



ROHS-Compliant Product

T-97000 Series



SMD TCXO according to frequency stability requirements of Telcordia GR-253-Core SMC (SONET MINIMUM CLOCK) and of ITU-T G.813 Option 2

1. Specification

Type:	T-97XYZ	
Frequency range:	10.0 ... 40.0 MHz	
Supply Voltage V_C (nominal values $\pm 5\%$):	X	
+2.8 V:	4	
+3.0 V:	5	
+3.3 V:	6	
+5.0 V:	7	
Initial frequency tolerance ($T_A = +25\text{ }^\circ\text{C}$; $V_C = +1.5\text{ V}$): 24 h after reflow ($T_{\text{peak}} = +260\text{ }^\circ\text{C}$ for 10 sec max):	$\leq \pm 1.0\text{ ppm}$ $\leq \pm 1.5\text{ ppm}$	
Temperature range options:	Y	
0 $^\circ\text{C}$ to +50 $^\circ\text{C}$:	1	
-10 $^\circ\text{C}$ to +60 $^\circ\text{C}$:	2	
0 $^\circ\text{C}$ to +70 $^\circ\text{C}$:	3	
-20 $^\circ\text{C}$ to +70 $^\circ\text{C}$:	4	
-30 $^\circ\text{C}$ to +85 $^\circ\text{C}$:	5	
-40 $^\circ\text{C}$ to +85 $^\circ\text{C}$:	6	
Frequency stability options:	Z	
$\pm 0.5\text{ ppm}$:	1 (Note 1)	
$\pm 1.0\text{ ppm}$:	2	
$\pm 1.5\text{ ppm}$:	3	
$\pm 2.0\text{ ppm}$:	4	
$\pm 2.5\text{ ppm}$:	5	
$\pm 3.0\text{ ppm}$:	6	
$\pm 4.0\text{ ppm}$:	7	
$\pm 5.0\text{ ppm}$:	8	
Notes:		
(1): $\pm 0.5\text{ ppm}$ not available for temp. options 5 and 6; please switch to T-53000 series.		
Frequency stability vs. supply voltage changes $V_S \pm 5\%$: vs. load changes $\pm 5\%$:	$\leq \pm 0.02\text{ to }0.4\text{ ppm}$ $\leq \pm 0.02\text{ to }0.3\text{ ppm}$	depending on output signal type and frequency
Aging per year @ +40 $^\circ\text{C}$:	$\leq \pm 0.2\text{ to }1.0\text{ ppm}$	depending on frequency
Storage Temperature Range:	-55 $^\circ\text{C}$ to +105 $^\circ\text{C}$	

4				KVG Quartz Crystal Technology GmbH P.O. Box 61 D-74924 Neckarbischofsheim Tel. +49 (0) 7263 / 648-0 Fax. +49 (0) 7263 / 6196
3	Load changes	13.10.2011	Kuntz	
2		27.05.2011	Rudolph	
1		27.10.2009	Zupan	
ED	Description	Date	Name	



T-97000 Series

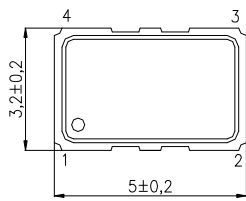
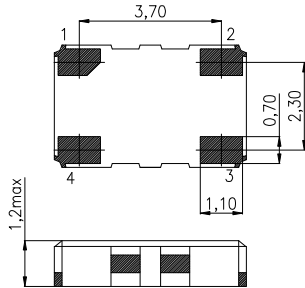


1. Specification continued		
Frequency Control Options : Fixed frequency oscillator: +5 ppm: +8 ppm: +10 ppm: +12 ppm: +15 ppm (case by case):		X F E T U V
Control voltage range V_C :	+0.5 V to +2.5 V	
Transfer function / Linearity:	positive / 10 %	
Type:	T-977xx (+5 V)	T-976xx (+3.3 V)
Output signal Option H (*): low level : high level : load :	HCMOS $V_{OL} < 10\% V_S$ $V_{OH} > 90\% V_S$ 1 kOhm // 15 pF	(LV)HCMOS $V_{OL} < 10\% V_S$ $V_{OH} > 90\% V_S$ 1 kOhm // 15 pF
(*) For HCMOS please contact factory case by case		
Current consumption for HCMOS : f < 20 MHz: f > 20 MHz:	< 10 mA < 15 mA	< 6 mA < 10 mA
Output signal Options S : Type: Level: Load:	Clipped Sine wave $\geq 0.8 V_{PP}$ 10 kOhm // 10 pF	
Current consumption for Clipped Sine wave : 10 MHz < f \leq 15 MHz: 15 MHz < f \leq 30 MHz: 30 MHz < f \leq 40 MHz:	≤ 1.5 mA ≤ 2.0 mA ≤ 4.0 mA	
Phase Noise 100 Hz: 1 kHz: 10 kHz:	(typical for 13 MHz) -115 dBc -135 dBc -145 dBc	(typical for 26 MHz) -108 dBc -128 dBc -140 dBc
2. Marking		
ww KVG yy Frequency		
3. Environmental conditions		
According to KVG Product Qualification Procedure AA-QM-200		

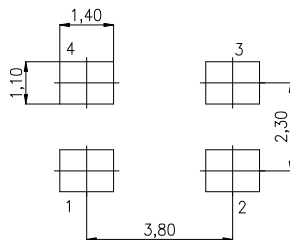
4				KVG Quartz Crystal Technology GmbH P.O. Box 61 D-74924 Neckarbischofsheim Tel. +49 (0) 7263 / 648-0 Fax. +49 (0) 7263 / 6196
3	Load changes	13.10.2011	Kuntz	
2		27.05.2011	Rudolph	
1		27.10.2009	Zupan	
ED	Description	Date	Name	

4. Case

Case Style: BF193-1.2



Recommended soldering pattern

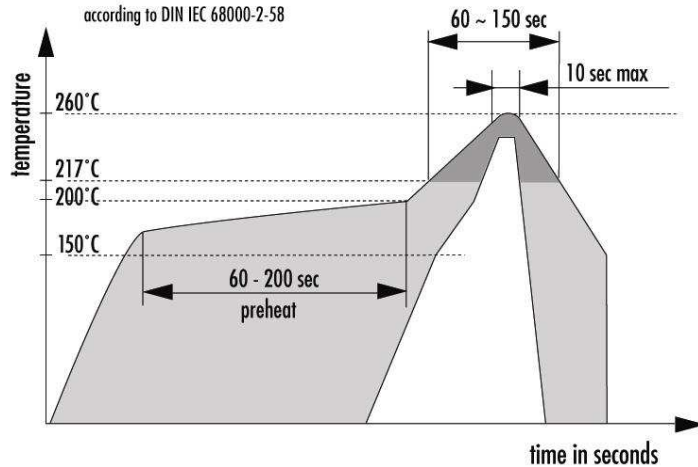


Pin configuration

1. N.C. or Control Voltage V_c
2. Ground, Case
3. RF Output
4. Supply Voltage V_s

5. Reflow Soldering Profile

Lead Free reflow temperature profile
according to DIN IEC 68000-2-58



6. Ordering Information

Package Code	Supply Voltage	Temp. Range	Frequ. Stability	Frequ. Control	Output Signal	RoHS compl.	Nominal Frequency
5.0 x 3.2 mm	3.3 V	-30/+85 °C	±2 ppm	±5 ppm	Sine		2 6.000
T-97	6	5	4	F	S	-LF	- XX.YYY MHz

Example: T-97654FS-LF-26.000 MHz

4					KVG Quartz Crystal Technology GmbH P.O. Box 61 D-74924 Neckarbischofsheim Tel. +49 (0) 7263 / 648-0 Fax. +49 (0) 7263 / 6196
3	Load changes		13.10.2011	Kuntz	
2			27.05.2011	Rudolph	
1			27.10.2009	Zupan	
ED	Description	Date		Name	