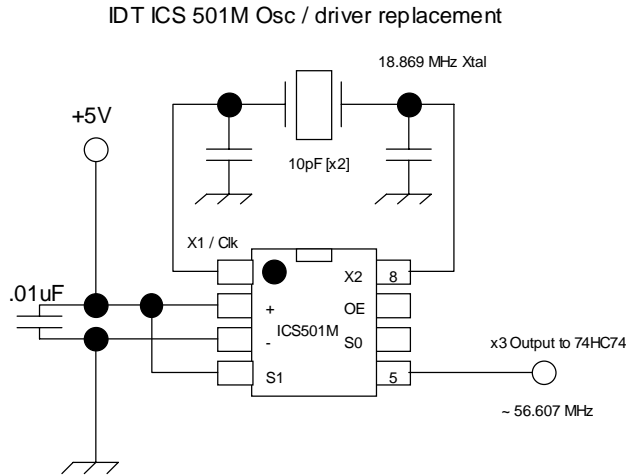# 20 Meter Softrock Lite with ICS501MLF

Circuit Modifications:

I recently built the 20M v6.2 Lite [SSB freq 18.869MHz] with out including any of the oscillator or buffer components on the pc board and then substituted an IDT ICS501M[1] LOCO PLL Clock Multiplier IC [$0.83 in single lots at SemiconductorStore.com[2]] to give the 56.61MHz output [a little high because I used 7pF instead of 10pF caps].

Schematic Diagram of x3 Operation with Crystal

IDT ICS 501M Osc / driver replacement

This chip only takes a .01uF cap across the supply [+5V from R1] and 2 - 10pf caps [I used 7pF - all I could find in my box] from the Xtal pins to gnd.
[Also may benefit from a 33ohm resistor in series with the CLK output, pin 5. I did not have a 1/10 W or SMD part to fit - will try after I get some parts.]

Removing the crystal and the 2 caps and pin 1 can be directly driven by a DDS, the input is self biasing using an AC coupled sine or square wave as low as 0.8 V p-p.

I am using a Norcal FCC-2 with the LO-Z out which is AC coupled and set the gain control at minimum.

S1 & S0 provide 9 multipliers from x2 to x8 - with S1=+5V and S0 open [tristate] the multiplier is 3 Gnd S0 and the multiplier is 6.

The x5 is also possible if S1 is gnd and S0 is +5V.

Top frequency is over 140MHz and no tuning - no coils ! - 3 parts plus the crystal & IC.

Clock Output Table: [See data sheet for complete information and restrictions]

Clk times	4	5.3125	5	6.25	2	3.125	6	3	8
S1[pin4]	0	0	0	TS	TS	TS	1	1	1
S0[pin6]	0	TS	1	0	TS	1	0	TS	1

TS = tristate level or no connection
0 = Gnd
1 = +5V

Photos on the next page

20 Meter Softrock Lite with ICS501MLF

20 M board with ugly construction Xtal oscilator with x3 output [no coils, no tuning !]

Xtal parts removed and DDS input to pin1 [.01uF Cap under ICS501] 18Mhz in & x3 output at 56MHz +

Replaced the ugly construction with a SOIC breadboard and added the 33 ohm series resistor to the output. Working great with the FCC-2 DDS and Rocky 3.32

References:
1 - Datasheet & app note: http://www.idt.com/?genID=501

2 – Referenced USA Distributor - Semiconductor Store :
    http://www.semiconductorstore.com/pages/asp/ltem.asp?ItemNumber=501MLF
    or all Distributors : http://www.idt.com/?id=6