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APPLICATION NOTE 4635

Connecting Dual-Digit LED Modules

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Abstract: The MAX6954/MAX6955 LED display drivers allow users to drive both individual LED digits and shared segment pins. This application note details what steps must be taken to map the digits properly.

Maxim's [MAX6954](#) and [MAX6955](#) LED display drivers can be used to drive LED digits whose segment pins are individually available. The MAX6954/MAX6955 can also be used to drive dual-digit 7-segment LED modules which feature shared segment pins. **Figure 1** shows the internal example configuration of such a device.

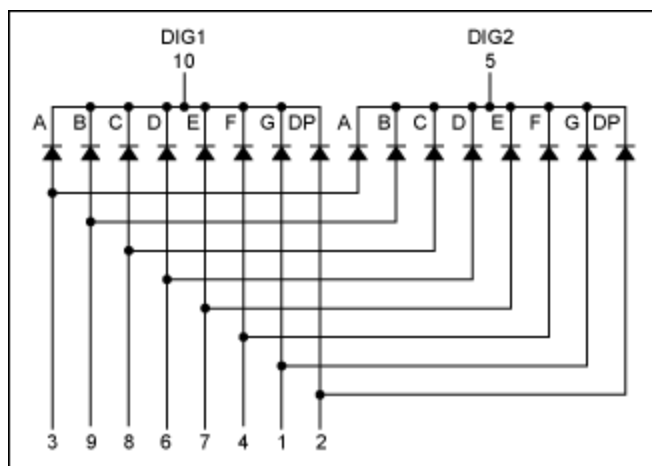


Figure 1. Internal configuration of a dual-digit LED module.

Up to eight dual-digit modules or 16 digits can be driven by just one MAX6954 or MAX6955. The following module digit-to-digit mapping is recommended to connect these modules to the MAX6954/MAX6955.

Module1-Digit1 -> Digit 0	DIG1 -> CC00
Module1-Digit2 -> Digit 1	DIG2 -> CC01
Module2-Digit1 -> Digit 2	DIG1 -> CC02
Module2-Digit2 -> Digit 3	DIG2 -> CC03
Module3-Digit1 -> Digit 4	DIG1 -> CC04
Module3-Digit2 -> Digit 5	DIG2 -> CC05
Module4-Digit1 -> Digit 6	DIG1 -> CC06

Module4-Digit2 -> Digit 7	DIG2 -> CC07
Module5-Digit1 -> Digit 0a	DIG1 -> CC00
Module5-Digit2 -> Digit 1a	DIG2 -> CC01
Module6-Digit1 -> Digit 2a	DIG1 -> CC02
Module6-Digit2 -> Digit 3a	DIG2 -> CC03
Module3-Digit1 -> Digit 4a	DIG1 -> CC04
Module3-Digit2 -> Digit 5a	DIG2 -> CC05
Module4-Digit1 -> Digit 6a	DIG1 -> CC06
Module4-Digit2 -> Digit 7a	DIG2 -> CC07

Table 4, *Connection Scheme for Sixteen 7-Segment Digits*, in the MAX6954/MAX6955 data sheet explains that digit 0, 1, 2, 3, 4, 5, 6, and 7's segment pins are identified by 1a, 1b, 1c, 1d, 1e, 1f, 1g, and 1dp; digit 0a, 1a, 2a, 3a, 4a, 5a, 6a, and 7a's segment pins are identified by 2a, 2b, 2c, 2d, 2e, 2f, 2g, and 2dp.

The scan limit should be set accordingly by writing the proper number to register 0x03. For this example with all eight modules or 16 digits, the scan-limit register should have a content of 0x07. The scan-limit register content can be changed to 0x03 if only four modules or eight digits are driven. When only half of the modules or digits are used, the module digit-to-digit mapping can be changed to the following.

Module1-Digit1 -> Digit 0	DIG1 -> CC00
Module1-Digit2 -> Digit 1	DIG2 -> CC01
Module2-Digit1 -> Digit 2	DIG1 -> CC02
Module2-Digit2 -> Digit 3	DIG2 -> CC03
Module5-Digit1 -> Digit 0a	DIG1 -> CC00
Module5-Digit2 -> Digit 1a	DIG2 -> CC01
Module6-Digit1 -> Digit 2a	DIG1 -> CC02
Module6-Digit2 -> Digit 3a	DIG2 -> CC03

Related Parts

MAX6954	4-Wire Interfaced, 2.7V to 5.5V LED Display Driver with I/O Expander and Key Scan	Free Samples
MAX6955	2-Wire Interfaced, 2.7V to 5.5V LED Display Driver with I/O Expander and Key Scan	Free Samples

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