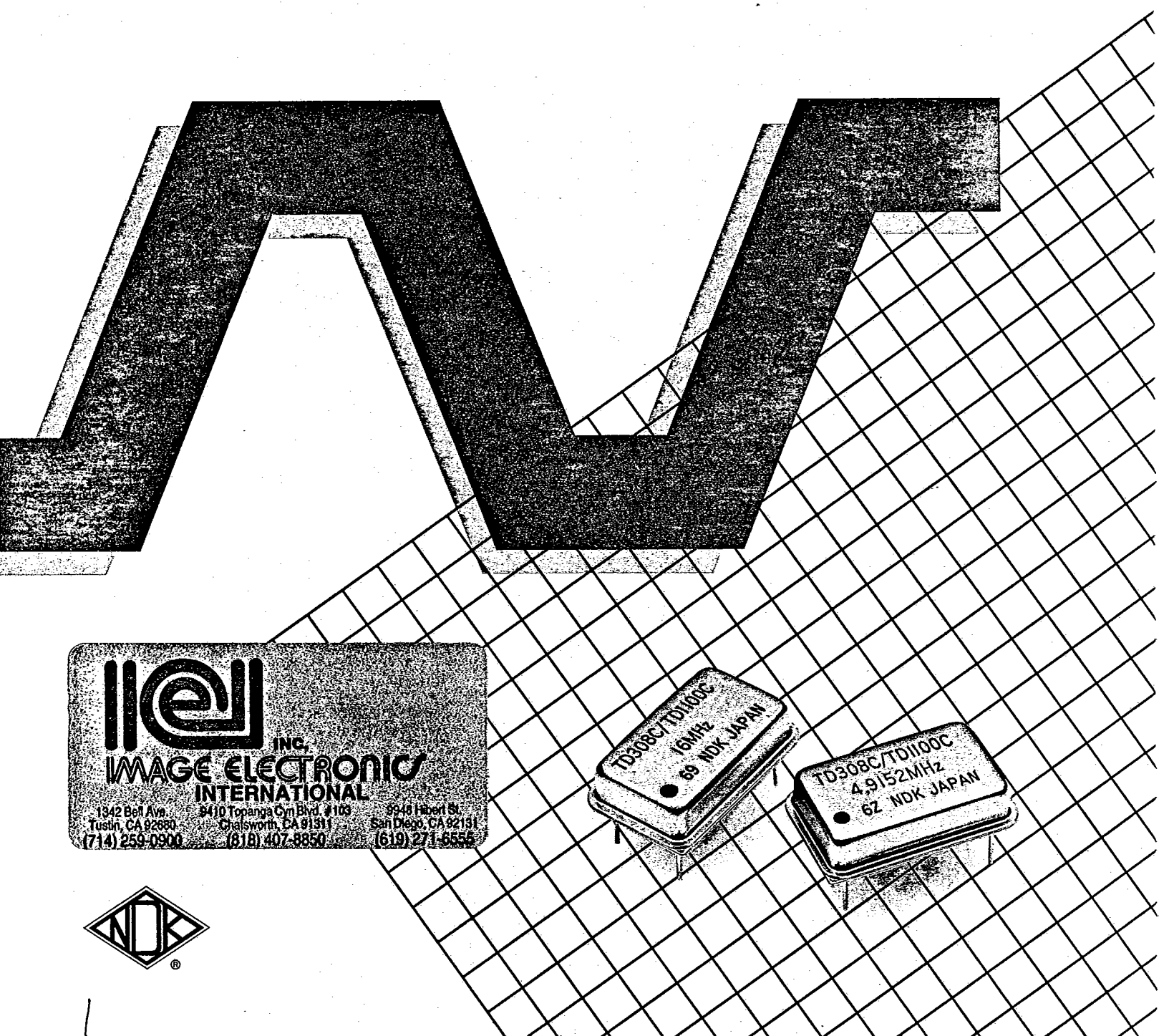
B-45-03

NDK

TD1100 Series Crystal Clock Oscillators



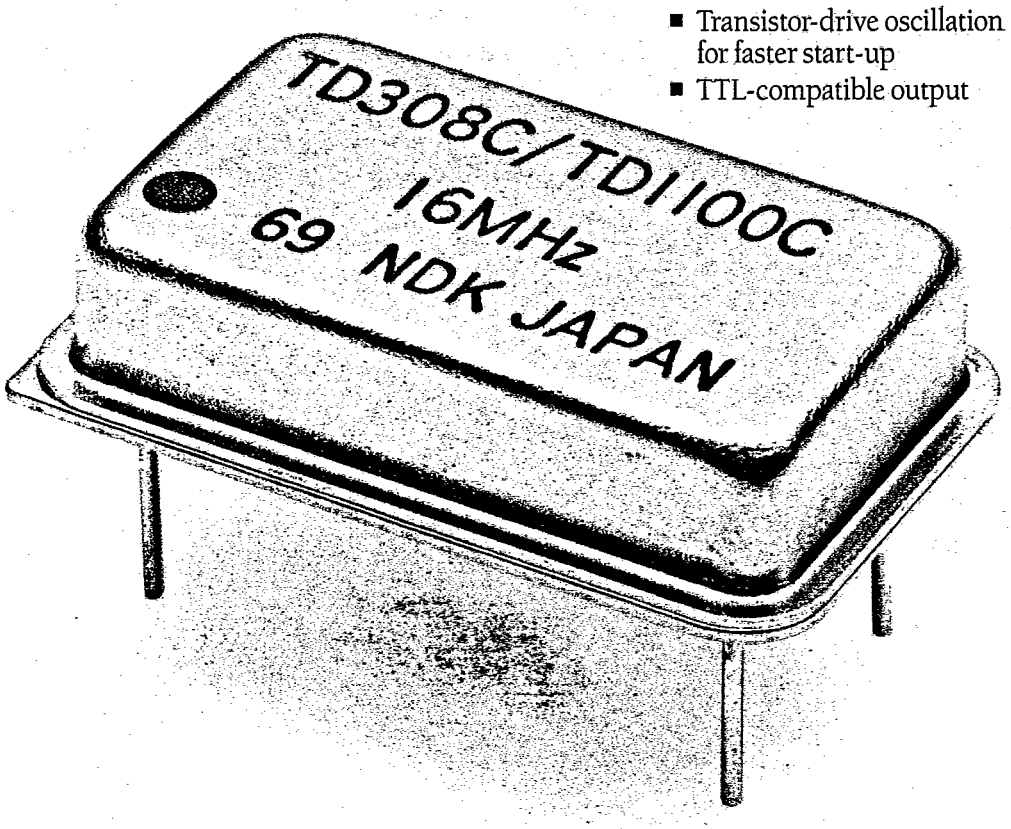
T-50-23

The broadest family of TTL-compatible crystal oscillators available, NDK Crystal Clock Oscillators offer an economical, convenient design solution for manufacturers of microprocessor-based products.

Available in frequencies ranging from 1.0 MHz to 100 MHz, NDK's TD1100 Series Crystal Clock Oscillators offer high reliability and optimum electronic performance at a cost far less than that of assembling discrete components. NDK TD1100 Series oscillators have been engineered with grounded, hermetically-sealed metal cases to resist EMI and withstand harsh environments. Pinouts have been designed to mate with standard 14-pin DIP sockets to ensure fast PC-board assembly.

TD1100 SERIES FEATURES

- Broadest range of available frequencies speeds design and the procurement process
- "Unitized" device eliminates direct and indirect costs of discrete component assembly
- Fits standard 14-pin DIP socket for fast PC-board assembly
- Sealed metal case resists high temperatures and humidity
- Plug-in interchangeability speeds troubleshooting
- Integral glass stand-offs insulate device from PC board
- Transistor-drive oscillation for faster start-up
- TTL-compatible output



NDK: THE INDUSTRY LEADER

Headquartered in Tokyo, Japan, NDK is the world's premier manufacturer of synthetic crystal quartz. NDK surpasses all other manufacturers in both quality and quantity of synthetic quartz production. Blending American engineering with Japanese manufacturing expertise, NDK offers the widest range of microprocessor quartz crystals, crystal oscillators, and compact crystal oscillators available. All NDK products are fabricated under the strictest quality controls, and are guaranteed to be free from impurities and defects.

NDK standard products are available through a nationwide network of stocking distributors. NDK also offers custom crystal-device fabrication to meet individual needs. For more information on NDK custom services or distribution, write:

NDK America, Inc.
20300 Stevens Creek Blvd.
Suite 400
Cupertino, CA 95014-2210

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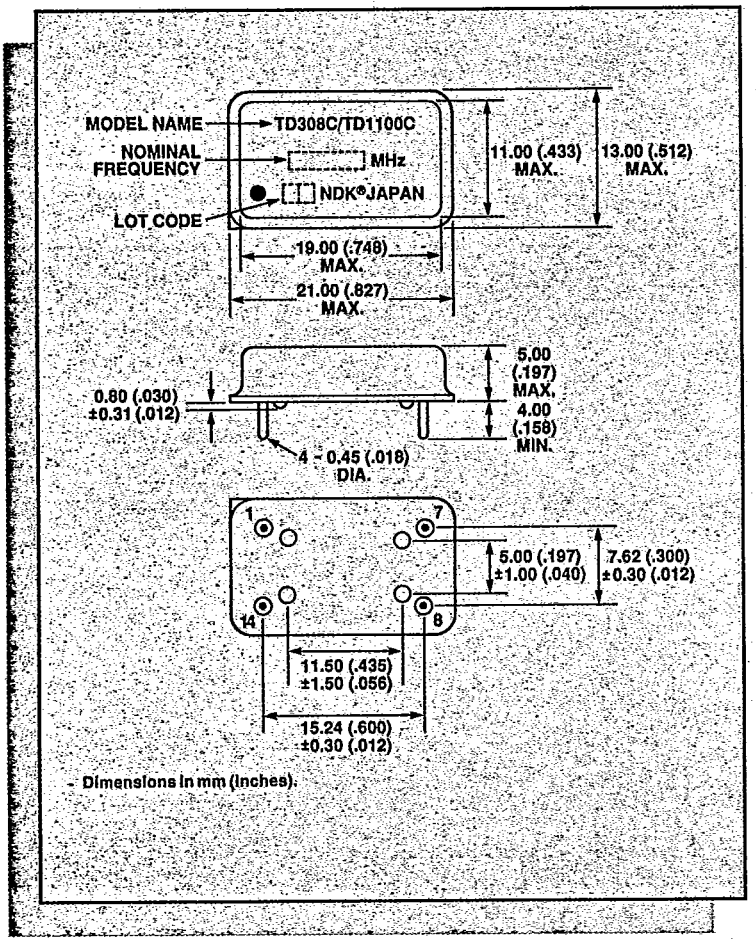
NDK 1100 SERIES SPECIFICATIONS

Packaging



Pinout

Part Numbers: TD1100C, TD1145C, TD1158C

Fits Standard 14-Pin DIP Socket

Pin	Function
1	Not Connected
7	GND (Ground to case)
8	Output
14	+5V DC

Operating Conditions

- Input Voltage: +5V DC to ±5%
- Input Current: 50mA max. (<40 MHz); 60mA max. (>40 MHz)
- Operating Temperature: 0°C to +70°C standard; −40°C to +85°C optional with part TD1158C

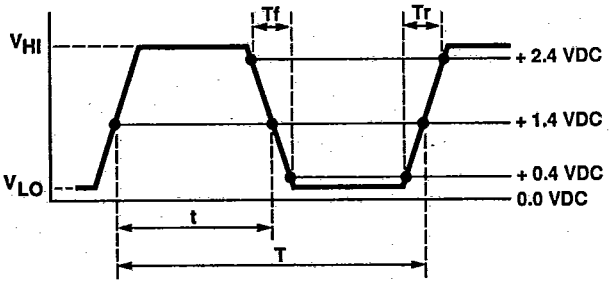
Frequency Characteristics

- Available Frequencies: 1.0 MHz to 100 MHz
- Frequency Stability*: ±100 ppm standard; ±50 ppm optional (Part No. TD1145C)

*Inclusive of calibration tolerance, operating temperature range, input voltage change, load change, aging, shock, and vibration.

Output Characteristics

- Output Voltage (TTL Level): V_{LO}: +0.4V max. (<40 MHz); V_{LO}: +0.5V max. (>40 MHz); V_{HI}: +2.4V min.
- Output Wave Form (Square Wave)



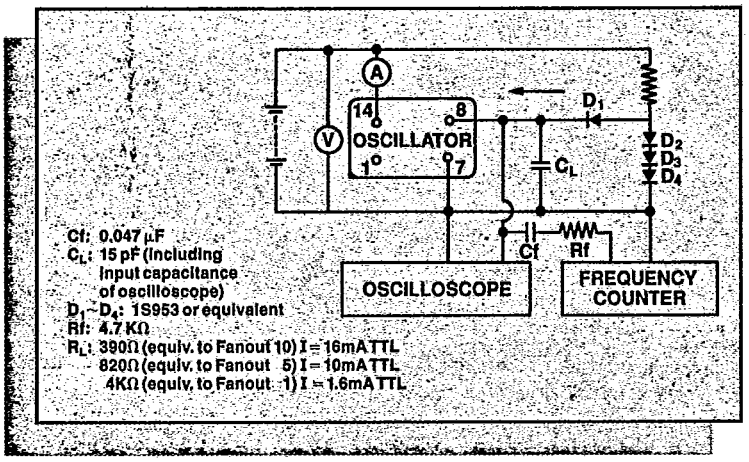
- Duty Cycle: 40% to 60% at 1.4V DC level where duty cycle is determined by: $\text{Duty Cycle} = \frac{t}{T} \times 100\%$
- Rise (T_r) and Fall (T_f) Times:

1 MHz to	7.999 MHz	15ns max.
8 MHz to	20.999 MHz	10ns max.
21 MHz to	29.999 MHz	7ns max.
30 MHz to	100.000 MHz	5ns max.

- Output Load: 1 to 10 TTL Gates

T-50-23

Test Circuit



Environmental Characteristics

▶ Vibration	10 Hz to 200 Hz, 1.5 mm amplitude, sweep time 20 minutes for two hours, each of three planes.
▶ Shock	1000 G, 0.5ms, half sine for one time, each of three planes.
▶ Temperature	±50 ppm maximum change after −40°C to +80°C for 30 minutes, 100 cycles.

Mechanical Characteristics

▶ Leakage	Mass spectrometer, leak rate $<3 \times 10^{-8}$ atom. cc/sec of helium.
▶ Solderability	Solder-dipped pins up to 0.5 mm from height of stand-off.
▶ Resistance to Soldering Heat	MIL-STD-202, Method 210, Condition B.
▶ Leads Bend	Will withstand maximum bend of 90° reference to base for three bends.

CROSS REFERENCE GUIDE — TTL OUTPUT

Manufacturer	Frequency Stability / Operating Temperature Range	±50/ppm 0° to 70°C	±100/ppm 0° to 70°C	±100/ppm −40° to +85°C	±500/ppm 0° to 70°C	±1000/ppm 0° to 70°C	±10,000/ppm 0° to 70°C
NDK		TD1145C	**TD1100C**	TD1158C	**TD1100C**	**TD1100C**	**TD1100C**
Motorola		K1145AM	K1100AM	K1158AM	K1114AM	K1115AM	K1116AM
Motorola		RASCO-0	**RASCO-1**	—	RASCO-2	RASCO-3	RASCO-4
Dale		X043A	**X043B**	—	X043C	X043D	X043H
Dale		X053A	**X053B**	—	X053C	X053D	X053H
CTS Knight		MX055-3	**MX055-2**	—	MX055-4	MX055-1	—
M-Tron		MTO-T_1-S_4	**MTO-T_1-S_3**	MTO-T_2-S_3	MTO-T_1-S_2	MTO-T_1-S_1	MTO-T_1-S_0
Saronix		NCT 040B	**NCT 040C**	—	NCT 040D	NCT 040E	NCT 040F
Saronix		NCT 050B	**NCT 050C**	—	NCT 050D	NCT 050E	NCT 050F
Saronix		NCT 070B	**NCT 070C**	—	NCT 070D	NCT 070E	NCT 070F
MF Electronics		M1245	**M1200**	—	M1214	M1215	M1216
Seiko		—	**DS-C304A**	—	—	—	—
Fox		F1145	**F1100**	—	F1114	F1115	F1116
Midland—Ross NEL		—	**HS-100**	—	—	—	—
Midland—Ross NEL		—	**HS-200**	—	—	—	—
Midland—Ross NEL		—	**HS-500**	—	—	—	—
Valpey—Fisher		—	**VF150**	—	—	—	—
			VF153				
Valpey—Fisher		—	**VF152**	—	—	—	—
			VF154				

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