HOLT INTEGRATED CIRCUITS

# FIELD BULLETIN

#010985

## WHAT IS THE HI-8010?

The HI-8010 is a high voltage (35V) LCD driver designed to drive Dichroic Displays? **So what's a Dichroic Display?**

A Dichroic Display is a high contrast, directly driven LCD which has the ability to readily accept various dye materials and therefore can easily be produced in colors. By its nature, it requires a drive voltage in excess of 15 volts to operate; but it does not require a polarizer, and therefore it has a very wide viewing angle. If you have ever owned a digital (LCD) watch, you know that low voltage LCD's do require a polarizer and do have a very limited viewing angle.

Dichroic Displays have found favor in applications where high visibility is a must, especially where intense ambient light is a factor. Some examples of this are

- Aircraft cockpits
- Marine instrumentation
- Automobile instrumentation
- Scoreboards and outdoor displays

The HI-8010 is a second source for the AMI 4520A. Our customers tell us that our device is superior to AMI's in the following areas:

1. It can drive higher voltages providing improved contrast and viewability.
2. It can be clocked at higher frequencies which is important when cascading several displays.

Note: The HI-8010 is not plug compatible with the AMI 4520A at this time, however we can make it compatible.

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The HI-8010 is available in four basic package options:

- o 40-pin package
- o 48-pin package
- o 44-pin J-lead
- o 68-pin J-lead

There are additional options available within the basic options.

1. 40-pin package (HI-8010-05, 06, 07)
   - o 30-segment drive capability
   - o Various chip select and clock option combinations available
2. 44-pin package (HI-8010J-15)
   - o 30-segment drive capability
   - o Chip select and all clock options user-selectable
3. 48-pin package
   - o HI-8010-01 - 34-segment drive capability with both chip select and all clock options user-selectable
   - o HI-8010-02,03,04 - 38-segment drive capability with various chip select and clock option combinations available
4. 68-pin package (HI-8010J-16)
   - o 38-segment drive capability
   - o Chip select and all clock options user-selectable

Note: A pin-out assignment sheet and standard configuration matrix are attached in the event that you <u>really</u> need to know what <u>all</u> these options are!

# HI-8010 Part Number Definition

HI-8010XX-XX

Package Type
- S - Ceramic Leadless Chip Carrier
- L - Leaded Ceramic Chip Carrier
- P - Plastic DIP
- J - Plastic J-Lead (PLCC)

Processing
- M - Military

Version

01, 02, 03, 04, 05, 06, 07, 15, 16 — Without Burn-In
See Configurations Matrix and Pin-Out Assignment Charts

31, 32, 33, 34, 35, 36, 37 — With Burn-In
See Configuration Matrix and Pin-Out Assignment Charts

## HI-8010 PIN-OUT ASSIGNMENTS

| Pin Number | Version | | | | | | |
|---|---|---|---|---|---|---|---|
| | -01<br>-31 | -02<br>-32 | -03<br>-33 | -04<br>-34 | -05<br>-35 | -06<br>-36 | -07<br>-37 |
| 1 | S33 | S35 | S35 | S35 | $V_{SS}$ | $V_{SS}$ | $V_{SS}$ |
| 2 | S34 | S36 | S36 | S36 | $\overline{CS}$ | $\overline{CL}$ | $\overline{CS}$ |
| 3 | $V_{SS}$ | $V_{SS}$ | $V_{SS}$ | $V_{SS}$ | $\overline{CL}$ | LD | $\overline{CL}$ |
| 4 | $\overline{CS}$ | $\overline{CL}$ | $\overline{CS}$ | $\overline{CS}$ | LD | DIN | LD |
| 5 | $\overline{CL}$ | LD | $\overline{CL}$ | $\overline{CL}$ | DIN | LCDØ | DIN |
| 6 | LD | DIN | LD | LD | LCDØ | LCDØOPT | LCDØ/LCDØOPT |
| 7 | DIN | LCDØ | DIN | DIN | $V_{DD}$ | | |
| 8 | LCDØ | LCDØOPT | LCDØ/LCDØOPT | LCDØ | S1 | | |
| 9 | LCDØOPT | $V_{DD}$ | | | S2 | | |
| 10 | $V_{DD}$ | S37 | | | S3 | | |
| 11 | S1 | S38 | | | S4 | | |
| 12 | S2 | S1 | | | S5 | | |
| 13 | S3 | S2 | | | S6 | | |
| 14 | S4 | S3 | | | S7 | | |
| 15 | S5 | S4 | | | S8 | | |
| 16 | S6 | S5 | | | S9 | | |
| 17 | S7 | S6 | | | S10 | | |
| 18 | S8 | S7 | | | S11 | | |
| 19 | S9 | S8 | | | S12 | | |
| 20 | S10 | S9 | | | S13 | | |
| 21 | S11 | S10 | | | S14 | | |
| 22 | S12 | S11 | | | $V_{EE}$ | | |
| 23 | S13 | S12 | | | S15 | | |
| 24 | S14 | S13 | | | S16 | | |

Note: DIP, leaded and leadless ceramic carrier pin-outs are the same.

## HI-8010 PIN-OUT ASSIGNMENTS

| Pin Number | Version | | | | | | |
|---|---|---|---|---|---|---|---|
| | -01<br>-31 | -02<br>-32 | -03<br>-33 | -04<br>-34 | -05<br>-35 | -06<br>-36 | -07<br>-37 |
| 25 | $V_{EE}$ | | S14 | | | S17 | |
| 26 | S15 | | $V_{EE}$ | | | S18 | |
| 27 | S16 | | S15 | | | S19 | |
| 28 | S17 | | S16 | | | BP | |
| 29 | S18 | | S17 | | | DOUT 30 | |
| 30 | S19 | | S18 | | | S20 | |
| 31 | BP | | S19 | | | S21 | |
| 32 | N/C | | BP | | | S22 | |
| 33 | N/C | | DOUT 38 | | | S23 | |
| 34 | DOUT 34 | | S20 | | | S24 | |
| 35 | S20 | | S21 | | | S25 | |
| 36 | S21 | | S22 | | | S26 | |
| 37 | S22 | | S23 | | | S27 | |
| 38 | S23 | | S24 | | | S28 | |
| 39 | S24 | | S25 | | | S29 | |
| 40 | S25 | | S26 | | | S30 | |
| 41 | S26 | | S27 | | | | |
| 42 | S27 | | S28 | | | | |
| 43 | N/C | | S29 | | | | |
| 44 | S28 | | S30 | | | | |
| 45 | S29 | | S31 | | | | |
| 46 | S30 | | S32 | | | | |
| 47 | S31 | | S33 | | | | |
| 48 | S32 | | S34 | | | | |

N/C = No Connection

## HI-8010 PIN OUT ASSIGNMENTS

| Pin Number | Version | |
|---|---|---|
| | -15 | -16 |
| 1 | VSS | S34 |
| 2 | $\overline{CS}$ | S35 |
| 3 | $\overline{CL}$ | S36 |
| 4 | LD | VSS |
| 5 | DIN | N/C |
| 6 | LCDØ | $\overline{CS}$ |
| 7 | LCDØOPT | CL |
| 8 | VDD | LD |
| 9 | S1 | N/C |
| 10 | S2 | N/C |
| 11 | S3 | N/C |
| 12 | S4 | N/C |
| 13 | S5 | DIN |
| 14 | S6 | N/C |
| 15 | N/C | LCDØ |
| 16 | S7 | LCDØOPT |
| 17 | S8 | VDD |
| 18 | S9 | S37 |
| 19 | S10 | S38 |
| 20 | S11 | S1 |
| 21 | S12 | S2 |
| 22 | S13 | S3 |
| 23 | S14 | S4 |
| 24 | VEE | S5 |
| 25 | S15 | S6 |
| 26 | S16 | S7 |
| 27 | S17 | N/C |
| 28 | S18 | N/C |
| 29 | N/C | S8 |
| 30 | S19 | S9 |
| 31 | N/C | S10 |
| 32 | BP | S11 |
| 33 | DOUT 30 | S12 |
| 34 | S20 | S13 |

| Pin Number | Version | |
|---|---|---|
| | -15 | -16 |
| 35 | S21 | S14 |
| 36 | S22 | VEE |
| 37 | S23 | S15 |
| 38 | S24 | S16 |
| 39 | S25 | S17 |
| 40 | S26 | S18 |
| 41 | S27 | N/C |
| 42 | S28 | N/C |
| 43 | S29 | N/C |
| 44 | S30 | N/C |
| 45 | | N/C |
| 46 | | S19 |
| 47 | | N/C |
| 48 | | N/C |
| 49 | | BP |
| 50 | | N/C |
| 51 | | N/C |
| 52 | | DOUT38 |
| 53 | | S20 |
| 54 | | S21 |
| 55 | | S22 |
| 56 | | S23 |
| 57 | | S24 |
| 58 | | S25 |
| 59 | | S26 |
| 60 | | N/C |
| 61 | | N/C |
| 62 | | SS7 |
| 63 | | S28 |
| 64 | | S29 |
| 65 | | S30 |
| 66 | | S31 |
| 67 | | S32 |
| 68 | | S33 |

N/C = No Connection

## STANDARD HI-8010 CONFIGURATIONS MATRIX

| Standard Package Configuration | | Pin Assignments | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | -01 -31 | -02 -32 | -03 -33 | -04 -34 | -05 -35 | -06 -36 | -07 -37 | -15 | -16 |
| 40-pin plastic DIP | 8010P | | | | | X | X | X | | |
| 48-pin plastic DIP | 8010P | X | X | X | X | | | | | |
| 44-pin plastic J-lead | 8010J | | | | | | | | X | |
| 68-pin plastic J-lead | 8010J | | | | | | | | | X |
| 40-pin leadless ceramic carrier | 8010S | | | | | X | X | X | | |
| 48-pin leadless ceramic carrier | 8010S | X | X | X | X | | | | | |
| 40-pin leaded ceramic carrier | 8010L | | | | | X | X | X | | |
| 48-pin leaded ceramic carrier | 8010L | X | X | X | X | | | | | |

| Standard Option Configurations | -01 -31 | -02 -32 | -03 -33 | -04 -34 | -05 -35 | -06 -36 | -07 -37 | -15 | -16 |
|---|---|---|---|---|---|---|---|---|---|
| Chip Select ($\overline{CS}$) | X | | X | X | X | | X | X | X |
| External Osc. (LCDØ only) | | | | X | X | | | | |
| Internal Osc. (LCDØ tied to LCDØOPT internally) | | | X | | | | X | | |
| Selectable Osc. Mode (LCDØ & LCDØOPT pins available) | X | X | | | | X | | X | X |
| Number of Segments | 34 | 38 | 38 | 38 | 30 | 30 | 30 | 30 | 38 |