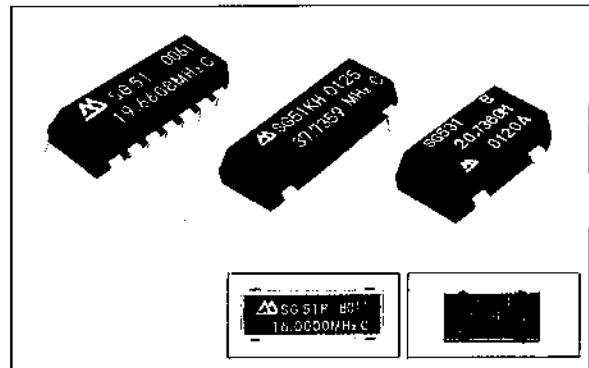


FULL SIZE DIP HIGH FREQUENCY CRYSTAL OSCILLATOR

SG-51 series

HALF SIZE DIP HIGH FREQUENCY CRYSTAL OSCILLATOR

SG-531 series

Actual size

Specifications (characteristics)

Item	Symbol	SG-51/51K/51P/51E, SG-531/531P	SG-51T/51KT/51PT, SG-531T/531PT	SG-51KT/51PT, SG-531T/531PT	Remarks
		Specifications			
Output frequency range	f_o	1.0250MHz to 26.0000MHz	26.0001MHz to 36.0000MHz	36.0001MHz to 50.3500MHz	
Power source voltage	Max. supply voltage	V_{DD-GND}	-0.3V to +7.0V	-0.3V to +7.0V	-0.3V to +7.0V
	Operating voltage	V_{OH}	5.0V ± 0.5V	5.0V ± 0.5V	5.0V ± 0.5V
Temperature range	Storage temp.	T_{STG}	-55°C to +125°C	-65°C to +100°C	-55°C to +100°C
	Operating temp.	T_{OPR}	-10°C to +70°C	-10°C to +70°C	-10°C to +70°C
Soldering condition (lead part)	T_{SOL}	Under 260°C within 10 sec.	Under 260°C within 10 sec.	Under 260°C within 10 sec.	Package less than 150°C
Frequency stability	$\Delta f/f_o$	B: ± 50ppm, C: ± 100ppm	B: ± 50ppm, C: ± 100ppm	B: ± 50ppm, C: ± 100ppm	-10°C to +70°C
Current consumption	I_{OP}	25mA MAX.	35mA MAX.	50mA MAX.	No load condition
Duty	T_w/T	40% to 60% * (45% to 55% **)	40% to 60% ** * (45% to 55% **)	40% to 60% ** *	* : 1.4V or 1/2 V_{DD} level ** : 1.4V level
Output voltage	V_{OH}	$V_{OH} - 0.4V$ MIN.	$V_{OH} - 0.4V$ MIN.	2.4V MIN.	$t_{OH} = -400\mu A$
	V_{OL}	0.4V MAX. *	0.4V MAX. *	0.4V MAX. **	* : $I_{OL} = 16mA$, ** : $I_{OL} = 8mA$
Output load condition (fan out)	TTL	N	10 TTL MAX.	10 TTL (30pF) MAX.	
	C-MOS	CL	50pF MAX.		
Output enable/standby input voltage	V_{IH}	2.0V MIN.	2.0V MIN.	2.0V MIN.	
	V_{IL}	0.8V MAX.	0.8V MAX.	0.8V MAX.	
Output disable current	I_{OE}	12mA MAX.	20mA MAX.	25mA MAX.	OE = GND
Standby current	I_{ST}	310 μA MAX.			ST = GND
Output rise time	t_{RLH}	8nsec. MAX.	10nsec. MAX.	6nsec. MAX.	Refer to output waveform chart (page 9)
Output fall time	t_{FL}	8nsec. MAX.	8nsec. MAX.	6nsec. MAX.	
Oscillation start time	t_{OSC}	4msec. MAX.	10msec. MAX.	10msec. MAX.	More than for 1mS until $V_{OH} = 0V - 4.5V$. Time at 4.5V to be 0sec.
Aging	f_a	± 5ppm/year MAX.	± 5ppm/year MAX.	± 5ppm/year MAX.	Ta = 25°C, $V_{DD} = 5V$, first year
Shock resistance	S. R.	± 20ppm MAX.	± 20ppm MAX.	± 20ppm MAX.	Drop test of 3 times on a hard board from 75cm height or excitation test with 3000G × 0.3mS × 1/2 sine wave in 3 directions.

Note: 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.

Frequency correspondence table

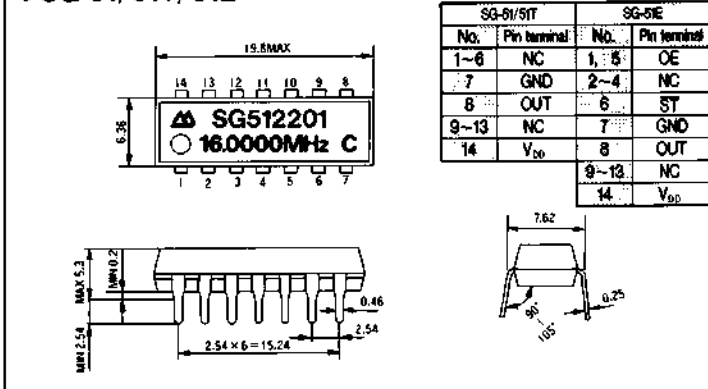
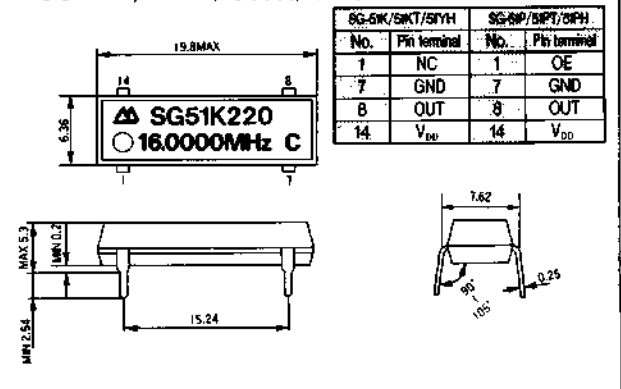
Model	Frequency
SG-51/51K/51E, SG-531/531P	1MHz
SG-51T/51KT/51ET, SG-531T/531PT	26MHz
SG-51PH/51YH, SG-531PH/531YH	60MHz
	66.67MHz

(SG-51T: Up to 36MHz)

External Dimensions

(Unit: mm)

(Unit: mm)

SG-51/51T/51E**SG-51K/51KT/51YH/51P/51PT/51PH**

Features

SG-51 series

- Pin compatible with full size metal can
- Packaged in plastic 14 pin DIP
- Auto insertable
- Provided with output enable and standby functions

SG-531 series

- Pin compatible with half size metal can
- Provided with output enable function

Common

- Cylindrical type AT cut quartz crystal built-in, thus assuring high reliability
- Possible with 386 CPU
- Use of C-MOS IC enables reduction of current consumption

Item	Symbol	SG-51PH/51YH, SG-531PH/531YH	
		Specifications	Remarks
Output frequency range	f_o	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 \pm 0.5V \times 2
Temperature range	Storage temperature	V_{SIG}	-55°C to +100°C
	Operating temperature	T_{OPR}	-10°C to +70°C
Soldering condition (lead part)	T_{SOL}	Under 260°C within 10sec	Package less than 150°C
Frequency stability	$\Delta f/f_o$	(B: \pm 50ppm)C \pm 100ppm	-10°C to +70°C. B type is possible up to 55MHz, please consult us.
Current consumption	Iop	35mA MAX.	No load condition Up to 45MHz : 21mA MAX.
Duty	TW/T	40% to 60%	1/2 V_{DD} level
Output voltage	V_{OH}	V_{DD} - 0.4V MIN.	$I_{OH} = -4mA$
	V_{OL}	0.4V MAX.	$I_{OL} = 4mA$
Output load condition (Fan out)	TTL	N	
	C-MOS	CL	50pF MAX.
Output enable/standby input voltage	V_{IH}	2.0V MIN.	
	V_{IL}	0.8V MAX.	
Output disable current	I_{OE}	20mA MAX.	OE=GND. Up to 45MHz : 15mA MAX.
Standby current	I_{ST}		
Output rise time	t_{RLH}	7nsec. MAX. \times 2	Over 45MHz : 5nS. MAX. Refer to output waveform chart (page 9)
Output fall time	t_{FHL}	7nsec. MAX. \times 2	
Oscillation start time	t_{OSC}	10msec. MAX.	More than for 1mS until $V_{DD} = 0V \rightarrow 4.5V$ Time at 4.5V to be 0sec.
Aging	fa	\pm 5ppm/year MAX.	$T_a = 25^\circ C$ $V_{DD} = 5V$, first year
Shock resistance	S.R.	\pm 200m MAX.	Drop test of 3 times on a hard board from 75cm height or excitation test with 3000G \times 0.3mS \times 1/2 sine wave in 3 directions in 3 directions

*1 It is possible depending on condition, reference data (page 22).

*2 AC characteristics of 386 CPU.

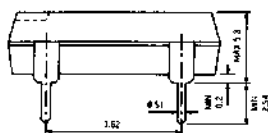
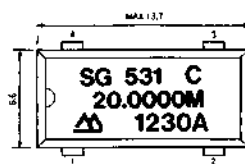
($V_{DD} = 5V \pm 0.25V$, Load : $CL \leq 50pF$, $T_a = -10$ to +70°C, Refer to output waveform chart of 386 CPU)

Item	Symbol	26.001MHz to 36.000MHz		40.000MHz		45.000MHz to 60.000MHz		50.001MHz to 66.667MHz		Unit	Remarks
		Min.	Max.	Max.	Min.	Min.	Max.	Min.	Max.		
CLK high time	t2a	9		8		7		6.25		ns	2V level
CLK high time	t2b	5		5		4		4.5		ns	Under 45MHz : $V_{DD} - 0.8V$ level Over 45MHz : 3.7V level
CLK low time	t3a	9		8		7		6.25		ns	2V level
CLK low time	t3b	7		6		5		4.5		ns	2v level
CLK fall time	t4		8		8		7		4	ns	Under 45MHz : $V_{DD} - 0.8V$ to 0.8V Over 45MHz : 3.7V to 0.8V
CLK rise time	t5		9		9		7		4	ns	Under 45MHz : V_{DD} 0.8V to $V_{DD} - 0.8V$ Over 45MHz : 0.8V to 3.7V

External Dimensions

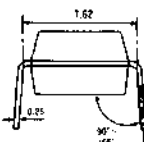
(Unit : mm)

SG-531 series



No.	Pin terminal
1	NC (OE)
2	GND
3	OUT
4	V_{DD}

() shows P type



Waveform Chart of 386 CPU

