

SMALL HIGH-FREQUENCY CRYSTAL OSCILLATOR

SG - 350 / 550 series

Product number (please contact us)

SG-350 : Q33350xx0xxxx00

SG-550 : Q33550xx0xxxx00

- Frequency range : 1 MHz to 48 MHz
- Operating voltage : 1.8 V Typ. / 2.5 V Typ. / 3.3 V Typ.
- Current consumption : SEF1.8 V No load condition 48 MHz 1.5 mA Typ.
- Function : Standby(\overline{ST})
- Thickness : 1.2 mm Max.
- Lead(Pb)-free : Complies with EU RoHS directive (Lead free completely)



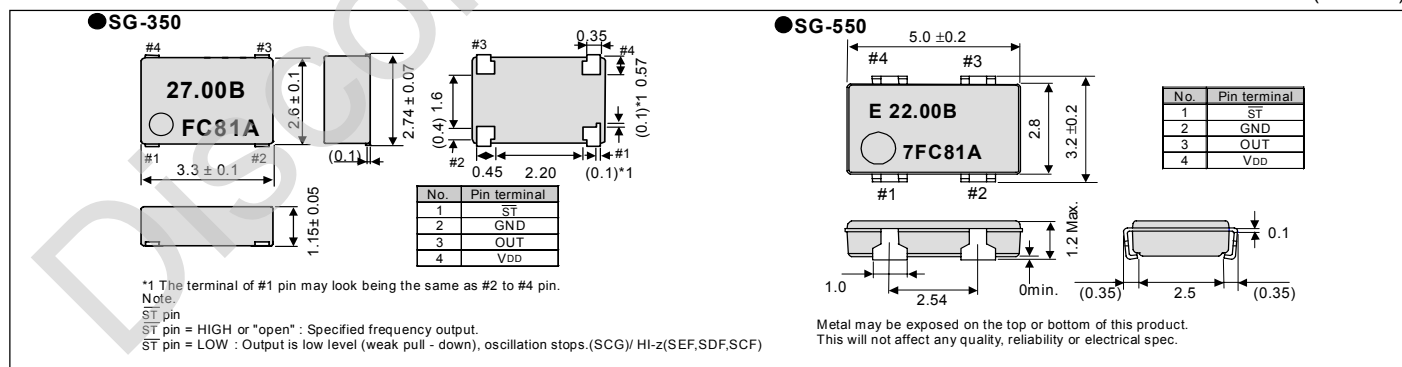
Actual size

Specifications (characteristics)

Item	Symbol	Specifications				Remarks
		SEF	SDF	SCF	SCG	
Output frequency range	f_0	2 MHz to 48 MHz			1 MHz to 48 MHz	
Power source voltage	Operating voltage	1.8 V Typ. 1.6 V to 2.2 V	2.5 V Typ. 2.2 V to 3.0 V	3.3 V Typ. 2.7 V to 3.6 V		
	Storage temperature	-40 °C to +125 °C				Stored as bare product after unpacking
Temperature range	Operating temperature	-40 °C to +85 °C				
	Frequency stability	B: $\pm 50 \times 10^{-6}$, C: $\pm 100 \times 10^{-6}$ M: $\pm 100 \times 10^{-6}$ L: $\pm 50 \times 10^{-6}$				-20 °C to +70 °C -40 °C to +85 °C -20 °C to +70 °C -40 °C to +85 °C
Current consumption	I_{OP}	1.5 mA Max.	1.5 mA Max.	1.5 mA Max.	—	No load condition, 2 MHz $\leq f_0 \leq$ 4 MHz
		1.5 mA Max.	1.5 mA Max.	2.0 mA Max.	—	No load condition, 4 MHz $\leq f_0 \leq$ 8 MHz
		1.5 mA Max.	2.0 mA Max.	2.5 mA Max.	—	No load condition, 8 MHz $\leq f_0 \leq$ 16 MHz
		2.0 mA Max.	2.0 mA Max.	2.5 mA Max.	—	No load condition, 16 MHz $\leq f_0 \leq$ 25 MHz
		2.0 mA Max.	2.5 mA Max.	3.5 mA Max.	—	No load condition, 25 MHz $\leq f_0 \leq$ 33 MHz
		3.0 mA Max.	3.5 mA Max.	4.5 mA Max.	—	No load condition, 33 MHz $\leq f_0 \leq$ 48 MHz
Standby current	I_{ST}	0.7 μ A Max.	1.5 μ A Max.	2.0 μ A Max.	12 mA Max.	No load condition, Max.frequency output. ST = GND
Duty	tw/t	45 % to 55 %	45 % to 55 %		45 % to 55 %	1 MHz $\leq f_0 \leq$ 16 MHz 16 MHz $\leq f_0 \leq$ 33 MHz 33 MHz $\leq f_0 \leq$ 40 MHz 40 MHz $\leq f_0 \leq$ 48 MHz
		40 % to 60 %	40 % to 60 %			50 % V_{DD} CL \leq 15 pF
High output voltage	V_{OH}	90 % V_{DD} Min.			V_{DD} -0.4 V Min.	I_{OH} =-3 mA(SEF, SDF, SCF), -8 mA(SCG)
Low output voltage	V_{OL}	10 % V_{DD} Max.			0.4 V Max.	I_{OL} = 3 mA(SEF, SDF, SCF), 8 mA(SCG)
Output load condition	C_L	15 pF Max.				
Output enable / disable input voltage	V_{IH}	80 % V_{DD} Min.			70 % V_{DD} Min.	\overline{ST} terminal
	V_{IL}	20 % V_{DD} Max.				
Output rise and fall time	t_R / t_F	4 ns Max.				20 % V_{DD} level to 80 % V_{DD} level. C_L =15 pF
Oscillation start up time	t_{osc}	SG-350:2 ms Max. / SG-550:10 ms Max.			12 ms Max.	t=0 at 90% V_{DD}
Aging	fa	$\pm 5 \times 10^{-6}$ / year Max.			$\pm 10 \times 10^{-6}$ Max. 10 years	T_a =+25 °C, First year, V_{DD} =1.8V,2.5V,3.3V

External dimensions

(Unit:mm)



Recommended soldering pattern

(Unit:mm)

