



MM5762 financial calculator general description

The single-chip MM5762 Business and Financial Calculator was developed using a metal-gate, P-channel enhancement and depletion mode MOS/LSI technology with low end-product cost as a primary objective. A complete calculator as shown in *Figure 1* requires only the MM5762, a keyboard, DS8864 digit driver, NSA1298 LED display, 9V battery and appropriate hardware.

Keyboard decoding and key debounce circuitry, all clock and timing generation and 7-segment output display encoding are included on-chip and require no external components. Segments can usually be driven directly from the MM5762, as it typically sources about 8.5 mA of peak current. [Note: The typical duty cycle of each digit is 0.104; average LED segment current is therefore approximately 0.104 (8.5 mA), or 0.9 mA average. Correspondingly, the worse-case average segment current is 0.104 (5.0 mA), or 0.52 mA.] The ninth digit (left-most) is used for the negative sign, or the decimal point of a number less than unity.

An internal power-on clear circuit is included that clears all registers, including the memory, when V_{DD} and V_{SS} are initially applied to the chip.

Trailing zero suppression allows convenient reading of the left justified display, and conserves power. The DS8864 digit driver is capable of sensing a low battery voltage and providing a signal during Digit 9 time that can be used to turn on one of the segments as an indicator. Typical current drain of a complete calculator displaying five "5's" is 30 mA. Automatic display cutoff is included. If no key closure occurs for approximately 35 seconds, all numbers are blanked and all decimal points are displayed.

The Ready output signal is used to indicate calculator status. It is useful in providing synchronization information for testing or applications where the MM5762 is used with other logic or integrated circuits; e.g., with the MM5765 Programmer (*Figure 3*).

Thirty-two keys are arranged in a four-by-nine matrix as shown in *Figure 1*. There are the standard four function keys (+, -, \div , x), Change Sign, Exchange, three accumulating memory control keys plus ten unique business or financially oriented computation keys: three keys for entering interest rate per period, number of periods and amount, three keys for computing present and future values, sinking funds, saving and loan payments and other time/money factors, two keys for computing per cent and delta per cent, a sum-of-digits key and a power key. There is an automatic constant feature.

The user has access to six registers designated X, Y, A, I, N and M. The X-register is used for keyboard entry and display. The Y and A-registers are used in multiply/divide and add/subtract calculations, respectively. Interest values are held in the I-register and the N-register stores

the number of time periods in financial calculations. M is an accumulating storage memory and is completely independent of the others.

Data is entered into the calculator in floating point business notation. All entries and results are displayed left justified with insignificant zeros to the right of the decimal point suppressed. All intermediate results of a chain calculation are floating point. Terminating keys (such as equal, per cent, etc.) round the displayed result to two decimal positions.

features

- Complete business and financial capability
 - Arithmetic functions: +, -, x, \div
 - Power function: Y^X
 - Percent: both live percent and delta percent keys
 - Sum-of-digits capability for computing depreciation or "Rule of 78's" loan costs
 - Financial functions:
 - ▲ "n" key, enters number of periods
 - ▲ "i" key, enters interest rate per period
 - ▲ "AMT" key, enters given amount
 - ▲ "VAL" key, computes PV or FV
 - ▲ "SAV" key, computes deposit or sinking fund amounts
 - ▲ "LOAN" key, computes payment or loan amounts
- Accumulating memory
- Automatic constant
- Convenient business (adding machine) entry notation
- Eight full digits
- Power-on clear
- Automatic display cutoff
- Low system cost

connection diagram (DIP Top View)

