

FEATURES

- * Cost effective
- * Tight tolerance
- * Long term stability
- * Excellent resistance and environmental characteristics

Inscore tuning fork type crystals are used as a clock source in communication equipment, measuring instruments, microprocessors and other time management applications. Their low power consumption makes these crystals ideal for portable equipment.



OPERATING CONDITIONS/ELECTRICAL CHARACTERISTICS

		IDT-3X8	IDT-2X6	IDT-1X5	UNITS
NOMINAL FREQUENCY	F ₀	32.768	32.768	32.768	KHz
FREQUENCY TOLERANCE	Δf/f ₀	±20	±20	±20	PPM
LOAD CAPACITANCE (typ.)	C _L	12.5	typ(customer Specified)	typ(customer Specified)	pF
DRIVE LEVEL (max.)	D _L	1	1	1	μW
RESISTANCE AT SERIES RESONANCE	R ₁	35(max)	35(max)	35(max)	KΩ
TURNOVER TEMPERATURE	T _M	+25 ±5	+25 ±5	+25 ±5	°C
TEMPERATURE COEFFICIENT		-0.040ppm/°C ² max.	-0.040ppm/°C ² max.	-0.040ppm/°C ² max.	PPM/(°C)
OPERATING TEMP. RANGE	T _{OPR}		-10~+60		°C
STORAGE TEMP. RANGE	T _{STG}		-40~+85		°C
SHOCK RESISTANCE		Drop test 3 times on hard wooden board from height of 75cm / ±5 PPM max.			PPM
INSULATION RESISTANCE	IR	500M min./DC100V			MΩ
AGING (FIRST YEAR)	Δf/f ₀	±3 PPM max.@ +25°C ±3°C			PPM

PACKAGE DIMENSIONS (mm)

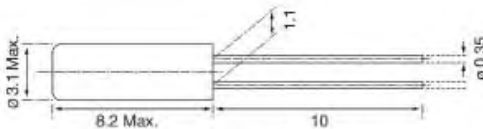


Figure 1) IDT-3X8

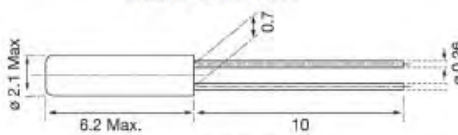


Figure 2) IDT-2X6

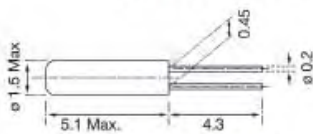
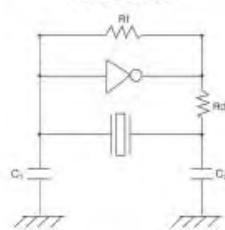
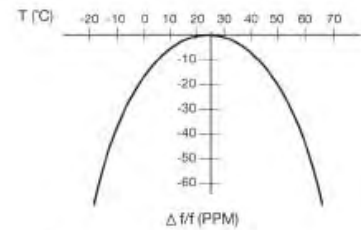


Figure 3) IDT-1X5

RECOMMENDED OSCILLATION CIRCUIT



PARABOLIC TEMPERATURE CURVE



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 1μW is recommended. If excessive drive is applied, irregular oscillation or quartz element fractures may occur.

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