



Chipsmall Limited consists of a professional team with an average of over 10 year of expertise in the distribution of electronic components. Based in Hongkong, we have already established firm and mutual-benefit business relationships with customers from,Europe,America and south Asia,supplying obsolete and hard-to-find components to meet their specific needs.

With the principle of “Quality Parts,Customers Priority,Honest Operation,and Considerate Service”,our business mainly focus on the distribution of electronic components. Line cards we deal with include Microchip,ALPS,ROHM,Xilinx,Pulse,ON,Everlight and Freescale. Main products comprise IC,Modules,Potentiometer,IC Socket,Relay,Connector.Our parts cover such applications as commercial,industrial, and automotives areas.

We are looking forward to setting up business relationship with you and hope to provide you with the best service and solution. Let us make a better world for our industry!



Contact us

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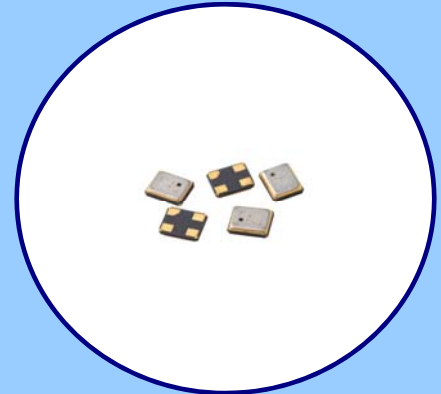
Address: A1208, Overseas Decoration Building, #122 Zhenhua RD., Futian, Shenzhen, China





FEATURES

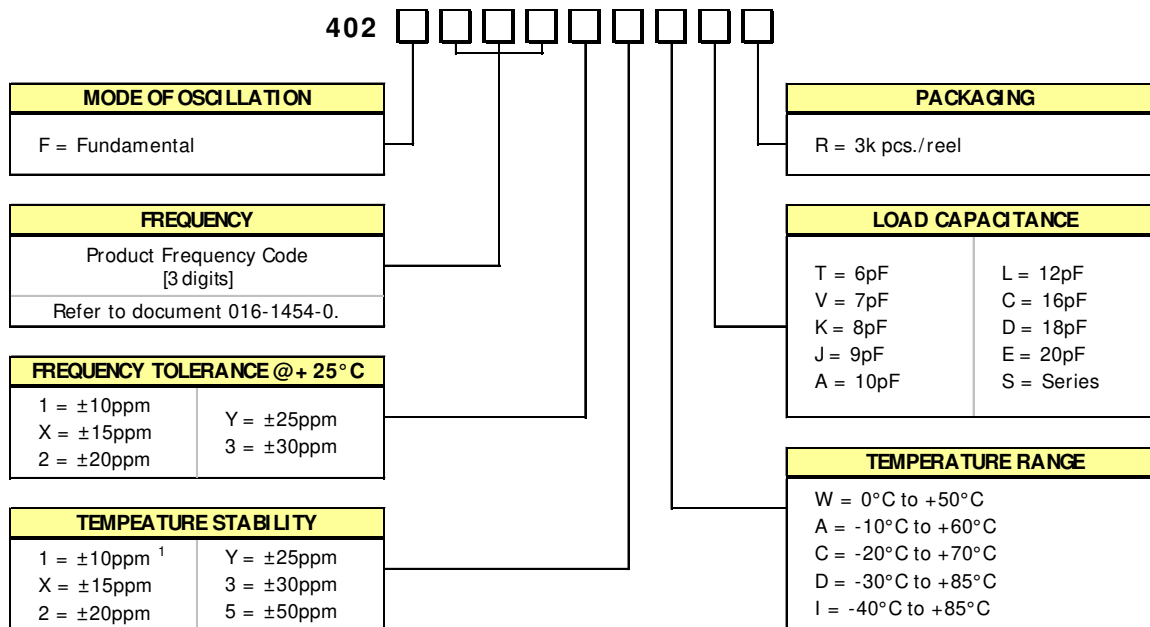
- Standard 2.0mm x 1.6mm Seam Weld Package
- Fundamental Crystal Design
- Frequency Range 16 – 60MHz
- Frequency Tolerance, $\pm 20\text{ppm}$ Standard
- Frequency Stability, $\pm 30\text{ppm}$ Standard
- Operating Temperature to -40°C to $+85^{\circ}\text{C}$
- Tape & Reel Packaging Standard, EIA-481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



APPLICATIONS

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

ORDERING INFORMATION

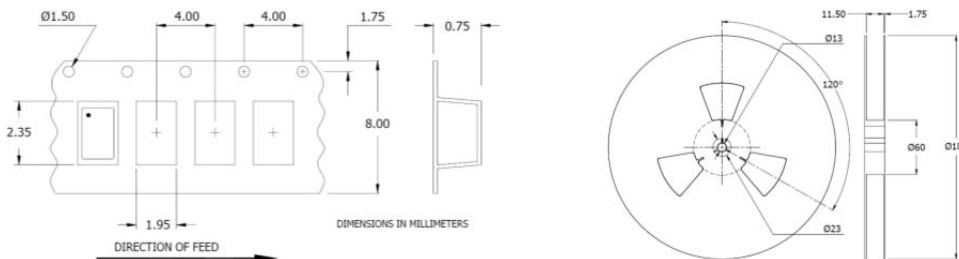


1. Available with temperature range codes W, A, C and D.

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.

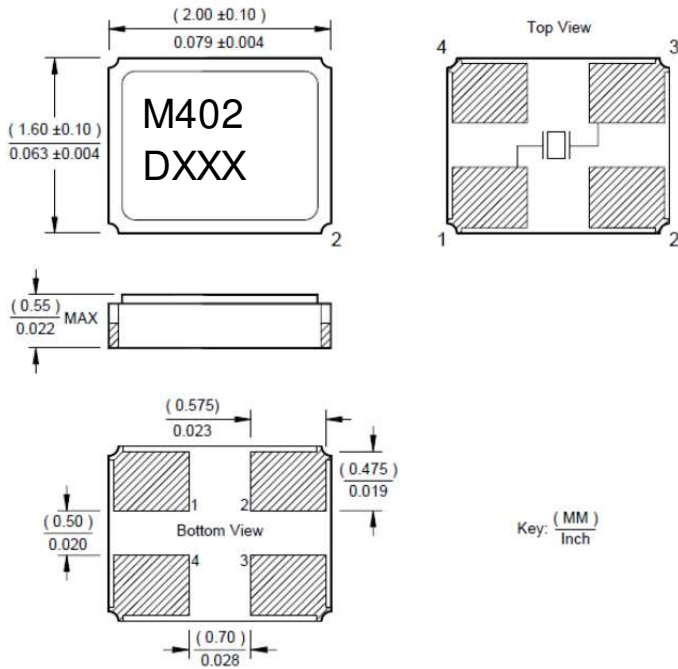


ELECTRICAL CHARACTERISTICS

PARAMETER		VALUE		
ELECTRICAL PARAMETERS	Frequency Range	16MHz to 60MHz		
	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 Ranges	-10°C to +60°C	-20°C to +70°C	
		-30°C to +85°C	-40°C to +85°C	
	Equivalent Series Resistance [Maximum]	16MHz - < 20MHz	120 Ohms	
		20MHz - < 30MHz	100 Ohms	
		30MHz - < 36MHz	80 Ohms	
		36MHz - 60MHz	60 Ohms	
	Load Capacitance	See Ordering Information		
	Shunt Capacitance [C ₀]	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 labels.
2. Terminations #2, #4 and the metal lid are connected internally. End user may connect these pins to circuit ground for EMI suppression.
3. Termination pads (e4); barrier plating is nickel [Ni] with gold [Au] flash plate.
4. Reflow conditions per JEDEC J-STD-020; +260°C maximum, 10 seconds.
5. MSL = 1.

SUGGESTED SOLDER PAD GEOMETRY

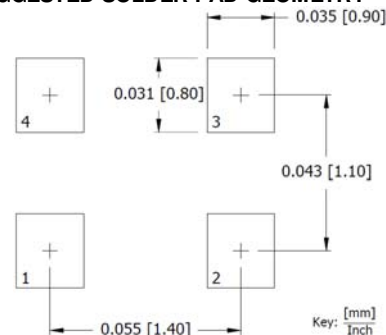


TABLE I – DATE CODE

YEAR		MONTH					JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
		2001	2005	2009	2013	2017												
2001	2005	2009	2013	2017	A	B	C	D	E	F	G	H	J	K	L	M		
2002	2006	2010	2014	2018	N	P	Q	R	S	T	U	V	W	X	Y	Z		
2003	2007	2011	2015	2019	a	b	c	d	e	f	g	h	j	k	l	m		
2004	2008	2012	2016	2020	n	p	q	r	s	t	u	v	w	x	y	z		