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# Embedded Demonstration Board Product Datasheet

## EMB035INTDEMO

3.5" Integrated TFT Demonstration Board

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## 1. Introduction

The Displaytech EMB035INTDEMO is a demonstration board for the Displaytech INT035TFT integrated driver board. The EMB035INTDEMO is controlled by a Microchip PIC32MX460F512L MCU and includes a USB connection, 2Mbyte SPI flash, and an SD card slot.

The INT035TFT integrated display module powers and controls a Displaytech DT035TFT TFT display with a 240 x 320 RGB resolution. The TFT module is mounted on a PCB on which is mounted a Solomon SSD1963 controller with integrated touch screen control and LED backlight power circuitry. Please see the [INT035TFT Datasheet](#) for more information.

The EMB035INTDEMO is powered via a 5v USB connection, with a power switch (SW2) to turn the device on and off. All power levels required by the INT035TFT are generated and regulated by on-board voltage

regulators (see the [schematic](#) for more information).

## 2. INT Module Auto-Initialization

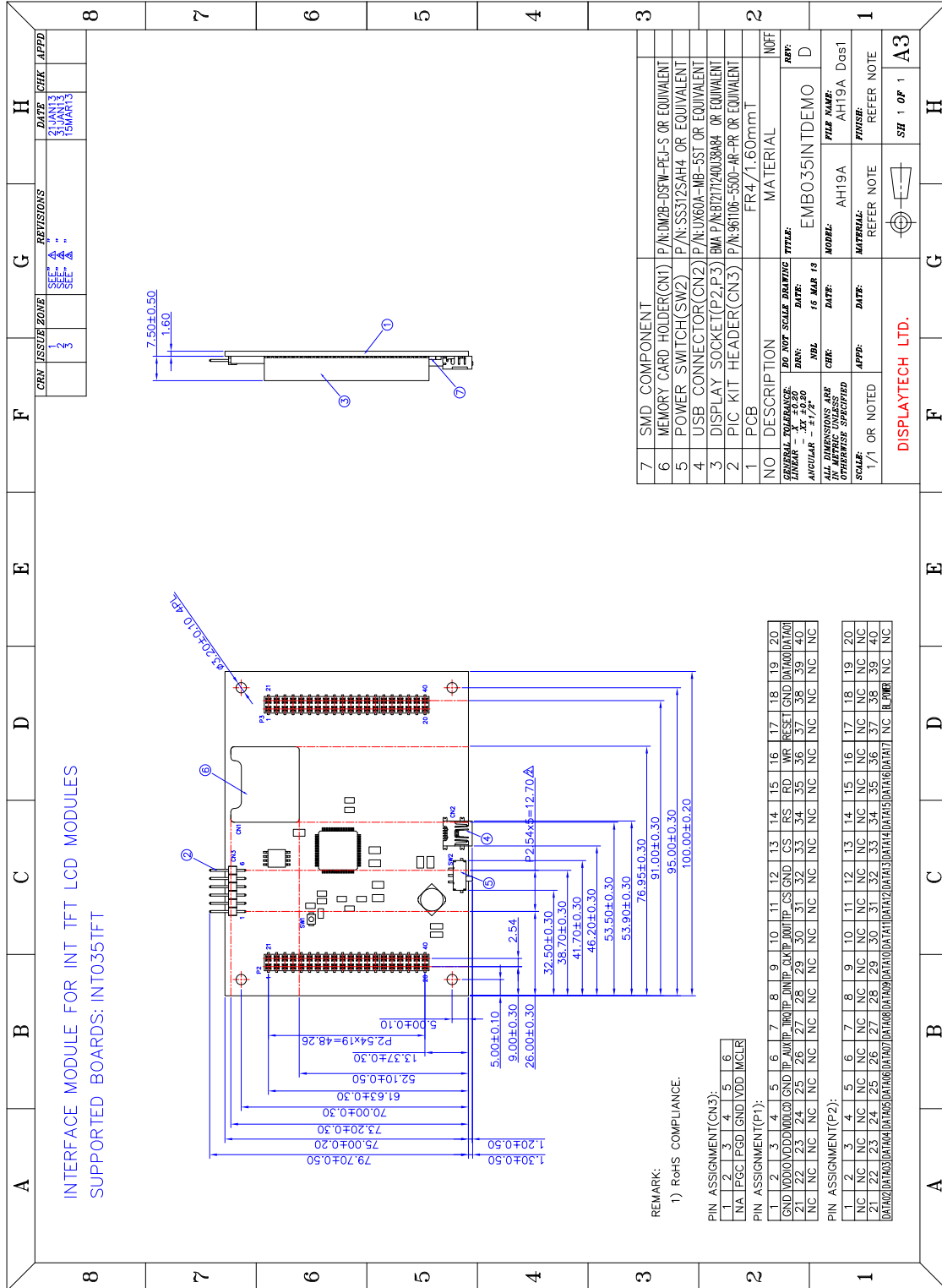
The SSD1963 as well as the Novatek NT39016D COG TFT Controller/Driver on-board the TFT module are automatically initialized upon power-up of the integrated module by an on-board ATmega8 microcontroller.

During the auto-initialization time, the PIC MCU should configure all I/O pins connected to the integrated board as inputs, as the on-board ATmega8 asserts control over these pins to configure the controller and driver. Please see the [INT035TFT datasheet](#) for more details.

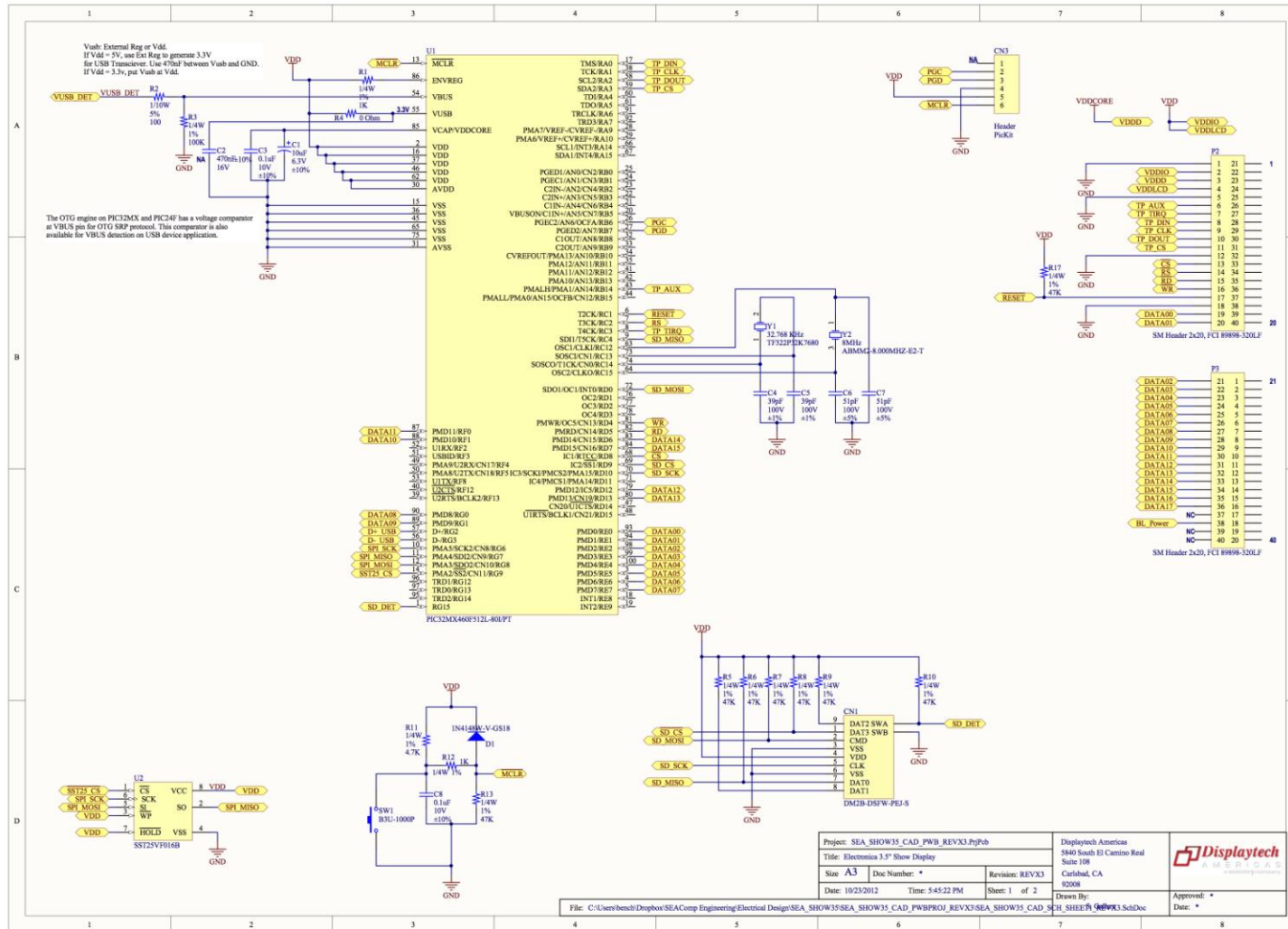
## 3. Example Software

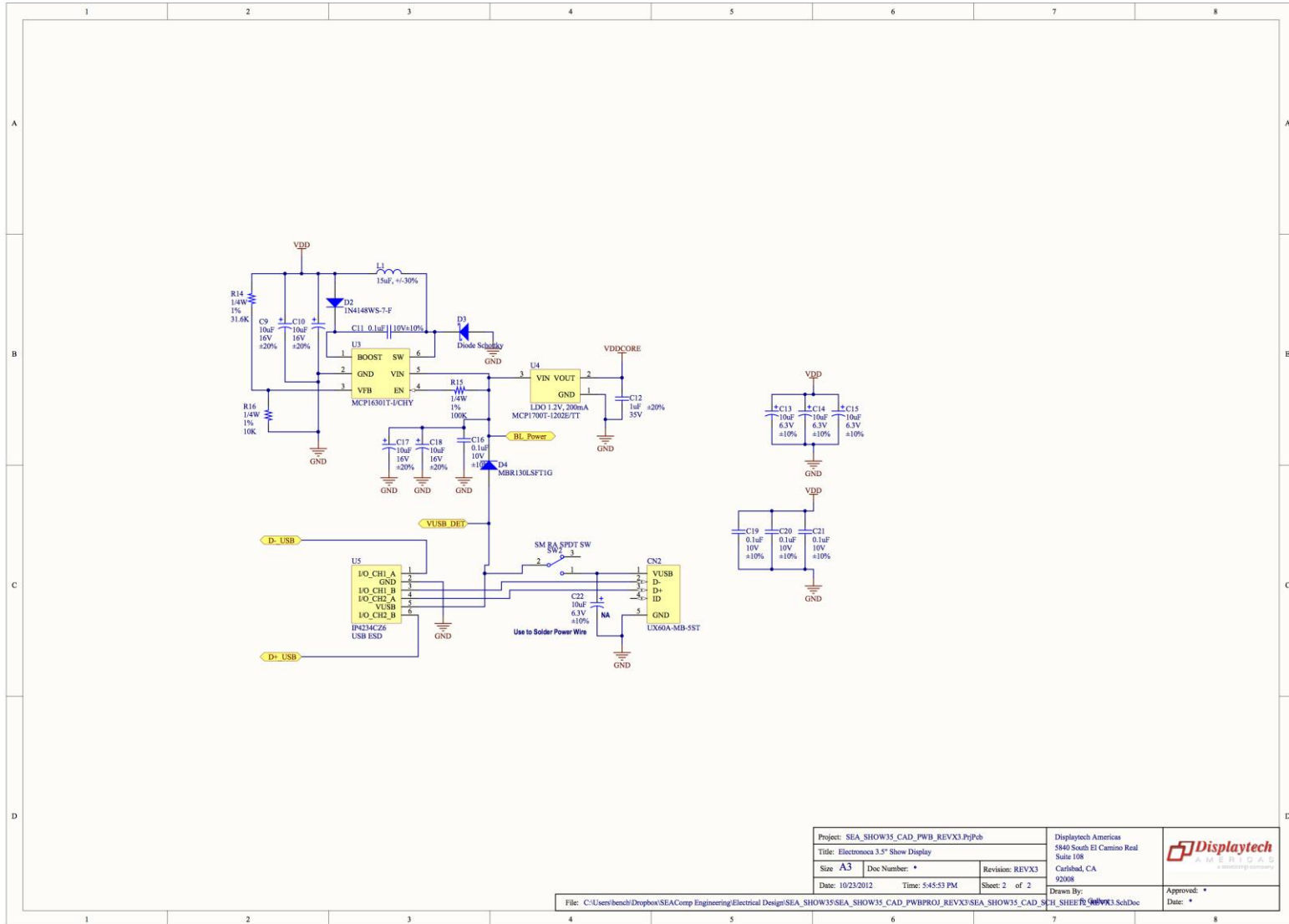
Example software is available from Displaytech upon request. Please contact Displaytech at [sales@displaytech-us.com](mailto:sales@displaytech-us.com).

# 4. Mechanical Drawing



5. Schematic





|   |                  |                           |              |
|---|------------------|---------------------------|--------------|
| Project: SEA_SHOW35_CAD_PWB_REVX3.PjPcb   |                  | Displaytech Americas      |              |
| Title: Electronica 3.5" Show Display  |                  | 5840 South El Camino Real |              |
| Size: A3  | Doc Number: *    | Revision: REVX3           | Carlsbad, CA |
| Date: 10/23/2012  | Time: 5:45:53 PM | Sheet: 2 of 2             | 92008        |
| File: C:\Users\bench\Dropbox\SEAComp Engineering\Electrical Design\SEA_SHOW35\SEA_SHOW35_CAD_PWB\PROJ_REVX3\SEA_SHOW35_CAD_SCH_SHEET_PWB\WR3.SchDoc |                  | Drawn By: [Signature]     | Approved: *  |
|   |                  | Date: *                   |              |

## 6. Bill of Materials

| Manufacturer | Part Number            | Footprint | Qty | Value        | Designator                         | Description  |
|--------------|------------------------|-----------|-----|--------------|------------------------------------|--|
| Kemet        | T491A106M016AT         | C1206     | 5   | 10uF         | C1, C13, C14, C15, C22             | Polarized Capacitor (Axial)  |
| TDK          | C1608X7R1C474K         | 0603      | 1   | 470nF        | C2                                 | Ceramic Capacitor  |
| Kemet        | C0603C104K8RACTU       | 0603      | 7   | 0.1uF        | C3, C8, C11, C16, C19,<br>C20, C21 | Polarized Capacitor (Axial)  |
| AVX          | 06031A390FAT2A         | 0603      | 2   | 39pF         | C4, C5                             | Polarized Capacitor (Axial)  |
| AVX          | 06031A510JAT2A         | 0603      | 2   | 51pF         | C6, C7                             | Polarized Capacitor (Axial)  |
| Kemet        | T491A106M016AT         | C1206     | 4   | 10uF         | C9, C10, C17, C18                  | Polarized Capacitor (Axial)  |
| TDK          | C1608X7R1V105M         | 0603      | 1   | 1uF          | C12                                | Ceramic Capacitor  |
| Hirose       | DM2B-DSFW-PEJ-S        | -         | 1   | -            | CN1                                | CONN MEMORY MINI SD<br>BOTTM MT SMD                                  |
| Hirose       | UX60A-MB-5ST           | -         | 1   | -            | CN2                                | USB 2.0, Right Angle, SMT,<br>MINI-B Type, Receptacle, 5<br>Position |
| 3M           | 961106-5500-AR-PR      | -         | 1   | -            | CN3                                | SM Header, 1x6-Pin, Right<br>Angle, 0.1"                             |
| Vishay       | 1N4148W-V-GS18         | SOD-123   | 1   | -            | D1                                 | High Conductance Fast Diode  |
| Vishay       | 1N4148WS-7-F           | SOD323    | 1   | -            | D2                                 | High Conductance Fast Diode  |
| Diodes       | ZLLS400TA              | SOD323    | 1   | -            | D3                                 | Schottky Rectifier   |
| ON Semi      | MBR130LSFT1G           | SOD-123   | 1   | -            | D4                                 | High Conductance Fast Diode  |
| Sumida       | CDRH6D28NP-150NC       | -         | 1   | 15uF, +/-30% | L1                                 | Inductor   |
| FCI          | 89898-320LF            | -         | 2   | -            | P2, P3                             | Header, SMT, 2x20-Pin, 0.1"  |
| Vishay       | CRCW06031K00FKEA<br>HP | 0603      | 2   | 1K           | R1, R12                            | Resistor   |
| Yageo        | RC0603JR-07100RL       | 0603      | 1   | 100          | R2                                 | Resistor   |
| Vishay       | CRCW0603100KFKEA<br>HP | 0603      | 2   | 100K         | R3, R15                            | Resistor   |

| Manufacturer                  | Part Number                | Footprint          | Qty | Value | Designator                      | Description  |
|-------------------------------|----------------------------|--------------------|-----|-------|---------------------------------|--|
| Yageo                         | RC0603JR-070RL             | 0603               | 1   | 0 Ohm | R4                              | Resistor   |
| Vishay                        | CRCW060347K0FKEA<br>HP     | 0603               | 7   | 47K   | R5, R6, R7, R8, R9, R10,<br>R13 | Resistor   |
| Vishay                        | CRCW06034K70FKEA<br>HP     | 0603               | 1   | 4.7K  | R11                             | Resistor   |
| Vishay                        | CRCW060331K6FKEA           | 0603               | 1   | 31.6K | R14                             | Resistor   |
| Vishay                        | CRCW060310K0FKEA<br>HP     | 0603               | 1   | 10K   | R16                             | Resistor   |
| Omron                         | B3U-1000P                  | ELTSM-65           | 1   | -     | SW1                             | Switch   |
| NKK Switches                  | SS312SAH4                  | -                  | 1   | -     | SW2                             | SM SPDT Sub Min Tog Switch,<br>Right Angle                                       |
| Microchip                     | PIC32MX460F512L-<br>80I/PT | TQFP-PT100         | 1   | -     | U1                              | 80 MHz 32-Bit Microcontroller<br>with USB, 512KB Program<br>Memory, 100-pin TQFP |
| Microchip                     | SST25VF016B-75-4I-<br>S2AF | SOIJ-SM8           | 1   | -     | U2                              | 16mbit SPI Bus Serial flash, 8-<br>Pin SOIJ, Industrial Temperature              |
| Microchip                     | MCP16301T-I/CHY            | SOT23-6_N          | 1   | -     | U3                              | Buck Adj 0.6A SOT23-6<br>Regulator. 2-15Vout, 4-30Vin                            |
| Microchip                     | MCP1700T-1202E/TT          | SOT23-3            | 1   | -     | U4                              | LDO, 3-Pin SOT-23, 1.2V Out,<br>200mA  |
| NXP                           | IP4234CZ6                  | SC-74,<br>SOT0457  | 1   | -     | U5                              | Single USB 2.0 ESD protection to<br>IEC 61000-4-2 level 4                        |
| CTS-<br>Frequency<br>Controls | TF322P32K7680              | 3215               | 1   | -     | Y1                              | Crystal Oscillator   |
| CTS-<br>Frequency<br>Controls | ABMM2-8.000MHZ-<br>E2-T    | SMD 6mm x<br>3.6mm | 1   | -     | Y2                              | Crystal Oscillator   |