

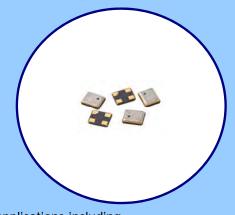
# MODEL 402



# SURFACE MOUNT QUARTZ CRYSTAL

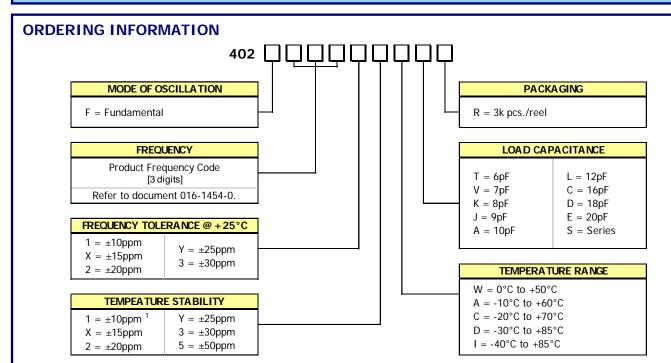
### **FEATURES**

- Standard 2.0mm x 1.6mm Seam Weld Package
- Fundamental Crystal Design
- Frequency Range 16 60MHz
- Frequency Tolerance, ±20ppm Standard
- Frequency Stability, ±30ppm Standard
- Operating Temperature to -40°C to +85°C
- Tape & Reel Packaging Standard, EIA-481
- RoHS/Green Compliant [6/6]



#### **APPLICATIONS**

Model 402 is a low cost guartz resonator used in a wide range of commercial applications including wearable and handheld electronics, notebooks, tablets, computer peripherals, Bluetooth, ZigBee and USB interfaces.

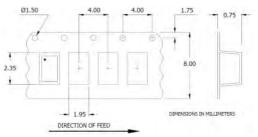


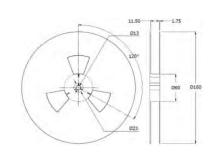
<sup>1.</sup> Available with temperature range codes W, A, C and D.

Not all performance combinations and frequencies may be available. Contact your local CTS Representative or CTS Customer Service for availability.

## PACKAGING INFORMATION [Reference]

Device quantity is 3k pieces per 180mm reel.









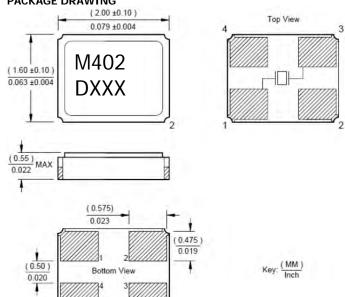


#### **ELECTRICAL CHARACTERISTICS**

ĺ	PARAMETER	VALUE					
	Frequency Range	16MHz to 60MHz					
TRICAL PARAMETERS	Operating Mode	Fundamental					
	Crystal Cut	AT-Cut					
	Frequency Tolerance @ +25°C	±20ppm, Standard					
	Frequency Stability Tolerance [Operating Temperature Range, Referenced to +25°C Reading]	±30ppm, Standard					
	Operating Temperature Panges	-10°C to +60°C	-20°C to +70°C				
	Operating Temperature Ranges	-30°C to +85°C	-40°C to +85°C				
		16MHz - <20MHz	120 Ohms				
	Equivalent Series Resistance [Maximum]	20MHz - <30MHz	100 Ohms				
	Equivalent Series Resistance [Maximum]	30MHz - <36MHz	80 Ohms				
		36MHz - 60MHz	60 Ohms				
ELEC'	Load Capacitance	See Ordering Information					
日	Shunt Capacitance [C <sub>0</sub> ]	3.0pF Typical, 5.0pF Maximum					
	Drive Level	10μW Typ., 200μW Max.					
	Aging @ +25°C	±3ppm/yr Typical					
	Insulation Resistance	500M Ohms @ DC 100V					
	Storage Temperature Range	-40°C to +90°C					

#### **MECHANICAL SPECIFICATIONS**

#### **PACKAGE DRAWING**



#### MARKING INFORMATION

- 1. M402 CTS Model Series.
- 2. D Date code. See Table I for codes.
- 3. XXX Frequency code, reference CTS document 016-1454-0.

#### **NOTES**

- 1. Complete CTS part number, frequency value, date code and manufacturing site code information must appear on reel and carton
- 2. Terminations #2, #4 and the metal lid are connected internally. End user may connect these pins to circuit ground for EMI suppression.
- Termination pads (e4); barrier plating is nickel [Ni] with gold [Au] flash plate.
- Reflow conditions per JEDEC J-STD-020; +260°C maximum, 10 seconds.
- 5. MSL = 1.

#### SUGGESTED SOLDER PAD GEOMETRY

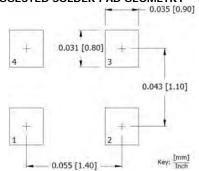


TABLE I - DATE CODE

			JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ОСТ	NOV	DEC		
	YEAR				JAN	125	WAK	AFK	WAT	3014	JUL	AUG	JLI	001	NOV	DEC
2001	2005	2009	2013	2017	Α	В	С	D	E	F	G	Н	J	K	L	М
2002	2006	2010	2014	2018	N	Р	Q	R	S	Т	U	V	W	Х	Υ	Z
2003	2007	2011	2015	2019	а	b	С	d	е	f	g	h	j	k	I	m
2004	2008	2012	2016	2020	n	р	q	r	S	t	u	V	W	х	у	Z

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