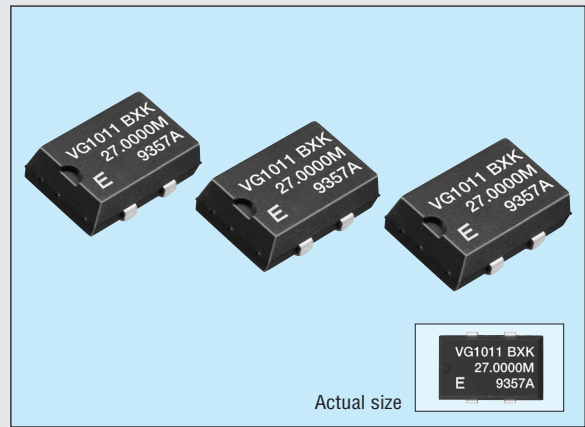


## VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR

## VG-1011JA series

- High accuracy and high reliability due to trimmerless design.
- Built-in heat resistive AT-cut crystal provides heat resistance equivalent to that of general-purpose ICs.
- Use of C-MOS IC assures low current consumption.
- Excellent shock resistance and environmental capability.
- Supply voltage: 5 V



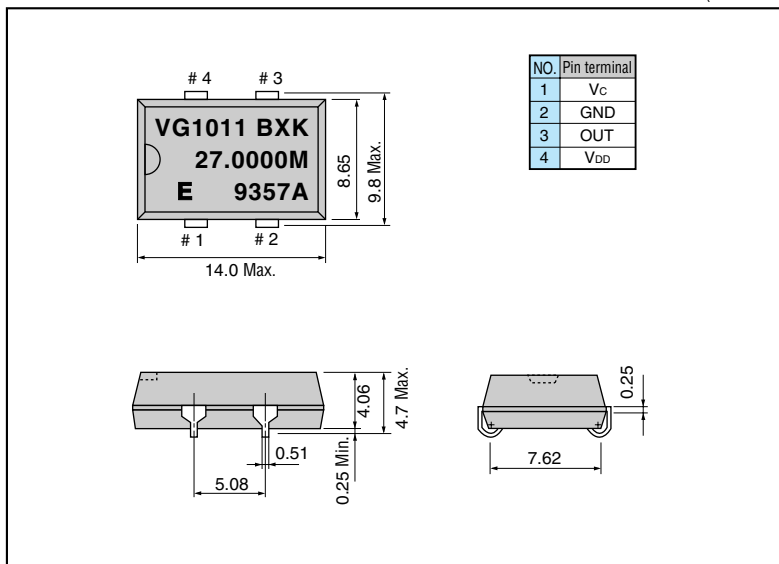
## ■ Specifications (characteristics)

Item	Symbol	Specifications	Remarks
Output frequency range	$f_0$	1.5000 MHz to 28.63636 MHz	
Power source voltage	Max. supply voltage	$V_{DD-GND}$	-0.5 V to +7.0 V
	Operating voltage	$V_{DD}$	5.0 V $\pm$ 0.5 V
Temperature range	Storage temperature	$T_{STG}$	-55 °C to +125 °C
	Operating temperature	$T_{OPR}$	As per below table
Soldering condition	$T_{SOL}$	Twice at under +260 °C within 10 s	
Frequency stability	$\Delta f/f_0$	As per below table	
Current consumption	$I_{OP}$	10 mA Max.	No load condition
Pull range	$\Delta f_c$	As per below table	$V_c=2.5\pm 2.0$ V
Input resistance	$Z_{IN}$	10 M $\Omega$ Min.	DC Level
Frequency change polarity		Positive polarity	$V_c=0.5$ to 4.5 V
Duty	$t_w/t$	40 % to 60 %	1.4 V or 1/2V <sub>DD</sub> level
Output voltage	$V_{OH}$	$V_{DD}-0.4$ V Min.	$I_{OH}=-0.8$ mA
	$V_{OL}$	0.4 V Max.	$I_{OL}=1.6$ mA
Output load condition (fan out)	N/C <sub>L</sub>	2 TTL or 15 pF Max.	TTL load/C-MOS load
Output rise time	$t_{TLH}$	8 ns Max.	C-MOS load: 20 % $\rightarrow$ 80 % V <sub>DD</sub>
		5 ns Max.	TTL load: 0.4 V $\rightarrow$ 2.4 V
Output fall time	$t_{THL}$	8 ns Max.	C-MOS load: 80 % $\rightarrow$ 20 % V <sub>DD</sub>
		5 ns Max.	TTL load: 2.4 V $\rightarrow$ 0.4 V
Oscillation start up time	$t_{OSC}$	4 ms Max.	Time at 4.5 V to be 0 s
Aging	$f_a$	$\pm 5 \times 10^{-6}$ Max.	$T_a=+25$ °C, $V_{DD}=5$ V, first year
Shock resistance	S.R.	$\pm 5 \times 10^{-6}$ Max.	Three drops on a hard board from 750 mm or excitation test with 29400 m/s <sup>2</sup> x 0.3 ms x 1/2sine wave in 3 directions

Note: • Please contact us for inquiries about operating temperature, frequency stability, pull range.

## ■ External dimensions

(Unit: mm)



## ■ Stability / Temperature range

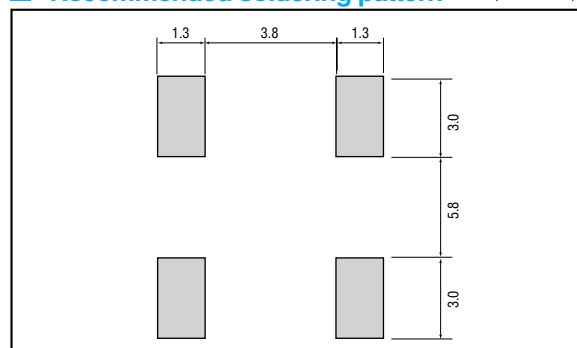
## ■ Pull range

Stability	No.	Temperature range			No.	Pull range
		-20 °C to +70 °C	-30 °C to +75 °C	-40 °C to +85 °C		
$\pm 15 \times 10^{-6}$	S	-	B	-	B	$\pm 20 \times 10^{-6}$ Min.
$\pm 20 \times 10^{-6}$	A	G, K, N	-	-	G	$\pm 50 \times 10^{-6}$ Min.
$\pm 25 \times 10^{-6}$	B	-	-	G, K, N	K	$\pm 75 \times 10^{-6}$ Min.
					N	$\pm 100 \times 10^{-6}$ Min.

Please consult us for AVN type device.

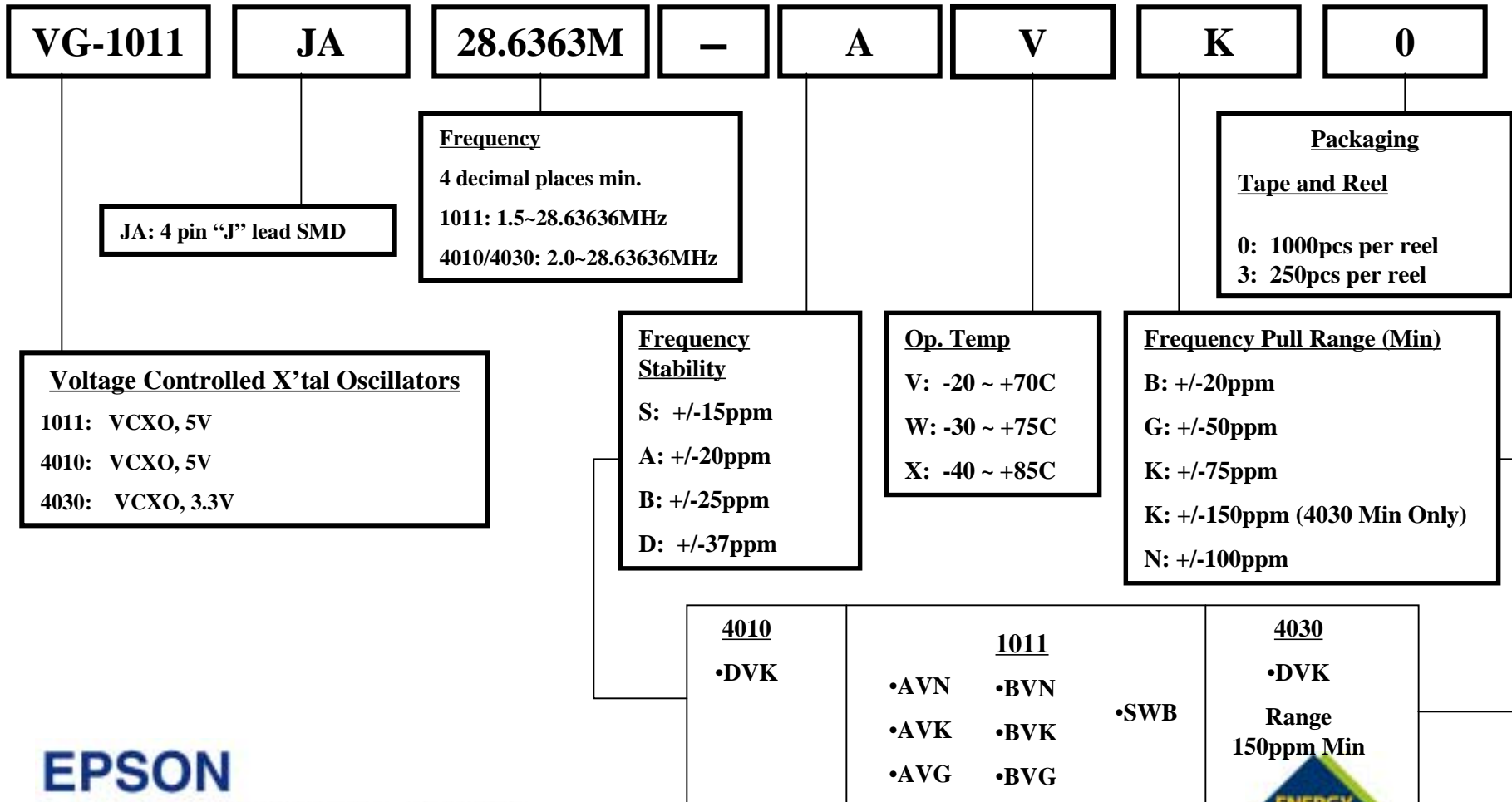
## ■ Recommended soldering pattern

(Unit: mm)



# Part Numbering System

## Voltage Controlled Crystal Oscillators (VCXO)



**EPSON**

EPSON ELECTRONICS AMERICA, INC.

