

FEATURES

- * Miniature size
- * Cost effective
- * Long term stability
- * Excellent shock and vibration characteristics

The IDT-3X8/2X6 Series features the same characteristics as only tuning fork crystals offer. Because of their miniature size they are ideal for portable and communication equipment applications.



OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

PARAMETERS		3X8	2X6	CONDITIONS
FREQUENCY RANGE	F ₀	20KHz~40KHz	30KHz~150KHz	KHz
FREQUENCY TOLERANCE	$\Delta f/f_0$	± 30 PPM	± 30 PPM	@+25 °C
FREQUENCY VS. TEMP. CHARAC.	$\Delta f/f_0$	See Drawing		-10°C~+60 °C
TURNOVER TEMPERATURE	T _M	+25°C typ.		
TEMPERATURE COEFFICIENT		-0.04 PPM/°C2 typ.		Varies depending on frequency
OPERATING TEMP. RANGE	T _{OPR}	-10 ~ +60		°C
STORAGE TEMP. RANGE	T _{STG}	-40 ~ +85		°C
EQUIVALENT SERIES RESISTANCE	R ₁	30 ~ 50 (max.)		kΩ
LOAD CAPACITANCE	C _L	12.5pF typ. (Customer Specified)		pF
DRIVE LEVEL	DL	1μW max.		μW
INSULATION RESISTANCE	IR	500 MΩ min.		DC 100V±15V
AGING (FIRST YEAR)	$\Delta f/f_0$	5 PPM max.		±25°C ±3°C
SHOCK RESISTANCE		±5 PPM max. Drop test of 3 times on a hard board from 75 cm height or shock test of 3000G x 0.3ms x 1/2 sin wave x 3 directions		Conditions will vary depending on frequency

PACKAGE DIMENSIONS (mm)

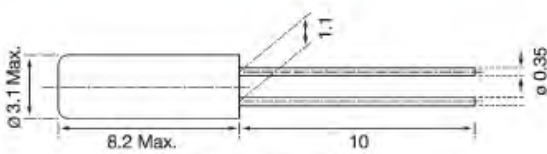


Figure 1) IDT-3X8

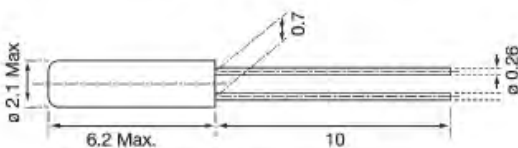
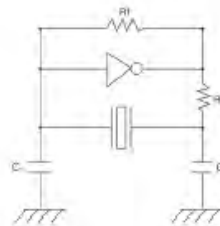


Figure 2) IDT-2X6

RECOMMENDED OSCILLATION CIRCUIT

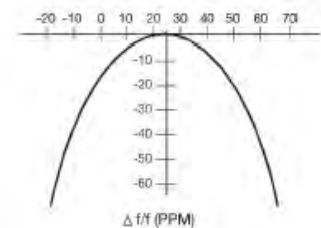


ELECTRICAL CHARACTERISTICS

- IC: TC 4069P
- R_f: 10MΩ
- R_d: 330kΩ (As required)
- C₁ = 22pF, C₂ = 22pF
- VDD = 3.0V

In this circuit, low drive level with a maximum of 1 μW is recommended. If excessive drive is applied, irregular oscillation or quartz element fractures may occur.

PARABOLIC TEMPERATURE CURVE



To determine frequency stability, use parabolic curvature. For example: What is the stability at 45°C?

- 1) Change in T (°C) = 45 - 25 = 20°C
- 2) Change in frequency = -0.04 PPM × (ΔT)²
= -0.04 PPM × (20)²
= -16.0 PPM