

# Preliminary Specification

## CTS

FREQUENCY PRODUCTS

- ◆ 9x14mm Surface Mount Pkg.
- ◆ Differential PECL Outputs
- ◆ +3.3Vdc or +5.0Vdc Operation
- ◆ Sealed AT Strip Crystal
- ◆ Output Enable Function
- ◆ Low Phase Jitter: < 1.0 pSec RMS
- ◆ Excellent Solder Reflow Performance

**Model 650**  
**9x14mm Differential PECL**  
**High Frequency Clock**  
**(416MHz to 832MHz)**

### Electrical Characteristics

Parameter	Sym	Conditions	Min	Typical	Max	Unit
<b>Power Requirements</b>						
Power Supply	Vcc	± 5% 650L ±5% 650S	3.135 4.75	3.30 5.0	3.465 5.25	Vdc Vdc
Supply Current	Icc	Vcc=Max. (3.3Vdc) 50Ω. Load (5.0Vdc)		45 60		mA mA
<b>Frequency Stabilities</b>						
Center Frequency	f <sub>nom</sub>		416	622.08 666.5143	832	MHz
Initial Tolerance	f <sub>cal</sub>	Ta=+25°C	-10		+10	ppm
Freq. vs. Temp.	Δf/ΔTemp	Oper. Temp. Range			± 15	ppm
Freq. vs. Voltage	Δf/ΔVcc	Vcc ±5%		± 1		ppm
Freq. vs. Load	Δf/ΔRL	± 10% Variation		± 1		ppm
Freq. vs Time (Aging)	Δf/ΔTime	20 years			±10	ppm
<b>Waveform Parameters</b>						
Symmetry	Sym	@ 50% Level	45	50	55	%
Amplitude	Vo	50Ω Load	Vcc-1.62V		Vcc-1.025V	V
Rise/Fall Times	tr, tf	20% to 80%		225	350	pSec
Load	RL	Output to Vcc-2.0V or Equivalent		50		Ω
Phase Jitter		12KHz to 20MHz or 50KHz to 80MHz Bandwidth			<1	pSec RMS

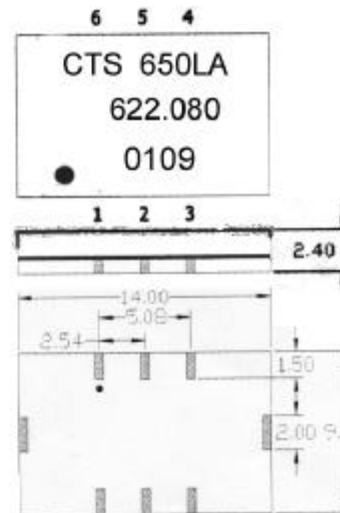
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## Mechanical Dimensions (mm):

- Pin Location:  
 1] No Connection  
 2] Enable/Disable  
 3] GND  
 4] RF output  
 5] Complementary RF output  
 6] Vcc, supply voltage



### Option "A" Enable Truth Table

Pin 2	Pins 4&5
Gnd.	Disabled
V <sub>cc</sub>	Enabled
Open	Disabled

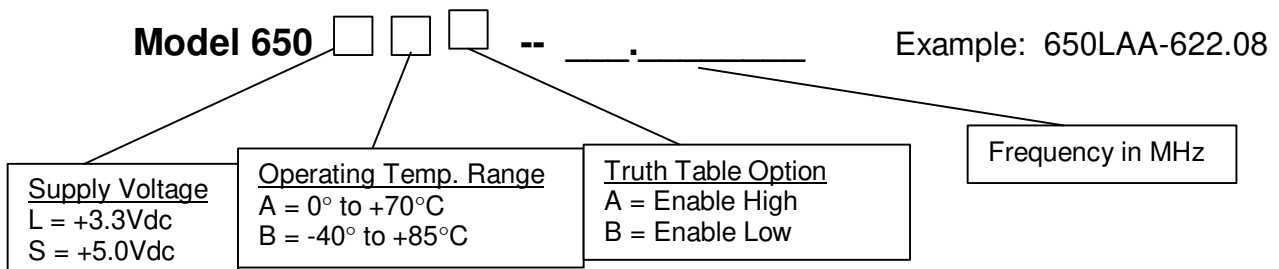
### Option "B" Enable Truth Table

Pin 2	Pins 4&5
Gnd.	Enabled
V <sub>cc</sub>	Disabled
Open	Enabled

### Environmental / Mechanical Specifications

Storage Temperature:	-55° to +125°C
Reflow Soldering:	will withstand 240°C for 20 Seconds
Shock:	1500 G's, 0.5 mSec. Pulse (3 Shocks/Axis)
Vibration:	10 G's peak, 20 to 2000 Hz
Case:	High Temp FR-4 Base
Seal:	Non-Hermetic

### Ordering Information



◆◆◆ CTS Frequency Products ◆ 400 W. North Street ◆ Carlisle, PA 17013 ◆ 717-243-5929 ◆◆◆

Rev 0