

### Features

Frequency range : 1MHz to 200MHz  
 SMD seam sealing ceramic package  
 Supply voltage : 1.8V ~ 3.3V  
 CMOS output  
 Tri-state function available  
 Dimensions L 2.0 x W 1.6 x H 0.76 mm  
 AEC-Q100 compliant (option)  
 RoHS compliant & Pb free

### Applications

Networking, Server, Storage  
 Wireless communications  
 Fibre channel, Ethernet, SATA, SAS,  
 PCI-E, USB, WLAN, xDSL, xPON  
 PC mainboard, Notebook, HDD, SSD,  
 Graphics card, Computer peripherals  
 Audio, Video, Gaming, Printer, DSC,  
 IP CAM, Consumer products

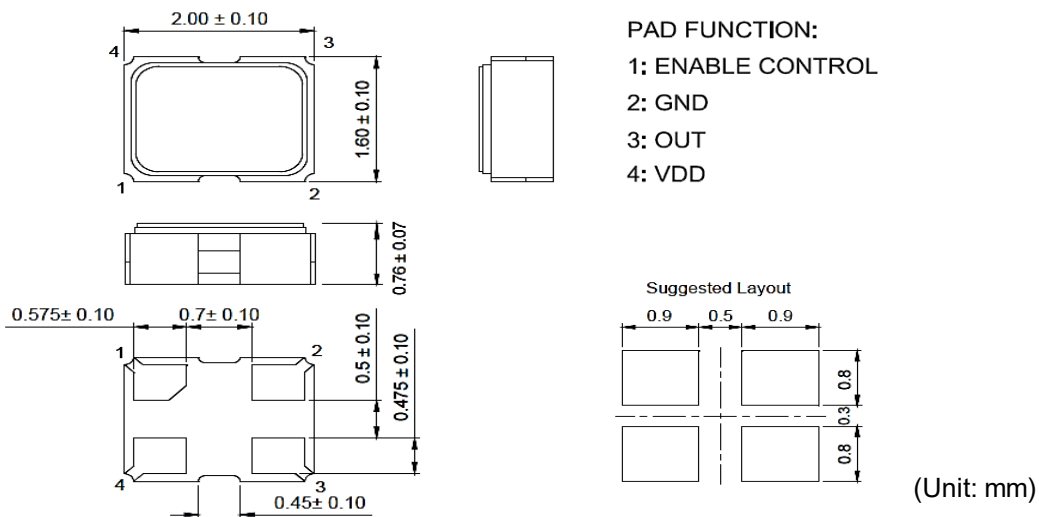
### Electrical Characteristics

Item	8NJ	Conditions
Frequency Range (F <sub>0</sub> )	1MHz ~ 125MHz	V <sub>DD</sub> =1.8V
	1MHz ~ 200MHz	V <sub>DD</sub> =2.5V, 3.3V
Frequency Stability (F <sub>stab</sub> )	±50 ppm	Note [2]
Operating Temperature Range (T <sub>OTR</sub> )	-40°C ~ +85°C	
	-40°C ~ +105°C	
Supply Voltage (V <sub>DD</sub> )	Typ. 1.8V (1.65V ~ 1.95V) Typ. 2.5V (2.25V ~ 2.75V) Typ. 3.3V (2.97V ~ 3.63V)	
Current Consumption (I <sub>DD</sub> )	22 mA Max.	No load, F <sub>0</sub> =110MHz, V <sub>DD</sub> =2.5V~3.3V
OE Mode Disable Current (I <sub>od</sub> )	18 mA Max.	OE=GND, output is Pulled Down
PDB Mode Standby Current (I <sub>std</sub> )	400 µA Typ.	OE=GND, output is Pulled Down
Output Type	CMOS	
Output Load (C <sub>L</sub> )	15 pF	
Duty Cycle	45% ~ 55%	
Rise & Fall Time (T <sub>r</sub> / T <sub>f</sub> )	1.5 ns Typ.	C <sub>L</sub> =15pF, 10%~90% V <sub>DD</sub> high drive (V <sub>DD</sub> =2.5V, 3.3V)
Output Voltage High (V <sub>OH</sub> )	V <sub>DD</sub> - 0.4 Min.	I <sub>OH</sub> =-4mA, I <sub>OL</sub> =4mA, Standard Drive
Output Voltage Low (V <sub>OL</sub> )	0.4 Max.	
Input Voltage High (V <sub>IH</sub> )	70% V <sub>DD</sub> Min.	Pin1, OE
Input Voltage Low (V <sub>IL</sub> )	30% V <sub>DD</sub> Max.	
Start-up Time (T <sub>start</sub> )	5ms Typ. / 7ms Max.	Note [3]
OE Enable/Disable Time (T <sub>oe</sub> )	10 nS Max.	Note [4]
Resume Time (T <sub>resume</sub> )	7 mS Max.	In PDB mode, Ta=25°C, C <sub>L</sub> =15pF
PK-PK Period Jitter (T <sub>jitt</sub> )	200pS Typ. / 300pS Max.	F <sub>0</sub> =125MHz, V <sub>DD</sub> =2.5V or 3.3V
	220pS Typ. / 300pS Max.	F <sub>0</sub> =125MHz, V <sub>DD</sub> =1.8V
Phase Jitter, RMS (T <sub>phj</sub> )	0.7pS Typ. / 1.0pS Max.	F <sub>0</sub> =125MHz, V <sub>DD</sub> =3.3V, integrated 12kHz~20MHz
First Year aging (F <sub>aging</sub> )	±1.5 ppm Max.	at 25°C±3°C
10 Years Aging	±5 ppm Max.	
Storage Temperature Range (T <sub>STR</sub> )	-55°C ~ +125°C	

### Notes:

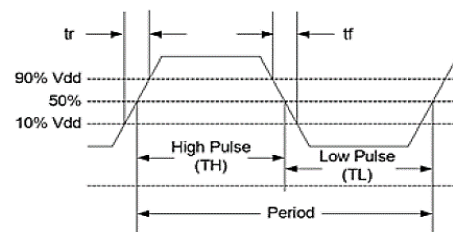
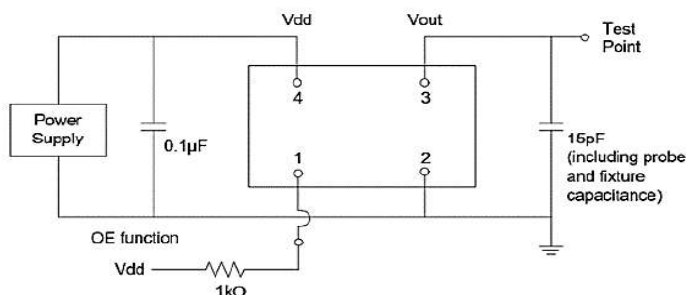
- [1] All electrical specifications in the above table are specified with 15pF output load and for all  $V_{DD}$  unless otherwise stated.
- [2] Inclusive of frequency tolerance at 25°C, 1st year aging at 25°C, and variations over operating temperature, supply voltage, and load.
- [3] Measure from the time  $V_{DD}$  reaches its rated minimum value.
- [4] OE function;  $T_a = 25^\circ\text{C}$ ,  $C_L = 15\text{pF}$ . Add one clock period to this measurement for a usable clock output.

### Dimensions & Pin Configuration



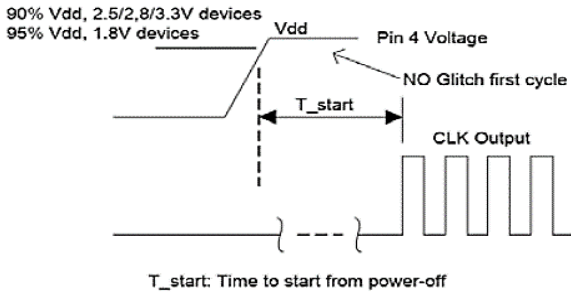
Pin	Symbol	Functionality	
1	OE	Output Enable	H or Open, Specified frequency output. L: output is high impedance. Only output driver is disabled.
		PDB mode (Option)	H or Open, Specified frequency output. L: output is low. Device goes to sleep mode. Supply current reduces to $I_{std}$ .
2	GND	Ground	Electrical ground
3	OUT	Output	Oscillator output
4	VDD	Power	Power supply voltage

### Test Circuit and Waveform

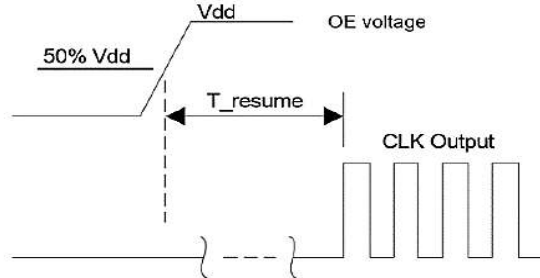


### Test Diagram

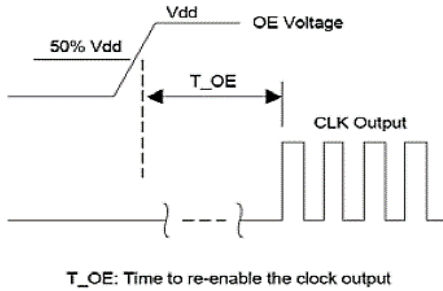
Startup Timing (OE mode)



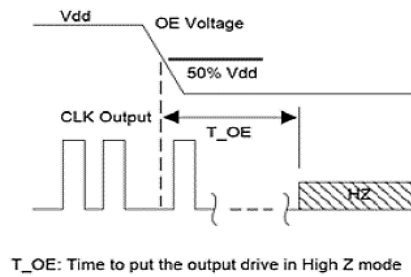
Standby Resume Timing (PDB mode)



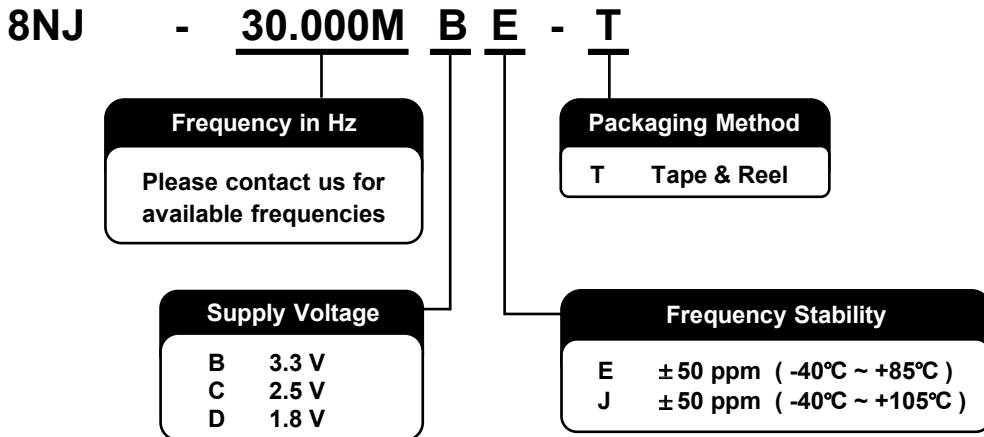
OE Enable Timing



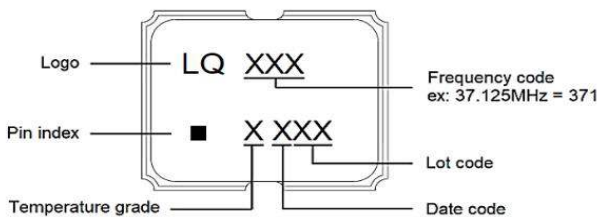
OE Disable Timing



### Ordering Information

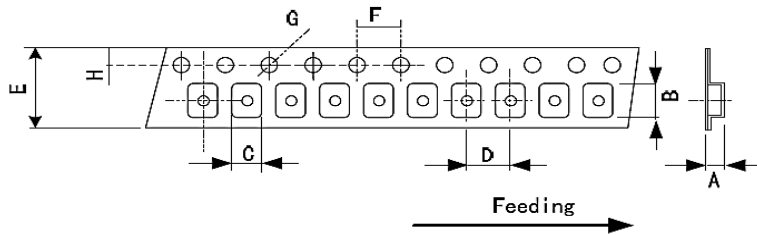


### Making



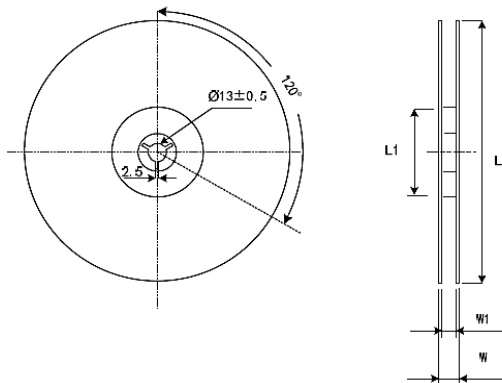
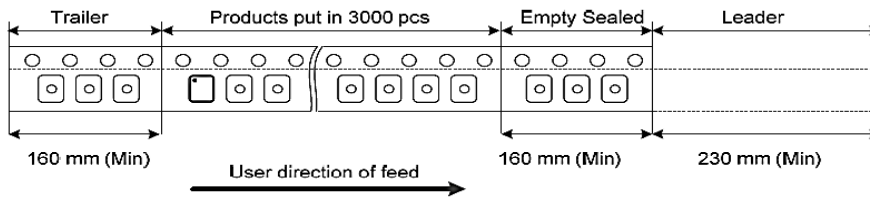
Temperature grade	Temperature range
I	-40°C ~ +85°C
E	-40°C ~ +105°C

### Packing



DIMENSIONS	A	B	C	D	E	F	G	H	
	0.90	2.30	1.90	4.00	8.00	4.00	1.55	1.75	(UNIT:mm)
	±0.10	±0.10	±0.10	±0.10	±0.20	±0.10	±0.05	±0.10	

REMARK :



DIMENSIONS	L	L1	W	W1	
	178	60.2	11.5	8	Standard Reel Quantity is 3,000 pcs per reel
	±1.00	±0.50	±0.2	+1/-0	(UNIT:mm)

### Reflow Profile

Solder melting point : 220°C ± 10°C, 60 sec. Min.

Peak temperature : 260°C ± 10°C, 10 sec. Min.

