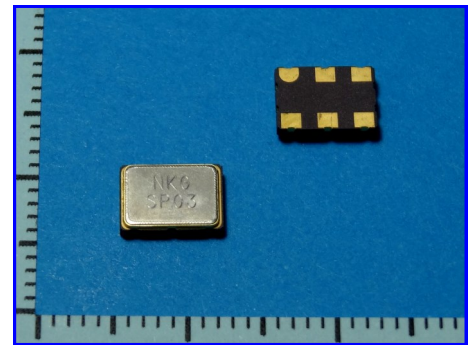


### CRYSTAL OSCILLATOR UNIT WITH LVPECL OUTPUT IN CERAMIC SEAM SEAL SMD PACKAGE, SIZE 7.0 x 5.0MM WITH 6 PADS.

# SPH3



#### PRODUCT FEATURES

- SMD PACKAGE SIZE 7.0 x 5.0 x 1.8MM WITH 6 PADS.
- WIDE FREQUENCY RANGE 100 TO 800MHZ
- ULTRA LOW JITTER AND PHASE NOISE.
- HIGHLY RELIABLE SEAM SEAL PACKAGE AND LOW AGING.

#### APPLICATIONS

- HIGH SPEED NETWORKING
- LAN, WLAN
- TELECOM

#### PRODUCT SPECIFICATIONS

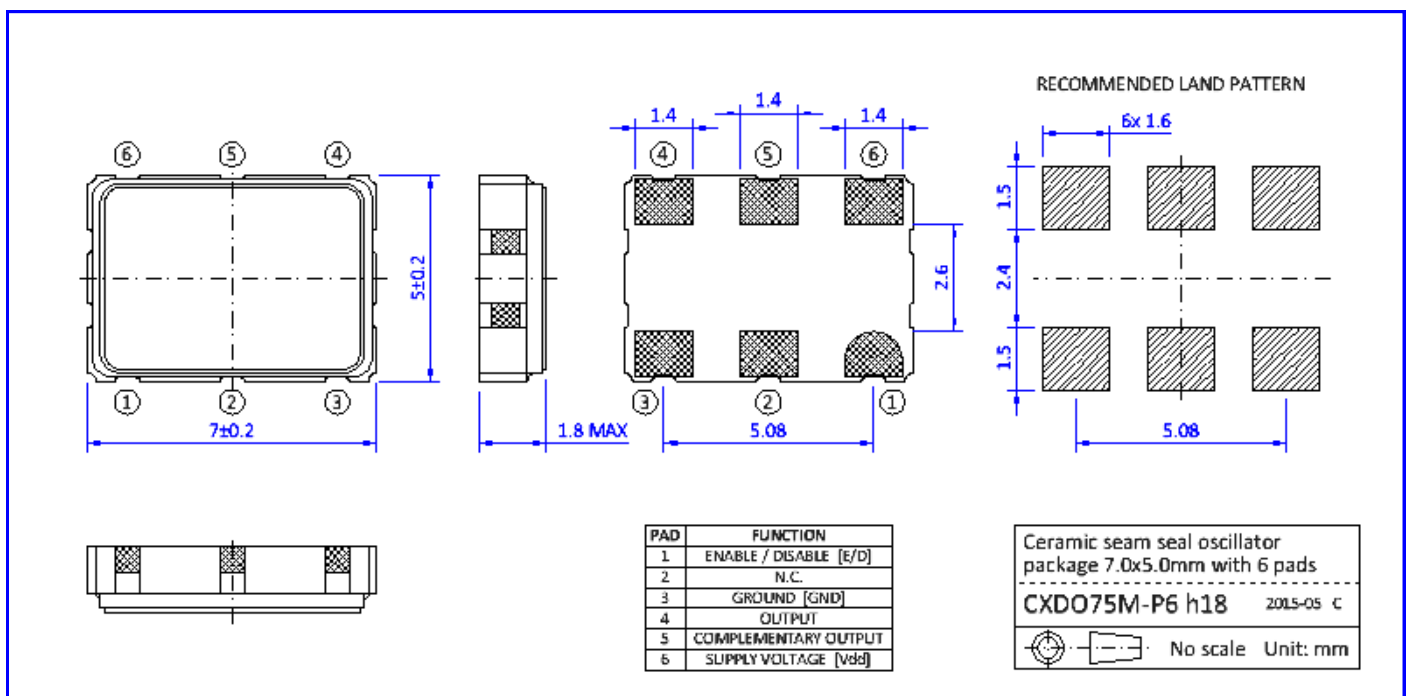
PARAMETER	SYMBOL	PARAMETER VALUES / LIMITS	PARAMETER VALUES / LIMITS
FEATURE / MODEL	—	<b>ULTRA LOW JITTER &amp; PHASE NOISE</b>	<b>LOW JITTER &amp; PHASE NOISE</b>
OSCILLATOR MODE	—	OVERTONE CIRCUIT	MULTIPLIER CIRCUIT
NOMINAL FREQUENCY	$F_N$	<b>100.0 ~ 156.250MHZ</b>	<b>125.0 ~ 800.0MHZ</b>
SUPPLY VOLTAGE	$V_{DD}$	2.5V <sub>DC</sub> / 3.3V <sub>DC</sub>	3.3V <sub>DC</sub>
SUPPLY CURRENT CONSUMPTION <sup>(NOTE 1)</sup>	$I_{DD}$	<80mA	<100mA
OVERALL FREQUENCY STABILITY <sup>(NOTE 2)</sup>	$\Delta f/F_N$	±20PPM, ±25PPM, ±50PPM, ±100PPM	
OPERATING TEMPERATURE RANGE	$T_{OP}$	-10°C ~ +70°C OR -40°C ~ +85°C	
AGING FIRST YEAR	$(\Delta f/F_N)_{Y1}$	±3PPM	
OUTPUT WAVEFORM / LOAD	— / $Z_L$	LVPECL / 50Ω	
OUTPUT VOLTAGE LEVELS	$V_{OH}/V_{OL}$	$V_{DD}-1.025V$ MIN / $V_{DD}-1.625V$ MAX	
RISE AND FALL TIMES	$t_R$ AND $t_F$	0.3ns TYP, 0.7ns MAX (100~160MHZ) / 0.2ns TYP, 0.5ns MAX (>160MHZ)	
OUTPUT SYMMETRY (DUTY CYCLE)	DC	50±5%	
PHASE JITTER (12KHZ≤FJ≤20MHZ)	$J_{RMS}$	0.2ps TYP (FOR 155.520MHZ)	0.4ps TYP (FOR 155.520MHZ)
PHASE NOISE <sup>(NOTE 3)</sup>	$\ell(\Delta f)$	-70 / -108 / -134 / -142 / -143dBc	-62 / -95 / -120 / -125 / -129dBc
STANDBY FUNCTION (E/D ON PIN 1)	E/D	PIN1=HIGH OR OPEN -> OUTPUTS ARE ACTIVE	PIN1=LOW -> OUTPUTS ARE HIGH IMPED.
POWER RAMP UP RATE ( $V_{DD}$ AT 90%)	$t_{PU}$	0.1 ~ 100ms (MONOTONIC RAMP UP)	

NOTE 1: CURRENT CONSUMPTION IS TYPICAL FOR 3.3V, AT LOWER SUPPLY VOLTAGES LESS CONSUMPTION APPLIES.

NOTE 2: OVERALL FREQUENCY STABILITY INCLUDES TOLERANCE @+25°C, DEVIATIONS OVER OPERATING TEMPERATURE RANGE, DEVIATIONS DUE TO OUTPUT LOAD VARIATIONS AND SUPPLY VOLTAGE FLUCTUATIONS.

NOTE 3: PHASE NOISE TYPICAL AT 10HZ / 100HZ / 1KHZ / 10KHZ / 100KHZ FOR 155.520MHZ

#### MECHANICAL DIMENSIONS



### CRYSTAL OSCILLATOR UNIT WITH LVPECL OUTPUT IN CERAMIC SEAM SEAL SMD PACKAGE, SIZE 7.0 X 5.0MM WITH 6 PADS.

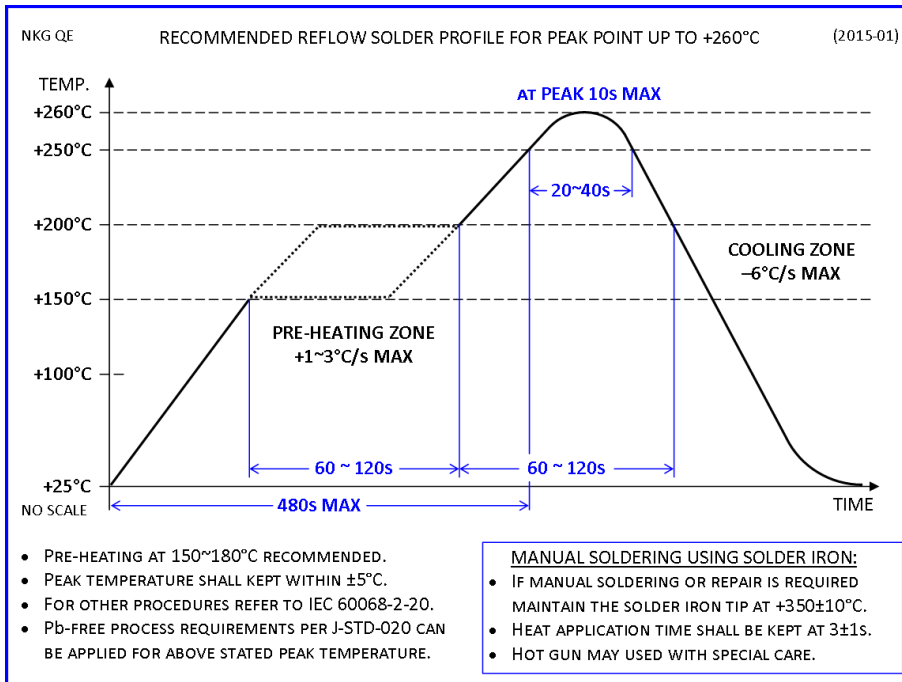
# SPH3

#### ENVIRONMENTAL COMPLIANCE INFORMATION

- ROHS 6/6 COMPLIANT (DIRECTIVE 2011/65/EC) AND LEAD-FREE.
- COMPLIANT TO ROHS 2 (DIRECTIVE 2018/863) (ALSO CALLED ROHS10).
- HALOGEN-FREE PER DEFINITION OF IEC 61249-2-21 2033.
- NONE-USE OF SVHCS PER REACH IS CURRENTLY GIVEN, CONTINUOUSLY MONITORED AND UPDATED AS THE COMMISSION ISSUES NEW RELEASES.
- PRODUCT DOES NOT CONTAIN ANY PHTHALATES (PHS).
- PRODUCT DOES NOT CONTAIN PVC (POLYVINYL CHLORIDE).
- PRODUCT DOES NOT CONTAIN PFOS/PFOA NOR BEING SAME USED TO MANUFACTURE THE COMPONENTS OF THIS PRODUCT.
- NONE-USE OF CONFLICT MINERALS PER THE DODD-FRANK WALL STREET REFORM AND CONSUMER PROTECTION ACT (WALL STREET REFORM ACT).

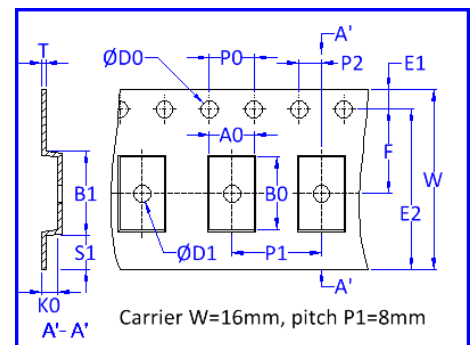


#### SOLDERING RECOMMENDATIONS



#### PACKAGING INFORMATION

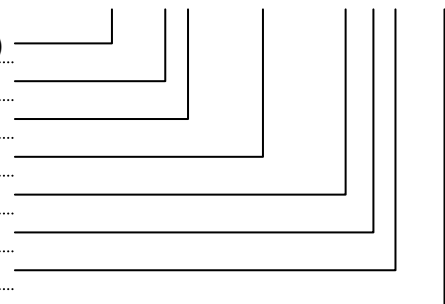
- PACKAGING IN TAPE & REEL IN COMPLIANCE TO EIA-481.
- QTY PER REEL: 1,000PCS
- REEL DIA A=180MM.
- EMBOSSED CARRIER TAPE WIDTH W = 16MM.
- COMPONENT PITCH P1 = 8MM.



#### PART NUMBER SYNTAX

- PART NUMBER FAMILY (REPRESENTS PRODUCT MODEL W/ CMOS OUTPUT AND PACKAGE SIZE)
- SUPPLY VOLTAGE NOMINATOR (I.E. 6= 3.3V, 7= 1.8V, 9= 2.5V)
- FREQUENCY STABILITY CODE (I.E. A= ±25PPM, B= ±50PPM, C= ±100PPM, D= ±30PPM)
- NOMINAL FREQUENCY (IN MHZ WITH AT LEAST THREE DIGITS AFTER DECIMAL POINT)
- OPERATING TEMPERATURE RANGE CODE (I.E. M= -10~70°C, W= -40~85°C)
- OUTPUT SYMMETRY INDICATOR (N= 50±10%, T= 50±5%)
- OUTPUT LOAD DESIGNATOR (I.E. S= STANDARD 50Ω)
- PART NUMBER EXTENSION (ONLY FOR NON-STANDARD OR CUSTOMIZED PARTS)

### SPH3 6 B 125.000 MTS-EXT



IF THERE IS A LARGE NUMBER OF CODES IN USE THE TABLE ABOVE MAY ONLY SHOW A FEW EXAMPLES.

FOR MORE INFORMATION PLEASE CONTACT US.

HONG KONG:  
 NAKAGAWA ELECTRONICS LIMITED  
 ☎ +852 2389 9201 ✉ sales@nkg.com.hk  
 ☎ +852 2341 0001 🌐 www.nkg.com.hk

China Shenzhen office:  
 深圳中川晶体电子有限公司  
 ☎ +86(0)755 2598 2648 ✉ sales\_sz@nkg.cn  
 ☎ +86(0)755 2598 2390 🌐 www.nkg.com.hk

China Suzhou office:  
 苏州纳美电子有限公司  
 ☎ +86(0)512 8818 7890 ✉ sales\_nm@nkg.cn  
 ☎ +86(0)512 8818 7889 🌐 www.nkg.com.hk