



LQT Series - Precision Crystal Clock Oscillators

High Precision Quartz Synchronization - f_0 : 50 Hz to 100 KHz

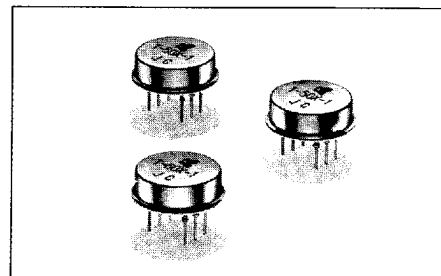
FEATURES

- 1) Revision of existing power synchronization systems to high-precision system possible
- 2) CMOS produces high output at low energy consumption
- 3) Metal package prevents radiation
- 4) Up to 4 simultaneous synchronized outputs at f_0 , $f_0/2$, $f_0/4$, $f_0/8$, or 3 outputs plus reset available
- 5) A cut crystal with excellent temperature characteristics.

HOW TO ORDER

LQT - 50X - 1

- ① Type
- ② Output Frequency
- ③ Number of outputs



PIN CONNECTION:

PIN No.	1	OUT 50 Hz
	2	V_{CC}
	3	V_{SS}
	4	OUTPUT OR NO CONNECTION
	5	OUTPUT OR NO CONNECTION
	6	OUTPUT OR NO CONNECTION
Case	NO CONNECTION	

AVAILABLE FREQUENCIES:

Part Number	Pin Assignment (Freq. in Hz)					
	#1	#2	#3	#4	#5	#6
LQT-50X-1	50	V_{CC}	V_{SS}	NC	NC	NC
LQT-60X-1	60	V_{CC}	V_{SS}	NC	NC	NC
LQT-50X-3	50	V_{CC}	V_{SS}	Reset	12.5	25
LQT-60X-3	60	V_{CC}	V_{SS}	Reset	15	30
LQT-64X-3	256	V_{CC}	V_{SS}	Reset	64	128
LQT100X	200	V_{CC}	V_{SS}	Reset	50	100
LQT-1KX	500	V_{CC}	V_{SS}	4,000	2,000	1,000
LQT-10KX	10,000	V_{CC}	V_{SS}	80,000	40,000	20,000
LQT-100KX	12,500	V_{CC}	V_{SS}	100,000	50,000	25,000

COMPARATIVE STUDY OF LQT-50X-1 and 60X-1 with LQT-50X-3 and 60X-3

		LQT-50X-1, 60X-1	LQT-50X-3, 60X-3	Unit
I_{OL} (0.4V)	Allowance Value (Minimum)	1.6	0.5	mA
	Actual Value	6.2	1.4	mA
I_{OH} (3.8V)	Allowance Value (Minimum)	-1.6	-0.5	mA
	Actual Value	-12.0	-0.6	mA
Current Consumption (at no load)	Maximum	0.5	1.5	mA
	Actual Value	0.2	0.9	mA
Voltage (Vst) at Oscillation Start		2.8	4.0	V
Voltage Characteristic		± 2 Typical	± 5 Typical	ppm/V

MAXIMUM ABSOLUTE RATING:

Classification	Code	Rating	Unit
Voltage	V_{CC}	-0.3 to +7.0	V
Operation Temperature	T_{opr}	-20 to +70	$^{\circ}C$
Storage Temperature	T_{stg}	-40 to +90	$^{\circ}C$



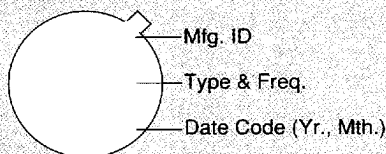
LQT Series - Precision Crystal Clock Oscillators

High Precision Quartz Synchronization - f_o : 50 Hz to 100 KHz

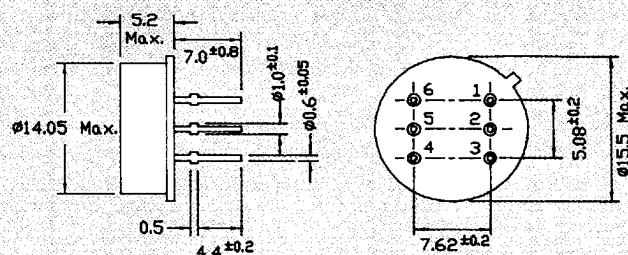
SPECIFICATIONS: (LQT-Series)

Classification	Code	Rating	Unit	Remarks
Output frequency	f_{out}	50 or 60	Hz	Cosine Wave 50% Duty
Output Frequency Error	$\Delta f/f$ (25°C)	0: ± 10	ppm	
		1: ± 50	ppm	
		2: ± 100	ppm	
		3: ± 0.2	%	
Frequency Temperature Characteristic	$\Delta f/f$ (T)	± 20 Max	ppm	-10°--+60°C range based on $T_a = 25^\circ\text{C}$, $V_{CC} = 5.0\text{V}$
Voltage Characteristic	$\Delta f/f$ (V_{CC})	± 2 Typical	ppm/V	-
Operating Temperature Range	T_{opr}	-20 to +70	°C	-
Supply Voltage Range	V_{CC}	+5.0 \pm 0.5	V	DC
Current Consumption (at no load)	I_{CC}	0.5 Max	mA	-
Output Current	I_{OH}	-1.6 Min	mA	$V_{CC} = 5.0\text{V}$, $V_{OH} = \text{AT}3.8\text{V}$
	I_{OL}	1.6 Min	mA	$V_{CC} = 5.0\text{V}$, $V_{OL} = \text{AT}0.4\text{V}$
Fan Out	n	TTL 1 Gate		

MARKING:



DIMENSIONS:



Unit: mm

TEST CIRCUIT:

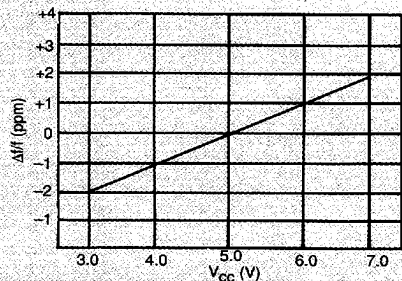


Fig. 4 Voltage - Example of Oscillation Frequency Variation Characteristic ($T_a = 25^\circ\text{C}$)

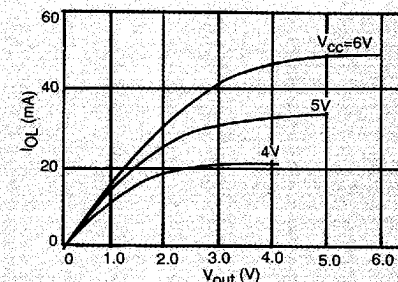


Fig. 6 Example of V_{out} Characteristic ($T_a = 25^\circ\text{C}$)

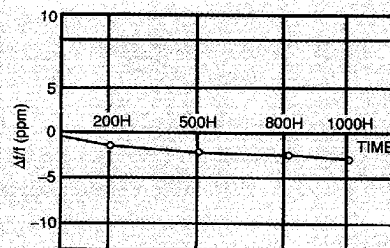


Fig. 8 High Temperature Exposure (85°C)

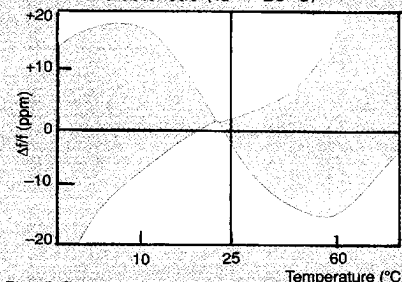


Fig. 5 Temperature - Oscillation Frequency Variation Characteristic ($V_{dd} = 5.0\text{V}$)

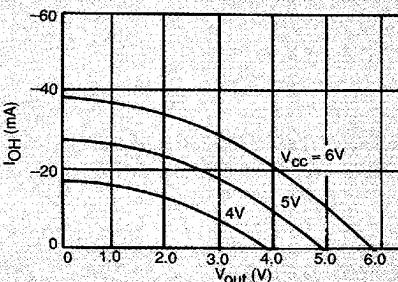


Fig. 7 Example of I_{oh} - V_{out} Characteristic ($T_a = 25^\circ\text{C}$)

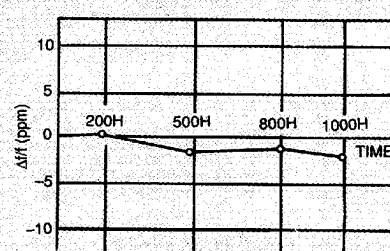


Fig. 9 Low Temperature Exposure Characteristic ($T_a = -40^\circ\text{C}$)