

General Description

The DS8500 evaluation kit (EV kit) provides a convenient platform to evaluate the DS8500 HART® modem. It allows quick evaluation through a demonstration mode and in-depth evaluation using HART Communication Foundation (a part of FieldComm Group) tools.

EV Kit Contents

- DS8500 EV Kit Board
- Micro-USB Cable

Benefits and Features

- The EV Kit Provides Fast and Simple Evaluation by Providing a Total HART Communications Chain on Board
- Example HART Master and Field Device Circuits Demonstrate Usage in the Two Most Common HART Connection Configurations
- HART Registered Modem IC
- On-Board Isolated 4mA–20mA Communications Loop
- MAXQ622 USB Microcontroller with Demo Firmware
- External Connections Allow for Advanced Evaluation of the DS8500 in Other Configurations

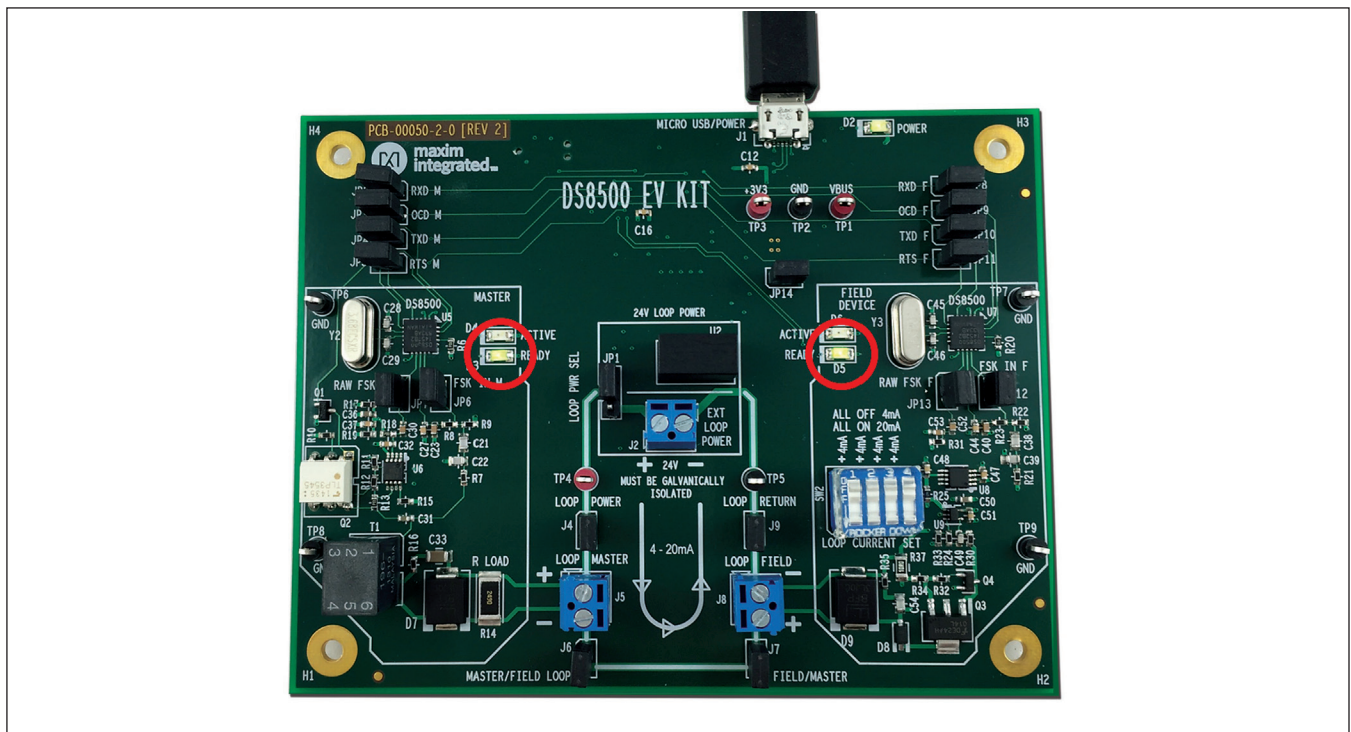


Figure 1. USB Connection and READY LEDs

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Quick Start

The DS8500 EV kit comes with demonstration firmware already loaded.

- 1) Download and install the **DS8500 EVKIT Software GUI** at www.maximintegrated.com/evkitsoftware.
- 2) Use the included Micro-USB cable to connect and power the EV kit as shown in [Figure 1](#).
- 3) Wait until the READY LEDs (circled in [Figure 1](#)) light after the board has finished USB enumeration. This can take several seconds.
- 4) Start the DS8500 EVKIT GUI from the **Start** menu by selecting **Maxim Integrated | DS8500 | DS8500 Evaluation Kit**. [Figure 2](#) shows the demo GUI. It automatically finds the USB-connected EV kit.
- 5) Simply type messages from the **Master** or **Field Device** window and press the **Send** button to transmit and receive modulated data over the on-board 4–20mA current loop.
- 6) Observe the ACTIVE LEDs lighting while transmitting and receiving.

Detailed Description of Hardware

Users must also use the DS8500 IC data sheet in conjunction with this EV kit data sheet.

Power Supply

The EV kit uses USB power for all on-board devices.

On-Board 4–20mA Current Loop

The current loop is isolated from board ground and power allowing communications between **Master** and **Field Device**, both implemented by serial ports on the MAXQ622. This common connection necessitates use of a fully isolated 4–20mA loop, which is very sensitive to ground loops, thus direct probing of the on-board loop is **strongly discouraged** and could **damage** the EV kit. Note that this is a nontypical configuration specifically designed for demonstration purposes. In typical installations, **Master** and **Field Device** are separately located, with the **Field Device** floating, often powered by loop current.

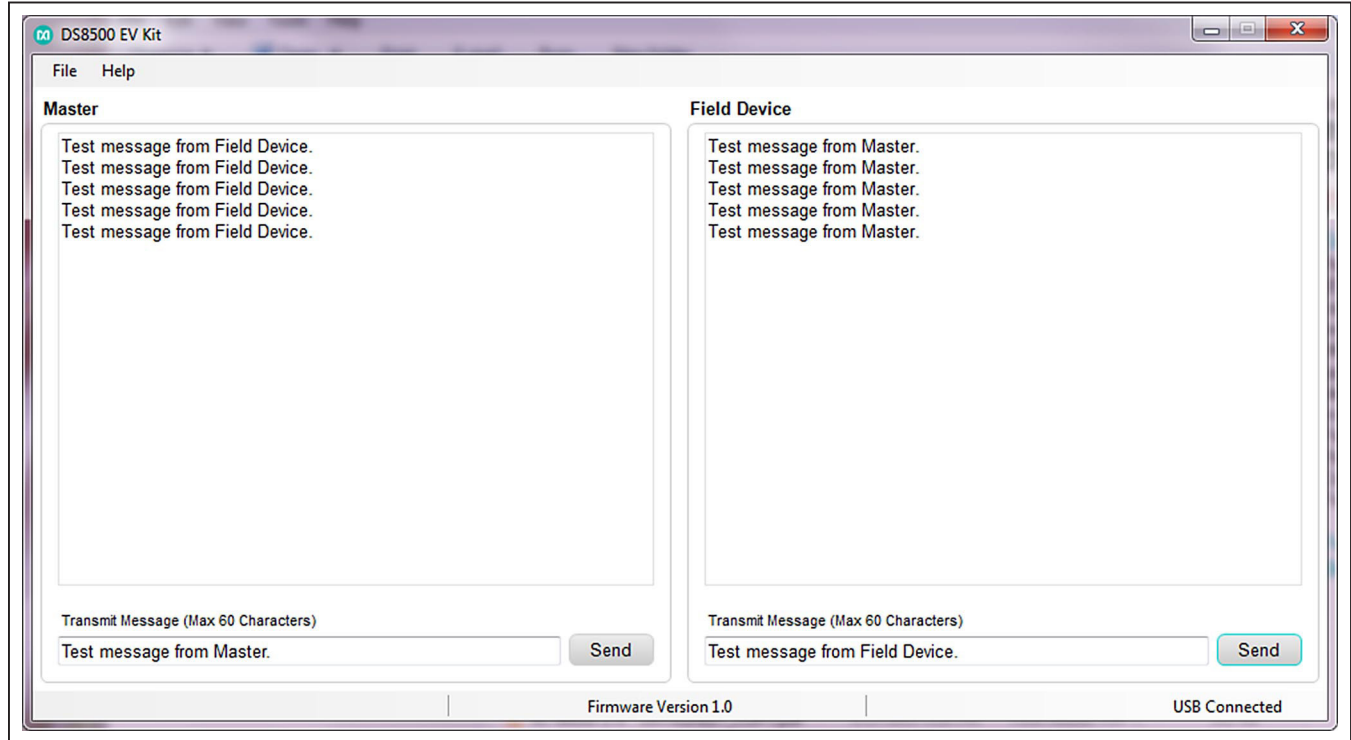


Figure 2. DS8500 EV Kit Demo GUI

Interface Ports

Jumpers JP2–JP5 provide direct access to the serial control signals for the **Master** side of the HART loop. Jumpers JP8–JP11 provide direct access to the serial control signals for the **Field Device** side of the HART loop. These allow connection to an embedded microcontroller or computer running a HART stack via 3.3V TTL serial UART. See [Table 1](#) and the [Advanced Evaluation](#) section for more details.

Each DS8500 exposes FSK_OUT and FSK_IN signals via jumper for probing purposes ([Table 2](#)).

Jumper Functions

The DS8500 EV kit is equipped with 17 jumpers for disconnecting pins and modifying the EV kit features. [Table 3](#) details the jumpers not previously covered.

External Connectors

The EV kit has three terminal blocks for easy loop/wire connections. See [Table 4](#).

Advanced Evaluation

The DS8500 EV kit can communicate directly with actual HART devices or software-emulated devices. The on-board MAXQ622 is only for demonstration purposes

Table 1. Master and Field Device Control Signals

| PORT PIN | PIN NAME | PIN TYPE | DESCRIPTION |
|----------|----------|----------|--|
| JP2 | HRXD_M | Output | Digital serial data output from MASTER DS8500 (DOUT) |
| JP3 | HOCD_M | Output | Carrier detect output from MASTER DS8500 |
| JP4 | HTXD_M | Input | Digital serial data input to MASTER DS8500 (DIN) |
| JP5 | HRTS_M | Input | Active-low request to send signal for MASTER DS8500 |
| JP8 | HRXD_F | Output | Digital serial data output from FIELD DEVICE DS8500 (DOUT) |
| JP9 | HOCD_F | Output | Carrier detect output from FIELD DEVICE DS8500 |
| JP10 | HTXD_F | Input | Digital serial data input to FIELD DEVICE DS8500 (DIN) |
| JP11 | HRTS_F | Input | Active-low request to send signal for FIELD DEVICE DS8500 |

Note: Serial signals are 3.3V TTL.

Table 2. FSK Probe and Disconnect Jumpers

| JUMPER | NAME | TYPE | DESCRIPTION |
|--------|-----------|--------|--|
| JP6 | FSK_IN_M | Input | MASTER side incoming FSK-modulated serial signal |
| JP7 | RAW_FSK_M | Output | MASTER side outgoing FSK-modulated serial signal |
| JP12 | FSK_IN_F | Input | FIELD DEVICE side incoming FSK-modulated serial signal |
| JP13 | RAW_FSK_F | Output | FIELD DEVICE side outgoing FSK-modulated serial signal |

Table 3. Jumper Settings

| JUMPER | SETTING | EFFECT |
|-----------|---------|--|
| JP1 (1-2) | Closed* | Powers the 4–20mA loop from on-board power |
| | Open | Disconnects 4–20mA loop from on-board power |
| JP1 (2-3) | Closed | Connect external loop power from connector J2 |
| | Open* | Disconnects external loop power from connector J2 |
| J4 | Closed* | Connects loop power to master device |
| | Open | Isolates loop power from master device |
| J5 | Closed* | Connect master to field device via loop |
| | Open | Isolates master from field device via loop |
| J7 | Closed* | Connects field device to master via loop |
| | Open | Isolates field device from master via loop |
| J9 | Closed* | Connects field device to loop return |
| | Open | Isolates field device from loop return |
| JP14 | Closed* | Connects VBUS power (5V) to loop 24V power supply |
| | Open | Disconnects power from loop supply for noise reduction |

*Default position.

Table 4. External Connectors

| CONNECTOR | PURPOSE |
|-----------|--|
| J2 | Power the 4–20mA loop from an external galvanic isolated supply or battery |
| J5 | Wire connection interface to MASTER |
| J8 | Wire connection interface to FIELD DEVICE |

(USB interface) and does not implement a HART software stack. The serial UART data and control pins are exposed via jumpers as detailed in [Table 1](#). They allow a hardware serial port on a PC or laptop to transmit and receive modulated signals. Note that these serial pins expect TTL level signals (3.3V), not RS-232 level, so a serial level shifter board is typically required for communications.

The following examples detail two evaluation setups. Other configurations are possible, including emulating both simultaneously, or connection to an actual Field Device. However, these are beyond the scope of this document. **Note:** The following configurations require hardware and software tools available from the FieldComm Group or other sources and are not included with the DS8500 EV kit.

Emulated HART Field Device

To use the DS8500 EV kit as a Field Device interface, follow the setup detailed in [Figure 3](#), using the on-board 24V loop power supply and load resistor. Simply connect a personal computer running HART master software, (e.g., HCF_KIT_180) and a HART serial modem (e.g., HCF_TOOL-35, available with the Physical Layer Test Kit HCF_KIT-116). The reference modem's loop connections attach across the Field Device as shown. Verify that the jumpers (J7 and J9) remain in place, even with the loop connections attached.

Another personal computer simulates the behavior of an actual field device by running the XMTR MV tool (HCF_TOOL-039). Remove jumpers JP8–JP11 and connect the serial signals to the computer via a RS-232 level shifter.

To test, launch the XMTR MV program, then start the Master software and observe communications.

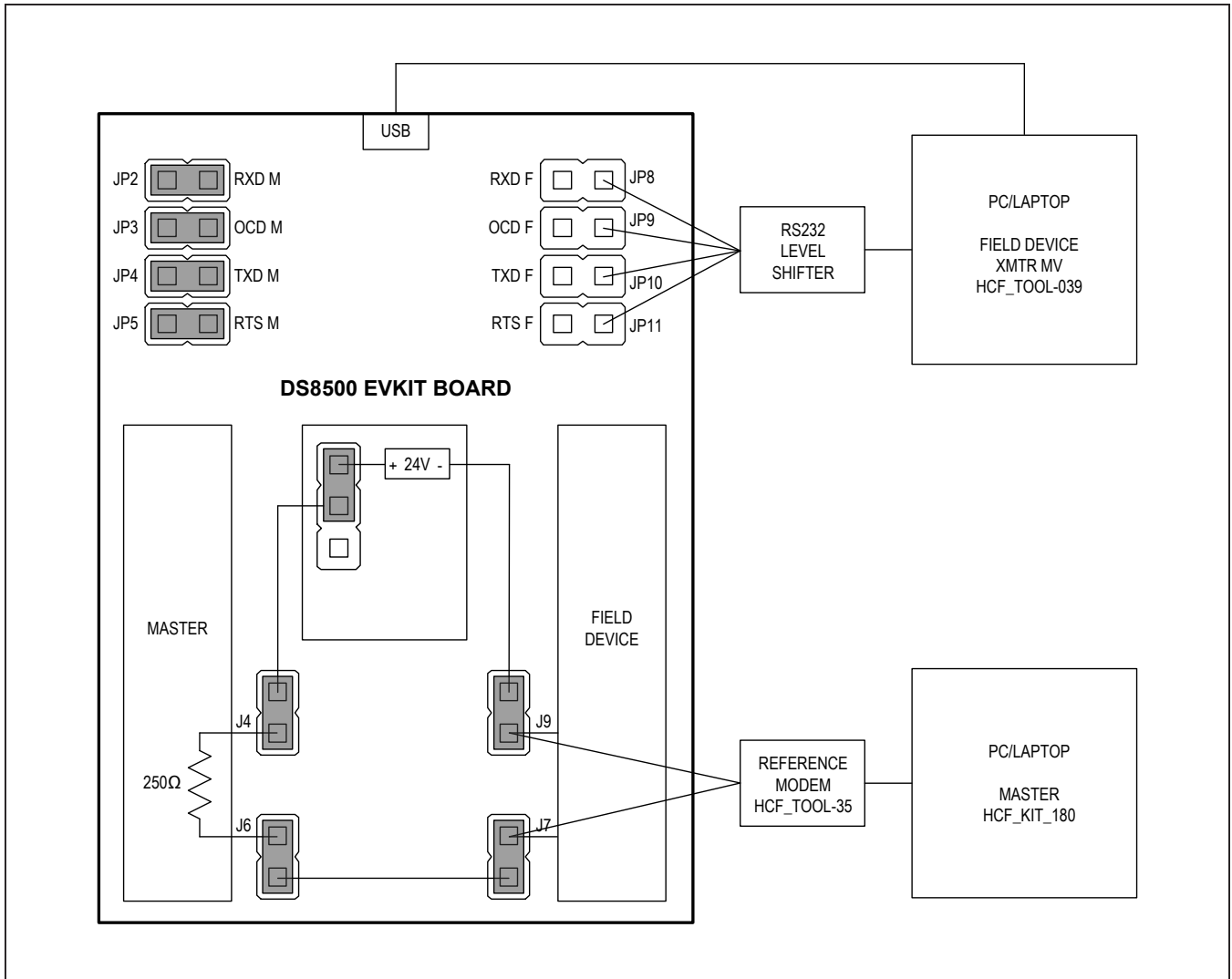


Figure 3. Setup for Emulated Field Device Evaluation

Emulated HART Primary/Secondary Master

To use the DS8500 EV kit as a Master or Secondary Master, follow the setup detailed in [Figure 4](#). This example does not require loop power so completely remove jumpers J4 and J6 to isolate the Master side of the EV kit from the on-board loop. Remove jumpers JP2–JP5 and connect the serial signals to the computer via a RS-232 level shifter. This computer runs HART master software (e.g., HCF_KIT_180).

Another personal computer simulates the behavior of the Field Device by running the XMTR MV tool (HCF_TOOL-039) and using a HART serial modem (e.g., HCF_TOOL-35, available with the Physical Layer Test Kit HCF_KIT-116). The reference modem’s loop connections attach across the load resistor as shown in [Figure 4](#).

To test, launch the XMTR MV program, then start the Master software and observe communications.

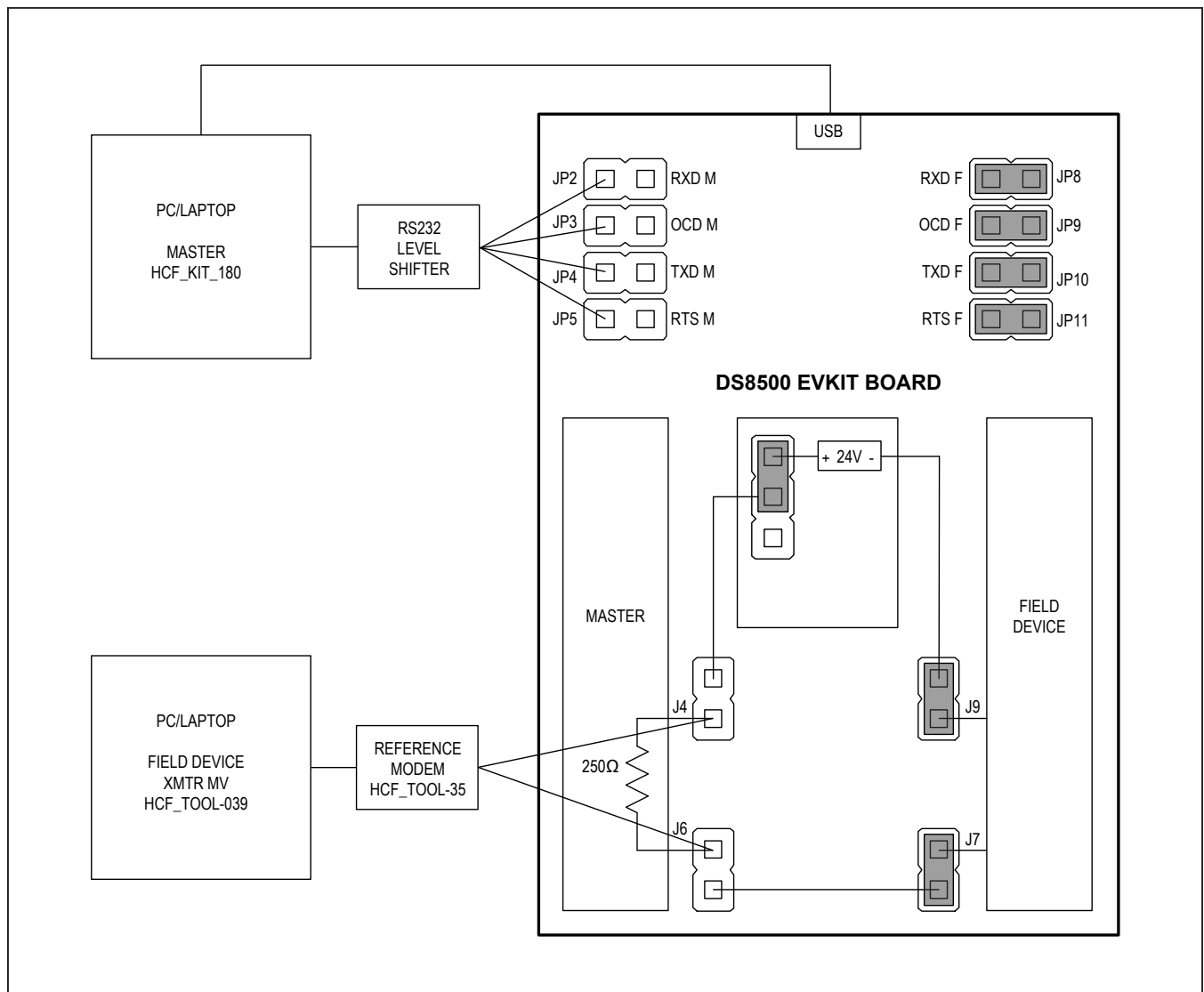


Figure 4. Setup for Emulated Master Evaluation

Component List, Schematics, and PCB Layout

See the following links for component list, PCB layout, and schematics:

- [DS8500-KIT BOM](#)
- [DS8500-KIT schematics](#)
- [DS8500-KIT PCB layout](#)

Ordering Information

| PART | TYPE |
|-------------|--------|
| DS8500-KIT# | EV Kit |

#Denotes RoHS compliant.

Revision History

| REVISION NUMBER | REVISION DATE | DESCRIPTION | PAGES CHANGED |
|-----------------|---------------|--|---------------|
| 0 | 11/10 | Initial release | — |
| 1 | 9/15 | Rewrote data sheet to include GUI and jumper descriptions and settings | 1–8 |

For pricing, delivery, and ordering information, please contact Maxim Direct at 1-888-629-4642, or visit Maxim Integrated's website at www.maximintegrated.com.

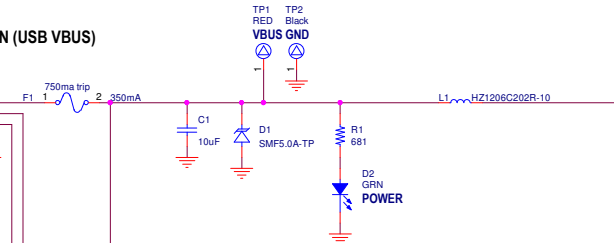
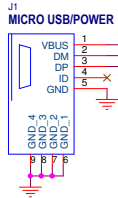
Maxim Integrated cannot assume responsibility for use of any circuitry other than circuitry entirely embodied in a Maxim Integrated product. No circuit patent licenses are implied. Maxim Integrated reserves the right to change the circuitry and specifications without notice at any time.

Bill of Materials (BOM) (Rev 1; 6/15)

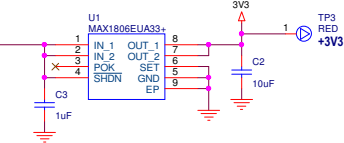
| Item Number | Quantity | Part Reference | Value | BOM_Description |
|-------------|----------|---|----------------------|-------------------------|
| 1 | 4 | BMP1 BMP2 BMP3 BMP4 | Bumper | BUMPER CYLIN 0.375" |
| 2 | 2 | C1 C2 | 10uF | CAP CER 10uF 10V 10% |
| 3 | 8 | C3 C13 C15 C17 C19 C35 C36 C50 | 1uF | CAP CER 1uF 10V 20% |
| 4 | 21 | C5 C7 C11 C12 C14 C16 C18 C20 C24 C25 C26 C27 C34 C37 C41 C42 C43 C44 C47 C48 C51 | 100nF | CAP CER 0.1uF 16V 10% |
| 5 | 2 | C9 C10 | 18pF | CAP CER 18PF 50V 5% |
| 6 | 3 | C21 C38 C54 | 2.2nF | CAP CER 2200PF 50V 5% |
| 7 | 2 | C22 C39 | 10nF | CAP CER 10000PF 50V 5% |
| 8 | 2 | C23 C40 | 1uF | CAP CER 1uF 16V 10% |
| 9 | 4 | C28 C29 C45 C46 | 15pF | CAP CER 15PF 50V 5% |
| 10 | 4 | C30 C32 C52 C53 | 33nF | CAP CER 0.033UF 10V 10% |
| 11 | 1 | C31 | 2.2uF | CAP CER 2.2uF 10V 10% |
| 12 | 1 | C33 | 2.2uF | CAP CER 2.2UF 50V 10% |
| 13 | 1 | C49 | 1nF | CAP CER 1nF 50V 5% N |
| 14 | 1 | C55 | 22uF | CAP ALUM 22UF 50V 20% |
| 15 | 1 | C56 | 1uF | CAP CER 1UF 50V 10% |
| 16 | 1 | C57 | 100nF | CAP CER 0.1UF 50V 10% |
| 17 | 1 | C59 | 47uF | CAP ALUM 47UF 6.3V |
| 18 | 1 | D1 | SMF5.0A-TP | TVS 200W 5V UNIDIR |
| 19 | 3 | D2 D3 D5 | GRN | LED 565NM WTR CLR |
| 20 | 2 | D4 D6 | YEL | LED ALINGAP YELLOW |
| 21 | 2 | D7 D9 | SMCJ36CA | TVS DIODE 36VWM 58V |
| 22 | 1 | D8 | 1N5819HW-7-F | DIODE SCHOTTKY 40V |
| 23 | 1 | F1 | 350mA | FUSE PTC RESET 350M |
| 24 | 1 | H1 | DNI | DNI MTG 125DRL 300 |
| 25 | 1 | H2 | DNI | DNI MTG 125DRL 300 |
| 26 | 1 | H3 | DNI | DNI MTG 125DRL 300 |
| 27 | 1 | H4 | DNI | DNI MTG 125DRL 300 |
| 28 | 1 | J1 | MICRO USB AB RCPT RA | CONN RCPT MICRO US |
| 29 | 3 | J2 J5 J8 | 2P 3.5mm | TERM BLOCK 3.5MM V |
| 30 | 1 | J3 | DNI | MAXQ_POGO_PIN CB PIN |
| 31 | 17 | J4 J6 J7 J9 JP2 JP3 JP4 JP5 JP6 JP7 JP8 JP9 JP10 JP11 JP12 JP13 JP14 | JUMPER | CONN HEADER .100 SP |
| 32 | 1 | JP1 | 3P JUMPER | CONN HEADER .100 SP |
| 33 | 2 | L1 L5 | HZ1206C202R-10 | FERRITE CHIP SIGNAL |
| 34 | 2 | L2 L3 | 100uH | IND 100UH 0.16A MIN |
| 35 | 1 | L4 | 6.8uH | FIXED IND 6.8UH 640M |
| 36 | 1 | PCB1 | PCB | |
| 37 | 1 | Q1 | FDV304P | MOSFET P-CH 25V 460 |
| 38 | 1 | Q2 | TLP3545(F) | PHOTOCOUPLER PHO |
| 39 | 1 | Q3 | NDT014L | MOSFET N-CH 60V 2.8 |
| 40 | 1 | Q4 | MMBT3904 | TRANSISTOR GP NPN A |

| | | | | |
|----|----|--|----------------|---------------------------|
| 41 | 1 | R1 | 681 | RES 681 OHM 1/10W |
| 42 | 4 | R2 R3 R4 R5 | 150 | RES 150 OHM 1/10W |
| 43 | 4 | R6 R13 R18 R20 | 100K | RES 100K OHM 1/10W |
| 44 | 2 | R7 R21 | 1.58K | RES 1.58K OHM 1/10W |
| 45 | 2 | R8 R23 | 221K | RES 221K OHM 1/10W |
| 46 | 2 | R9 R22 | 301K | RES 301K OHM 1/10W |
| 47 | 1 | R10 | 49.9 | RES 49.9 OHM 1/10W |
| 48 | 2 | R11 R15 | 10K | RES 10K OHM 1/10W |
| 49 | 1 | R12 | 12.4K | RES 12.4K OHM 1/10W |
| 50 | 1 | R14 | 249 | RES 249 OHM 1W 1% |
| 51 | 1 | R16 | 10 | RES 10 OHM 1/10W 1% |
| 52 | 4 | R17 R19 R24 R32 | 1K | RES 1K OHM 1/10W 1% |
| 53 | 5 | R25 R26 R27 R28 R29 | 1.24M | RES 1.24M OHM 1/10W |
| 54 | 2 | R30 R33 | 300 | RES 300 OHM 1/10W |
| 55 | 1 | R31 | 511K | RES 511K OHM 1/10W |
| 56 | 1 | R34 | 24.3 | RES 24.3 OHM 1/10W |
| 57 | 1 | R35 | 100 | RES 100 OHM 1/10W |
| 58 | 1 | R36 | 20K | RES 20K OHM 1/10W |
| 59 | 1 | R37 | 10 | RES SMD 10 OHM 0.1% |
| 60 | 1 | R38 | 10K | RES SMD 10K OHM 1% |
| 61 | 17 | SJ1 SJ2 SJ3 SJ4 SJ5 SJ6 SJ7 SJ8 SJ9 SJ10 SJ11 SJ12 SJ13 SJ14 SJ15 SJ16 SJ17 | SHUNT | CONN JUMPER SHORT |
| 62 | 1 | SW2 | DIP SW 4POS | SWITCH DIP 4POS SEALED |
| 63 | 1 | T1 | MET-26 | TRANSFORMER 1KCT: 250V |
| 64 | 3 | TP1 TP3 TP4 | RED | TEST POINT PC COMPATIBLE |
| 65 | 6 | TP2 TP5 TP6 TP7 TP8 TP9 | BLK | TEST POINT PC COMPATIBLE |
| 66 | 1 | U1 | MAX1806EUA33+ | IC REG LDO 3.3V/ADJ 100MA |
| 67 | 1 | U2 | NME0524SC | CONV DC/DC 1W 5VIN 2.5V |
| 68 | 1 | U3 | MAXQ622G-0000+ | IC MCU 16BIT 128KB 1.8V |
| 69 | 1 | U4 | MAX3207EAUT+T | ESD PROT DIFF SOT23 1.8V |
| 70 | 2 | U5 U7 | DS8500-JND+ | IC MODEM HART SGL 1.8V |
| 71 | 1 | U6 | MAX4166EUA+ | IC OPAMP GP 5MHZ R 1.8V |
| 72 | 1 | U8 | MAX6133A25+ | IC VREF SERIES 2.5V 8PIN |
| 73 | 1 | U9 | MAX9620AXK+T | IC OPAMP CHOPPER 1.8V |
| 74 | 1 | Y1 | 12MHz | CRYSTAL 12MHZ 18PF |
| 75 | 2 | Y2 Y3 | 3.6864MHz | CRYSTAL 3.6864MHZ 18PF |

EVKIT POWER IN (USB VBUS)

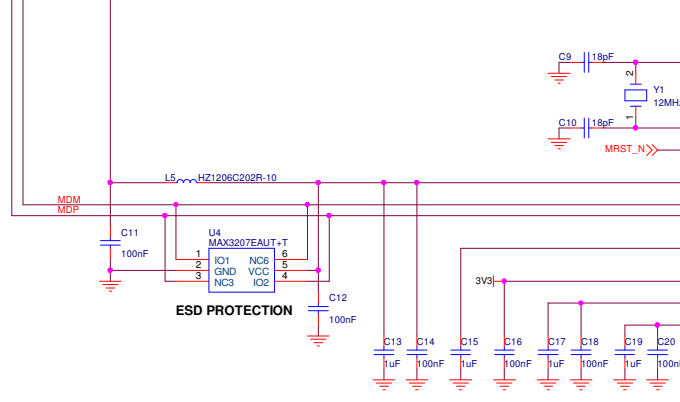
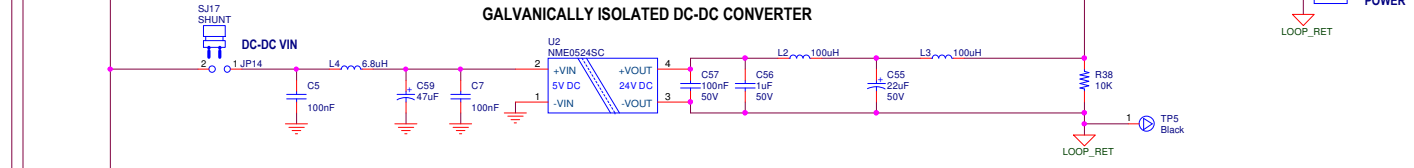


PRIMARY VOLTAGE REGULATOR

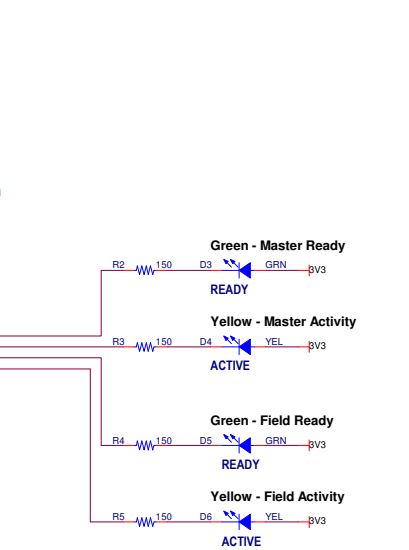
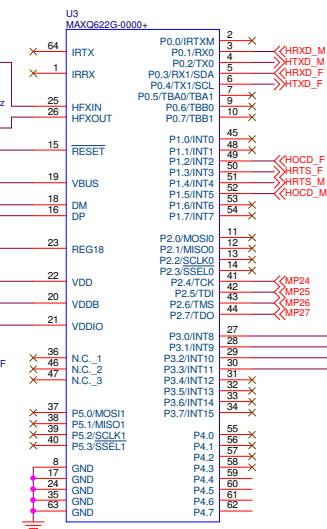
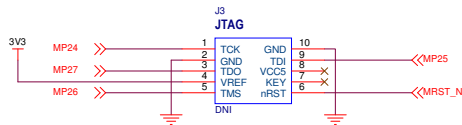


Add jumper to U2 power inlet. Simplify output filter.

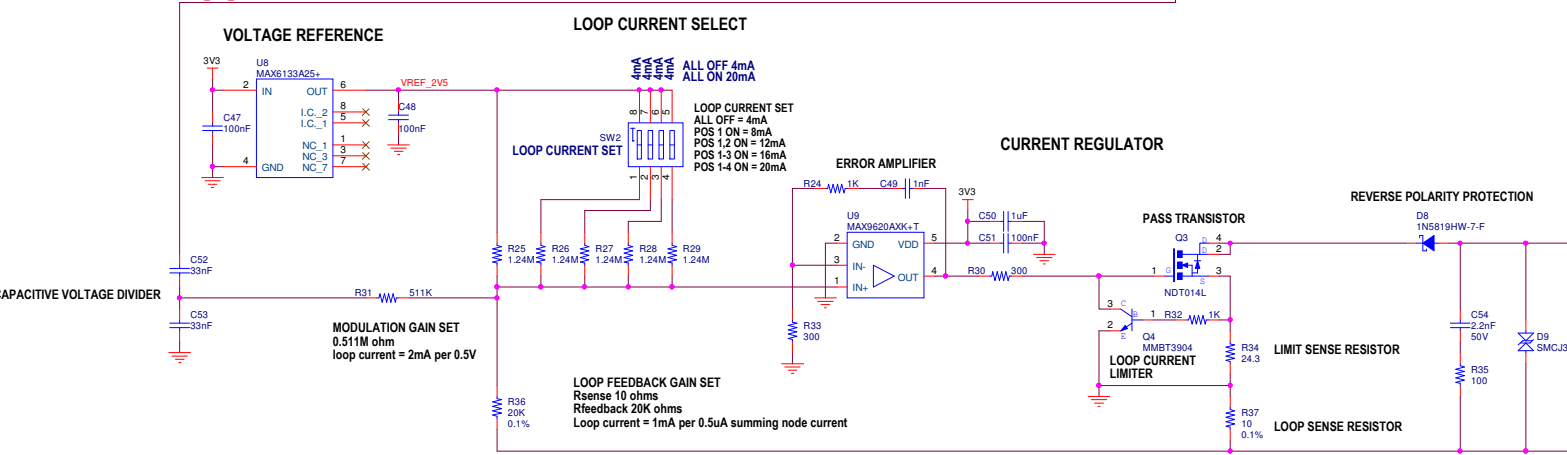
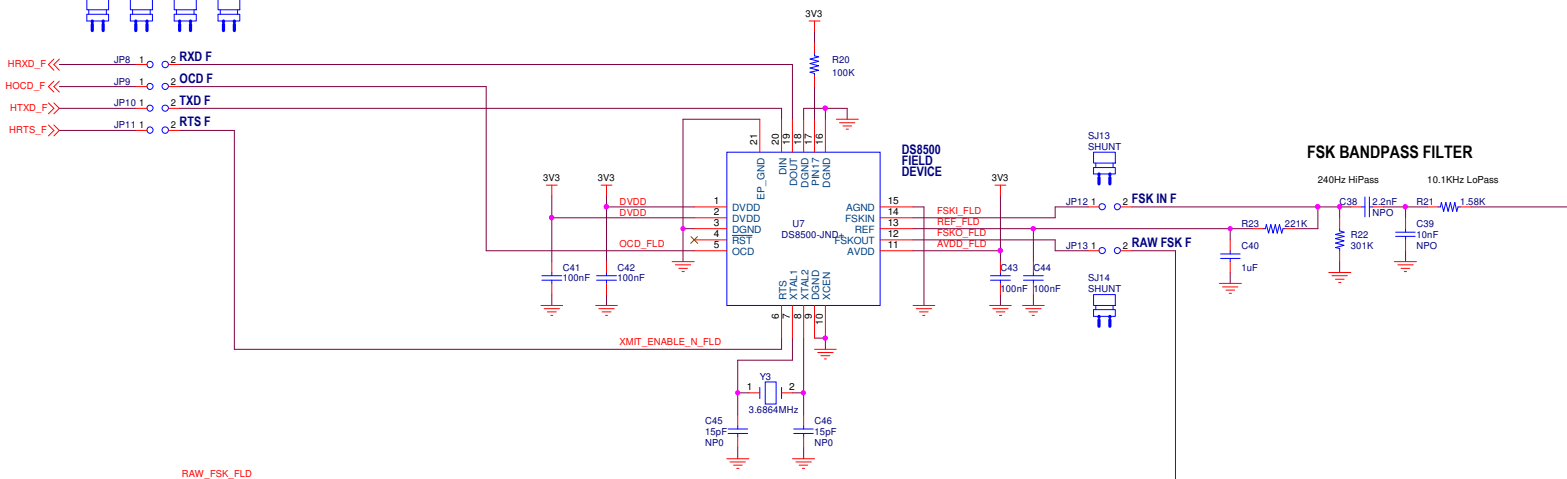
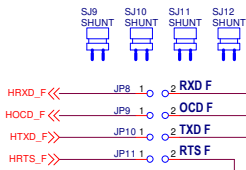
GALVANICALLY ISOLATED DC-DC CONVERTER



MAXQ622 PROGRAMMING JTAG PORT



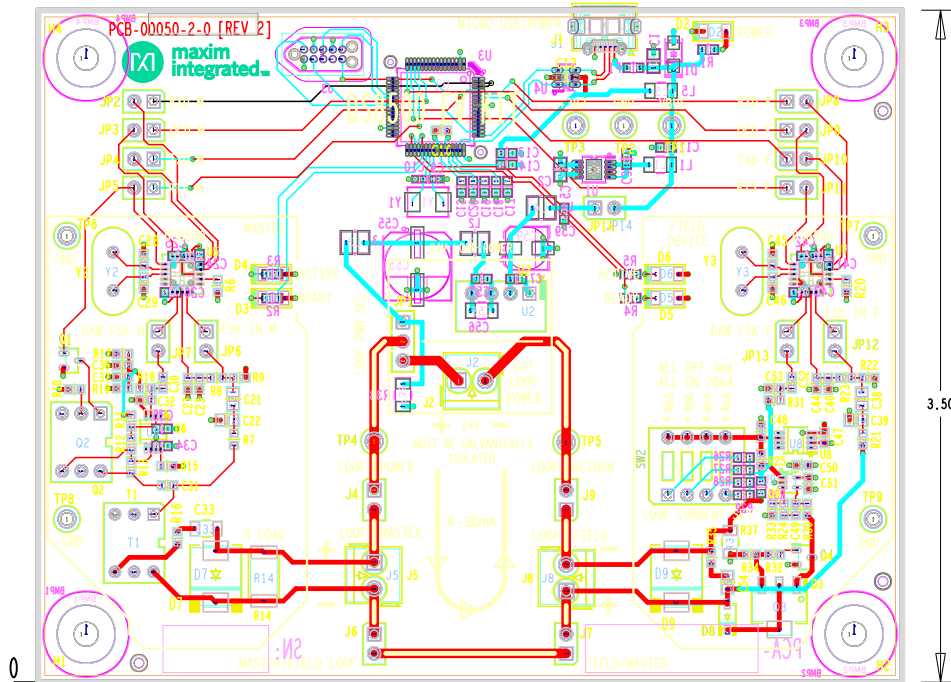
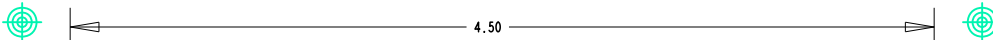
UART INTERFACE



| | |
|-------------------|-----------------------|
| | SILKSCREEN TOP |
| | SOLDER MASK TOP |
| LAYER 1 TOP | 1 OZ. FINISHED COPPER |
| LAYER 2 GND PLANE | PREPREG 0.0039" |
| LAYER 3 PWR PLANE | 0.5 OZ. COPPER |
| LAYER 4 BOTTOM | CORE 0.047" |
| | 0.5 OZ. COPPER |
| | PREPREG 0.0039" |
| | 1 OZ. FINISHED COPPER |
| | SOLDER MASK BOTTOM |
| | SILKSCREEN BOTTOM |

- NOTES:
1. ALL MEASUREMENTS ARE IN INCHES.
 2. THE PWB SHALL BE FABRICATED TO I SHALL CONFORM TO IPC-A-600, CLASS TOLERANCE OF PRINTED WIRING BOARD
 3. BOARD MATERIAL TO BE MULTI-FUNCTION AND SHALL MEET OR EXCEED MIL-P-1 THE FINISHED BOARD.
 4. BOARD MATERIAL AND CONSTRUCTION
 5. MINIMUM COPPER WALL THICKNESS OF
 6. OVERALL BOARD THICKNESS TO BE .0 LAMINATION AND PLATING PROCESSES
 7. MAX WARP AND TWIST TO BE .01 INC
 8. BOARD MUST BE ELECTRICALLY TESTE
 9. PLATE ALL EXPOSED AREAS WITH ELE MICROINCHES THK MIN.

- PROCESS NOTES:
1. APPLY LPI SOLDERMASK, BOTH SIDES COLOR: GREEN SOLDERMASK SHALL CONFORM TO I CLEARED BY SOLDERMASK PER ART AS NEEDED AS LONG AS SOLDERMA
 2. SILKSCREEN BOTH SIDES USING LPI PLACE ANY VENDOR SERIAL NUMBER A

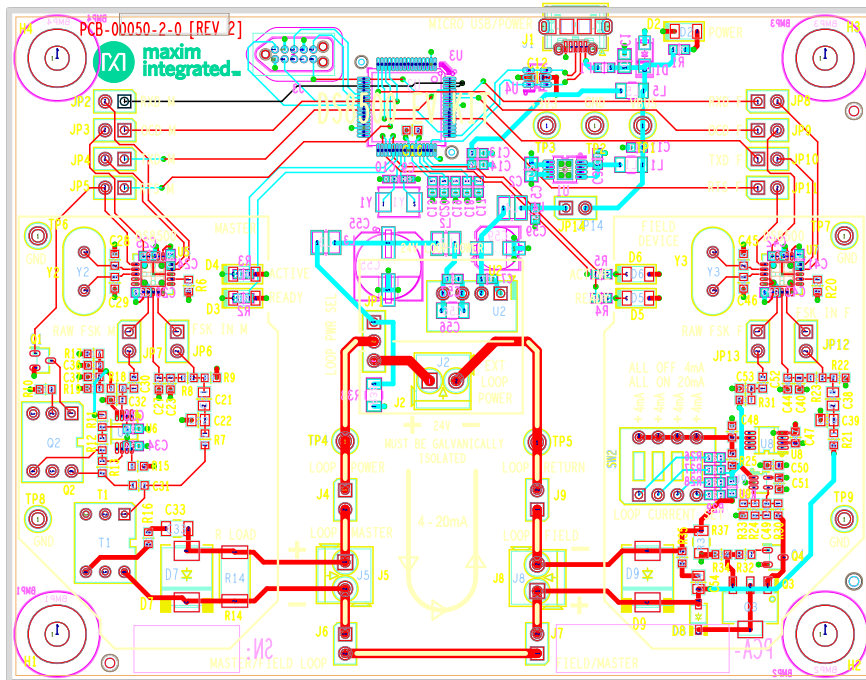
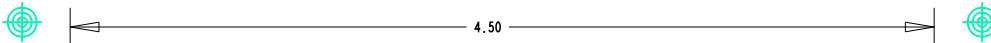


| | | |
|---|------------------|--|
| | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | DATE: 02-19-2015 | |
| LAYER: DR1R0B8TEMPBATEBRON0D50D0BO(TOR) | | |

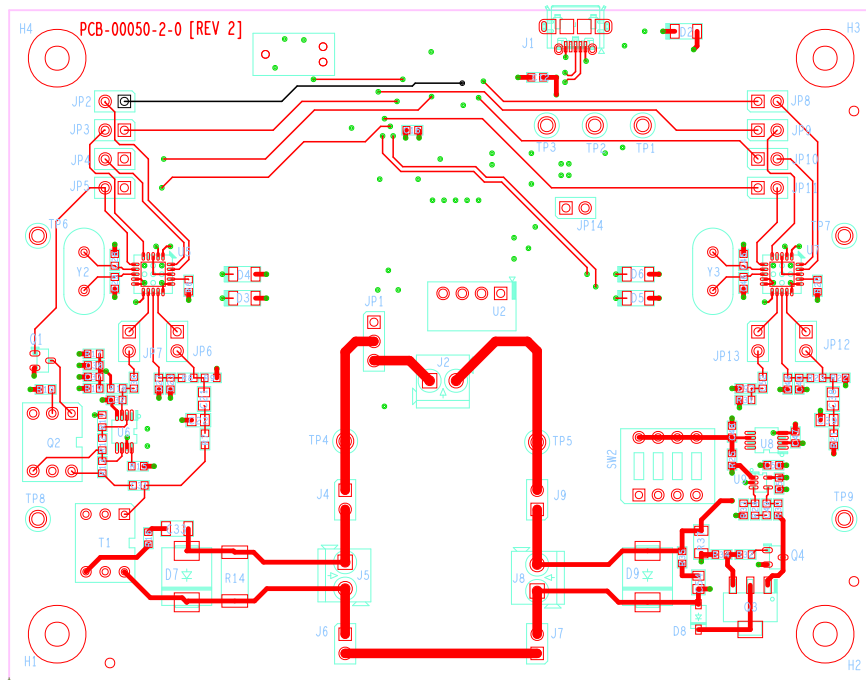
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|-------------------|-----------------------|
| | SILKSCREEN TOP |
| | SOLDER MASK TOP |
| LAYER 1 TOP | 1 OZ. FINISHED COPPER |
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| | PREPREG 0.0039" |
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 2. SILKSCREEN BOTH SIDES USING LPI PLACE ANY VENDOR SERIAL NUMBER A



| | | |
|---|------------------|--|
| | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | DATE: 02-19-2015 | |
| LAYER: DR1R0B8TEMPBATE00R0N0D500BO(TOR) | | |

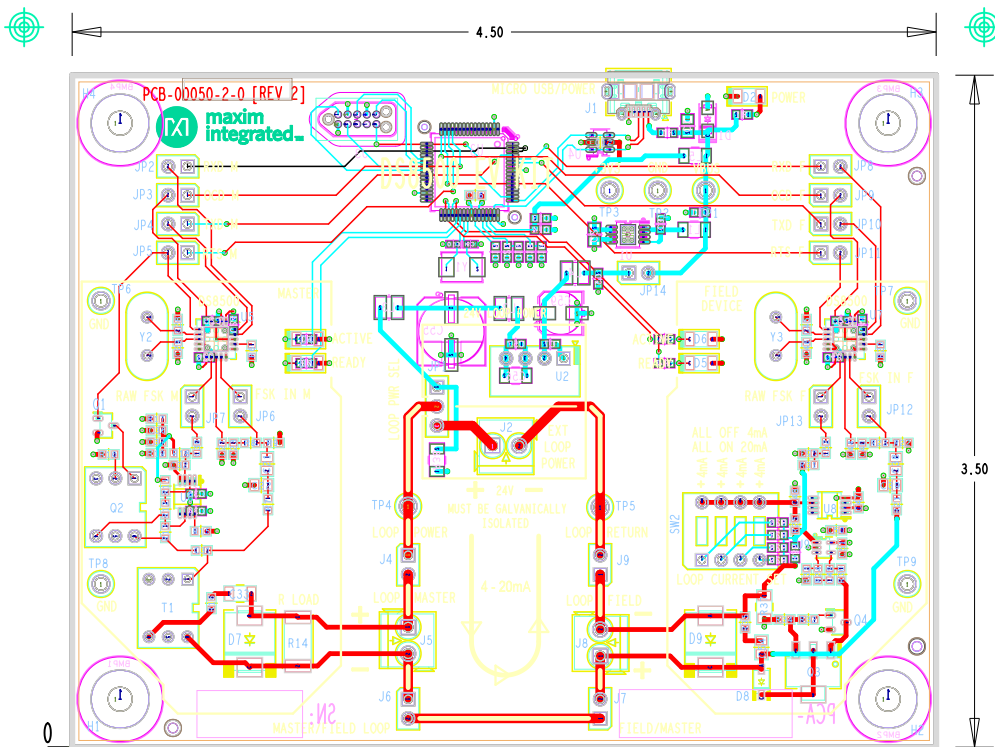


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|---|-------------------------|--|
|  | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | DATE: 02-19-2015 | |
| LAYER: LAYERB1Y-D-COMPONENTPSIDE (TOP) | | |

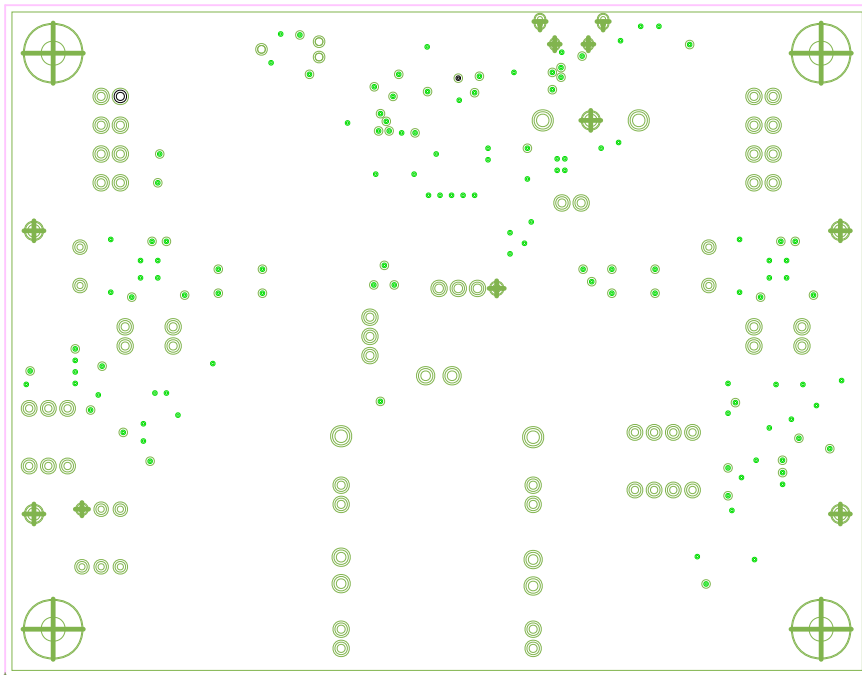
| | |
|-------------------|-----------------------|
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1. ALL MEASUREMENTS ARE IN INCHES.
 2. THE PWB SHALL BE FABRICATED TO I SHALL CONFORM TO IPC-A-600, CLASS TOLERANCE OF PRINTED WIRING BOARD.
 3. BOARD MATERIAL TO BE MULTI-FUNCTION AND SHALL MEET OR EXCEED MIL-P-1 THE FINISHED BOARD.
 4. BOARD MATERIAL AND CONSTRUCTION SHALL MEET OR EXCEED MIL-P-1 THE FINISHED BOARD.
 5. MINIMUM COPPER WALL THICKNESS OF .0005 INCHES.
 6. OVERALL BOARD THICKNESS TO BE .0625 INCHES.
 7. LAMINATION AND PLATING PROCESSES SHALL MEET OR EXCEED MIL-P-1 THE FINISHED BOARD.
 8. MAX WARP AND TWIST TO BE .01 INCHES PER INCH.
 9. BOARD MUST BE ELECTRICALLY TESTED PER IPC-6013.
 10. PLATE ALL EXPOSED AREAS WITH ELECTROLYTIC COPPER AT A MINIMUM OF 100 MICROINCHES THK MIN.

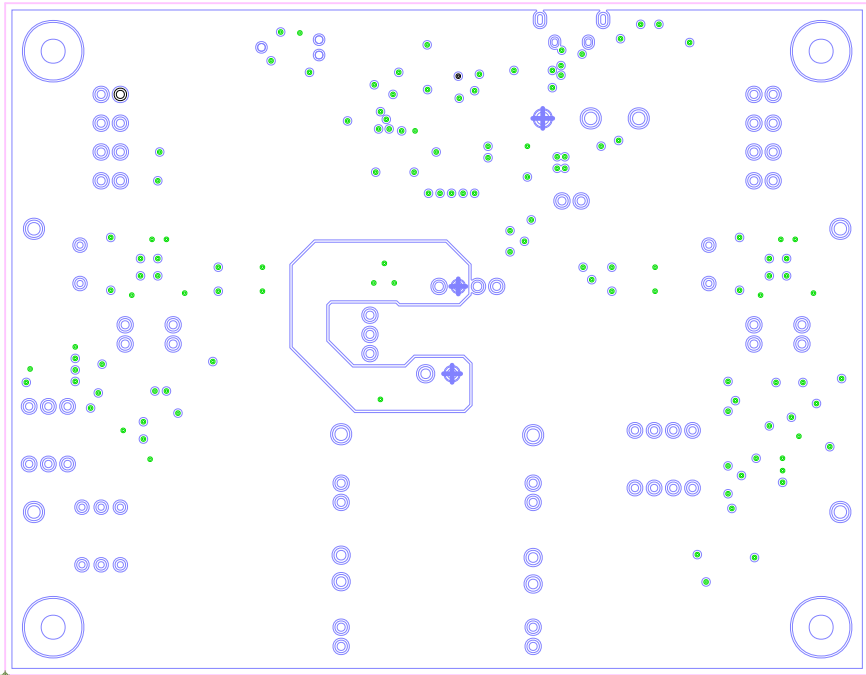
- PROCESS NOTES:
1. APPLY LPI SOLDERMASK, BOTH SIDES OF BOARD. COLOR: GREEN. SOLDERMASK SHALL CONFORM TO IPC-4562. ALL EXPOSED AREAS SHALL BE CLEARED BY SOLDERMASK PER ART. AS NEEDED AS LONG AS SOLDERMASK IS NOT REMOVED.
 2. SILKSCREEN BOTH SIDES USING LPI. PLACE ANY VENDOR SERIAL NUMBER AS NEEDED.



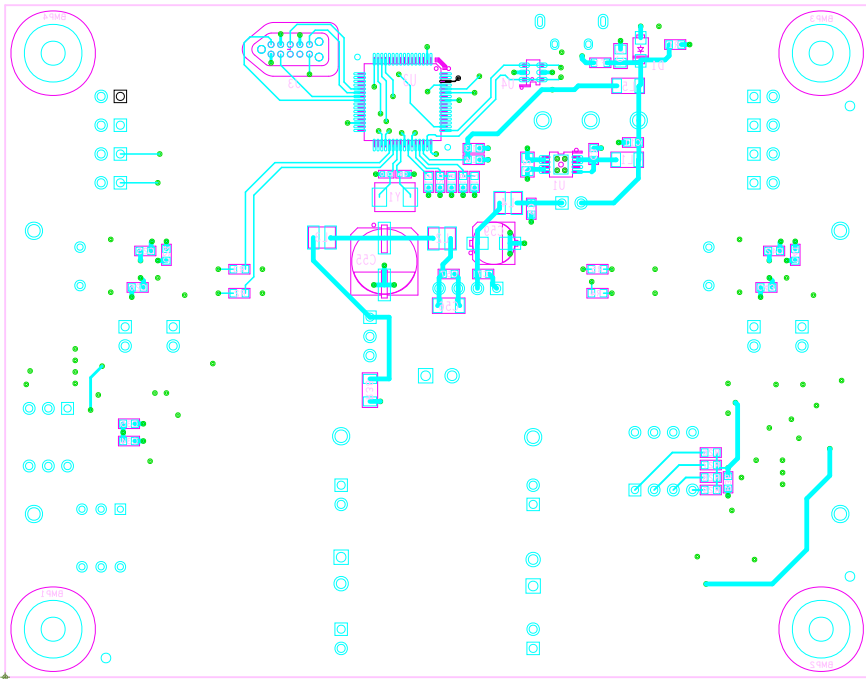
| | | |
|---|------------------|--|
| | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | DATE: 02-19-2015 | |
| LAYER: DR1R08BTEMPBATE0000000500BO(TOR) | | |



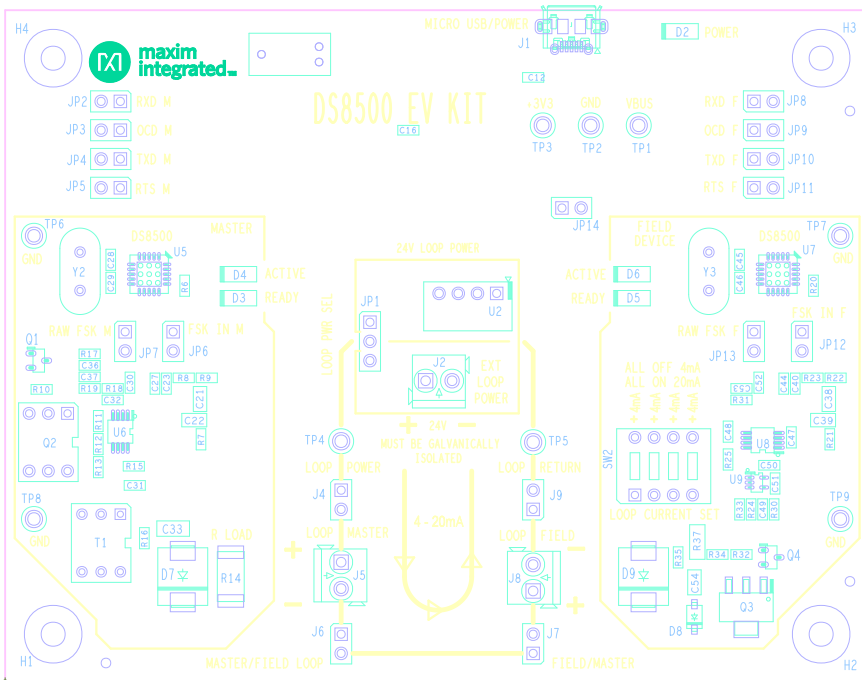
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|  | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | | DATE: 02-19-2015 |
| LAYER: LAYER 2 - GND PLANE | | |



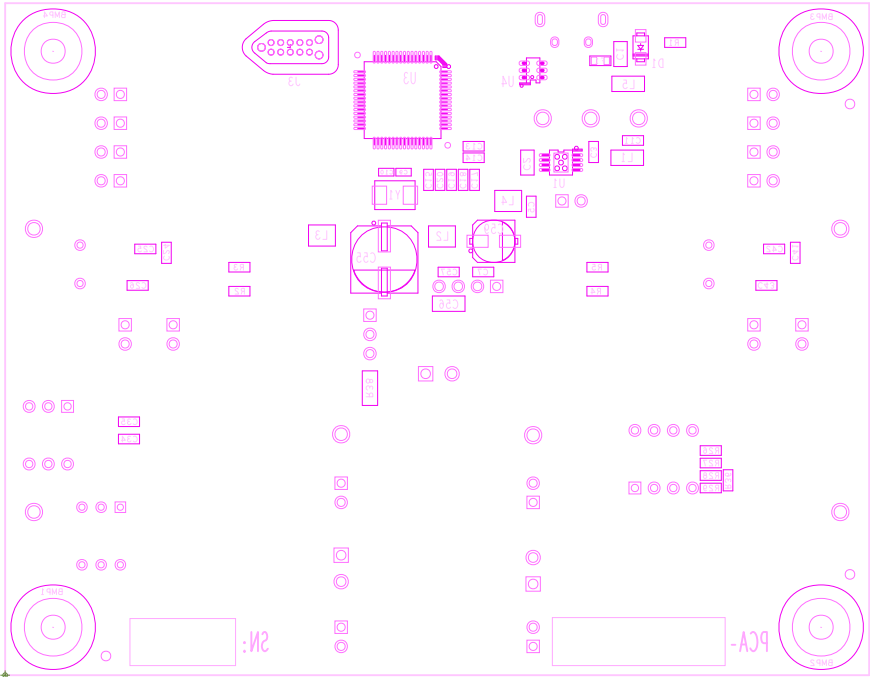
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| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | | DATE: 02-19-2015 |
| LAYER: LAYER 3 - PWR PLANE | | |



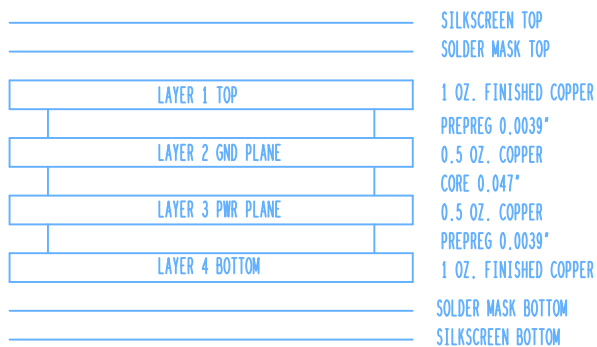
| | | |
|---|--|-------------------------|
|  maxim integrated | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | | DATE: 02-19-2015 |
| LAYER: ASSEMBLY-DRAWING BOTTOM(BOTTOM) | | |



| | |
|------------------------------------|-------------------------|
| | |
| BOARD NAME: DS8500 EV KIT | |
| P/N: PCB-00050-2-0 | DATE: 02-19-2015 |
| LAYER: ASSEMBLY DRAWING TOP | |

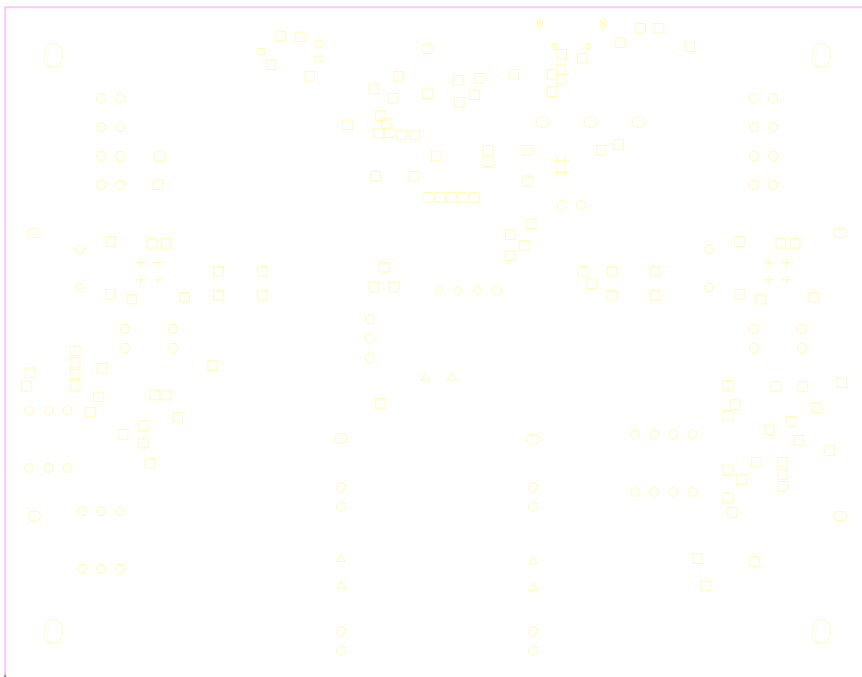
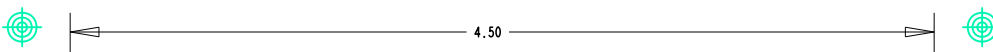


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|  | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | | DATE: 02-19-2015 |
| LAYER: ASSEMBLY DRAWING BOTTOM | | |



- NOTES:
1. ALL MEASUREMENTS ARE IN INCHES.
 2. THE PWB SHALL BE FABRICATED TO I SHALL CONFORM TO IPC-A-600, CLASS TOLERANCE OF PRINTED WIRING BOARD
 3. BOARD MATERIAL TO BE MULTI-FUNCTION AND SHALL MEET OR EXCEED MIL-P-1
 4. BOARD MATERIAL AND CONSTRUCTION THE FINISHED BOARD.
 5. MINIMUM COPPER WALL THICKNESS OF
 6. OVERALL BOARD THICKNESS TO BE .0 LAMINATION AND PLATING PROCESSES
 7. MAX WARP AND TWIST TO BE .01 INC
 8. BOARD MUST BE ELECTRICALLY TESTE
 9. PLATE ALL EXPOSED AREAS WITH ELE MICROINCHES THK MIN.

- PROCESS NOTES:
1. APPLY LPI SOLDERMASK, BOTH SIDES COLOR: GREEN SOLDERMASK SHALL CONFORM TO I CLEARED BY SOLDERMASK PER ART AS NEEDED AS LONG AS SOLDERMA
 2. SILKSCREEN BOTH SIDES USING LPI PLACE ANY VENDOR SERIAL NUMBER A



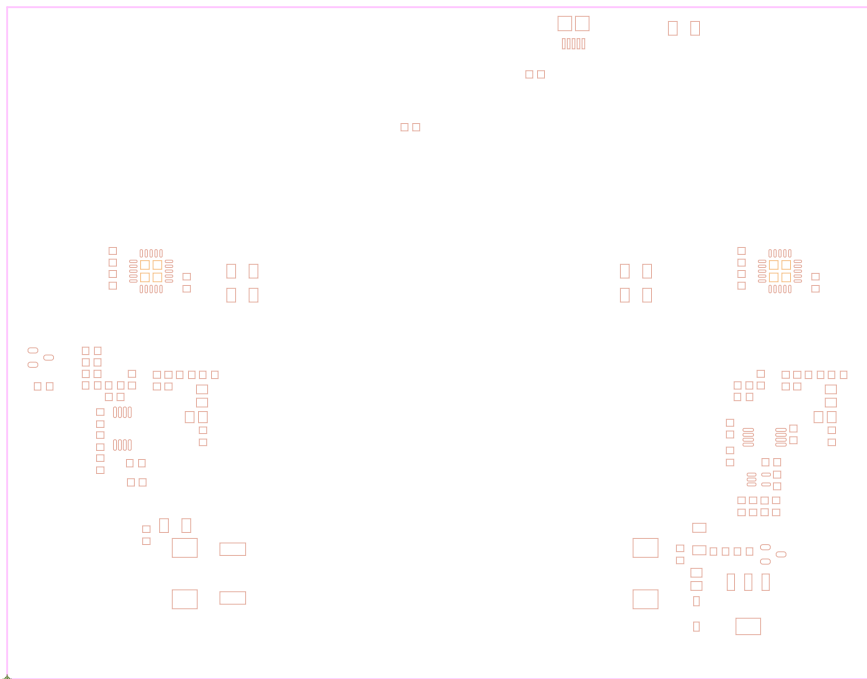
| DRILL CHART: TOP to BOTTOM | | | | |
|----------------------------|-----------|-----------|------------|-----|
| ALL UNITS ARE IN MILS | | | | |
| FIGURE | SIZE | TOLERANCE | PLATED | QTY |
| + | 12.0 | +3.0/-3.0 | PLATED | 12 |
| □ | 12.0 | +3.0/-3.0 | PLATED | 116 |
| ○ | 32.0 | +3.0/-3.0 | PLATED | 10 |
| ○ | 38.0 | +3.0/-3.0 | PLATED | 14 |
| ○ | 42.0 | +3.0/-3.0 | PLATED | 38 |
| ◇ | 45.0 | +3.0/-3.0 | PLATED | 3 |
| △ | 50.0 | +3.0/-3.0 | PLATED | 6 |
| ○ | 65.0 | +3.0/-3.0 | PLATED | 9 |
| ○ | 125.0 | +3.0/-3.0 | PLATED | 4 |
| □ | 40.0 | +3.0/-3.0 | NON-PLATED | 3 |
| ⊗ | 35.0x28.0 | +3.0/-3.0 | PLATED | 2 |
| ⊗ | 52.0x25.0 | +3.0/-3.0 | PLATED | 2 |

maxim integrated

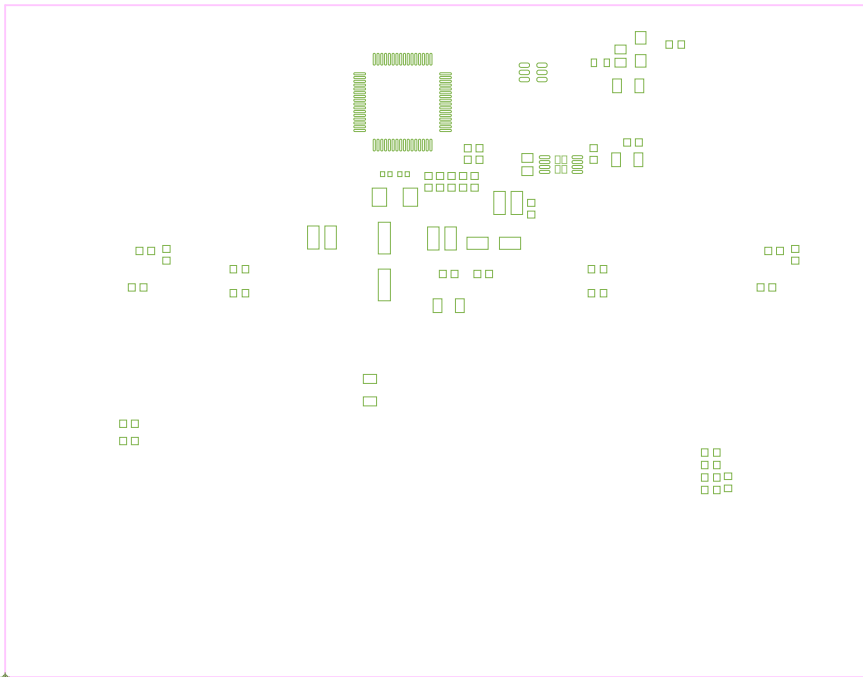
BOARD NAME: DS8500 EV KIT

| | |
|---------------------------|-------------------------|
| P/N: PCB-00050-2-0 | DATE: 02-19-2015 |
|---------------------------|-------------------------|

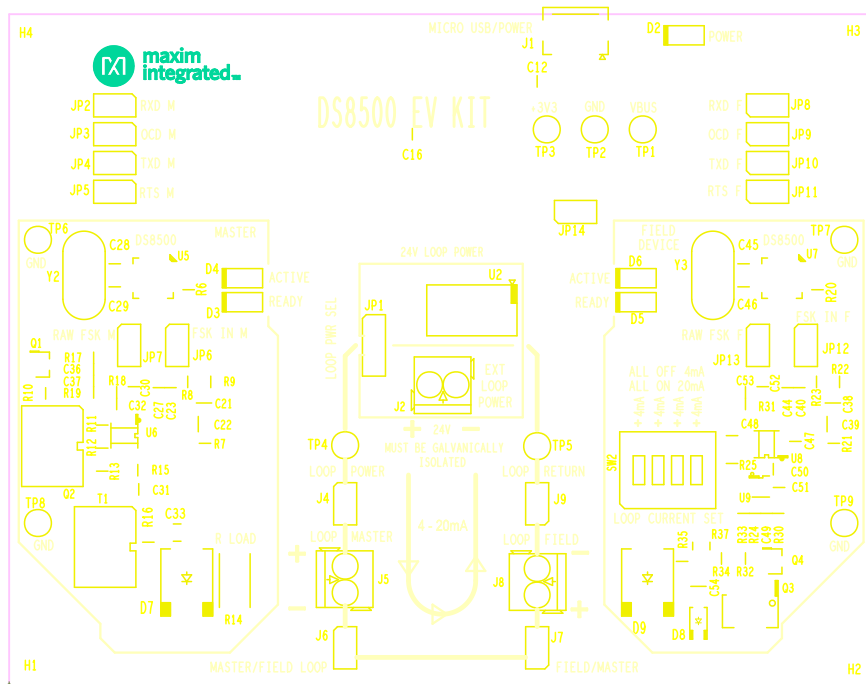
LAYER: DRILL TEMPLATE



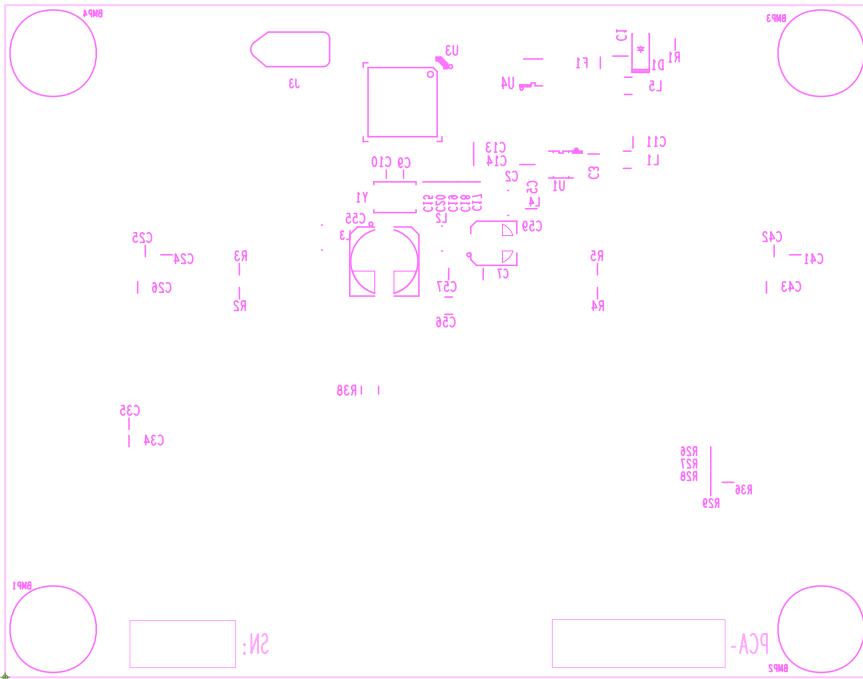
| | | |
|--|--|-------------------------|
|  maxim integrated | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | | DATE: 02-19-2015 |
| LAYER: PASTE MASK TOP | | |



| | | |
|--|--|-------------------------|
|  maxim integrated | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | | DATE: 02-19-2015 |
| LAYER: PASTE MASK BOTTOM | | |



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| | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | | DATE: 02-19-2015 |
| LAYER: SILKSCREEN TOP | | |

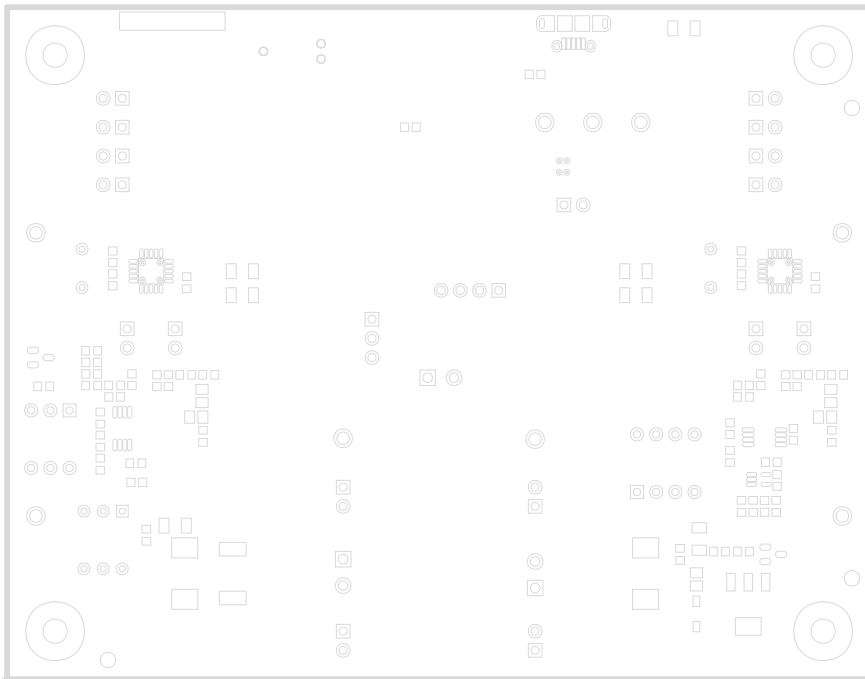


BOARD NAME: DS8500 EV KIT

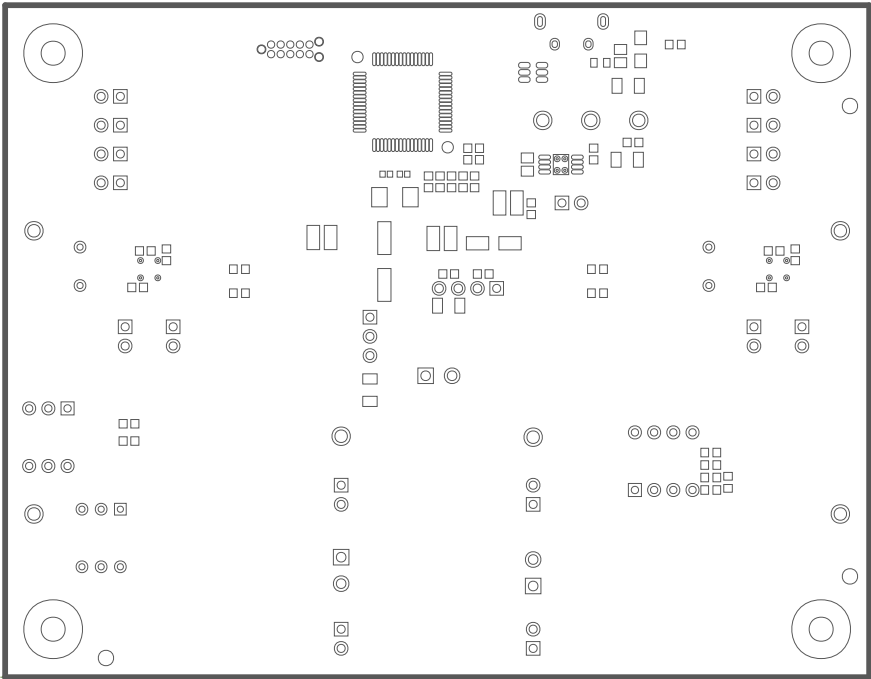
P/N: PCB-00050-2-0


DATE: 02-19-2015

LAYER: SILKSCREEN BOTTOM



| | | |
|---|--|-------------------------|
|  maxim integrated | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | | DATE: 02-19-2015 |
| LAYER: SOLDER MASK TOP | | |



| | | |
|---|--|-------------------------|
|  | | |
| BOARD NAME: DS8500 EV KIT | | |
| P/N: PCB-00050-2-0 | | DATE: 02-19-2015 |
| LAYER: SOLDER MASK BOTTOM | | |

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