

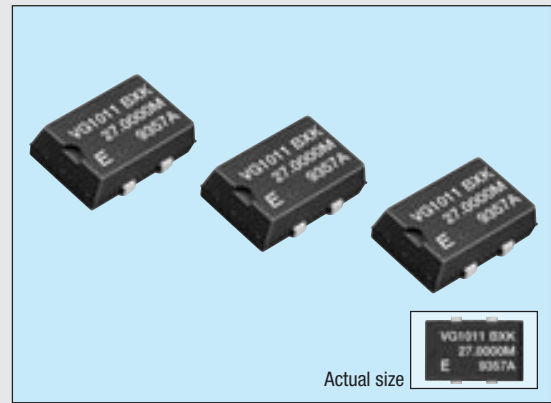
## VOLTAGE-CONTROLLED CRYSTAL OSCILLATOR

## VG-1011JA

Product number (please refer to page 4)

Q3602JA0xxxx00

- High accuracy and high reliability due to trimmerless design.
- Use of CMOS IC assures low current consumption.
- Excellent environmental capability.
- Supply voltage: 5 V
- Available for lead (Pb)-free soldering.
- Available for lead (Pb)-free terminal.



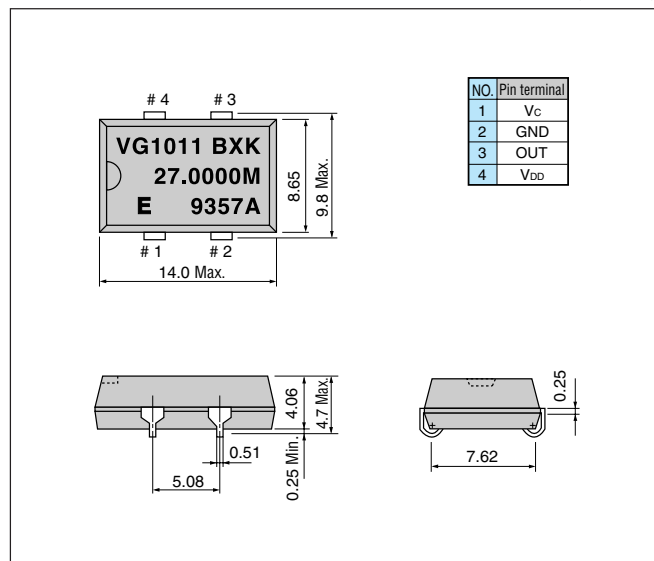
## ■ Specifications (characteristics)

Item	Symbol	Specifications	Remarks	
Output frequency range	$f_0$	1.5000 MHz to 28.63636 MHz *		
Power source voltage	Max. supply voltage	V <sub>DD</sub> -GND	-0.5 V to +7.0 V	
	Operating voltage	V <sub>DD</sub>	5.0 V ±0.5 V	
Temperature range	Storage temperature	T <sub>STG</sub>	-55 °C to +125 °C	Stored as bare product after unpacking
	Operating temperature	T <sub>OPR</sub>	As per below table *	
Frequency stability	$\Delta f/f_0$	As per below table *		
Current consumption	I <sub>OP</sub>	10 mA Max.	No load condition	
Pull range	$\Delta f_c$	As per below table *	V <sub>C</sub> = 2.5 ±2.0 V	
Input resistance	Z <sub>IN</sub>	10 M $\Omega$ Min.	DC Level	
Frequency change polarity		Positive polarity	V <sub>C</sub> = 0.5 to 4.5 V	
Duty	t <sub>w</sub> / t	40 % to 60 %	1.4 V or 50 % V <sub>DD</sub> level	
Output voltage	V <sub>OH</sub>	V <sub>DD</sub> -0.4 V Min.	I <sub>OH</sub> = -0.8 mA	
	V <sub>OL</sub>	0.4 V Max.	I <sub>OL</sub> = 1.6 mA	
Output load condition (fan out)	C <sub>L</sub>	2 TTL or 15 pF Max.	TTL load / CMOS load	
Output rise time	t <sub>r</sub>	8 ns Max.	CMOS load: 20 % → 80 % V <sub>DD</sub>	
		5 ns Max.	TTL load: 0.4 V → 2.4 V	
Output fall time	t <sub>f</sub>	8 ns Max.	CMOS load: 80 % → 20 % V <sub>DD</sub>	
		5 ns Max.	TTL load: 2.4 V → 0.4 V	
Oscillation start up time	t <sub>OSC</sub>	4 ms Max.	Time at 4.5 V to be 0 s	
Aging	f <sub>a</sub>	±5 x 10 <sup>-6</sup> Max.	T <sub>a</sub> = +25 °C, V <sub>DD</sub> = 5 V, first year	
Shock resistance	S.R.	±5 x 10 <sup>-6</sup> 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	Temperature range			Pull range
	-20 °C to +70 °C	-30 °C to +75 °C	-40 °C to +85 °C	
±15 x 10 <sup>-6</sup>	V	W	X	B ±20 x 10 <sup>-6</sup> Min.
±20 x 10 <sup>-6</sup>	S	B	-	G ±50 x 10 <sup>-6</sup> Min.
±25 x 10 <sup>-6</sup>	A	G, K, N	-	K ±75 x 10 <sup>-6</sup> Min.
	B	-	G, K, N	N ±100 x 10 <sup>-6</sup> Min.

\*Please contact us for inquiries about the available frequency.

## ■ Recommended soldering pattern

(Unit: mm)

