

TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR UNIT WITH HCMOS OUTPUT IN METAL CAN DIP-8 PACKAGE.

TCO2

PRODUCT FEATURES

- TCXO IN DIP-8 PACKAGE SIZE 13 X 13 X 6MM WITH 4 PINS.
- FREQUENCY RANGE 1 TO 160MHZ.
- LOW JITTER AND PHASE NOISE.

APPLICATIONS

- ETHERNET, ADSL
- WLAN / WiMAX
- AUDIO & VIDEO EQUIPMENT
- LARGE SCALE EQUIPMENT



PRODUCT SPECIFICATIONS

PARAMETER	SYMBOL	PARAMETER VALUES / LIMITS	CONDITIONS / REMARKS
NOMINAL FREQUENCY	$F_N$	1 ~ 160MHZ	FUNDAMENTAL OR OVERTONE DESIGN
SUPPLY VOLTAGE RANGE	$V_{DD}$	2.5V / 2.8V / 3.3V / 5.0V	SEE OPTIONS TABLE ON PAGE 2 FOR DETAILS
SUPPLY CURRENT CONSUMPTION	$I_{DD}$	10 ~ 35mA	SEE NOTE 1
FREQUENCY TOLERANCE	$\Delta f/F_N$	$\pm 1.0\text{PPM}$ OR $\pm 2.0\text{PPM}$	@+25°C, OTHERS AVAILABLE
FREQUENCY STABILITY VS TEMP.	$\Delta f/F_N$	$\pm 1.0\text{PPM}$ TO $\pm 5.0\text{PPM}$	SEE NOTE 2, OTHERS AVAILABLE
OPERATING TEMPERATURE RANGE	$T_{OP}$	-10~+60°C OR -20~+70°C OR -40~+85°C	OTHER OPTIONS AVAILABLE
AGING FIRST YEAR	$(\Delta f/F_N)_{Y1}$	$\pm 1\text{PPM}$	@+25°C
OUTPUT WAVEFORM / LOAD	— / $C_L$	HCMOS / 15~30PF	DEPENDING ON SUPPLY VOLTAGE & FREQ.
OUTPUT VOLTAGE LEVELS	$V_{OH}/V_{OL}$	$\geq 90\%V_{DD}$ / $\leq 10\%V_{DD}$	—
RISE AND FALL TIMES	$t_R$ AND $t_F$	$\leq 6\text{ns}$ $V_{DD}=2.5\text{V}$ $\leq 8\text{ns}$ $V_{DD}=3.3\text{V}$ $\leq 7\text{ns}$ $V_{DD}=2.8\text{V}$ $\leq 10\text{ns}$ $V_{DD}=5.0\text{V}$	@20%~80%~20% $V_{DD}$
OUTPUT SYMMETRY (DUTY CYCLE)	DC	40/60% OR 45/55%	@50% $V_{DD}$
PHASE NOISE	$\ell(\Delta f)$	-80 / -115 / -135 / -138 / -142dBc	TYP. 10MHZ AT 10 / 100 / 1k / 10k / 100kHz
TRISTATE FUNCTION (OPTIONAL) ENABLE/DISABLE FUNCTION PIN 1	E/D	PIN1 = HIGH OR OPEN -> OUTPUT PIN3 ACTIVE PIN1 = LOW -> OUTPUT PIN3 HIGH IMPEDANCE	• OUTPUT HIGH IMPEDANCE = TRI-STATE • PIN1 CAN BE LEFT OPEN = FLOATING

NOTE 1: CURRENT CONSUMPTION VARIES BY SUPPLY VOLTAGE, SEE OPTIONS TABLE ON PAGE 2 FOR MORE DETAILS.

NOTE 2: FREQUENCY STABILITY IS THE DEVIATIONS OVER OPERATING TEMPERATURE RANGE IN REFERENCE TO THE READING AT +25°C.

MECHANICAL DIMENSIONS

13.0 MAX (width), 13.0 MAX (height), 5.0 MIN (pin length), 5.5 (pin length), 6.3 MAX<sup>h</sup> (pin length), 7.62±0.15 CENTERED (pin pitch), 7.62±0.15 CENTERED (pin pitch).

PIN	FUNCTION
1	N.C.*
7	GROUND [GND]
8	RF OUTPUT [CLK]
14	SUPPLY VOLTAGE [Vdd]

\* Option for ENABLE / DISABLE function can be available for certain models.

Notes:  
The metal case is connected to pin 4 and therefore grounded (GND).  
<sup>h</sup> The package height may vary depending on design, check specification sheet for information.

Metal can DIP-8 TCXO package  
13x13mm with 4 pins  
DIP8TC-P4 2017-09 C  
No scale Unit: mm

### TEMPERATURE COMPENSATED CRYSTAL OSCILLATOR UNIT WITH HCMOS OUTPUT IN METAL CAN DIP-8 PACKAGE.

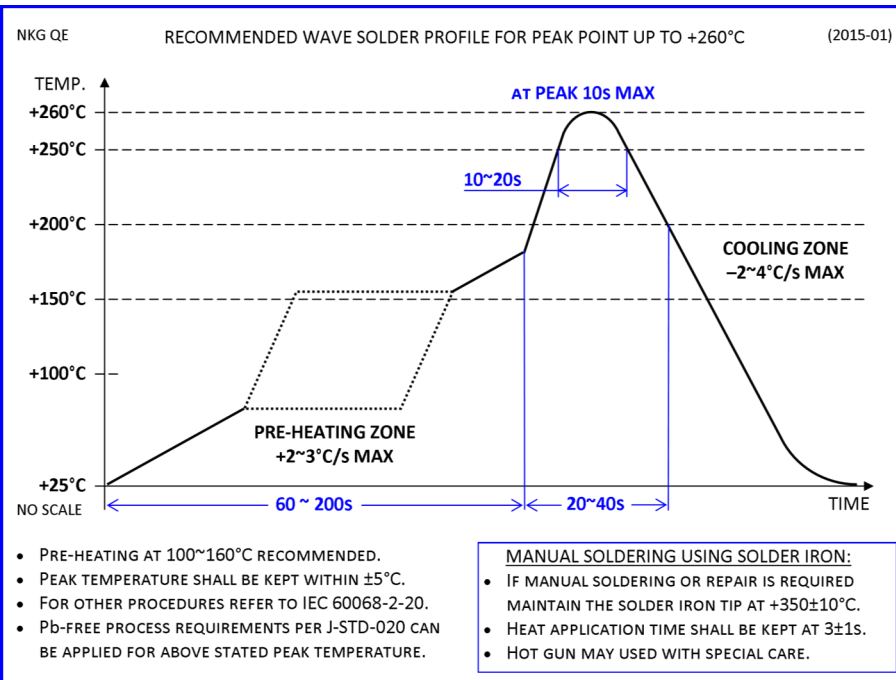
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#### ENVIRONMENTAL COMPLIANCE INFORMATION

- ROHS 6/6 COMPLIANT (DIRECTIVE 2011/65/EC).
- COMPLIANT TO ROHS 2 (DIRECTIVE 2015/863) (ALSO CALLED ROHS 10).
- PRODUCT DOES NOT CONTAIN PVC (POLYVINYL CHLORIDE).
- PRODUCT DOES NOT CONTAIN PFOS/PFOA NOR BEING SAME USED TO MANUFACTURE THE COMPONENTS OF THIS PRODUCT.
- MOISTURE SENSITIVITY LEVEL (MSL) 1 PER J-STD-020C.



#### SOLDERING RECOMMENDATIONS



#### PACKAGING INFORMATION

- PACKAGING IN ANTISTATIC TUBES.
- QTY PER TUBE: 40PCS
- ALTERNATE PACKAGING IN PLASTIC TRAYS AND FOAM TRAY IS AVAILABLE.

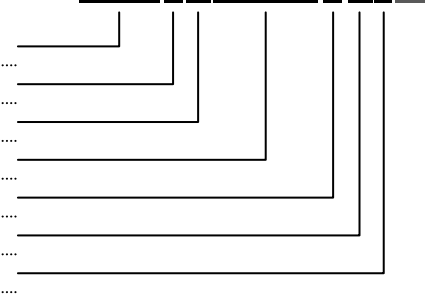
#### AVAILABLE OPTIONS

PARAMETER	SYMBOL	TCO22	TCO25	TCO28	TCO29
SUPPLY VOLTAGE	V <sub>DD</sub>	5.0V ±5%	3.3V ±5%	2.8V ±5%	2.5V ±5%
FREQUENCY RANGE [MHZ]	F <sub>N</sub>	1 ~ 55	50 ~ 160	1 ~ 55	50 ~ 160
SUPPLY CURRENT (MAX)	I <sub>DD</sub>	<20mA	<35mA	<18mA	<32mA
				<15mA	<25mA
				<12mA	<25mA

#### PART NUMBER SYNTAX

- ..... PART NUMBER FAMILY (REPRESENTS MODEL WITH HCMOS OUTPUT AND PACKAGE SIZE)
- ..... SUPPLY VOLTAGE NOMINATOR (I.E. 2=5V, 5= 3.3V, 8= 2.8V, 9= 2.5V, SEE OPTIONS TABLE)
- ..... FREQUENCY STABILITY CODE (I.E. N= ±5PPM, Q= ±2.5PPM, U= ±1.5PPM, W= ±0.5PPM)
- ..... NOMINAL FREQUENCY (IN MHZ WITH AT LEAST THREE DIGITS AFTER DECIMAL POINT)
- ..... OPERATING TEMPERATURE RANGE CODE (I.E. C= -10~60°, E= -20~70°C, W= -40~85°C)
- ..... OUTPUT SYMMETRY INDICATOR (N= 40/60%, T= 45/55%)
- ..... OUTPUT LOAD DESIGNATOR (I.E. S= STANDARD 15PF, C= 20PF, D= 25PF, E= 30PF)
- ..... PART NUMBER EXTENSION (ONLY FOR NON-STANDARD OR CUSTOMIZED PARTS)

#### TCO25 U25.000 E NS-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.

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