

Model 139

Stratum 3E, Low Noise DIL OCXO

Features

- -170 dBc/Hz Phase Noise floor
- Compliant to Stratum 3E of GR-1244-Core
- 10 to 40MHz
- Surface Mount or Thru hole DIL Package
- 3.3V or 5.0V operation
- Tape and Reel Packaging (SMD)



Part Dimensions: 20.3 × 12.7 × 11.0 mm

Description

The CTS Model 139 is a low cost, small size, high performance OCXO. The high quality CTS Quartz Crystal used in this OCXO offers high stability and low jitter/phase noise, making it the ideal choice for any telecommunications system. Other applications include: Telecom Switching, Wireless Communication and Timing over Packet.

Ordering Information

Model	Stability	Temp Range	Supply Voltage	EFC	Package Style	Frequency																																																										
139	<u>U</u>	<u>G</u>	<u>E</u>	<u>N</u>	<u>I</u>	<u>XXMXXX</u>																																																										
	<table><tr><th>Code</th><th>Stability</th></tr><tr><td>T</td><td>±50ppb</td></tr><tr><td>U</td><td>±20ppb</td></tr><tr><td>V</td><td>±10ppb</td></tr><tr><td>W*</td><td>10ppb pk-pk**</td></tr></table> * Order stability option “W” for full GR-1244-CORE, S3E compliance ** Over entire operating temp range	Code	Stability	T	±50ppb	U	±20ppb	V	±10ppb	W*	10ppb pk-pk**	<table><tr><th>Code</th><th>Temp Range</th></tr><tr><td>A</td><td>0 to 50°C</td></tr><tr><td>D</td><td>-20 to 70°C</td></tr><tr><td>G</td><td>-40 to 85°C</td></tr></table>	Code	Temp Range	A	0 to 50°C	D	-20 to 70°C	G	-40 to 85°C	<table><tr><th>Code</th><th>Spec</th></tr><tr><td>D</td><td>5V ± 5%</td></tr><tr><td>E</td><td>3.3V ± 5%</td></tr></table>	Code	Spec	D	5V ± 5%	E	3.3V ± 5%	<table><tr><th>Code</th><th>Spec.</th></tr><tr><td>V</td><td>EFC</td></tr><tr><td>N</td><td>None</td></tr></table>	Code	Spec.	V	EFC	N	None	<table><tr><th>Code</th><th>Spec</th></tr><tr><td>T</td><td>Thru hole</td></tr><tr><td>S</td><td>SMT</td></tr></table>	Code	Spec	T	Thru hole	S	SMT	<table><tr><th>Code</th><th>Frequency (MHz)</th></tr><tr><td>10M000</td><td>10.000</td></tr><tr><td>12M800</td><td>12.800</td></tr><tr><td>16M384</td><td>16.384</td></tr><tr><td>19M440</td><td>19.440</td></tr><tr><td>20M000</td><td>20.000</td></tr><tr><td>24M576</td><td>24.576</td></tr><tr><td>25M000</td><td>25.000</td></tr><tr><td>26M000</td><td>26.000</td></tr><tr><td>30M720</td><td>30.720</td></tr><tr><td>Custom</td><td>XX.XXX</td></tr></table>	Code	Frequency (MHz)	10M000	10.000	12M800	12.800	16M384	16.384	19M440	19.440	20M000	20.000	24M576	24.576	25M000	25.000	26M000	26.000	30M720	30.720	Custom	XX.XXX
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Part Number Example: 139UGENT20M000

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Electrical Specifications

Parameter	Conditions & Remarks	Min	Typical	Max	Unit
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Operating Conditions

Operating Temperature Range	See “Ordering Information” table for options.	-40	-	+85	°C
Supply Voltage (Vcc)	See “Ordering Information” table	3.135 4.75	3.3 5.0	3.465 5.25	Vdc
Power Consumption	During warm up	-	1.8	2.5	W
	Steady state @ 25°C	-	0.75	1.0	W
Load	Output to Ground	5	10	15	pF

Frequency Stability

Frequency	F _{NOM}	10	-	40	MHz
Calibration	$\Delta F/F_{NOM}$; T _A = 25°C; at time of shipment	-	±100	±200	ppb
Temperature Stability	(F _{max} - F _{min})/2 (See “Ordering Information” table for available stability options)	-	-	±10	ppb
Voltage Stability	V _{CC} ±5%	-	±2	±5	ppb
Aging	Per day	-	±0.5	±1	ppb
	Per year	-	-	±50	ppb
	10 years	-	-	±500	ppb
24-Hour Holdover Stability	Inclusive of operating temp and 24hours aging drift (Stability option W)	-	-	11	ppb, pk-pk
Total Free-Run Accuracy	Under all operating conditions for 10 years	-	-	±0.7	ppm
Drift (24 hours)	Constant temperature per GR-1244-CORE	-	-	±1	ppb
Short Term Stability ADEV (in still air)	1.0 sec	-	<0.01	0.02	ppb
	10 sec	-	0.01	0.03	ppb
Wander Generation	MTIE and TDEV per Stratum 3E requirements of Telcordia GR-1244-CORE				
Warmup-Up Time	T _A =25°C; to within 10ppb of freq. @ 30 min	-	-	5	minutes

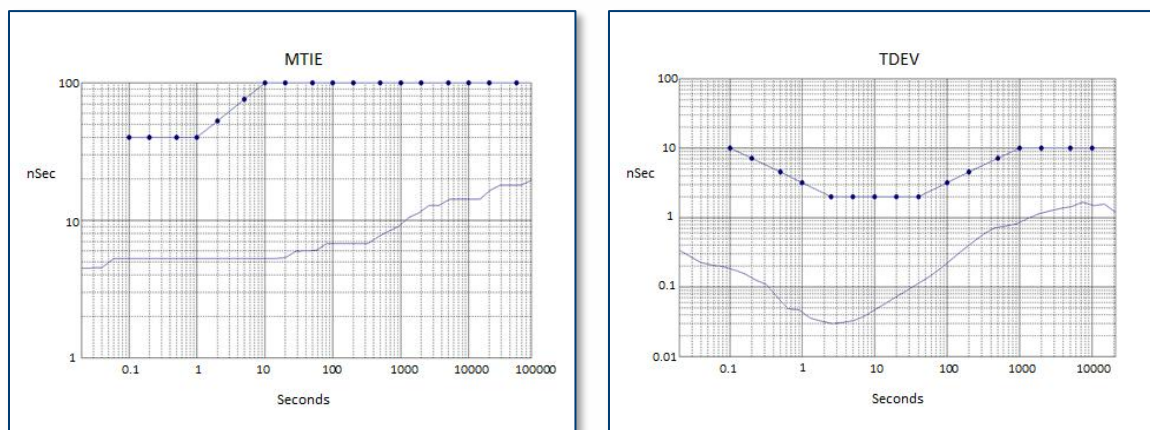
Electronic Frequency Control – EFC (option)

Voltage Range	V _C , Control voltage range	0	-	V _{CC}	V
Pulling Range	Sufficient for 10 years life	±0.7	±1.0	-	ppm
Linearity		-	-	10	%

Electrical Specifications (continued)

Parameter	Conditions & Remarks	Min	Typical	Max	Unit
Output Parameters – Square Wave, HCMOS					
Waveform			HCMOS		
Amplitude	V _{OL} V _{OH}	- 0.9V _{cc}	- -	0.1V _{cc} -	V _{dc}
Rise / Fall Times	10% to 90% @ 10pf load	-	3	5	ns
Duty Cycle	@ 50% of output signal	45	50	55	%
Phase Noise (20MHz)	Offset = 10Hz	-	-112	-	dBc/Hz
	100Hz	-	-143	-	
	1KHz	-	-154	-	
	10KHz	-	-164	-	
	100KHz	-	-170	-	
Spurious		-	-	-70	dBc

Typical Stratum 3E Wander Generation performance per Telcordia GR-1244-CORE (20 MHz, locked through a 0.001 Hz loop bandwidth)



Mechanical and Environmental

Parameter	Condition
Soldering	Maximum reflow temperature, 245°C for 10seconds, 240°C for 20seconds, per IPC/JEDEC J-STD-202D Note: Not intended for inverted reflow
MSL	Level 1
RoHS	Lead-Free. Fully compliant with RoHS Directive 2011/65/EU
Shock	500 G's, 1msec, 5 shocks in each of 6 directions
Sinusoidal Vibration	10Hz to 55Hz with a double amplitude of 1.5mm, 10g's peak from 55Hz to 2000Hz, for 30minutes in each of three perpendicular directions
Random Vibration	5.35G's RMS, 20 to 500Hz, per MIL-STD-202F, Method 214, 15minutes each axis
Seal	Hermetic
Marking Permanency	MIL-STD-202F, Method 215J
Packaging	Tape and Reel for Surface Mount Package; Bulk Pack in Foam for Thru-Hole Package
Storage Temperature Range	-55°C to +105°C

Mechanical Specifications

Figure 1 – Package Drawing – Surface Mount

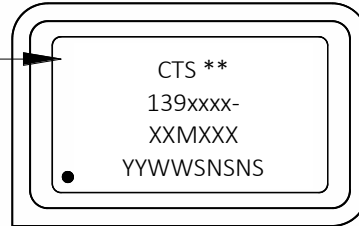
Pad termination finish: Gold flash < 10 µ inch, over Ni plated Cu

MARKING THIS SURFACE

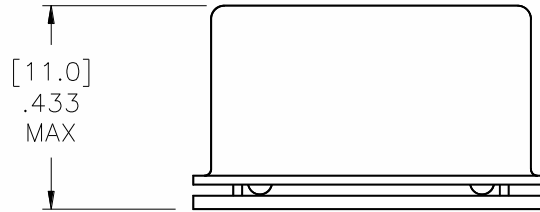
** = MFG SITE CODE

YYWW = DATE CODE

XXXXXX = SERIAL NUMBER



PIN / PAD	FUNCTION
1	N/C or Vc
7	OV & CASE GROUND
8	OUTPUT
14	Vcc



KEY: [MM]
INCH

TOLERANCE: $[\pm .25]$
 $\pm .010$

$[\phi 1.09]$
 $\phi .043$ CASTELLATION
(4) PLACES

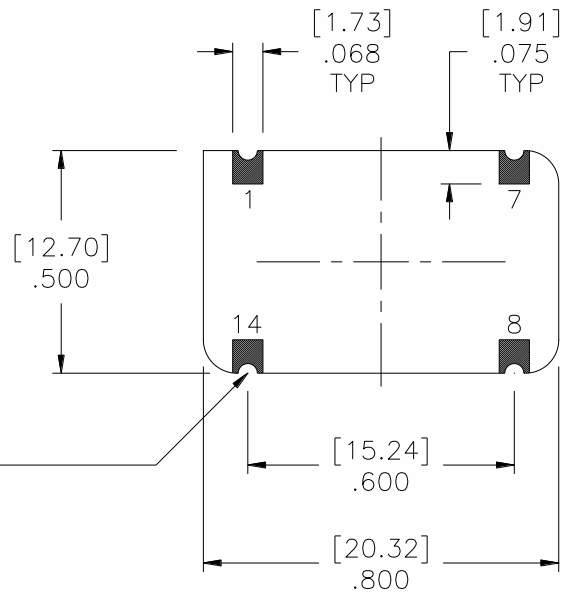


Figure 2 – Package Drawing – Through Hole

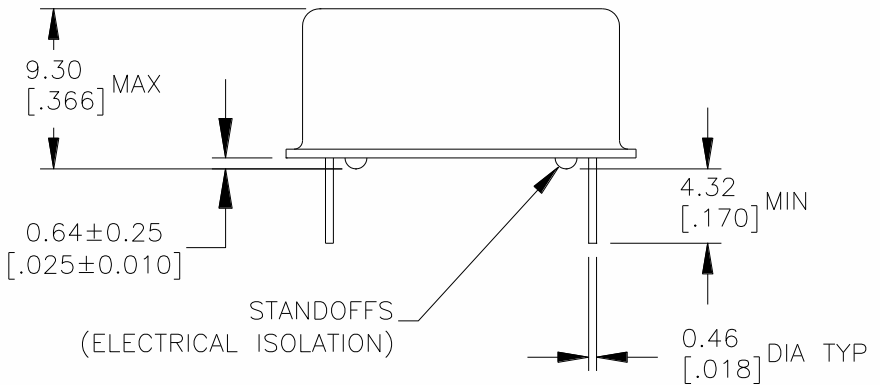
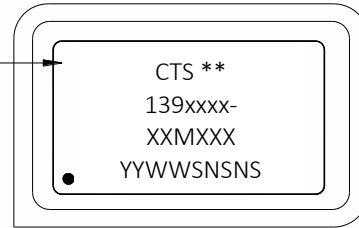
Lead Termination Finish: Solder Coated, Sn96.5% / Ag3.5%

MARKING THIS SURFACE

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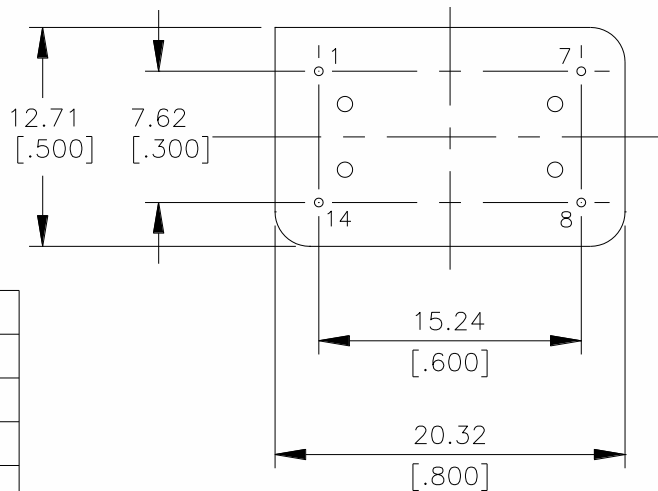
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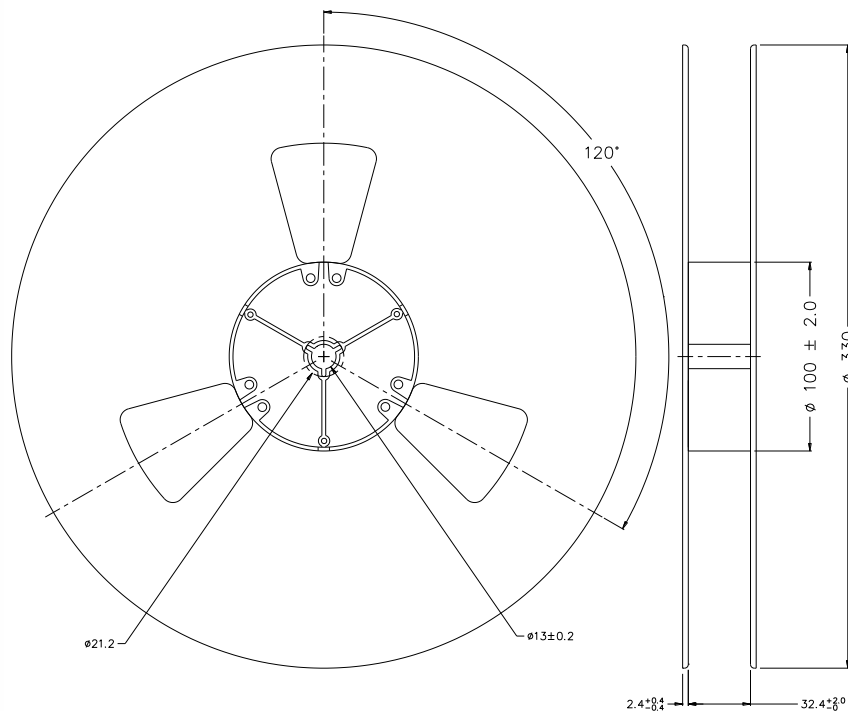
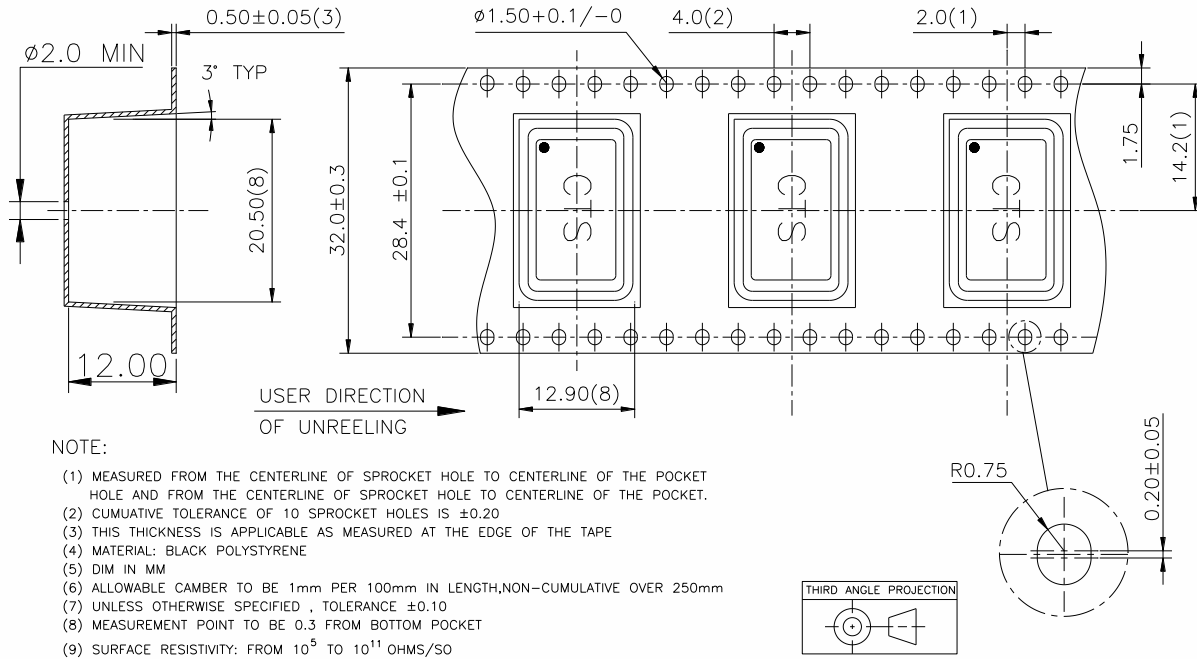
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[INCH]

TOLERANCE: $\pm .25$
[$\pm .010$]



PIN / PAD	FUNCTION
1	N/C or Vc
7	0V & CASE GROUND
8	OUTPUT
14	Vcc

Packing: Tape and Reel



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