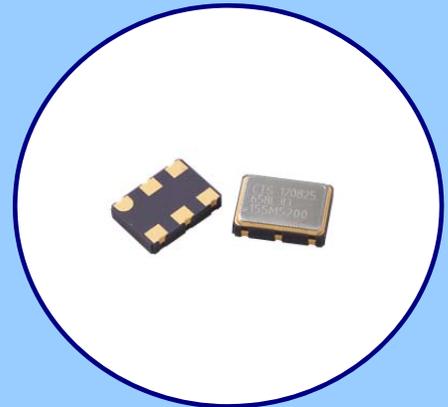


FEATURES

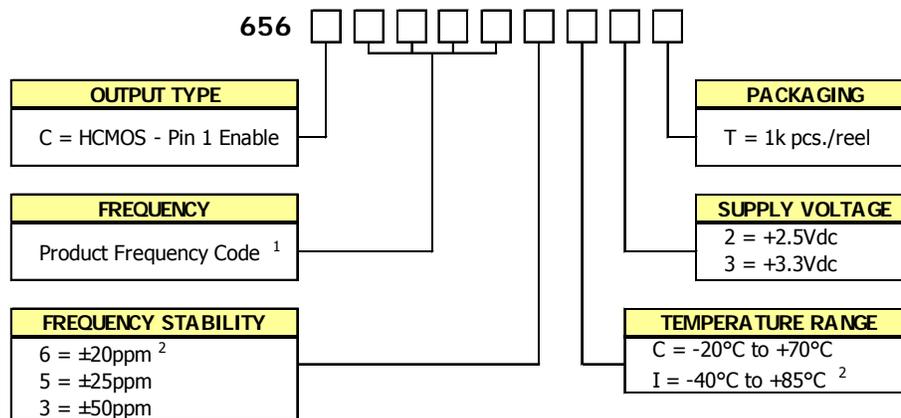
- Advanced PLL Design
- **HCMOS Output**
- Standard 7.0mm x 5.0mm 6-Pad Surface Mount Package
- Integrated Phase Jitter 600fs Typical [12kHz – 20MHz]
- Frequency Range 10 – 250MHz
- Frequency Stability; $\pm 50\text{ppm}$ Standard, $\pm 25\text{ppm}$ Available
- Operating Temperature to -40°C to $+85^{\circ}\text{C}$
- Output Enable Standard
- Tape & Reel Packaging Available
- **RoHS/Green Compliant [6/6]**



APPLICATIONS

Model 656C is ideal for applications such as networking equipment, broadcast video systems, Ethernet, Fiber Channel, storage area networks, PCI Express, test and measurement equipment.

ORDERING INFORMATION

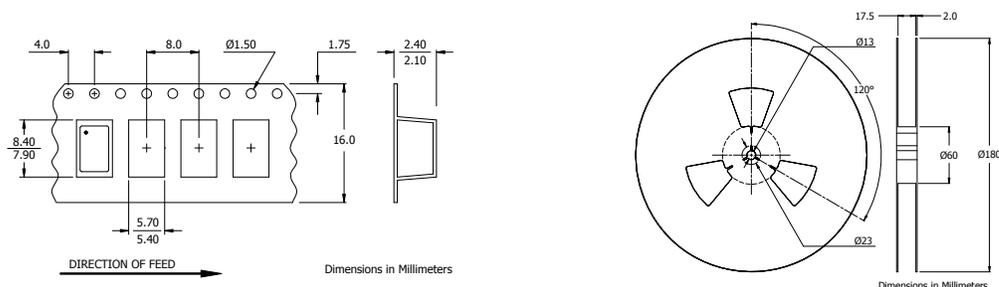


1. Refer to document 016-1454-0, Frequency Code Tables.
3-digits required for frequencies below 100MHz and 4-digits for frequencies 100MHz or greater.
2. Consult factory for availability of 6I Stability/Temperature combination.

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 1,000 pieces maximum per 180mm reel.



ELECTRICAL CHARACTERISTICS

	PARAMETER	SYMBOL	CONDITIONS	MIN	TYP	MAX	UNIT	
Electrical and Waveform Parameters	Maximum Supply Voltage	V_{CC}	-	-0.5	-	5.0	V	
	Storage Temperature	T_{STG}	-	-55	-	+125	°C	
	Frequency Range	f_0	-	10	-	250	MHz	
	Frequency Stability	$\Delta f/f_0$	All Inclusive, see Note 1. 1st year aging	-	-	20, 25, 50 3	± ppm	
	Operating Temperature Commerical	T_A	-	-20	+25	+70	°C	
	Industrial			-40		+85		
	Supply Voltage	V_{CC}	±5%	2.38 3.14	2.5 3.3	2.63 3.47	V	
	Supply Current	I_{CC}	Maximum Load	-	20	-	mA	
	Start Up Time	T_S	Application of V_{CC}	-	3	5	ms	
	Phase Jitter, RMS	t_{jrms}	Integration Bandwidth 12kHz - 20MHz	-	0.6	<1	ps	
	Period Jitter, RMS	p_{jrms}	-	-	3.0	-		
	Period Jitter, Pk-Pk	p_{jpk-pk}	-	-	30	-		
	Enable Function		Standby					
	Enable Input Voltage	V_{IH}	Pin 1 Logic '1', Output Enabled	0.7* V_{CC}	-	-	V	
	Disable Input Voltage	V_{IL}	Pin 1 Logic '0', Output Disabled	-	-	0.3* V_{CC}		
	Disable Current	I_{IL}	Pin 1 Logic '1', Output Disabled	-	-	20	µA	
	Enable Time	T_{PLZ}	Pin 1 Logic '1'	-	-	5	ns	
	HCMOS WAVEFORM							
	Output Load	C_L		-	-	15	pF	
	Output Duty Cycle	SYM	@ 50% Level	45	-	55	%	
Output Voltage Levels								
Logic '1' Level	V_{OH}	CMOS Load	90% V_{CC}	-	-	V		
Logic '0' Level	V_{OL}	CMOS Load	-	-	10% V_{CC}			
Rise and Fall Time	T_{R}, T_F	@ 20% - 80% Levels	-	5	10	ns		

Notes:

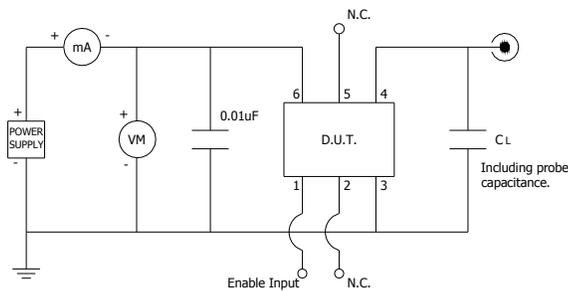
- Inclusive of initial tolerance at time of shipment, changes in supply voltage, load, temperature and aging.

ENABLE TRUTH TABLE

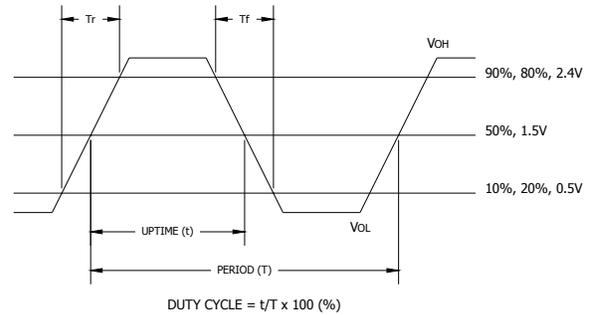
PIN 1	PIN 4
Logic '1'	Output
Open	Output
Logic '0'	High Imp.

ELECTRICAL CHARACTERISTICS

TEST CIRCUIT, HCMOS LOAD



HCMOS OUTPUT WAVEFORM

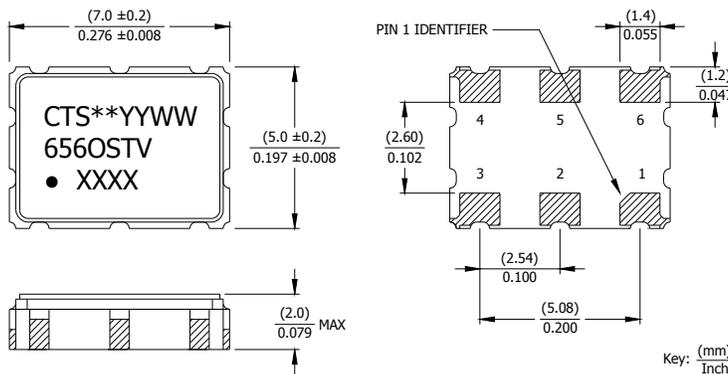


D.U.T. PIN ASSIGNMENTS

PIN	SYMBOL	DESCRIPTION
1	EOH	Enable
2	N.C.	No Connect
3	GND	Circuit & Package Ground
4	Output	RF Output
5	N.C.	No Connect
6	V _{CC}	Supply Voltage

MECHANICAL SPECIFICATIONS

PACKAGE DRAWING



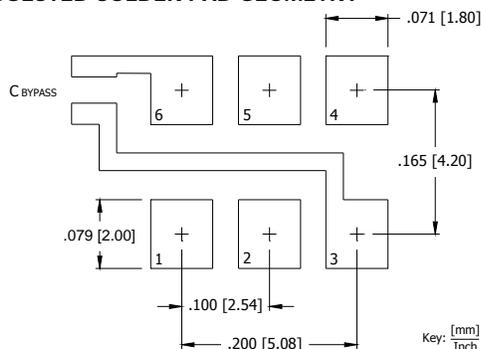
MARKING INFORMATION

- ** - Manufacturing Site Code.
 - YYWW - Date code, YY - year, WW - week.
 - O - Output Type. C = HCMOS.
 - ST - Frequency stability/temperature code. [Refer to Ordering Information.]
 - V - Voltage code. 3 = 3.3V, 2 = 2.5V
 - xxxx - Frequency Code.
3-digits, frequencies below 100MHz
4-digits, frequencies 100MHz or greater.
- Refer to document 016-1454-0, Frequency Code Tables.

NOTES

- Complete CTS part number, frequency value and date code information must appear on reel and carton labels.
- Termination pads (e4). Barrier-plating is nickel [Ni] with gold [Au] flash plate.
- Reflow conditions per JEDEC J-STD-020; +260°C maximum, 20 seconds.
- MSL = 1.

SUGGESTED SOLDER PAD GEOMETRY



ELECTRICAL CHARACTERISTICS [Addendum]

PHASE NOISE

PARAMETER	SYMBOL	CONDITIONS	TYPICAL	UNIT
HCMOS @ 62.5MHz Phase Noise	-	Single Side Band		
		@ 10Hz	-81	dBc/Hz
		@ 100Hz	-105	
		@ 1kHz	-121	
		@ 10kHz	-131	
		@ 100kHz	-135	
		@ 1MHz	-150	
		@ 10MHz	-154	
@ 40MHz	-154			
Phase Jitter, RMS	tjrms	Integration Bandwidth 12kHz - 20MHz	632	fs
HCMOS @ 125MHz Phase Noise	-	Single Side Band		
		@ 10Hz	-69	dBc/Hz
		@ 100Hz	-90	
		@ 1kHz	-115	
		@ 10kHz	-123	
		@ 100kHz	-129	
		@ 1MHz	-144	
		@ 10MHz	-153	
@ 40MHz	-153			
Phase Jitter, RMS	tjrms	Integration Bandwidth 12kHz - 20MHz	543	fs
HCMOS @ 250MHz Phase Noise	-	Single Side Band		
		@ 10Hz	-86	dBc/Hz
		@ 100Hz	-95	
		@ 1kHz	-110	
		@ 10kHz	-119	
		@ 100kHz	-121	
		@ 1MHz	-138	
		@ 10MHz	-149	
@ 40MHz	-153			
Phase Jitter, RMS	tjrms	Integration Bandwidth 12kHz - 20MHz	561	fs