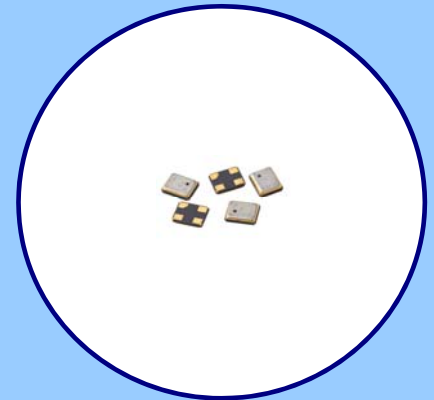




FEATURES

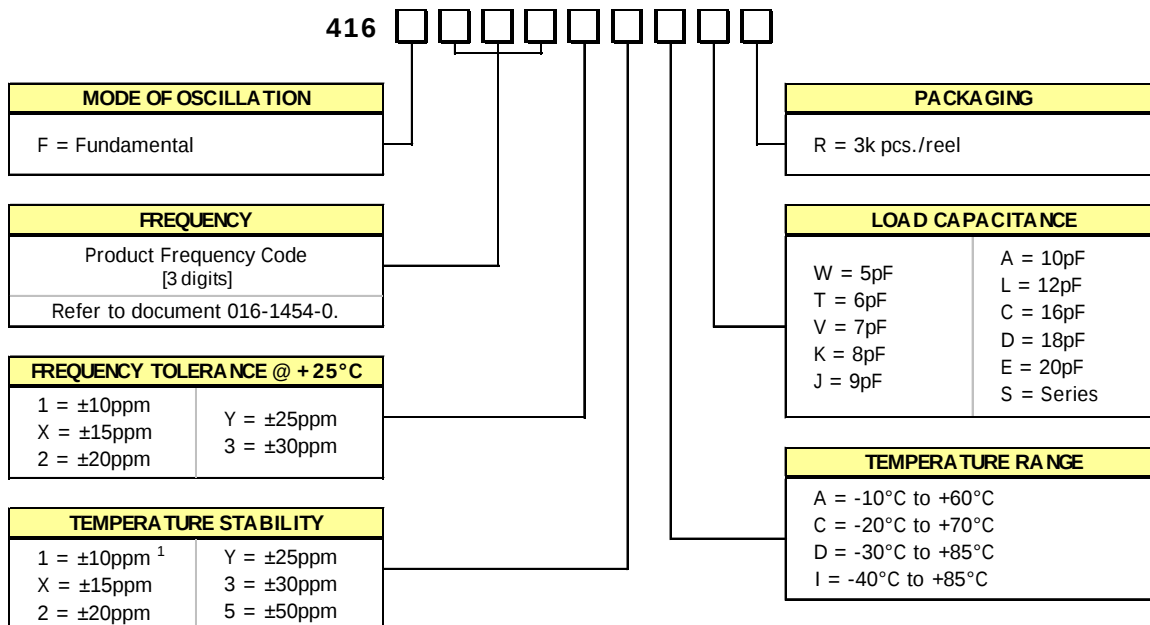
- Standard 1.6mm x 1.2mm Seam Weld Package
- Fundamental Crystal Design
- Frequency Range 24 – 80MHz
- Frequency Tolerance, $\pm 20\text{ppm}$ Standard
- Frequency Stability, $\pm 20\text{ppm}$ Standard
- Operating Temperature to -40°C to $+85^{\circ}\text{C}$
- Tape & Reel Packaging Standard, EIA-481
- RoHS/Green Compliant [6/6]



APPLICATIONS

Model 416 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

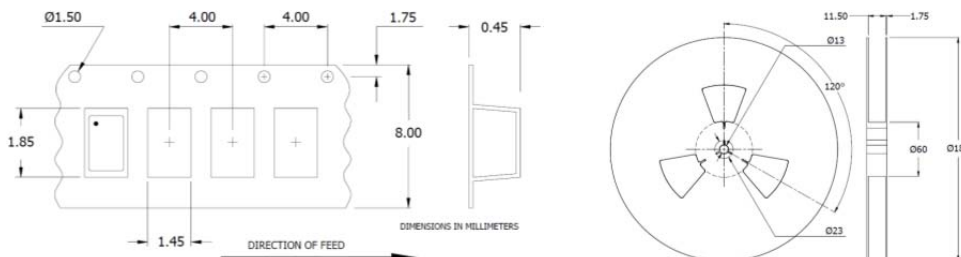


1. Available with temperature range codes A, C and D.

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.

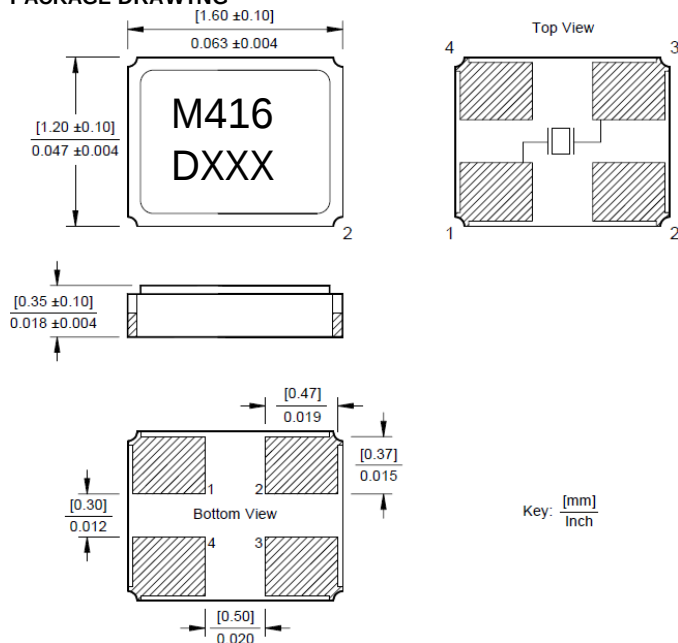


ELECTRICAL CHARACTERISTICS

ELECTRICAL PARAMETERS	PARAMETER	VALUE	
	Frequency Range	24MHz to 80MHz	
	Operating Mode	Fundamental	
	Crystal Cut	AT-Cut	
	Frequency Tolerance @ +25°C	±20ppm, Standard	
	Frequency Stability Tolerance [Operating Temperature Range, Referenced to +25°C Reading]	±20ppm, 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]	24MHz - <30MHz	120 Ohms
		30MHz - <37MHz	80 Ohms
		37MHz - 80MHz	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. M416 - 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

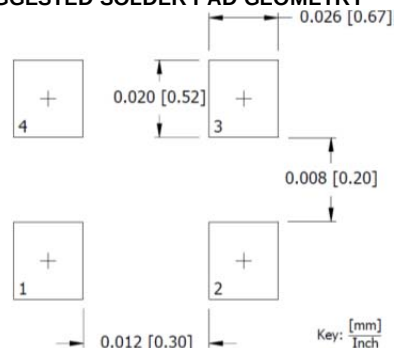


TABLE I – DATE CODE

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:

[416F40022IKT](#) [416F36022CKT](#) [416F48022IKT](#) [416F52022CKT](#) [416F52022IKT](#) [416F30022CKT](#) [416F44022CKT](#)
[416F27022CKT](#) [416F32022IKT](#) [416F24022IKT](#) [416F40022CKT](#) [416F32022CKT](#) [416F48022CKT](#) [416F26022IKT](#)
[416F26022CKT](#) [416F36022IKT](#) [416F24012IST](#) [416F26025CLT](#) [416F440X3CST](#) [416F440XXCLT](#) [416F440XXAST](#)
[416F260XXCKT](#) [416F440X3IST](#) [416F440XXCKT](#) [416F48011ADT](#) [416F44013IST](#) [416F4401XAST](#) [416F4401XCLT](#)
[416F44013CST](#) [416F44022CLT](#) [416F44022CST](#) [416F44022IAT](#) [416F44035AST](#) [416F44012IST](#) [416F44013ADT](#)
[416F44013CDT](#) [416F44033AKT](#) [416F44035AKT](#) [416F440X2AKT](#) [416F440X2CST](#) [416F44025AAT](#) [416F44022IDT](#)
[416F44025CKT](#) [416F44025IAT](#) [416F440X3ALT](#) [416F44023CST](#) [416F44033ITT](#) [416F440X2AST](#) [416F44035ALT](#)
[416F440X2AAT](#) [416F44025CDT](#) [416F44025IDT](#) [416F44033IAT](#) [416F44033IDT](#) [416F440X3AKT](#) [416F440X3CDT](#)
[416F440X3ITT](#) [416F44022AKT](#) [416F44011CTT](#) [416F44023CLT](#) [416F44023IST](#) [416F44011ALT](#) [416F406X3CST](#)
[416F406X3ITT](#) [416F44012ALT](#) [416F44012AST](#) [416F406XXALT](#) [416F40635IST](#) [416F406X2ILT](#) [416F406X3AKT](#)
[416F4401XCST](#) [416F4401XCTT](#) [416F406X3AAT](#) [416F44013ILT](#) [416F44013CLT](#) [416F44013CAT](#) [416F40633ADT](#)
[416F40622IKT](#) [416F44013AAT](#) [416F44013AST](#) [416F440XXAKT](#) [416F40623CKT](#) [416F40625ALT](#) [416F44035ILT](#)
[416F440X2IST](#) [416F440X3CLT](#) [416F440X3IDT](#) [416F406X2ALT](#) [416F3201XCST](#) [416F40625IST](#) [416F32013ITT](#)
[416F3201XCAT](#) [416F32022AKT](#) [416F32013IDT](#) [416F32013IST](#) [416F406X3ILT](#) [416F40633ALT](#) [416F40623AAT](#)
[416F32025CAT](#) [416F32025IAT](#)