

Model 406 Surface Mount Quartz Crystal

Features

- Hermetic Ceramic Surface Mount Package
- Fundamental Crystal Design
- Frequency Range 7.0 54MHz
- Frequency Tolerance, ±30ppm Standard
- Frequency Stability, ±50ppm Standard
- Operating Temperature Range to -40°C to +85°C
- Tape and Reel Packaging, EIA-418

Applications

- IoT and IIoT Applications
- Wireless Communications
- FPGA/Microcontrollers
- USB Interfaces
- Computer Peripherals
- Portable Equipment
- Test and Measurement
- M2M Communications

Part Dimensions:

60 x 3 5 x 1 2mm • 68mg

Connect

Broadband Access

Standard Frequencies - see Page 5 for common frequencies. * Check with factory for availability of frequencies not listed.

Description

CTS Model 406 incorporates a high Q quartz resonator and is ideal for supporting a wide range of commercial and industrial applications.

Ordering Information



Notes

1] Check factory availability when combined with -40°C to +85°C temperature range.

- 2] Frequency is recorded with 2 leading digits before the "M" and 5 significant digits after the "M" [including zeroes].
 - (Ex. XXMXXXXX [16M38400], XXMXXXXX [22M11840], XXMXXXXX [14M31818])

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

This product is specified for use only in standard commercial applications. Supplier disclaims all express and implied warranties and liability in connection with any use of this product in any non-commercial applications or in any application that may expose the product to conditions that are outside of the tolerances provided in its specification.

DOC# 008-0260-0 Rev. I

www.ctscorp.com

Page 1 of 5

©2017 CTS® Corporation. Information/product(s) subject to change. No warranty that product(s) will meet the stated specifications for customer specific applications or test equipment. Visit www.ctscorp.com for list of applicable patent(s), more information, or to request a quote.



Electrical Specifications

Operating Conditions

PARAMETER	SYMBOL	CONDITIONS	MIN	ТҮР	MAX	UNIT
	T _A	-	-20	+25	+70	°C
Operating Temperature			-30		+85	
			-40		+85	
			-40		+105	
Storage Temperature	T _{STG}	-	-55	-	+125	°C

Frequency Stability

PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT
Frequency Range	f _o	Fundamental Mode	7 - 54			MHz
Frequency Tolerance	∆f/f _o	@ +25°C	10,	10, 15, 20, 25 or 30		
Frequency Stability	$\Delta f/f_{25}$	Referenced to +25°C reading	10, 15, 20, 25, 30 or 50		±ppm	
Aging	∆f/f _o	Typical per year @ +25°C	-3	-	3	ppm

Crystal Parameters

PARAMETER	SYMBOL	CONDITIONS	MIN	ТҮР	MAX	UNIT		
Operating Mode	-	-	Fundamental			-		
Crystal Cut	-	-	AT-Cut Strip			-		
Load Capacitance	CL	-	See Ordering Information			рF		
Shunt Capacitance	Co	-	-	5.0	7.0	рF		
Series Resistance								
	R_1	7MHz-<12MHz	-	-	100			
Fundamental		12MHz-<14MHz	-	-	60	Ω		
Fundamentai		14MHz-<20MHz	-	-	50			
		20MHz-54MHz	-	-	40			
Drive Level	DL	-	-	10	300	μW		
Insulation Resistance	R _i	+100Vdc ±15Vdc	500	-	-	MΩ		
Δf/f ₀ - Frequency deviation referenced to nominal frequency.								

 $\Delta f/f$ $_{25}$ - Frequency deviation over operating temperature range, referenced to +25°C frequency.



Mechanical Specifications

Package Drawing





Marking Information

- 2. C CTS.
- 3. ** Manufacturing Site code.
- 4. YWW Date Code. Y = Lst Digit of Year, WW = Week.

Recommended Pad Layout



Notes

- 1. JEDEC termination code (e4). Barrier-plating is nickel [Ni] with gold [Au] flash plate.
- 2. Terminations #2, #4 and the metal lid are connected internally. End user may connect these pins to circuit ground for EMI suppression.
- Due to package variability, the pad chamfer on the bottom could be located on Pin 1 or 4 in a given lot. Layout orientation should be based on the top view [marking side], as indicated in package drawing. The chamfer location does not affect the electrical performance of the device.
- Reflow conditions per JEDEC J-STD-020; +260°C maximum, 20 seconds.
- 5. MSL = 1.

DOC# 008-0260-0 Rev. I

www.ctscorp.com

Page 3 of 5

©2017 CTS® Corporation. Information/product(s) subject to change. No warranty that product(s) will meet the stated specifications for customer specific applications or test equipment. Visit www.ctscorp.com for list of applicable patent(s), more information, or to request a quote.

^{1.} XX.XXX – Frequency marked with 3 significant digits after the decimal.



Packaging – Tape and Reel



Reel Drawing



Notes

- 1. Device quantity is 1k pieces maximum per 180mm reel.
- 2. Complete CTS part number, frequency value, date code and manufacturing site code information must appear on reel and carton labels.

www.ctscorp.com

Page 4 of 5

©2017 CTS® Corporation. Information/product(s) subject to change. No warranty that product(s) will meet the stated specifications for customer specific applications or test equipment. Visit www.ctscorp.com for list of applicable patent(s), more information, or to request a quote.



Addendum

Common Frequencies and Frequency Codes – MHz

Common Wireless Frequencies Additional Frequencies

12.000000 12.000 8.000000 8.000 24.553500 24.55350 24.553 13.560000 13.M56000 15.660 10.000000 10.000 24.576 24.575 16.000000 16.000 11.005920 11.005920 11.00592 25.00052 25.000052 25.001 19.200000 19.200 12.288000 12.288 26.041660 26M0000 25.000 24.000000 24.000 12.500000 12.8000 27.60000 27.60000 27.60000 27.60000 27.60000 27.60000 27.60000 28.22400 28.822 28.22400 28.224 28.322 28.322 28.322 28.322 28.322 28.322 28.322 28.322 28.322 28.322 28.322 28.322 28.325 32.000 38.300 13.853750 13.855375 13.8537 13.8537 13.8537 28.37500 28.437500 28.437500 28.4375 32.000000 32.000 13.824000 13.84000 13.842400 13.824 28.636360 28.6636 28	FREQUENCY	PART NUMBER CODE	MARKING CODE	FREQUENCY	PART NUMBER CODE	MARKING CODE	FREQUENCY	PART NUMBER CODE	MARKING CODE
13.560000 13.560000 10.000000 10.00000 24.576000 24.576000 24.57600 16.000000 16.0000 11.059200 11.05920 11.05920 25.00625 25.00162 19.200000 19.20000 12.200000 12.288000 12.2880 12.288 26.041660 26.404160 26.4000 26.800 24.000000 24.0000 12.50000 12.5000 27.60000 27.40000 27.4000 27.4000 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.32200 28.32200 28.32200 28.32200 28.32200 28.32200 28.32200 28.32200 28.32200 28.32200 28.32200 28.3253 28.3553 28.37500 28.37500 28.3400 13.83400 13.83440 13.8341 29.49120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.4	12.000000	12M00000	12.000	8.000000	08M00000	8.000	24.553500	24M55350	24.553
16.00000 16.0000 16.000 11.059200 11.05920 11.059 25.000625 25.001 19.200000 12.028000 12.28800 12.288 26.641660 26M4166 26.000 24.00000 24.0000 12.00000 12.0500 12.088 27.00000 27.00000 27.00000 25.000000 25.000 12.068000 12.800 27.60000 27.60000 27.60000 26.000000 26.000 13.00000 13.00000 13.000 28.22400 28.22400 28.22400 27.120000 27.10000 30.000 13.553750 13.855375 13.553 28.37500 28.3720 28.372 30.00000 30.000 13.2000 13.M55075 13.854 28.63650 28M37500 28.375 32.000000 37.400 13.82400 13.8240 13.824 28.63650 28M3750 28.975 34.000000 40.0000 14.400000 14.4000 14.4000 30.0000 30.0000 30.700 30.720 30.720 33.760	13.560000	13M56000	13.560	10.000000	10M00000	10.000	24.576000	24M57600	24.576
19.20000 19.20000 12.288000 12.28800 12.288 26.041660 26.001 20.00000 220.000 12.50000 12.500 25.800000 27.60000 27.60000 27.60000 24.000000 25.000000 25.00000 12.88000 12.68800 12.688 27.60000 27.60000 27.6000 27.6000 27.6000 27.6000 27.6000 27.6000 27.6000 28.22400 28.22400 28.2240 28.2240 28.322 30.00000 30.0000 13.553750 13.55375 13.553 28.37500 28.375 28.3750 28.37500 28.6366 28.6366 28.6366 28.6366 28.6366 28.6366 28.6366 28.6366 28.6366 28.6366 28.6366 28.6366 29.49120 29.49120 29.49120 29.49120 29.49120 29.49120 29.49120 29.49120 29.49120 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 <t< td=""><td>16.000000</td><td>16M00000</td><td>16.000</td><td>11.059200</td><td>11M05920</td><td>11.059</td><td>25.000625</td><td>25M00062</td><td>25.001</td></t<>	16.000000	16M00000	16.000	11.059200	11M05920	11.059	25.000625	25M00062	25.001
20.00000 20.0000 12.500000 12.500000 12.68000 12.6800 12.6880 12.688 27.00000 27.00000 27.000 28.022 28.322 28.322 30.00000 30.000 30.000 13.55375 13.05375 13.553 28.37500 28.4320 28.375 32.00000 37.400000 37.40000 37.40000 37.40000 30.4000 30	19.200000	19M20000	19.200	12.288000	12M28800	12.288	26.041660	26M04166	26.041
24.00000 24.000 12.68800 12.068800 12.688 27.00000 27.00000 27.00000 25.00000 25.000 12.80000 12.80000 12.800 27.00000 27.60000 27.60000 26.00000 26.000 13.00000 13.000 28.22400 28.22400 28.22400 28.22400 28.32200 28.32500 28.32500 28.32500 28.3550 28.3553 28.37500 28.35535 28.37500 28.35535 28.37500 28.35535 28.37500 28.35535 28.37500 28.35535 28.37500 28.35535 28.37500 28.35535 28.37500 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 29.491120 30.40000 30.400000 30.400000 30.400000 30.400000 30.400000 30.400000 30.400000 30.400000 30.400000 30.400000 30.400000 30.400000 30.400000 30.400000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 <td< td=""><td>20.000000</td><td>20M00000</td><td>20.000</td><td>12.500000</td><td>12M50000</td><td>12.500</td><td>26.800000</td><td>26M80000</td><td>26.800</td></td<>	20.000000	20M00000	20.000	12.500000	12M50000	12.500	26.800000	26M80000	26.800
25.00000 25.00 12.80000 12.800 27.60000 27.60000 27.60000 27.60000 27.60000 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.22400 28.322 27.120000 27.120 13.50000 13.00000 13.5533 28.37500 28.375 28.37500 28.375 32.00000 32.00000 32.000 13.82400 13.8240 13.824 28.636360 28.06566 28.63636 37.40000 37.400 13.934400 13.93440 13.934 29.491200 29.49120 29.49110 38.40000 40.00000 14.00000 14.40000 14.4000 31.25000 31.12500 31.2500 31.2500 31.2500 31.2500 31.2500 31.2500 31.2500 31.3000 33.3000 33.3000 33.3000 33.330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.33333 33.3330	24.000000	24M00000	24.000	12.688000	12M68800	12.688	27.000000	27M00000	27.000
26.00000 26.000 13.00000 13.00000 13.000 28.22400 28.22400 28.22400 27.12000 27.120 13.50000 13.5000 13.500 28.32200 28.322 30.00000 30.0000 13.50375 13.5537 28.37500 28.375 32.000000 32.00000 32.00000 32.00000 28.402 28.375 32.000000 32.00000 37.4000 13.82400 13.8240 28.636365 28.6363 37.40000 37.4000 13.93440 13.93440 13.934 29.49120 29.49120 29.49120 38.40000 40.0000 14.00000 14.0000 30.4000 30.40000 </td <td>25.000000</td> <td>25M00000</td> <td>25.000</td> <td>12.800000</td> <td>12M80000</td> <td>12.800</td> <td>27.600000</td> <td>27M60000</td> <td>27.600</td>	25.000000	25M00000	25.000	12.800000	12M80000	12.800	27.600000	27M60000	27.600
27.12000 27.1200 13.50000 13.5000 13.500 28.32200 28.32200 28.3220 30.00000 30.0000 30.000 13.55375 13.553 28.37500 28.37500 28.3750 32.000000 32.00000 32.000 13.82400 13.8240 13.824 28.636360 28.6363 28.636 37.400000 37.4000 13.934400 13.89340 13.824 29.491200 29.49120 29.49120 29.49120 29.49120 29.49120 30.4000 40.0000 40.0000 40.0000 14.00000 14.0000 30.40000 30.40000 30.40000 30.40000 30.40000 30.4000 30.4000 30.4000 30.40000 30.40000 30.40000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.7200 <t< td=""><td>26.000000</td><td>26M00000</td><td>26.000</td><td>13.000000</td><td>13M00000</td><td>13.000</td><td>28.224000</td><td>28M22400</td><td>28.224</td></t<>	26.000000	26M00000	26.000	13.000000	13M00000	13.000	28.224000	28M22400	28.224
30.00000 30.0000 32.000 13.553750 13.55375 13.553 28.375000 28.37500 28.37500 32.00000 32.0000 32.000 13.824000 13.82400 13.82400 13.82400 28.636360 28.63636 28.6363 37.40000 37.4000 13.934400 13.093440 13.934 29.491200 29.49120 29.491 38.40000 38.40000 14.00000 14.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.40000 30.72000 30.72000 30.72000 30.72000 31.7250 31.7250 31.7250 31.7250 31.72500 31.72500 31.72500 31.7250 31.72500 32.768 33.3000 33.3000 33.3000 33.3000 33.3000 33.3000 33.3000 33.3000 33.3000 33.3000 33.3300 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3330 33.3360 33.486880 33	27.120000	27M12000	27.120	13.500000	13M50000	13.500	28.322000	28M32200	28.322
32.00000 32.0000 32.000 13.82400 13.82400 13.8240 28.636360 28.6363 28.6363 37.400000 37.4000 13.934400 13.93440 13.9344 29.491200 29.49120 29.491 38.400000 38.4000 14.00000 14.0000 14.000 30.40000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.4000 30.72000 30.72000 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 31.72500 31.7250 31.7250 31.750 31.750 31.750 31.750 31.750 33.3000 33.00000 33.0000 33.0000 33.3300 33.3330 33.3330 33.3330 33.3330 33.3333 33.3330 33.33330 33.333333 33.3330 33.33330	30.000000	30M00000	30.000	13.553750	13M55375	13.553	28.375000	28M37500	28.375
37.40000 37.400 13.934400 13.93440 13.934 29.491200 29.49120 29.491 38.40000 38.4000 14.00000 14.000 30.4000 30.4000 30.4000 40.00000 40.0000 14.318180 14.43181 14.318 30.72000 30.M72000 30.720 48.00000 48.0000 14.400000 14.4000 14.400 31.25000 31.2500 31.250 52.00000 52.000 14.745600 14.745 32.768000 33.000000 33.00000	32.000000	32M00000	32.000	13.824000	13M82400	13.824	28.636360	28M63636	28.636
38.40000 38.4000 48.00000 40.00000 40.0000 14.000000 14.00000 14.000 14.000 30.4000 30.4000 30.4000 30.4000 30.4000 30.40000 30.40000 30.40000 30.40000 30.40000 30.4000 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 30.7200 31.750 31.350 33.330 33.333 33.3333 33.3333 33.3333 <td>37.400000</td> <td>37M40000</td> <td>37.400</td> <td>13.934400</td> <td>13M93440</td> <td>13.934</td> <td>29.491200</td> <td>29M49120</td> <td>29.491</td>	37.400000	37M40000	37.400	13.934400	13M93440	13.934	29.491200	29M49120	29.491
40.00000 40,0000 40,000 14.318180 14.31818 14.318 30.72000 30.072000 30.7200 48.000000 48.0000 14.00000 14.40000 14.400 31.25000 31.25000 32.768 52.000000 52.0000 52.000 14.745600 14.74560 14.745 32.76800 32.076800 33.000 15.360000 15.360 33.00000 33.00000 33.00000 33.000	38.400000	38M40000	38.400	14.000000	14M00000	14.000	30.400000	30M40000	30.400
48.00000 48.0000 48.000 14.400000 14.40000 14.400 31.25000 31.25000 32.768 52.000000 52.000 14.745600 14.74560 14.745 32.768000 32.0000 33.000	40.000000	40M00000	40.000	14.318180	14M31818	14.318	30.720000	30M72000	30.720
52.000000 52.000 52.000 14.745600 14.74560 14.7456 32.76800 32.76800 32.768 15.360000 15.36000 15.3600 15.360 33.00000 33.00000 33.000	48.000000	48M00000	48.000	14.400000	14M40000	14.400	31.250000	31M25000	31.250
15.360000 15M36000 15.360 33.00000 33.00000 16.367600 16M36760 16.367 33.33000 33.M3300 33.330 16.368000 16M36800 16.368 33.33000 33.M33300 33.333 16.384000 16M38400 16.384 33.33300 33.M3330 33.334 16.666700 16M66670 16.666 33.86880 33.86880 33.868 16.800000 16M80000 16.800 35.32800 35M32800 35.328 16.934400 16M93440 16.934 36.00000 36.0000 36.0000 18.000000 18.00000 18.000 37.50000 37M50000 37.500 18.432000 18.43200 18.432 38.00000 38.0000 38.000 19.40000 19.44000 19.440 39.06250 39.0625 39.062 19.660800 19.6608 19.660 39.06250 39.062 39.062 19.460000 19.46000 19.680 41.600000 41.000 44.000 20.48000 20.48000 20.736 45.00000 45.000 49.1520	52.000000	52M00000	52.000	14.745600	14M74560	14.745	32.768000	32M76800	32.768
16.367600 16M36760 16.367 33.33000 33M3300 33.330 16.368000 16M36800 16.368 33.33000 33M3300 33.333 16.384000 16M38400 16.384 33.33300 33M3330 33.334 16.666700 16M66670 16.666 33.86800 33M8680 33.868 16.800000 16M8000 16.800 35.328000 35M32800 35.328 16.934400 16M93440 16.934 36.00000 36M0000 36.000 18.000000 18M0000 18.000 37.50000 37M5000 37.500 18.432000 18M43200 18.432 38.00000 38M8000 38.800 19.40000 19M4000 19.440 38.88000 38M8800 38.880 19.660800 19.6608 19.660 39.06250 39.062 39.062 19.48000 20M4800 20.480 41.600000 41.600 41.600 20.736000 20M73600 20.736 45.00000 45.000 21.18400 22M11840 22.118 49.15200 49.1520				15.360000	15M36000	15.360	33.000000	33M00000	33.000
16.368000 16M36800 16.368 33.33300 33M3300 33.333 16.384000 16M38400 16.384 33.33300 33M3330 33.334 16.666700 16M6670 16.666 33.86880 33M86880 33.868 16.80000 16M8000 16.800 35.32800 35M32800 35.328 16.934400 16M93440 16.934 36.00000 36M0000 36.000 18.00000 18M0000 18.000 37.50000 37M5000 37.500 18.432000 18M4320 18.432 38.00000 38M0000 38.000 19.440000 19M4400 19.440 38.88000 38M8800 38.880 19.660800 19M66080 19.660 39.06250 39.06250 39.06250 19.680000 19M68000 19.680 41.600000 41.600 20.480000 20M48000 20.480 44.000000 45.000 20.480000 20M73600 20.736 45.00000 45M0000 49.152 21.18400 22M1840 22.118 49.15200 49M15200 49.152				16.367600	16M36760	16.367	33.330000	33M33000	33.330
16.384000 16M38400 16.384 33.33300 33M3330 33.334 16.666700 16M6670 16.666 33.86880 33M86880 33.868 16.800000 16M80000 16.800 35.32800 35M32800 35.328 16.934400 16M93440 16.934 36.00000 36M0000 36.000 18.00000 18M0000 18.000 37.50000 37M5000 37.500 18.432000 18M43200 18.432 38.00000 38M0000 38.000 19.440000 19M4400 19.440 38.88000 38M8800 38.880 19.660800 19M66080 19.660 39.06250 39.0625 39.062 19.660800 19M66080 19.660 39.06250 39.062 39.062 19.660800 20M48000 20.480 44.00000 41.600 44.000 20.736000 20M73600 20.736 45.00000 45.000 49.15200 49.15200 49.1520 22.118400 22.11840 22.1579 50.00000 50.0000 50.0000 50.0000 50.0000 54.0000 54.0000 <td></td> <td></td> <td></td> <td>16.368000</td> <td>16M36800</td> <td>16.368</td> <td>33.333000</td> <td>33M33300</td> <td>33.333</td>				16.368000	16M36800	16.368	33.333000	33M33300	33.333
16.66670016.M6667016.66633.86880033.M8688033.86816.80000016.M8000016.80035.32800035.3280035.32816.93440016.M9344016.93436.0000036.000036.00018.00000018.M0000018.00037.5000037.5000037.50018.43200018.M4320018.43238.0000038.M0000038.80019.44000019.M4400019.44038.8800038.M8800038.88019.66080019.6608019.66039.06250039.0625039.06219.68000019.M8800019.68041.6000041.0600041.00020.48000020.M4800020.48044.00000044.00044.00020.73600020.07360020.73645.00000045.00045.00021.1840022.11840022.11849.1520049.152049.15224.55450024.30554.0000054.00054.00054.00024.54540024.5454024.54524.5454024.54540				16.384000	16M38400	16.384	33.333300	33M33330	33.334
16.8000016.8000016.80035.3280035.3280035.328016.93440016.9344016.93436.0000036.0000036.00018.0000018.0000018.00037.5000037.5000037.5000018.4320018.432018.43238.0000038.000038.00019.4400019.440019.44038.8800038.8800038.88019.6608019.6608019.66039.06250039.0625039.06219.6800019.4800020.48041.6000041.0000041.00020.4800020.4800020.48044.0000044.000044.00020.7360020.7360020.73645.0000045.00049.152021.1840022.1184022.11849.1520049.1520049.152024.5454024.5454024.54524.54654.0000054.000				16.666700	16M66670	16.666	33.868800	33M86880	33.868
16.93440016.9344016.93436.0000036.000018.00000018.0000018.00037.5000037.5000018.43200018.M4320018.43238.0000038.0000019.44000019.44019.44038.8800038.8800019.66080019.6608019.66039.06250039.0625019.66080019.6608019.68041.6000041.0600020.48000020.480020.48044.0000044.000020.73600020.73645.0000045.00020.73600020.73645.0000045.00021.1840022.1184022.11849.1520049.152022.57920022.0579222.57950.0000050.000024.30500024.3050024.30554.0000054.00024.54540024.5454024.54524.5454024.54545				16.800000	16M80000	16.800	35.328000	35M32800	35.328
18.000000 18.000 37.500000 37.500000 37.500 18.432000 18.43200 18.432 38.000000 38.00000 38.000 19.440000 19.4400 19.440 38.880000 38.88000 38.8800 19.660800 19.6608 19.660 39.062500 39.06250 39.062 19.680000 19.06080 19.680 41.600000 41.060000 41.6000 20.480000 20.4800 20.480 44.000000 44.0000 44.000 20.736000 20.73600 20.736 45.000000 45.000 45.000 22.118400 22.11840 22.118 49.15200 49.1520 49.152 22.579200 22.05792 22.579 50.000000 50.0000 50.0000 24.305000 24.305500 24.305 54.000000 54.000 54.000 24.545400 24.54540 24.5454 24.54545 24.54545 24.54545				16.934400	16M93440	16.934	36.000000	36M00000	36.000
18.432000 18.43200 18.432 38.000000 38.000000 38.000 19.440000 19.M44000 19.440 38.880000 38.88000 38.880 19.660800 19.M66080 19.660 39.062500 39.06250 39.062 19.680000 19.M68000 19.680 41.600000 41.M60000 41.600 20.480000 20.M48000 20.480 44.000000 44.000 44.000 20.736000 20.736 45.000000 45.000 45.000 45.000 45.000 22.118400 22.11840 22.118 49.152000 49.1520 49.152 22.579200 22.M57920 22.579 50.000000 50.0000 50.000 24.305000 24.035500 24.305 54.000000 54.000 54.000 24.545400 24.54540 24.545 24.54545 24.54545 54.545				18.000000	18M00000	18.000	37.500000	37M50000	37.500
19.440000 19.44000 19.440 38.880000 38.88000 38.880 19.660800 19.66080 19.660 39.062500 39.06250 39.062 19.680000 19.6800 19.680 41.600000 41.00000 41.600 20.480000 20.4800 20.480 44.000000 44.000 44.000 20.736000 20.7360 20.736 45.00000 45.000 45.000 22.118400 22.118 49.15200 49.1520 49.152 22.579200 22.M57920 22.579 50.000000 50.0000 24.305000 24.03500 24.305 54.000000 54.000 24.545400 24.54540 24.545 24.5454 24.5454				18.432000	18M43200	18.432	38.000000	38M00000	38.000
19.660800 19.66080 19.660 39.062500 39.06250 39.062 19.680000 19.6800 19.680 41.60000 41.60000 41.600 20.480000 20.480 20.480 44.00000 44.0000 44.000 20.736000 20M73600 20.736 45.00000 45.000 45.000 20.736000 22M11840 22.118 49.15200 49.M15200 49.152 22.579200 22.M57920 22.579 50.000000 50.0000 50.000 24.305000 24M30500 24.305 54.000000 54.000 54.000 24.54540 24.54540 24.545 24.54545 24.54545 54.6454				19.440000	19M44000	19.440	38.880000	38M88000	38.880
19.680000 19M68000 19.680 41.60000 41M60000 41.600 20.480000 20M48000 20.480 44.00000 44M00000 44.000 20.736000 20M73600 20.736 45.00000 45M0000 45.000 22.118400 22M11840 22.118 49.15200 49M15200 49.152 22.579200 22M57920 22.579 50.00000 50M0000 50.000 24.305000 24M30500 24.305 54.000000 54.000 54.000 24.545400 24M54540 24.545 24.545 24.545 24.545 54.66				19.660800	19M66080	19.660	39.062500	39M06250	39.062
20.480000 20.48000 20.480 44.000000 44.00000 44.00000 20.736000 20.73600 20.736 45.00000 45.000 22.118400 22.118 49.15200 49.1520 49.152 22.579200 22.M57920 22.579 50.00000 50.0000 24.305000 24.030500 24.305 54.000000 54.000 24.545400 24.54540 24.545 24.545 24.545				19.680000	19M68000	19.680	41.600000	41M60000	41.600
20.73600 20.73600 20.736 45.00000 45.00000 45.000 22.118400 22.11840 22.118 49.15200 49.152 22.579200 22.M57920 22.579 50.00000 50.0000 24.305000 24.30500 24.305 54.00000 54.000 24.545400 24.54540 24.545 24.545 24.545				20.480000	20M48000	20.480	44.000000	44M00000	44.000
22.118400 22.011840 22.118 49.15200 49.05200 49.152 22.579200 22.057920 22.579 50.00000 50.0000 50.000 24.305000 24.00500 24.305 54.00000 54.000 54.000 24.545400 24.054540 24.545 24.545 24.545 24.545				20.736000	20M/3600	20.736	45.000000	45M00000	45.000
22.57200 22.57200 22.57200 22.57200 50.000000 50.000000 50.000 24.305000 24.30500 24.305 54.000000 54.000000 54.000 24.545400 24M54540 24.545 24.545 24.545				22.118400	221111840	22.118	49.152000	49IVI15200	49.152
24.505000 24M50500 24.505 54.00000 54M00000 54.000 24.545400 24M54540 24.545 24.545454 24.545				22.579200	2210137920	22.579	54,000000	54 M00000	54.000
24.5454500 = 24.045450 = 24.045				24.303000	24W50500	24.505	54.000000	3410100000	34.000
				24.545454	24M54545	24.546			

www.ctscorp.com

Page 5 of 5

©2017 CTS[®] Corporation. Information/product(s) subject to change. No warranty that product(s) will meet the stated specifications for customer specific applications or test equipment. Visit www.ctscorp.com for list of applicable patent(s), more information, or to request a quote.