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## Programmable Voltage Boost with Built-In Level Shifters and Serial Interface with Output Enable Product Brief

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### INTRODUCTION

MTCH650/2 is a compact boost converter, with up to 19 level shifters, which provides an easy-to-use solution for driving High Voltage (HV) outputs. MTCH650 is a line driver device with 21 level shifters available.

### PACKAGE TYPE

- 28-pin SOIC, SSOP
- 28-pin UQFN (4x4)

### MTCH650 FEATURES

- 21 High Voltage I/O lines
- 1.8V to 5.5V Input Operating Range
- Low Quiescent Current: <200  $\mu$ A
- Low Shutdown Current: 1.5  $\mu$ A, typical
- Up to 100 mA Output Current with 5 mA per OUTXX Channel
- Output Enable (OE) Independent of SPI Interface
- 3.6 to 18V External VPPIN Range

### MTCH652 FEATURES

- 19 High Voltage I/O Lines
- Built-in Boost
- Internal Switch
- 1.8V to 5.5V Input Operating Range
- Low Quiescent Current: <200  $\mu$ A
- Low Shutdown Current: 1.5  $\mu$ A, typical
- Up to 50 mA Output Current, at  $V_{IN} = 3.6V$  and  $V_{OUT} = 12V$
- The Boost is Driven by an External PWM Allowing for Greater Boost Flexibility
- Selectable Output Voltage Range: 6V, 8V, 10V, 12V, 14V, 16V and 18V
- Selectable Current Limiting
- Selectable Soft Start
- High-Speed SPI Interface:
  - 1 MHz max
- Output Enable (OE) Independent of SPI Interface
- Built-in Discharge Circuit

# MTCH650/2

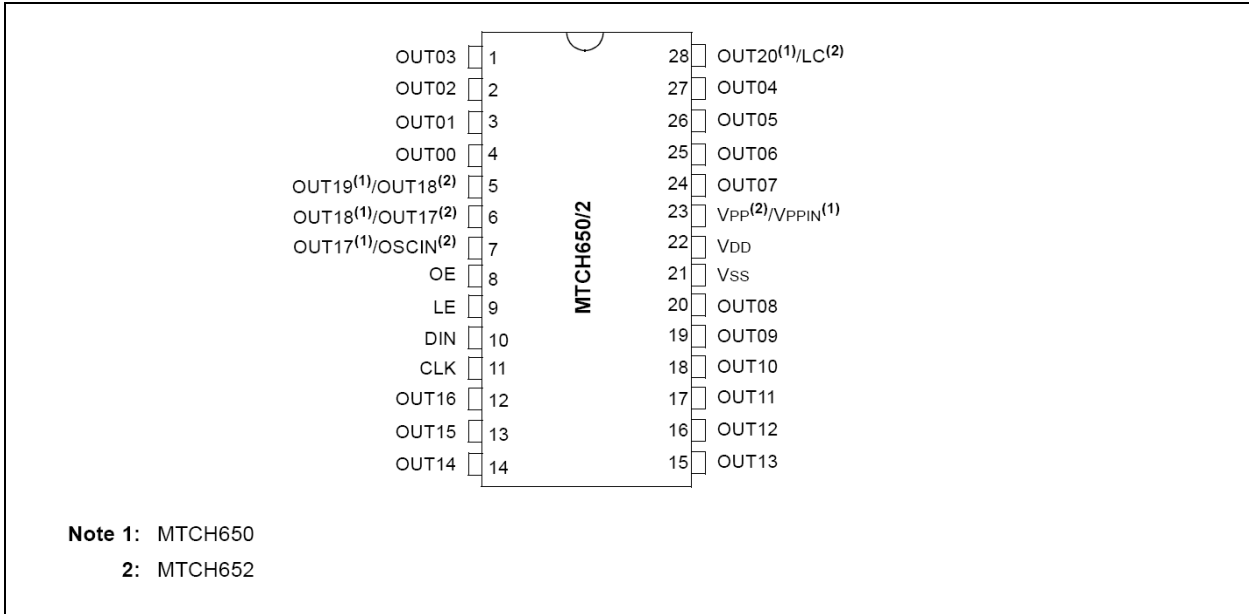
**TABLE 1: PART NUMBERS**

Part number	Temperature Range	Pin package	Packaging
MTCH650/SS	Commercial (0°C to +70°C)	SSOP	Tube
MTCH652/SS	Commercial (0°C to +70°C)	SSOP	Tube
MTCH650/SO	Commercial (0°C to +70°C)	SOIC	Tube
MTCH652/SO	Commercial (0°C to +70°C)	SOIC	Tube
MTCH650/MV	Commercial (0°C to +70°C)	UQFN	Tube
MTCH652/MV	Commercial (0°C to +70°C)	UQFN	Tube
MTCH650T/SS	Commercial (0°C to +70°C)	SSOP	Tape and Reel
MTCH652T/SS	Commercial (0°C to +70°C)	SSOP	Tape and Reel
MTCH650T/SO	Commercial (0°C to +70°C)	SOIC	Tape and Reel
MTCH652T/SO	Commercial (0°C to +70°C)	SOIC	Tape and Reel
MTCH650T/MV	Commercial (0°C to +70°C)	UQFN	Tape and Reel
MTCH652T/MV	Commercial (0°C to +70°C)	UQFN	Tape and Reel
MTCH650-I/SS	Industrial (-40°C to +85°C)	SSOP	Tube
MTCH652-I/SS	Industrial (-40°C to +85°C)	SSOP	Tube
MTCH650-I/SO	Industrial (-40°C to +85°C)	SOIC	Tube
MTCH652-I/SO	Industrial (-40°C to +85°C)	SOIC	Tube
MTCH650-I/MV	Industrial (-40°C to +85°C)	UQFN	Tube
MTCH652-I/MV	Industrial (-40°C to +85°C)	UQFN	Tube
MTCH650T-I/SS	Industrial (-40°C to +85°C)	SSOP	Tape and Reel
MTCH652T-I/SS	Industrial (-40°C to +85°C)	SSOP	Tape and Reel
MTCH650T-I/SO	Industrial (-40°C to +85°C)	SOIC	Tape and Reel
MTCH652T-I/SO	Industrial (-40°C to +85°C)	SOIC	Tape and Reel
MTCH650T-I/MV	Industrial (-40°C to +85°C)	UQFN	Tape and Reel
MTCH652T-I/MV	Industrial (-40°C to +85°C)	UQFN	Tape and Reel

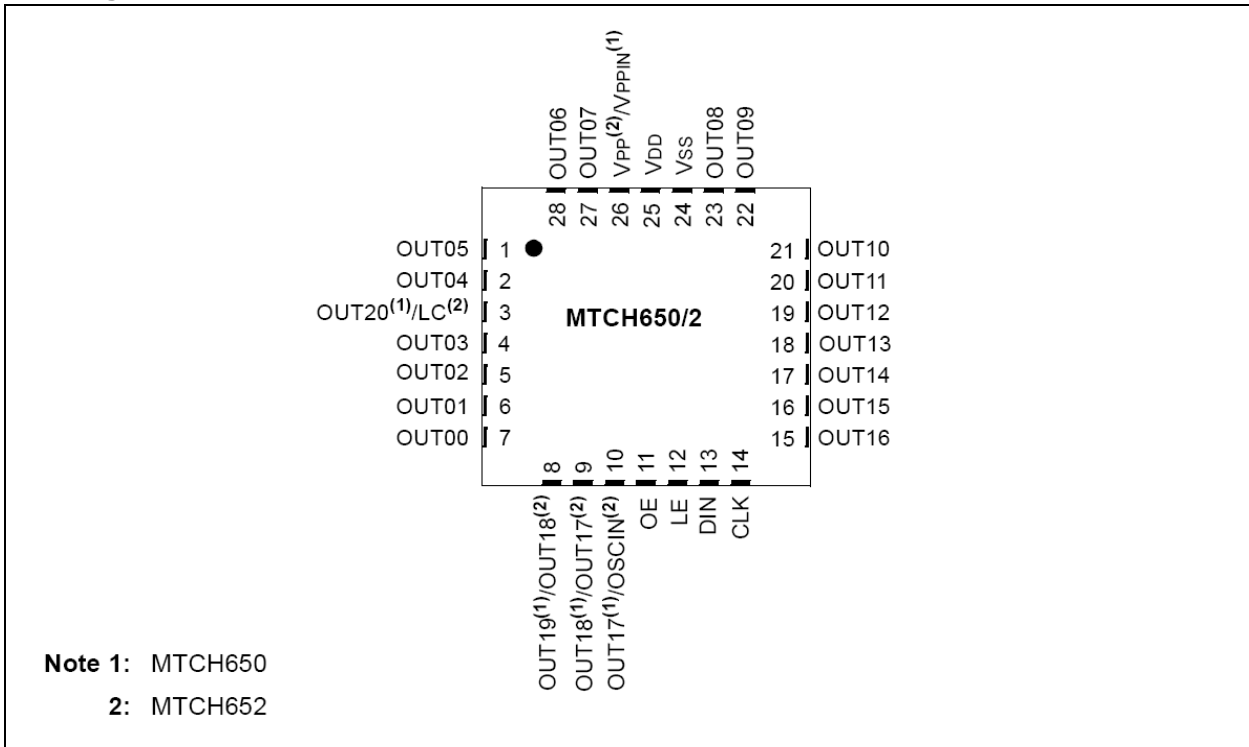
**Note:** For more information, visit the mTouch™ Sensing Solution Design Center: [www.microchip.com/mtouch](http://www.microchip.com/mtouch).

## PIN DIAGRAMS

### Pin Diagram – 28-Pin SOIC, SSOP

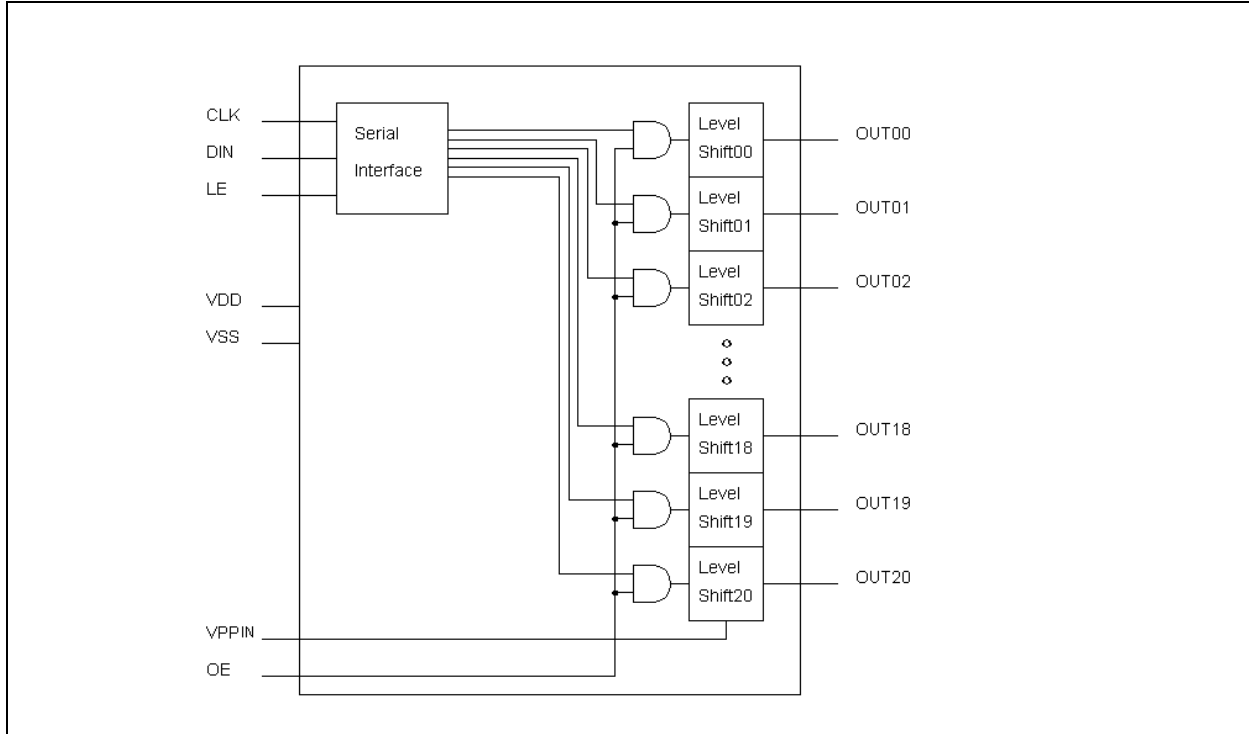


### Pin Diagram – 28-Pin UQFN

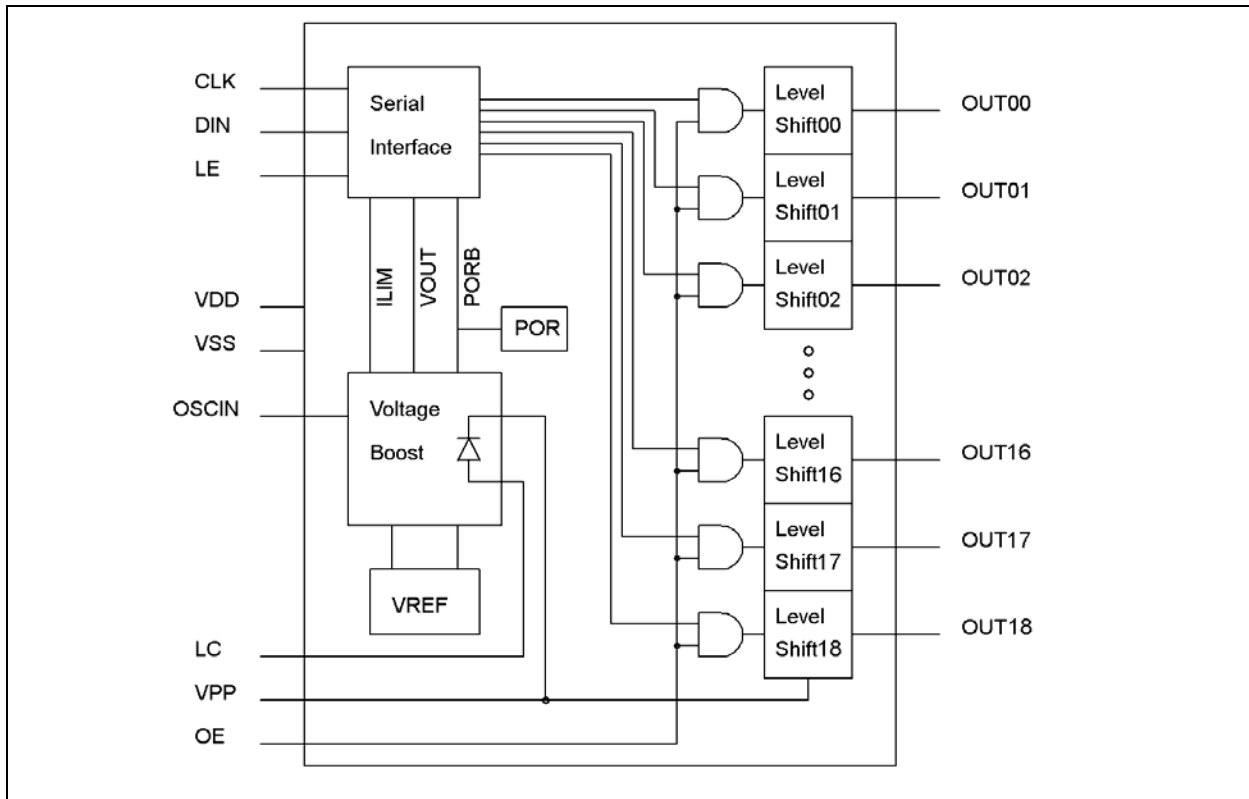


# MTCH650/2

**FIGURE 1: FUNCTIONAL BLOCK DIAGRAM FOR MTCH650**



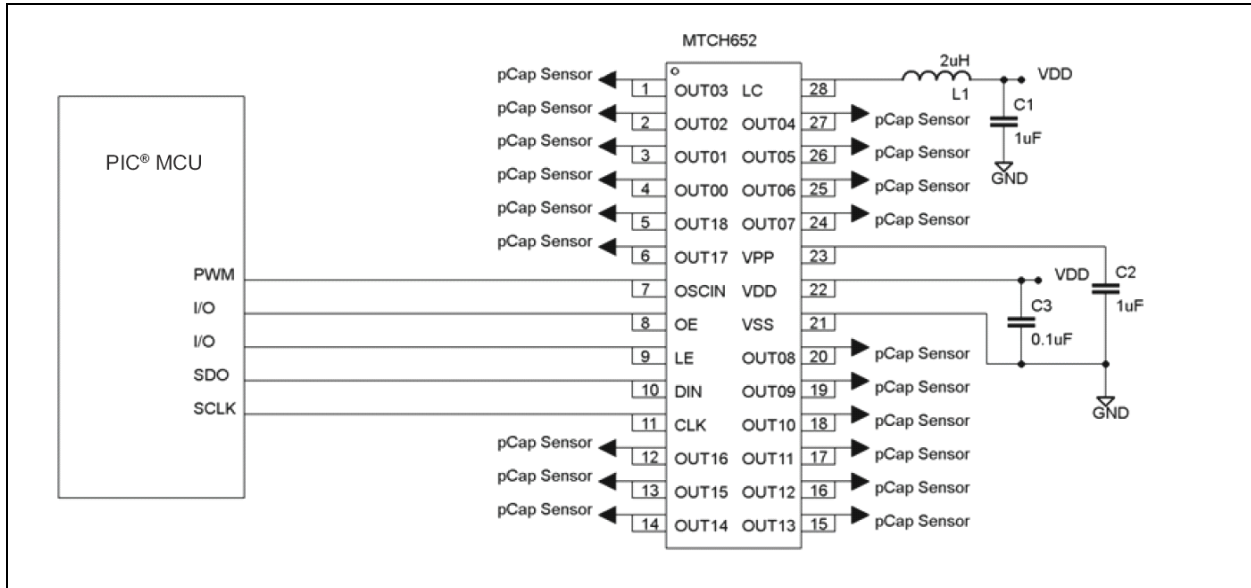
**FIGURE 2: FUNCTIONAL BLOCK DIAGRAM FOR MTCH652**



## APPLICATION EXAMPLE

MTCH650/2 are very simple to set up and use, only requiring configuration of a Configuration Word and a Data Word. The difference between MTCH650 and MTCH652 is the addition of the PWM input and the selectable options for VOUT and LIM. Figure 3 shows a typical application using a PIC<sup>®</sup> microcontroller and MTCH652.

**FIGURE 3: TYPICAL APPLICATION CIRCUIT**



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