HOLT INTEGRATED CIRCUITS

August 4, 2011

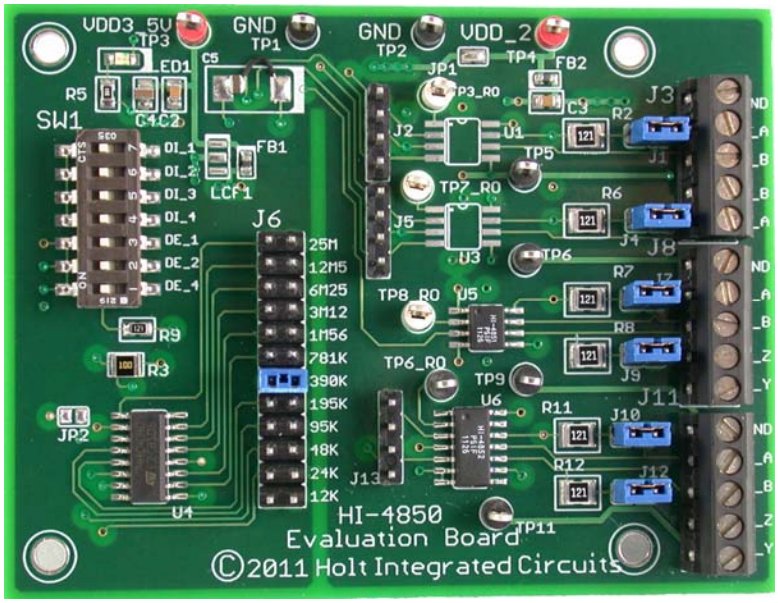
QSG-4850

HI-4850 RS-485/RS-422 Evaluation Board

Introduction:

The HI-4850 Evaluation Board allows the user to evaluate the Holt family of RS-485/RS-422 high speed transceivers. The Evaluation Board features a 50MHz oscillator and a divider circuit so the transceivers can be driven at frequencies selectable from 12.2 KHz – 25 MHz.

The transceiver Inputs and outputs are provided on terminal blocks for easy connection to external signals or cables. Termination resistors (120 ohm) are enabled by shunt jumpers for each of the transceiver inputs/outputs. The evaluation board requires external 3.3V or 5V power.



Demonstration:

A 50MHz oscillator and divider circuit provides clock signals to the transceivers to demonstrate the transmitters or receivers with a clock source. DIP switches allow disabling the clock signals going to each transceiver when an external user signal is applied. To provide a user test signal instead of the clock source, open the DIP switch for the desired transceiver and connect a signal on one or more of the DI_X pins on J2, J5, or J13 header connector. Refer to the schematic for circuit details.

Clock and Enables - SW1 Dip Switches

SWITCH	FUNCTION	FACTORY DEFAULT
S1	U6 Driver Enable (DE) = Open	Open
S2	U3 Driver Enable (DE) = Open	Open
S3	U1 Driver Enable (DE) = Open	Open
S4	U6 Clock (DI) = Closed	Closed
S5	U5 Clock (DI) = Closed	Closed
S6	U3 Clock (DI) = Closed	Closed
S7	U1 Clock (DI) = Closed	Closed

DE and RE header connectors

Three four pin headers (J2, J5 and J13) provide user connections to the DE and nRE signals for each transceiver. To disable any of the transmitters close the DIP switch or ground the DE signal on the corresponding header connector.

PIN	SIGNAL	FUNCTION
1	GND	
2	N.C	
3	DE_X	High = Enables Transmitter
4	nRE_X	Low = Enables the Receiver

Frequency Selection Jumpers

Install one jumper select to the desired frequency. Frequencies are listed on the silkscreen next to the jumper headers.

Termination Resistors

J1, J4, J7, J9, J10 and J12 jumpers enable 120 ohm termination resistors on the transceiver inputs/outputs.

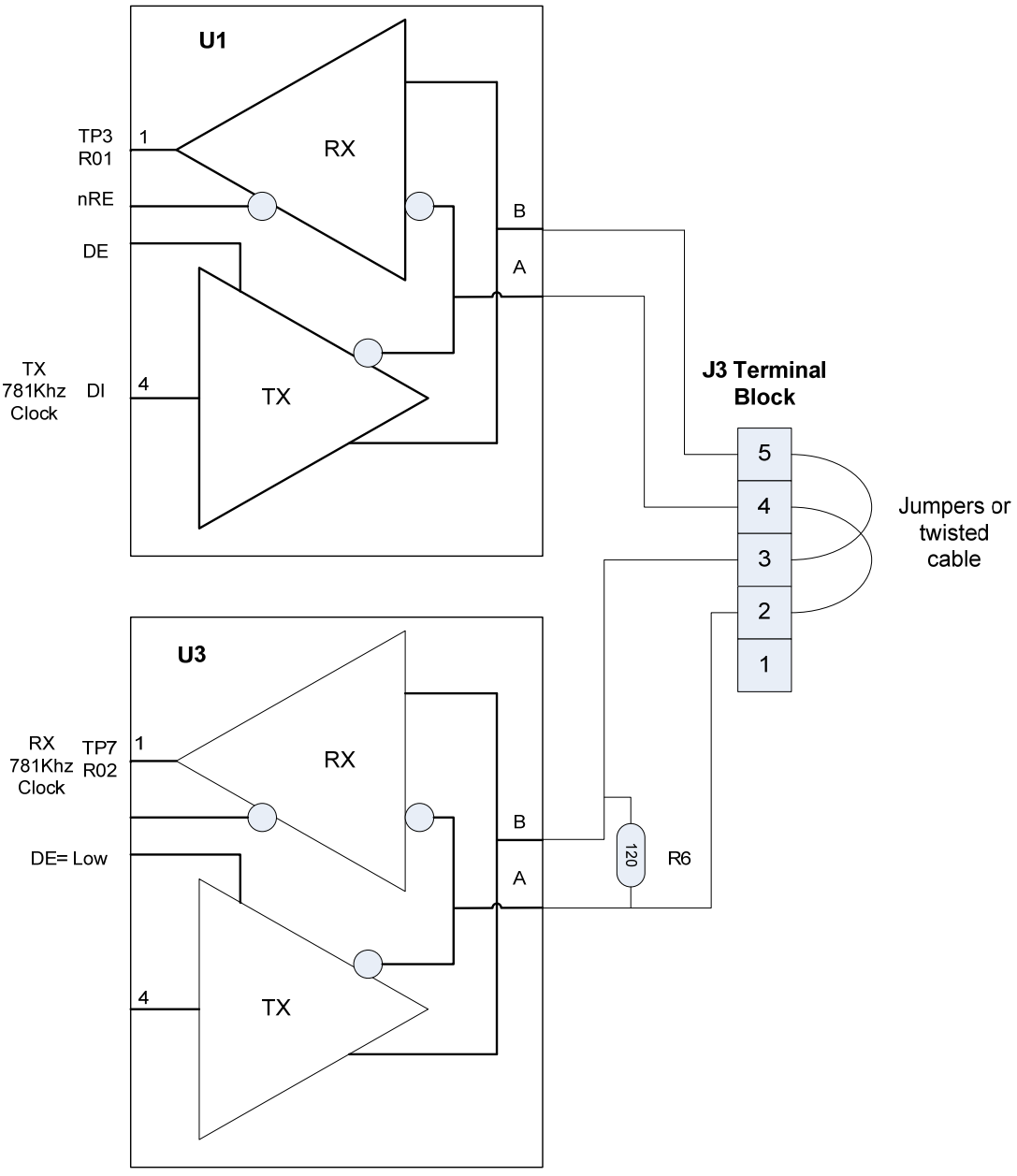
Miscellaneous Connections:

JUMPER	FUNCTION	FACTORY DEFAULT
JP1	Not Used = solder bridge	Closed
JP2	Disable 50 MHz Osc = solder bridge	Open

Demonstration Example:

This example configures U1 (4850/4853) as a transmitter and U3 (4850/4853) as a receiver. The on-board oscillator provides a 781 KHz clock source. The output of the transmitter is connected to the receiver inputs using the terminal blocks.

Diagram of configured circuit:



1. DIP switch settings to configure U1 and U6:

SWITCH	FUNCTION	Demo
S2	U3 Driver Enable (DE) = Closed	U3 transmitter disabled
S3	U1 Driver Enable (DE) = Open	U1 configured as Transmitter
S7	U1 Clock (DI) = Closed	781KHz clock source for U1

2. Jumpers:

   Install Jumper at J6 between posts 11-12 for 781KHz.

   Optionally install J4 jumper to enable R6 termination resistor on U3 receiver.

   Both receivers will be enabled automatically since the nRE signals to the IC are pulled down internally.

3. Connect two wires on the J3 terminal block to connect the transmitter to the receiver.

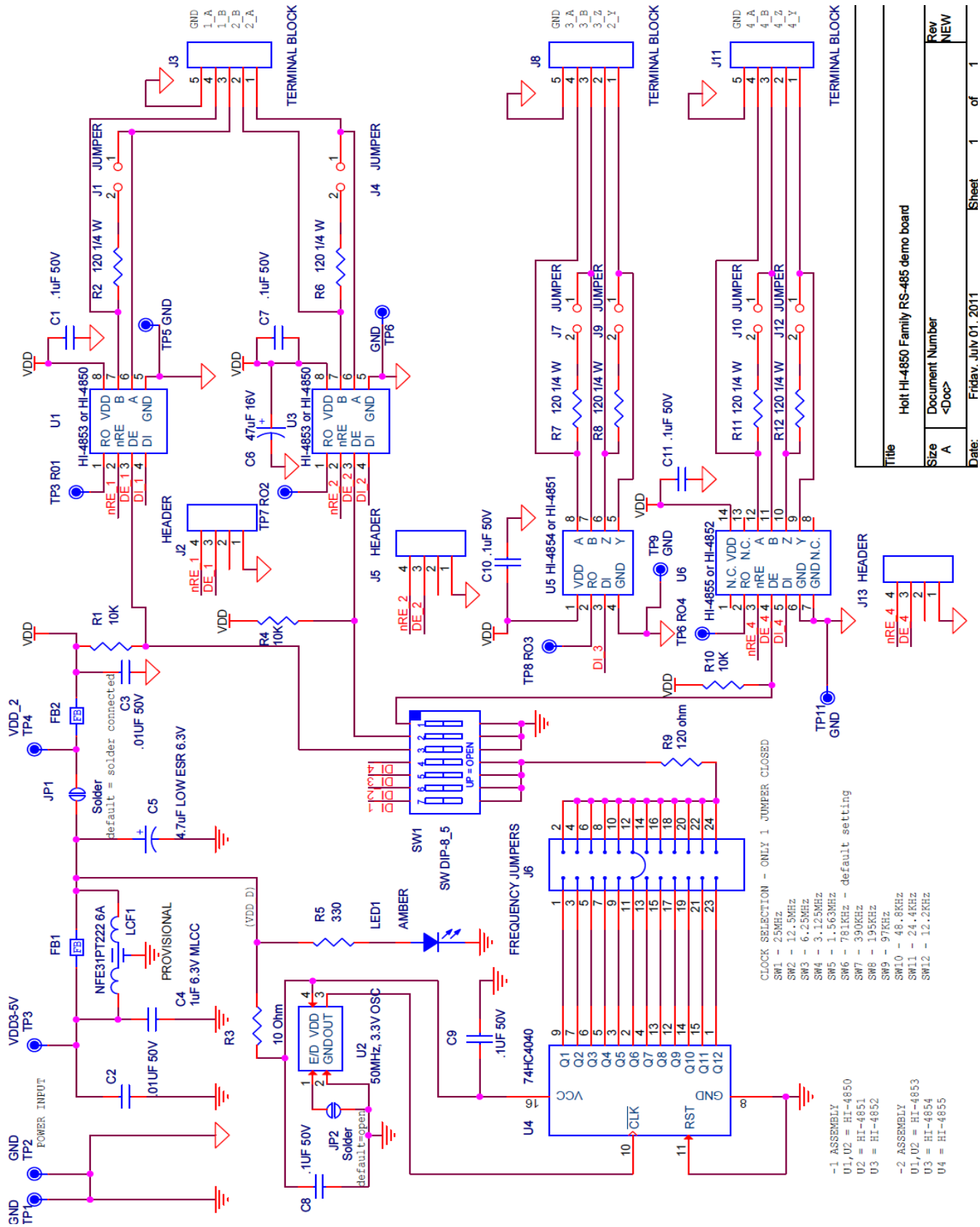
   J3 Terminal Block Connections
   Pin-4 to pin-2 (B)
   Pin-3 to pin-1 (A)

4. Apply 3.3V or 5V at TP3 and Ground to TP2.

A 781KHz clock signal should be viewable at U1-4 and on the A and B outputs of U1. The clock signal will be also on the A and B inputs of U3 receiver. The receiver outputs (RO) for both receivers will show the output. This test configuration could have been duplicated easily using any pair of transceivers on the board.

Conclusion:

The Holt HI-4850 Evaluation Board demonstrates the Holt family of RS-485/422 transceivers and can be configured for a variety of configurations to suit the user needs.


Title
Holt HI-4850 Family RS-485 demo board
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NEW
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Sheet
1
of
1
TERMINAL BLOCK
HEADER
JUMPER
FREQUENCY JUMPERS J6
SW DIP-8_5
CLOCK SELECTION - ONLY 1 JUMPER CLOSED
SW1 - 25MHz
SW2 - 12.5MHz
SW3 - 6.25MHz
SW4 - 3.125MHz
SW5 - 1.563MHz
SW6 - 781KHz - default setting
SW7 - 390KHz
SW8 - 195KHz
SW9 - 97KHz
SW10 - 48.8KHz
SW11 - 24.4KHz
SW12 - 12.2KHz
-1 ASSEMBLY
U1,U2 = HI-4850
U2 = HI-4851
U3 = HI-4852
-2 ASSEMBLY
U1,U2 = HI-4853
U3 = HI-4854
U4 = HI-4855
POWER INPUT
PROVISIONAL
default = solder connected
default=open
74HC4040
50MHz, 3.3V OSC

REVISION HISTORY

P/N	Rev	Date	Description of Change
QSG-4850	NEW	08/4/11	Initial Release