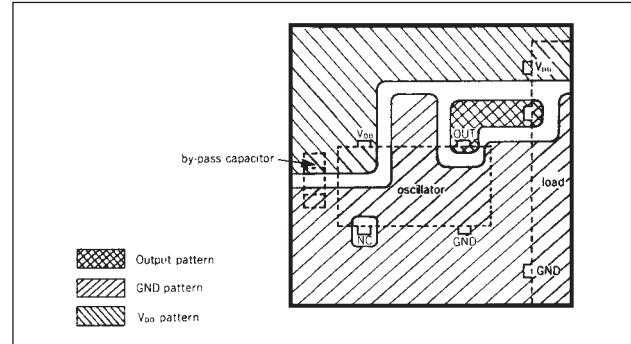
Crystal Oscillators - Seiko Epson

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

