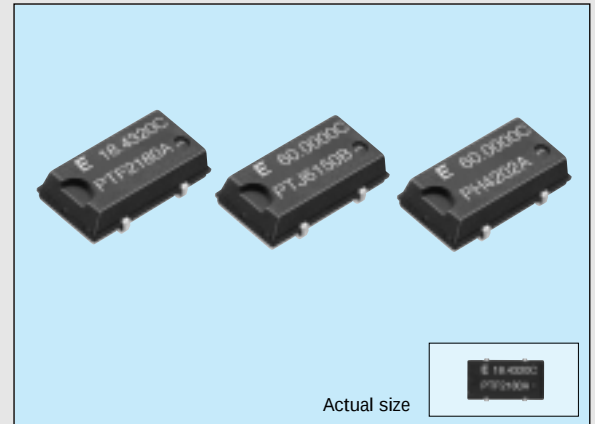


SMALL SMD HIGH-FREQUENCY CRYSTAL OSCILLATOR

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.



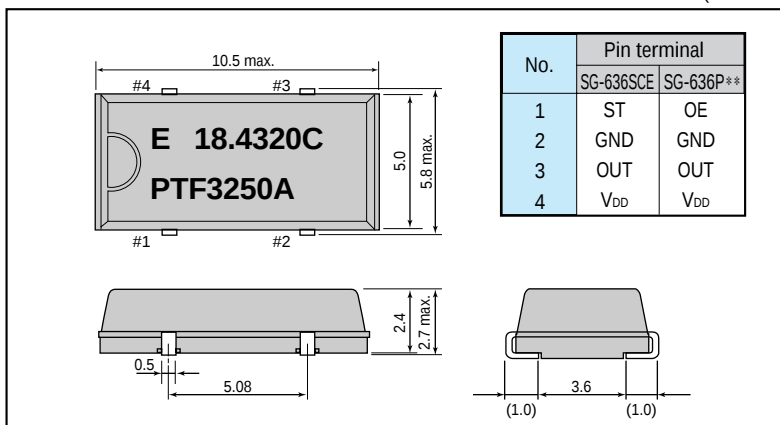
Specifications (characteristics)

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 $\pm$ 0.5V		3.3V $\pm$ 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: $\pm$ 100ppm			-10°C to +70°C
Current consumption		I_{OP}	17mA max.	35mA max.		9mA max.	No load condition
Duty	C-MOS level	t_w/t	45% to 55%	—	40% to 60%	45% to 55%	C-MOS load: 1/2 V_{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	-400 μ A	-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. ($\leq$ 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.	0.8 V_{DD} min.	I_{IH} =1 μ A max. (OE= V_{DD}) PTF,PTJ,PH I_{IL} =-100 μ A min. (OE=GND) PTF,PH -500 μ A min. (OE=GND) PTJ
		V_{IL}	0.8V max.	1.5 max.	0.8V max.	0.2 V_{DD} max.	
Output disable current		I_{OE}	10mA max.	28mA max.	20mA max.	5mA max.	OE=GND, ST=GND 2 μ A max. (SCE)
Output rise time	C-MOS level	t_{TLH}	7ns max.	—	5ns max.	—	C-MOS load: 20% $\rightarrow$ 80% V_{DD}
	TTL level		5ns max.	—	—	—	TTL load: 0.4V $\rightarrow$ 2.4V
Output fall time	C-MOS level	t_{THL}	7ns max.	—	5ns max.	—	C-MOS load: 80% $\rightarrow$ 20% V_{DD}
	TTL level		5ns max.	—	—	—	TTL load: 2.4V $\rightarrow$ 0.4V
Oscillation start up time		t_{OSC}	4ms max.	10ms max.	4ms max.		Time at 4.5V to be 0 sec.
Aging		f_a		$\pm$ 5ppm/year max.			Ta=25°C, V_{DD} =5V, first year
Shock resistance		S.R.		$\pm$ 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.

External dimensions

(Unit: mm)



Recommended soldering pattern

(Unit: mm)

