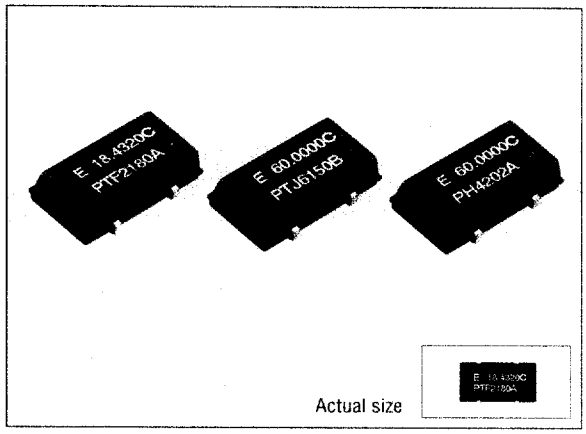
SMALL SOJ HIGH-FREQUENCY CRYSTAL OSCILLATOR

SG-636 series

- A small SMD that enables high-density mounting.
- A general-purpose device with builtin heat-resisting cylindrical AT-cut crystal and allowing almost the same temperature condition for soldering as SMD IC.
- Low current consumption.
- Provided with output enable function.
- 3.3V operation, stand-by function available.



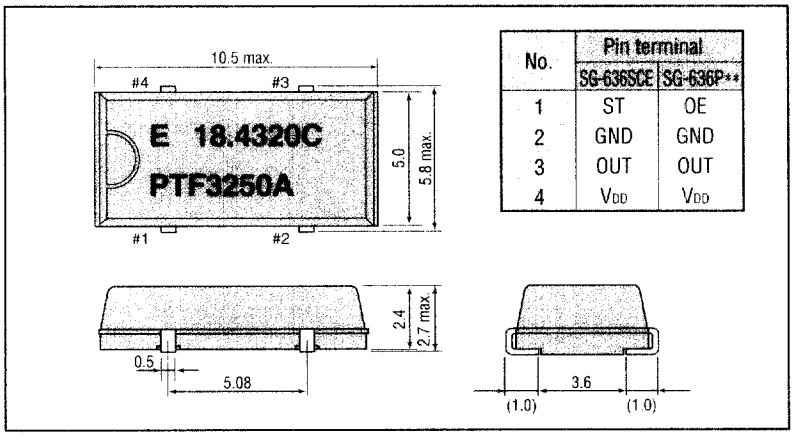
■ Specifications (characteristics)

Item		Symbol	SG-636PTF	SG-636PTJ	SG-636PH	SG-636SCE/PCE	Remarks
			Specifications				
Output frequency range		f_0	2.21675 MHz to 41.0000 MHz	41.0001 MHz to 70.0000 MHz		2.21675 MHz to 40.0000 MHz	
Power source voltage	Max. supply voltage	V_{DD}-GND	-0.5V to +7.0V	-0.3V to +7.0V	-0.5V to +7.0V		
	Operating voltage	V_{DD}	5.0V ±0.5V			3.3V ±0.3V	
Temperature range	Storage temperature	T_{STG}	-55°C to +100°C				Stored as bare product after unpacking
	Operating temperature	T_{OPR}	-10°C to +70°C				
Soldering condition		T_{SOL}	Twice at under 260°C within 10 sec. or under 230°C within 3 min.				
Frequency stability		$\Delta f/f_0$	C: ±100ppm				-10°C to +70°C
Current consumption		Iop	17mA max.	35mA max.		9mA max.	No load condition
Duty	C-MOS level	$t_{w/t}$	40% to 60%	—	40% to 60%	45% to 55%	C-MOS load: 1/2V_{DD} level
	TTL level		45% to 55%		—		TTL load: 1.4V level
Output voltage		V_{OH}	V_{DD} -0.4V min.	2.4V min.	V_{DD} -0.4V min.		
		(I_{OH})	-8mA	-400µA	-4mA		
		V_{OL}	0.4V max.				
		(I_{OL})	16mA	8mA	4mA		
Output load condition (fan out)	C-MOS	C_L	50pF max.	15pF	20pF max.(≤ 55 MHz) 15pF max.(> 55 MHz)	30pF max.	
	TTL	N	10TTL max.	5TTL max.	5 LSTTL max.	—	
Output enable/disable input voltage		V_{IH}	2.0V min.	3.5V min.	2.0V min.	0.8V_{DD} min.	I_{IH}=1µA max.(OE=V_{DD})PTF,PTJ,PH
		V_{IL}	0.8V max.	1.5 max.	0.8V max.	0.2V_{DD} max.	I_{IL}=-100µA min. (OE=GND) PTF,PH -500µA min. (OE=GND) PTJ
Output disable current		I_{OE}	10mA max.	28mA max.	20mA max.	5mA max.	OE=GND, ST=GND 2µA max.(SCE)
Output rise time	C-MOS level	t_{TLH}	7ns max.	—	5ns max.		C-MOS load: 20%→80%V_{DD}
	TTL level		5ns max.		—		TTL load: 0.4V→2.4V
Output fall time	C-MOS level	t_{THL}	7ns max.	—	5ns max.		C-MOS load: 80%→20%V_{DD}
	TTL level		5ns max.		—		TTL load: 2.4V→0.4V
Oscillation start up time		tosc	4ms max.	10ms max.		4ms max.	Time at 4.5V to be 0 sec.
Aging		fa	±5ppm/year max.				Ta=25°C,V_{DD}=5V,first year
Shock resistance		S.R.	±20ppm max.				Three drops on a hard board from 75 cm or excitation test with 3000G x 0.3ms x 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 required.
• There are some cases that a parts of the case of quartz resonator expose on the surface of the molding material.

■ External dimensions

(Unit: mm)



No.	Pin terminal	
	SG-636SCE	SG-636P**
1	ST	OE
2	GND	GND
3	OUT	OUT
4	V_{DD}	V_{DD}

■ Recommended soldering pattern

(Unit: mm)