

## INTRODUCTION

The DS2148DK is an evaluation board for the DS2148TN which can be operated via hardware or software control. The DS2148DK is designed to be used as a daughter card to the DST1E1DK, but can be configured for stand-alone operation in hardware mode. The board is complete with the DS2148TN, transformers, termination resistors, configuration switches, a RJ48 connector, and a 50-pin header to connect to the DST1E1DK. The DS2148 can be used with a 3.3V or a 5V power supply. This design kit comes standard with a 1:2 transformer on the transmit-side to allow 3.3V operation. In order to use a 5V power supply, the transmit-side transformer should be replaced with a 1:1.36 transformer. The receive-side uses a 1:1 transformer for both 3.3V and 5V operation. See the DS2148 data sheet for more details.

## QUICK START INSTRUCTIONS

### Connecting to the DST1E1DK:

If you do not wish to connect to the DST1E1DK, proceed directly to the Hardware Mode section. To install the DS2148DK on the DST1E1DK, insert the DS2148 evaluation board into the 50 pin expansion header labeled “J7” on the DST1E1DK so that the DS2148 is directly above the T1/E1 socket. If your DST1E1DK is configured for 5 volt operation, set switch S1 on the DS2148DK away from the “3V” position and switch SW2-1 to the “off” position. If your DST1E1DK is configured for 3.3 volt operation, set switch S1 to the “3V” position, and switch SW2-1 to the “on” position. Connect power to the DST1E1DK, and connect the serial cable as described in the DST1E1DK documentation.

### Software Mode:

After connecting to the DST1E1DK, proceed to configure all switches on the DS2148DK noted in table 1, as listed in the “Software Mode” column. Start the DST1E1 software using the DS2148 definition file provided with the DS2148DK. For example:

```
"DST1E1.EXE COM1 DS2148.DEF"
```

Configure register CCR1 with an 80h, and CCR3 with a 90h. The device will begin transmitting a pseudo-random bit sequence. Upon external loopback, the RCL and PBEO LED's will extinguish, denoting that the device has found a carrier, and has successfully decoded the pseudo-random bit sequence. For more advanced configurations, please refer to the DS2148 datasheet.

### Hardware Mode:

Connect the J1 pins 1,3,5, and 7 to ground. Choose either 3.3 or 5.0 volt operating voltage.

#### 3.3 volt supply:

- 1) Connect supply to J1 pins 41 and 43.
- 2) Set switch S1 to the “3V” position.
- 3) Set SW2-1 to the “on” position.

#### 5.0 volt supply:

- 1) Connect to J1 pins 47 and 49.
- 2) Set switch S1 away from the “3V” position.
- 3) Set switch SW2-1 to the “off” position.

Proceed to configure all switches on the DS2148DK noted in table 1, as listed in the “Hardware Mode” column. On power-up, the device will begin transmitting a pseudo-random bit sequence in T1 mode. Upon external loopback, the RCL and PBEO LED's will extinguish, denoting that the device has found a carrier, and has successfully decoded the pseudo-random bit sequence. For more advanced configurations, please refer to the DS2148 datasheet.

**Table 1-Quick Start Switch Settings:**

	SWITCH #	Hardware Mode	Software Mode	Switch Function
JAS	Switch 1-1	ON	OFF	Jitter attenuator position
JAMUX	Switch 1-2	ON	OFF	Jitter attenuator clock select
DJA	Switch 1-3	ON	OFF	Jitter attenuator enable/disable
L0	Switch 1-4	ON	OFF	Line Build Out select
L1	Switch 1-5	ON	OFF	Line Build Out select
L2	Switch 1-6	ON	OFF	Line Build Out select
SCLKE	Switch 1-7	ON	OFF	Clock synchronization enable
NRZE	Switch 1-8	ON	OFF	TPOS/TNEG data format
ETS	Switch 1-9	OFF	OFF	E1/T1 select
EGL	Switch 1-10	OFF	OFF	Equalizer gain limit enable
VSM	Switch 2-1	xx	Xx	Voltage select, see text.
MM1	Switch 2-2	ON	OFF	Monitor mode Select
MM0	Switch 2-3	ON	OFF	Monitor mode Select
LP1	Switch 2-4	ON	OFF	Loopback select
LP0	Switch 2-5	ON	OFF	Loopback select
TX1	Switch 2-6	ON	OFF	Transmit pattern select
TX0	Switch 2-7	OFF	OFF	Transmit pattern select
TPD	Switch 2-8	ON	OFF	Transmitter power enable
CES	Switch 2-9	ON	OFF	Clock edge select
HBE	Switch 2-10	ON	OFF	HDB3/B8ZS encode select
RT0	Switch 3-1	OFF	ON	Termination select
TCLK	Switch 3-2	ON	ON	Transmit clock select
BIS0	Switch 3-3	OFF	ON	Communications mode select
BIS1	Switch 3-4	OFF	ON	Communications mode select
BPCLK	Switch 3-5	OFF	OFF	Back Plane clock output
MCLK	Switch 3-6	ON	ON	Master clock
HRST	Switch 3-7	OFF	OFF	Hardware reset
TEST	Switch 3-8	ON	ON	Test mode enable
NC	Switch 3-9	OFF	OFF	Not used
RT1	Switch 3-10	OFF	OFF	Termination select

## DIP SWITCH SETTINGS

Using the hardware interface feature of the DS2148, the DS2148DK will operate in full hardware mode. While in hardware mode, S1, S2, and SW1-SW3 are all used in initializing and controlling the DS2148. For SW1-SW3, the “off” position opens the switch while “on” closes the switch, grounding the attached device pin. See the DS2148 data sheet for details on the function of each pin.

S1 selects 3V or 5V mode.

S2 selects the 2.048MHz or 1.544MHz oscillator.

SW1-SW3 are listed in Table 2

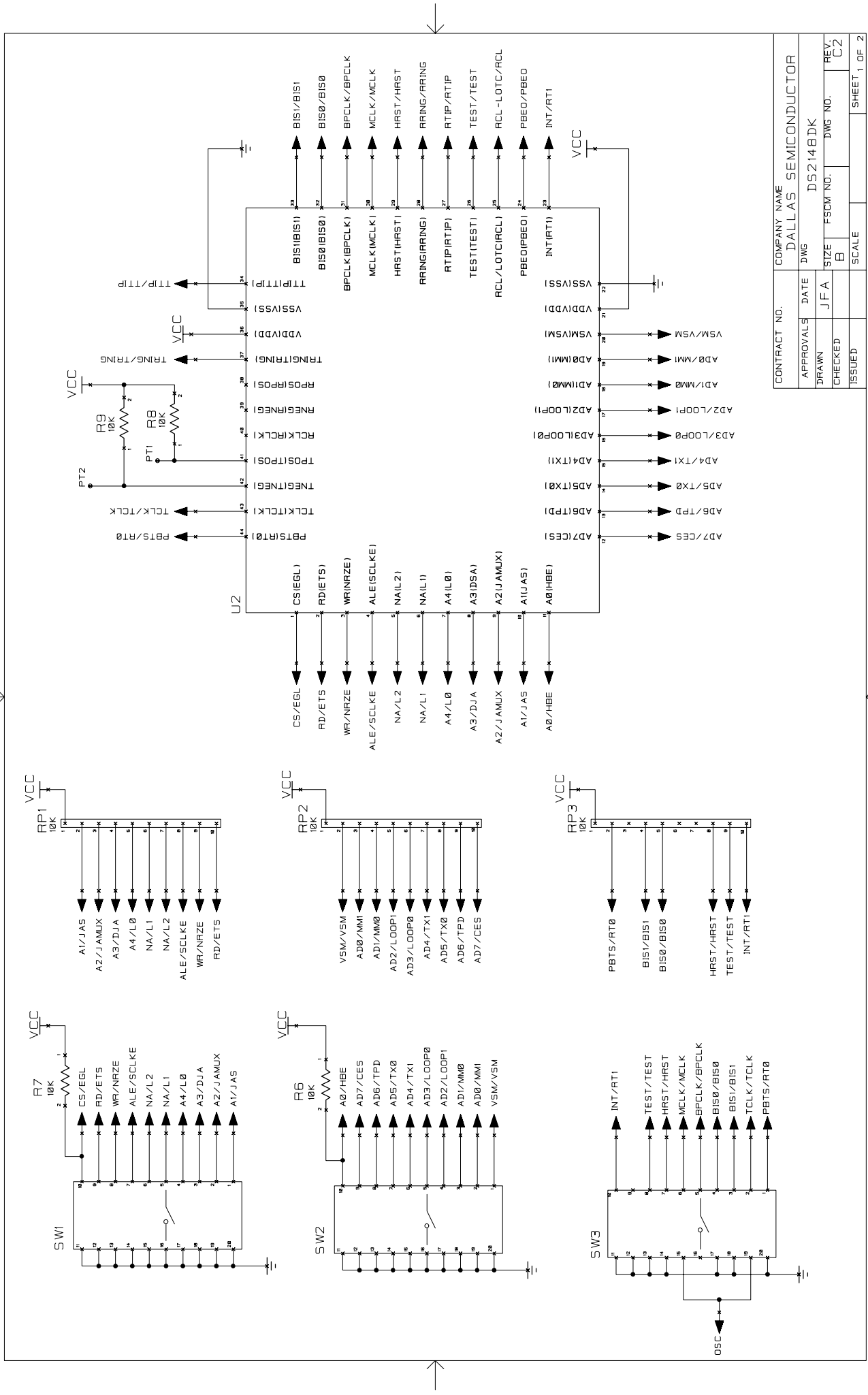
**Table 2-Pin and Switch Descriptions:**

<b>DS2148T PIN #</b>	<b>HARDWARE MODE</b>	<b>SWITCH NUMBER</b>
1	EGL	SW1-10
2	ETS	SW1-9
3	NRZE	SW1-8
4	SCLKE	SW1-7
5	L2	SW1-6
6	L1	SW1-5
7	L0	SW1-4
8	DJA	SW1-3
9	JAMUX	SW1-2
10	JAS	SW1-1
11	HBE	SW2-10
12	CES	SW2-9
13	TPD	SW2-8
14	TX0	SW2-7
15	TX1	SW2-6
16	LOOP0	SW2-5
17	LOOP1	SW2-4
18	MM0	SW2-3
19	MM1	SW2-2
20	VSM	SW2-1
21	VDD	-
22	VSS	-
23	RT1	SW3-10
24	PBEO	-
25	RCL	-
26	TEST	SW3-8
27	RTIP	-
28	RRING	-
29	HRST*	SW3-7
30	MCLK	SW3-6
31	BPCLK	SW3-5
32	BIS0	SW3-4
33	BIS1	SW3-3
34	TTIP	-
35	VSS	-
36	VDD	-
37	TRING	-
38	RPOS	-
39	RNEG	-
40	RCLK	-
41	TPOS	-
42	TNEG	-
43	TCLK	SW3-2
44	RT0	SW3-1

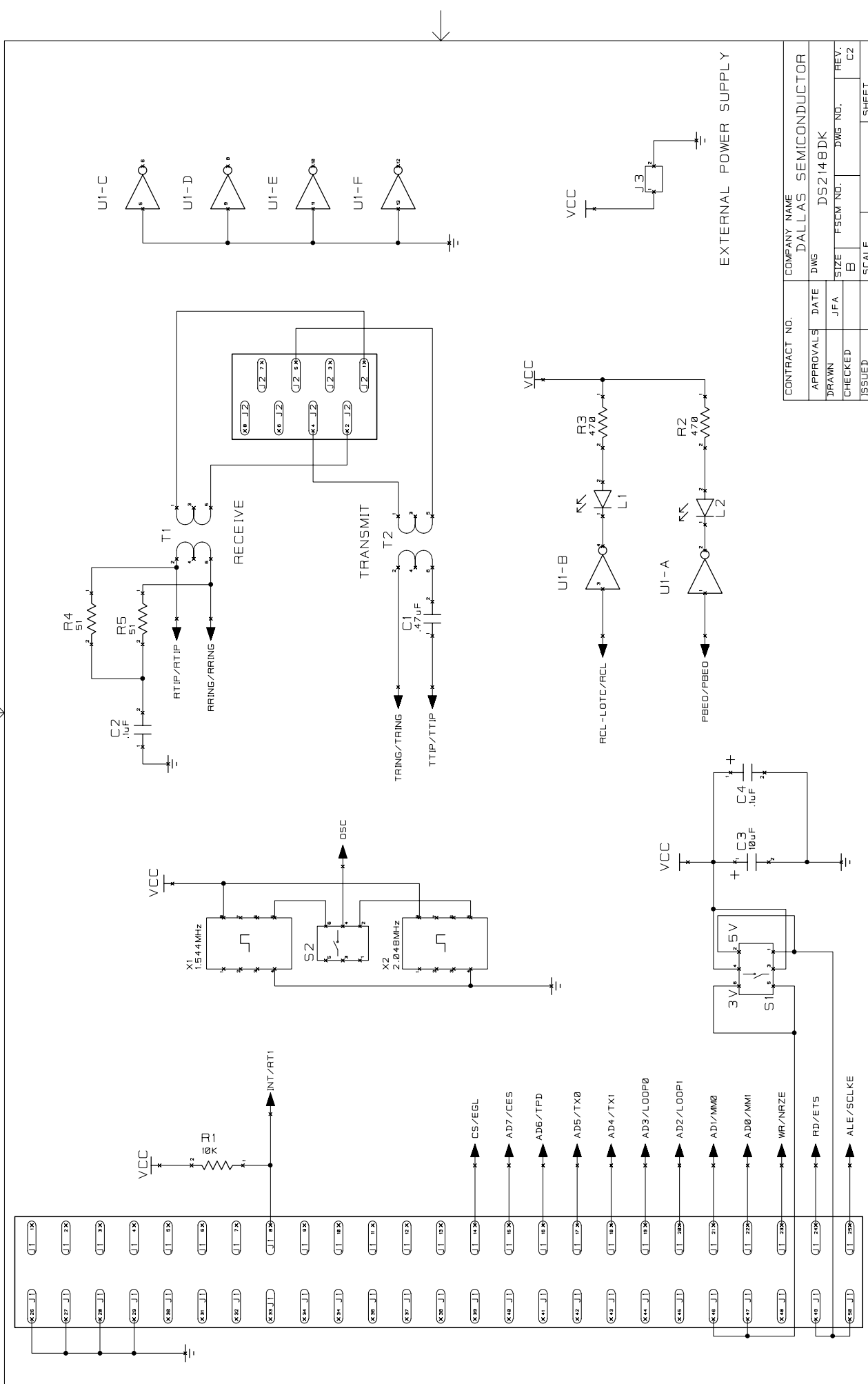
**PARTS LIST**

<b>COMPONENTS</b>	<b>DESCRIPTION</b>	<b>QUANTITY</b>
C2,C4	0.1 $\mu$ F CERAMIC CAPACITOR	2
C1	0.47 $\mu$ F CERAMIC CAPACITOR	1
X1	1.544 MHz OSCILLATOR	1
RP1-3	10K 10P SIP RESISTOR PACK	3
R1, R6-9	10K OHM 1/8W 10% RESISTOR	5
C3	10 $\mu$ F TANTALUM ELECTROLYTIC CAPACITOR	1
X2	2.048 MHz OSCILLATOR	1
SW1-3	20P DUAL ROW LOW PROFILE DIP SWITCH	3
J3	2P TERMINAL BLOCK	1
R2-3	470 OHM 1/8W 10% RESISTOR	2
R4-5	51 OHM 1/8W 1% RESISTOR	2
U1	HEX INVERTER	1
J1	50P DUAL ROW HEADER	1
J2	RJ48 CONNECTOR PCB MOUNT	1
S1-2	DPDT SWITCH	2
U2	DS2148 E1/T1/J1 LINE INTERFACE	1
L1-2	RED SURFACE MOUNT LED	2
T1	1:1 TRANSFORMER	1
T2	2:1 TRANSFORMER	1

Table 2-Parts List



CONTRACT NO.		COMPANY NAME	
APPROVALS		DALLAS SEMICONDUCTOR	
DATE	DWG	DS2148DK	
DRAWN	JFA	SIZE	FSCW NO.
CHECKED	B	SCALE	DWG NO.
ISSUED			REV
			C2
			SHEET 1 OF 2



CONTRACT NO.	COMPANY NAME
APPROVALS	DALLAS SEMICONDUCTOR
DRAWN	DATE
CHECKED	JFA
ISSUED	SIZE
	B
	SCALE
	REV. NO.
	DS2148DK
	DWG NO.
	C2
	REV. C2
	SHEET 2 OF 2

EXTERNAL POWER SUPPLY

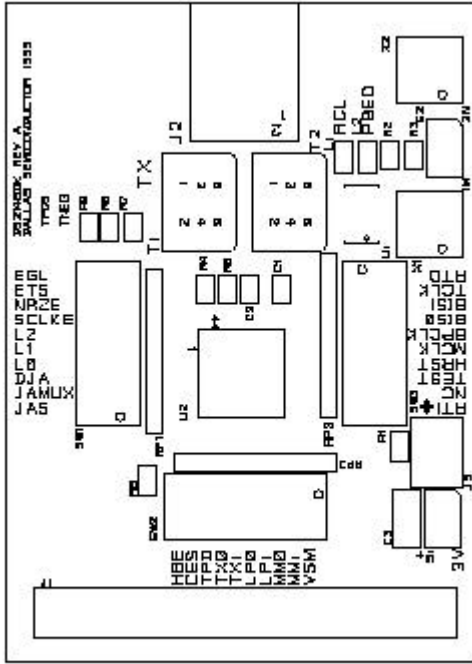


Figure 2-DS2148DK Silk Screen