

# PB Type Crystal Oscillator

## Programmable 5.0 x 3.2 mm

### Frequency 1MHz to 200MHz

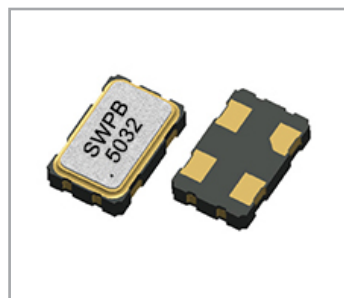
STARWAVE

#### FEATURE

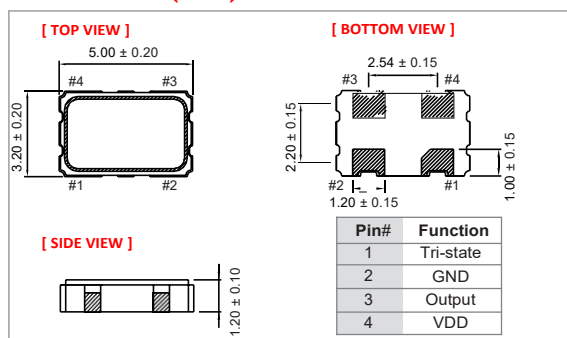
- Typical 5.0 x 3.2 x 1.2 mm ceramic SMD package
- Operation supply voltage: 1.8V, 2.5V and 3.3V
- FASTXO series, Fast delivery at any frequency
- Tri-State Enable/Disable
- Frequency Stability  $\pm 25$ ppm over  $-40^{\circ}\text{C}$  to  $105^{\circ}\text{C}$
- Pb-free/RoHS compliant

#### TYPICAL APPLICATION

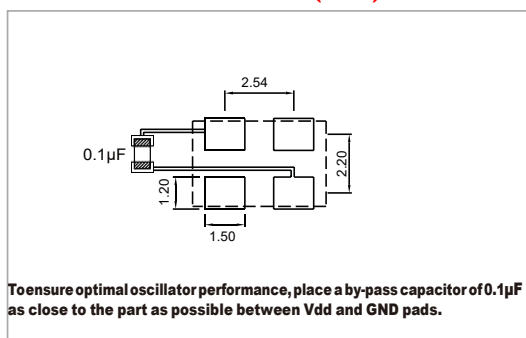
- Mobile Phone
- WLAN, Wireless, Fiber/10G-bit Ethernet
- Notebook, PDA, DSC



#### DIMENSION (mm)



#### SOLDER PAD LAYOUT (mm)



#### ELECTRICAL SPECIFICATION

Parameter	3.3V		2.5V		1.8V		Unit
	Min.	Max.	Min.	Max.	Min.	Max.	
Supply Voltage Variation	$V_{DD}-5\%$	$V_{DD}+5\%$	$V_{DD}-5\%$	$V_{DD}+5\%$	$V_{DD}-5\%$	$V_{DD}+5\%$	V
Frequency Range	1	200	1	200	1	125	MHz
Supply Current (@15pf Loading)	-	35	-	30	-	20	mA
Output Level	Output High	$90\%V_{DD}$	-	$90\%V_{DD}$	-	$90\%V_{DD}$	V
	Output Low	-	$10\%V_{DD}$	-	$10\%V_{DD}$	-	$10\%V_{DD}$
Transition Time	Rise Time / Fall Time		-	2	-	3	nSec
Duty Cycle	45	55	45	55	45	55	%
Startup Time	-	8	-	8	-	8	mSec
Tri-State	Output Enable	$0.7 \times V_{DD}$	-	$0.7 \times V_{DD}$	-	$0.7 \times V_{DD}$	V
	Output Disable	-	$0.3 \times V_{DD}$	-	$0.3 \times V_{DD}$	-	$0.3 \times V_{DD}$
Stand by Current (@PD Mode)	-	400	-	400	-	400	uA
Stand by Current (@OE Mode)	-	20	-	20	-	20	mA
Output Loading	15		15		15		pf
RMS Phase Jitter (12KHz to 20MHz)	-	2	-	2	-	2	pSec
Aging (@ 25°C, First Year)	-	$\pm 3$	-	$\pm 3$	-	$\pm 3$	ppm
Storage Temp. Range	-50	+125	-50	+125	-50	+125	$^{\circ}\text{C}$

Standard frequencies are frequencies which the crystal has been designed and does not imply a stock position.  
 + Transition times are measured between 10% and 90% of  $V_{DD}$ , with an output load of 15pF.

#### FREQUENCY STABILITY vs. TEMP. RANGE

Temp. ppm (°C)	$\pm 15$	$\pm 20$	$\pm 25$	$\pm 50$
-20~+70	△	○	○	○
-40~+85	×	△	○	○
-40~+105	×	△	○	○

\*O: Available △: Conditional X: Not available  
 \*Inclusive of calibration @ 25 °C, operating temperature range, i Voltage variation, load variation, aging (1<sup>st</sup> year), shock, and vibrati

Note: not all combination of options are available. Other specifications may be available upon request.

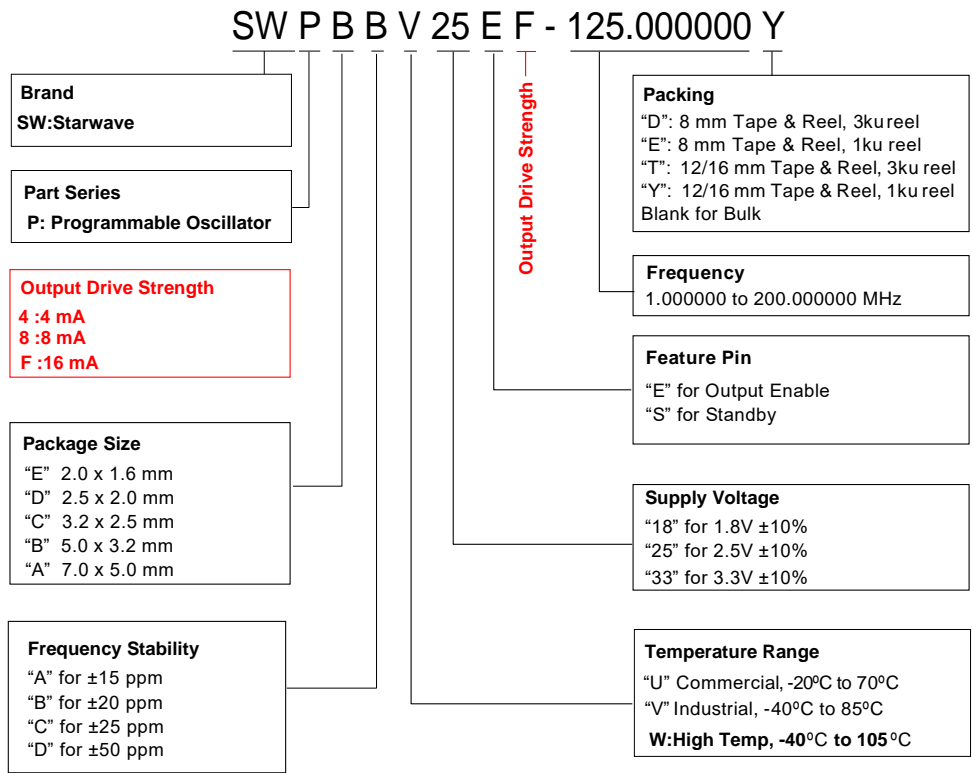
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### Ordering Information



**Table 13. Ordering Codes for Supported Tape & Reel Packing Method**

Device Size (mm x mm)	16 mm T&R (3ku)	16 mm T&R (1ku)	12 mm T&R (3ku)	12 mm T&R (1ku)	8 mm T&R (3ku)	8 mm T&R (1ku)
2.0 x 1.6	-	-	-	-	D	E
2.5 x 2.0	-	-	-	-	D	E
3.2 x 2.5	-	-	-	-	D	E
5.0 x 3.2	-	-	T	Y	-	-
7.0 x 5.0	T	Y	-	-	-	-