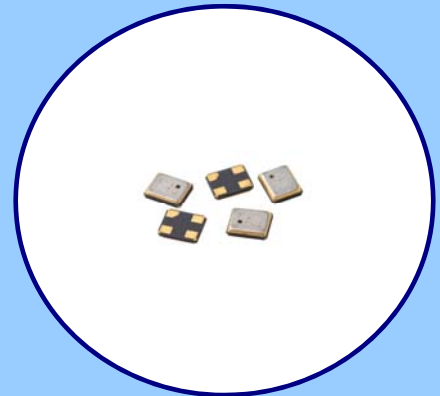


FEATURES

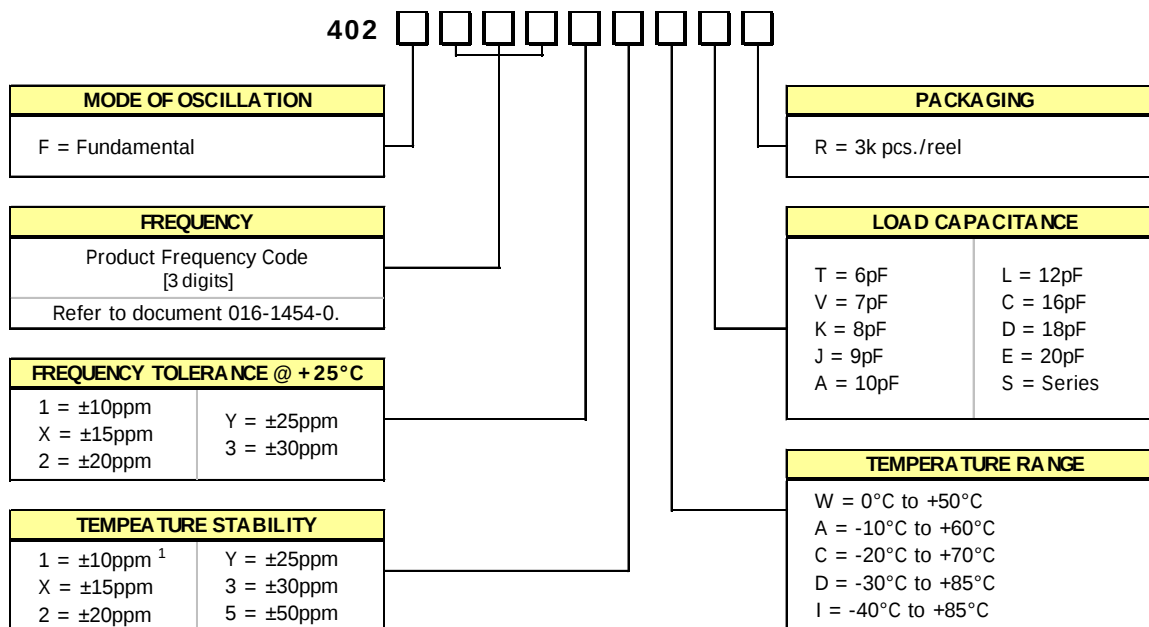
- Standard 2.0mm x 1.6mm Seam Weld Package
- Fundamental Crystal Design
- Frequency Range 16 – 60MHz
- Frequency Tolerance, ± 20 ppm Standard
- Frequency Stability, ± 30 ppm Standard
- Operating Temperature to -40°C to $+85^{\circ}\text{C}$
- Tape & Reel Packaging Standard, EIA-481
- RoHS/Green Compliant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

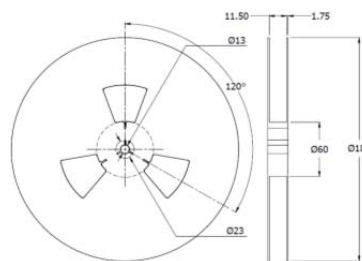
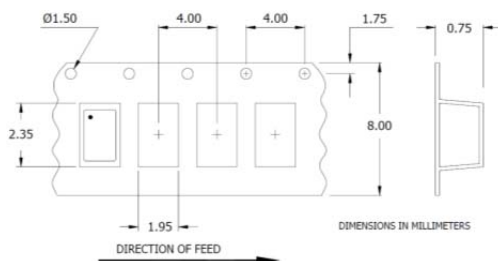


1. Available with temperature range codes W, A, C and D.

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.

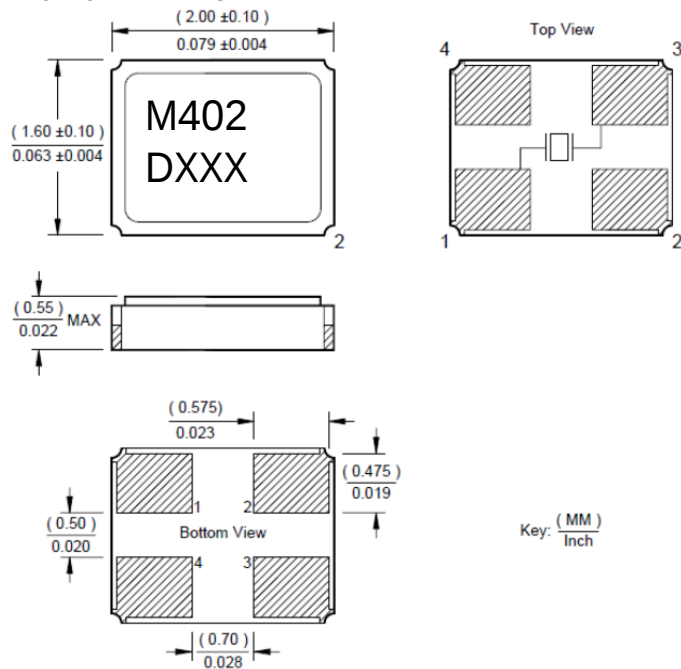


ELECTRICAL CHARACTERISTICS

ELECTRICAL PARAMETERS	PARAMETER	VALUE	
	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

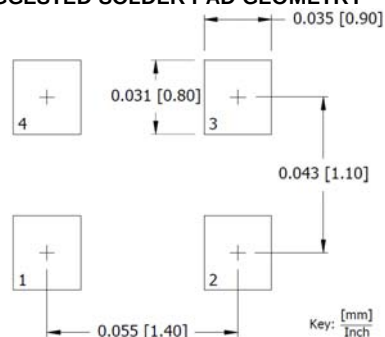


TABLE I – DATE CODE

YEAR					MONTH											
					JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC
2001	2005	2009	2013	2017	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

Mouser Electronics

Authorized Distributor

Click to View Pricing, Inventory, Delivery & Lifecycle Information:

CTS:

[402F500XXCLT](#) [402F200XXCDT](#) [402F32012IAT](#) [402F16033CDT](#) [402F24011CKT](#) [402F32011CAT](#)
[402F192XXCAT](#) [402F30022IAT](#) [402F19212IAT](#) [402F20412IKT](#) [402F50022IJT](#) [402F38422ILT](#) [402F32011CDT](#)
[402F270XXCLT](#) [402F4001XILT](#) [402F2041XIAT](#) [402F300XXCDT](#) [402F24011CDT](#) [402F2711XIKT](#) [402F50022ILT](#)
[402F200XXCJT](#) [402F36011CLT](#) [402F400XXCDT](#) [402F20011CLT](#) [402F360XXCJT](#) [402F500XXCAT](#) [402F5401XIKT](#)
[402F37433CDT](#) [402F250XXCDT](#) [402F36012IAT](#) [402F32022IJT](#) [402F30711CJT](#) [402F37433CAT](#) [402F37411CJT](#)
[402F2601XIKT](#) [402F2001XIDT](#) [402F16011CJT](#) [402F48033CAT](#) [402F30711CLT](#) [402F30033CLT](#) [402F40011CDT](#)
[402F20012IAT](#) [402F20422IAT](#) [402F27111CKT](#) [402F2401XIAT](#) [402F3601XIDT](#) [402F37412IDT](#) [402F32033CDT](#)
[402F25012IAT](#) [402F25011CDT](#) [402F30712IDT](#) [402F192XXCLT](#) [402F40022IKT](#) [402F20412IJT](#) [402F2701XIAT](#)
[402F50033CJT](#) [402F40022IDT](#) [402F37412IJT](#) [402F30712ILT](#) [402F27111CAT](#) [402F16012IKT](#) [402F480XXCDT](#)
[402F48012IDT](#) [402F48011CJT](#) [402F2001XILT](#) [402F260XXCDT](#) [402F19211CDT](#) [402F54022IDT](#) [402F30011CJT](#)
[402F27022IDT](#) [402F384XXCAT](#) [402F240XXCAT](#) [402F27033CJT](#) [402F5401XIDT](#) [402F27133CLT](#) [402F20022IAT](#)
[402F48012ILT](#) [402F4801XILT](#) [402F37412ILT](#) [402F30012IDT](#) [402F38433CKT](#) [402F38422IKT](#) [402F1601XIAT](#)
[402F48012IKT](#) [402F1921XIJT](#) [402F50011CDT](#) [402F40022IAT](#) [402F20433CJT](#) [402F270XXCAT](#) [402F40033CAT](#)
[402F2711XILT](#) [402F24012IAT](#) [402F307XXCKT](#) [402F24033CDT](#) [402F300XXCKT](#) [402F38412IKT](#) [402F2001XIJT](#)
[402F27022IJT](#) [402F204XXCJT](#) [402F160XXCJT](#)