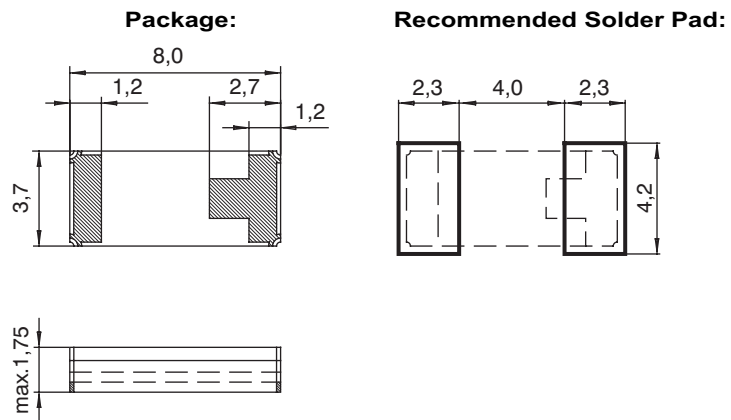


# CC1A-T1A

AT Crystal 8 MHz – 30 MHz



## DIMENSIONS



All dimensions in mm typical

**Small ceramic package**  
**Package height 1.75 mm**  
**Fundamental mode frequencies**  
**SMD-package in Tape and Reel**  
**Industrial and MIL temp. ranges**  
**High stability**  
**Low aging**  
**High shock and vibration resistance**

The CC1A-T1A is a completely leadfree product.

## DESCRIPTION:

This SMD ceramic package has been specially designed for small industrial, telecom and electronic applications. All frequencies are generated in fundamental mode.

The crystals are supplied in special trays (100 crystals per tray).

For pick-and-place equipment, the parts are available in 16 mm tapes:

7" (178 mm) reel with 1'000 crystals

10" (254 mm) reel with 2'000 crystals

## ELECTRICAL CHARACTERISTICS AT 25°C:

Frequency Range	$F_L$	8-30	MHz
Load capacitance <sup>1)</sup>	$C_L$	20.0	pF
Frequency tolerance at 25°C <sup>2)</sup>	$\Delta F/F$	+/-50	ppm
Frequency versus temperature -40°C to 85°C	$\Delta F/F_0$	+/-50	ppm
Drive level max.	P	500	μW
Insulation resistance min.	$R_i$	500	MΩ
Aging first year max.	$\Delta F/F$	+/-3	ppm

Frequency Example <sup>3)</sup>	$F_L$	10.000	16.384	24.000	MHz
Series resistance typ./max.	$R_s$	35 / 75	20 / 50	20 / 50	Ω
Motional capacitance typ.	$C_1$	5.2	7.2	11.5	fF
Static capacitance typ.	$C_0$	2.2	2.8	3.6	pF
Quality factor min.	Q	40'000	26'000	11'000	

1) Other load capacitances on request.

2) Tighter and wider frequency tolerances on request.

3) Values for other frequencies consult factory.

**STANDARD FREQUENCIES:**

Frequency MHz				
8.0000	10.0000	11.0592	12.0000	14.3181
16.0000	16.3840	19.6608	20.0000	24.0000
Other frequencies between 8 MHz and 30 MHz on request				

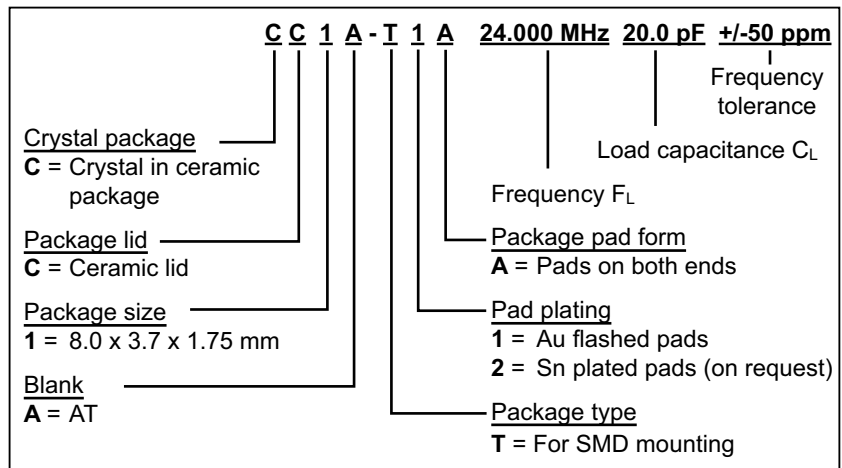
**ENVIRONMENTAL  
CHARACTERISTICS:**

		Conditions	Max. Dev.
Storage temp. range		-55 to +125°C	
Industrial operating temp. range		-40 to +85°C	
Military operating temp. range		-55 to +125°C	
Shock resistance	ΔF/F	5000 g, 0.3 ms, ½ sine	+/-5 ppm
Vibration resistance	ΔF/F	20 g / 10-2000 Hz	+/-5 ppm

**TERMINATIONS AND  
PROCESSING:**

Type	Termination	Processing
CC1A-T1A	For SMD mounting Au flashed pads	Reflow soldering 260°C/20 s max.
CC1A-T2A (on request)	For SMD mounting Sn plated pads	Reflow soldering 260°C/20 s max.

**PART NUMBER/  
ORDERING INFORMATION  
EXAMPLE:**



All specifications subject to change without notice. 07.03



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