

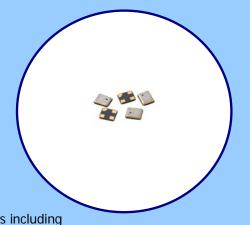
MODEL 416



SURFACE MOUNT QUARTZ CRYSTAL

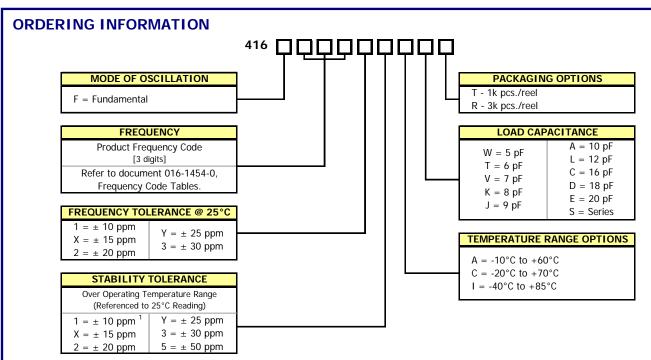
FEATURES

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



APPLICATIONS

Model 416 is a low cost device used in a wide range of commercial applications including wearable and handheld electronics, notebooks, computer peripherals, Bluetooth and USB interfaces.

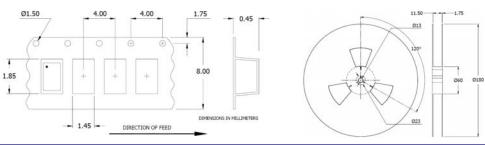


1] Check temperature range code availability with factory.

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 1k pieces minimum and 3k pieces maximum per 180mm reel.



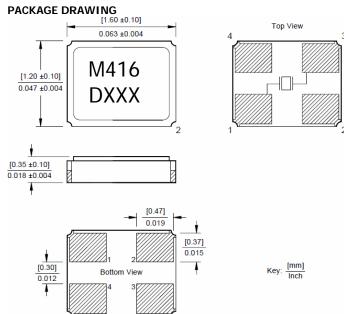


ELECTRICAL CHARACTERISTICS

	PARAMETER	VALUE					
	Frequency Range	24 MHz to 80 MHz					
PARAMETERS	Operating Mode	Fundamental					
	Crystal Cut	AT-Cut					
	Frequency Tolerance @ +25°C	±20 ppm, Standard					
	Frequency Stability Tolerance [Operating Temperature Range, Referenced to 25°C Reading]	±20 ppm, Standard					
ARA	Operating Temperature Ranges	-10°C to +60°C -20°C to +70°C	-40°C to +85°C				
	Equivalent Series Resistance [Maximum]	24 MHz - < 40 MHz	200 Ohms				
CAL	Equivalent Series Resistance [Maximum]	40 MHz - 80 MHz	100 Ohms				
CTRI	Load Capacitance	See Ordering Information					
ြ	Shunt Capacitance (C ₀)	3.0 pF Typical, 5.0 pF Maximum					
EE	Drive Level	10 μW Typ., 100 μW Max.					
	Aging @ +25°C	±3 ppm/yr Typical					
	Insulation Resistance	500M Ohms @ DC 100V					
	Storage Temperature Range	-40°C to +90°C					

MECHANICAL SPECIFICATIONS

[0.50] 0.020



MARKING INFORMATION

- 1. M416 CTS Model Series.
- 2. D Date code. See Table I for codes.
- 3. XXX Frequency code. Reference CTS document 016-1454-01.

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.
- 3. 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

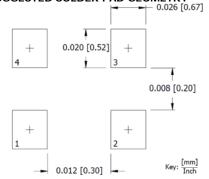


TABLE I - DATE CODE

	MONTH				JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	ост	NOV	DEC
	YEAR				JAN	ILD	WAIX	AFK	WAT	JOIN	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	٧	W	Χ	Υ	Z
2003	2007	2011	2015	2019	а	b	С	d	е	f	g	h	j	k	- 1	m
2004	2008	2012	2016	2020	n	р	q	r	S	t	u	V	W	Х	у	Z