PRELIMINARY

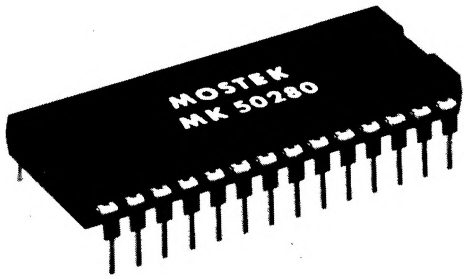
MK 50280 N Series

8-Digit Calculator Series

MOSTEK

FEATURES

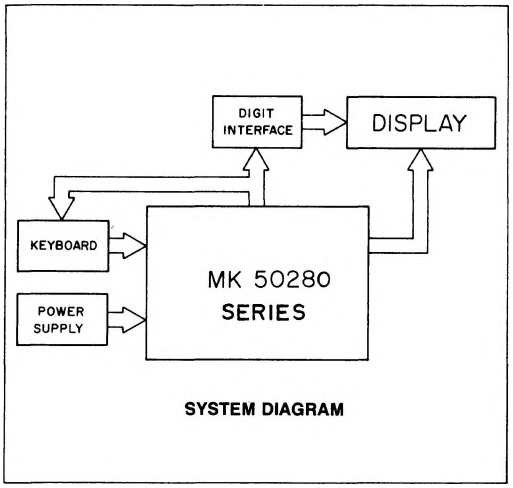
- ☐ Direct Segment Drive for LED's
- ☐ Low Power Consumption
- ☐ Single Power Supply Voltage
- ☐ Internal Clock Requiring No External Components
- ☐ Single 28-pin, Dual-in-line Package
- ☐ Internal Encoding of Keyboard Inputs
- ☐ Internal Debouncing of Keyboard Inputs
- ☐ Regulated Segment Outputs
- ☐ ROM Controlled



STANDARD PRODUCTS

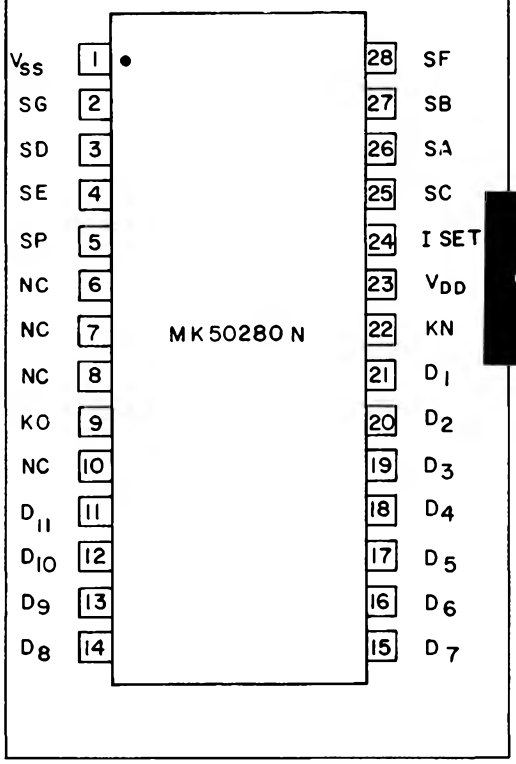
- ☐ MK 50281 8-digit, five-function (+, −, X, ÷, %) with automatic constant and store/recall memory
- ☐ MK 50282 8-digit, five-function (+, −, X, ÷, %) with automatic constant, average function and item counter.
- ☐ MK 50283 8-digit, six-function (+, −, X, ÷, %, √) with automatic constant

8-DIGIT CALCULATOR



SYSTEM DIAGRAM

PIN CONNECTION



Consumer

ABSOLUTE MAXIMUM RATINGS OVER OPERATING FREE-AIR TEMPERATURE RANGE
(All voltages relative to V_{SS})

Supply Voltage Range V ..... +0.3V to −20V

Input Voltage Range ..... +0.3V to −20V

Output Voltage Breakdown SA−SG ..... +0.3V to −17V

DI−DII ..... +0.3V to −17V

Operating Free-Air Temperature Range ..... 0°C to +55°C

Storage Temperature Range ..... −40°C to +100°C

RECOMMENDED OPERATING CONDITIONS ($0°C < T_A < 55°C$)

	PARAMETERS	MIN	TYP	MAX	UNITS
V_{GG}	Supply Voltage	−12	−14.5	−17	volts
V_{IH}	Input Voltage, Logic 1	V_{SS}−1.2			volts
V_{IL}	Input Voltage, Logic 0				volts
ϕ	Clock Period		Internal		μ sec

ELECTRICAL CHARACTERISTICS ($12 < V < 17; 0°C < T_A < 55°C$)

	PARAMETERS	MIN	TYP	MAX	UNITS
I_{GG}	Supply Current		6		mA
I_I	Input Current @ $V_{in} = V_{ss}$		150		μA
$R_{ON\ (SEG)}$	Segment Output "On" Resistance		Programmable		Ω
$R_{ON\ (DIG)}$	Digit Output "On" Resistance				Ω
$I_{OL\ (SEG)}$	Segment Output Leakage Current		.1	10	μA
$I_{OL\ (DIG)}$	Digit Output Leakage Current		.1	10	μA

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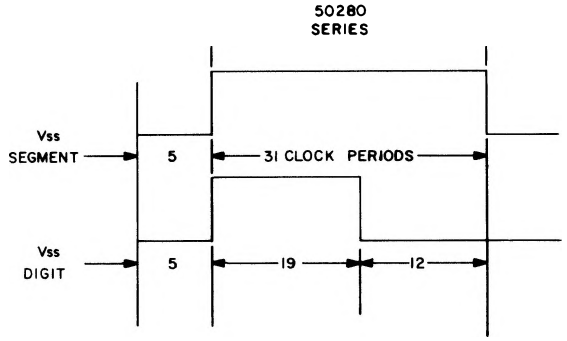
DISPLAY FONT

FLOATING MINUS

NOTE: DISPLAY FLASHES FOR OVERFLOW



DESCRIPTION

The MK 50281 is a five-function (+, −, X, ÷, %), 8-digit calculator featuring automatic constant, floating negative sign, algebraic entry, floating decimal point, chain calculations, credit balance, leading zero suppression, display blanking during calculations and internal clock oscillator. A floating negative sign eliminates the need for a ninth digit. A store/recall memory allows the contents of the display register to be placed in memory for subsequent recall on demand.

OUTPUTS

The digit outputs, D_1–D_{11}, are selected (conduct to V_{SS}) sequentially. Note that there is inter-digit blanking. The digit lines are also fed back to the chip (min. level =) as keyboard inputs.

The segment outputs (SA–SG, Sdp) select the appropriate seven-segment code (with decimal point) for each digit as that digit is selected. ** A segment output conducts to V_{SS} when selected. When not selected, a segment output is in an open-drain state. The resultant display font is shown. * Segment output current is controlled by the I_{set} input (see direct drive).

*leading zeros are blanked
**The floating negative sign is always selected during the digit position to the immediate left of the most significant digit

DIRECT DRIVE

The regulated segment outputs of the MK 50281 are capable of sourcing up to mA for the purpose of driving the segments of common cathode LED displays. I_{set} (pin 24) regulates the segment output current. Placing a resistor between pin 24 and V_{DD} determines the peak segment current in the following manner

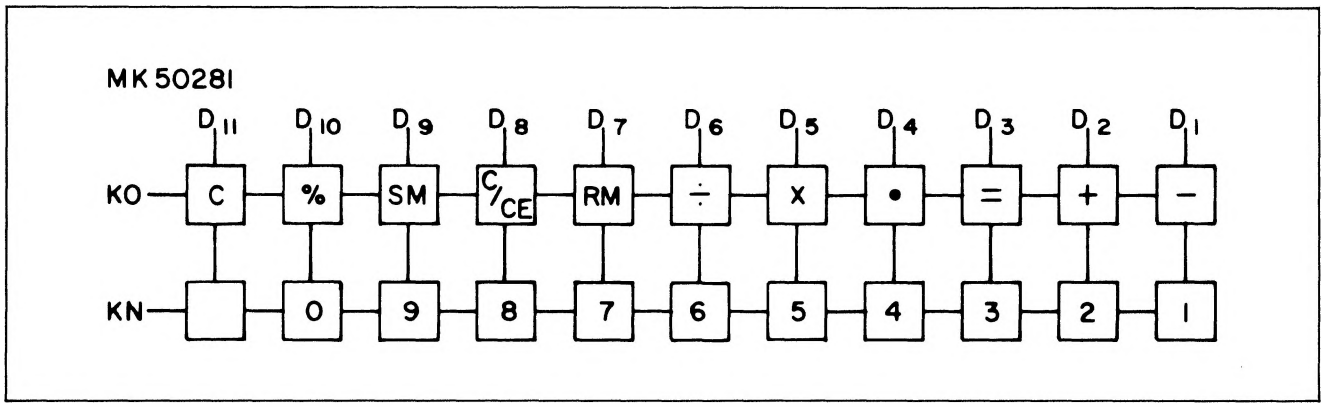
$$\text{Peak current} = 10 \times \frac{V_{DD}}{R}$$

OVERFLOW

Attempting an entry of more than 8 digits exceeds the capacity of the MK 50281 and results in an entry overflow condition. This causes the display to blink repetitively as an overflow indication. All keys except C/CE will be inoperative. These, however, may be used to clear the overflow condition in the course of their usual function.

A calculated result in excess of 8 digits exceeds the capacity of the MK 50281 and produces a result overflow condition. This causes the display to blink repetitively as an overflow condition. The display will contain the correct answer (÷ by 10^8 to 8 significant decimal places). All keys except C/CE will be inoperative. This may be used to clear the overflow condition in the course of its usual function.

KEY MATRIX



% - Computes and displays a percentage of a number which may be added to (tax) or subtracted from (discount) the original value.

SM - Store the display to the memory register.

RM - Recalls the memory register to the display.

DESCRIPTION:

The MK 50282 is a five-function (+, −, X, ÷, %), -8-digit calculator with an average value function, an item counter function and automatic constant. Additional features are floating negative sign, algebraic entry, floating decimal point, chain calculations, credit balance, leading zero suppression, display blanking during calculations, and internal clock oscillator. A floating negative sign eliminates the need for a ninth digit.

OUTPUTS

The digit outputs, D_1–D_{11}, are selected (conduct to V_{SS}) sequentially. Note that there is inter-digit blanking. The digit lines are also fed back to the chip (min. level =) as keyboard inputs.

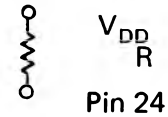
The segment outputs (SA–SG, Sdp) select the appropriate seven-segment code (with decimal point) for each digit as that digit is selected. ** A segment output conducts to V_{SS} when selected. When not selected, a segment output is in an open-drain state. The resultant display font is shown.* Segment output current is controlled by the I_{set} input (see direct drive).

*leading zeros are blanked
**The floating negative sign is always selected during the digit position to the immediate left of the most significant digit

DIRECT DRIVE

The regulated segment outputs of the MK 50282 are capable of sourcing up to mA for the purpose of driving the segments of common cathode LED displays. I_{set} (pin 24) regulates the segment output current. Placing a resistor between pin 24 and V_{DD} determines the peak segment current in the following manner

$$\text{Peak current} = 10 \times \frac{V_{DD}}{R}$$

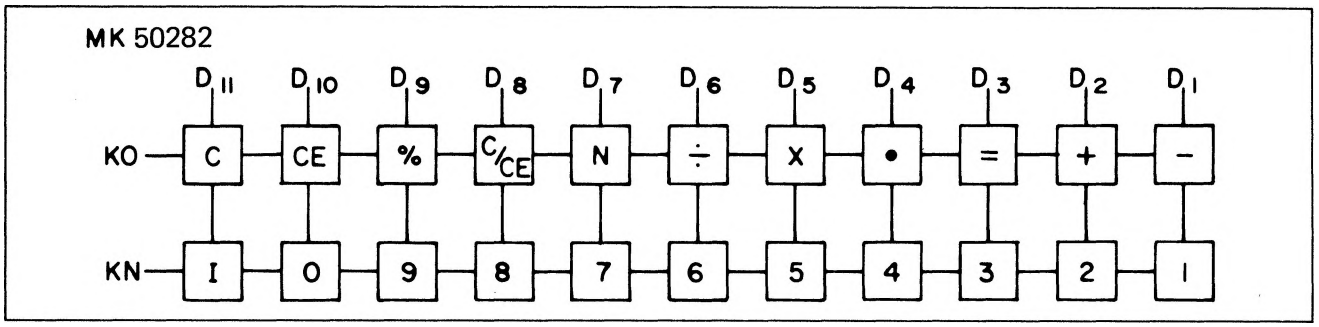


OVERFLOW

Attempting an entry of more than 8 digits exceeds the capacity of the MK 50282 and results in an entry overflow condition. This causes the display to blink repetitively as an overflow indication. All keys except C/CE will be inoperative. These, however, may be used to clear the overflow condition in the course of their usual function.

A calculated result in excess of 8 digits exceeds the capacity of the MK 50282 and produces a result overflow condition. This causes the display to blink repetitively as an overflow indication. The display will contain the correct answer (÷ by 10^8 to 8 significant decimal places). All keys except C/CE will be inoperative. This may be used to clear the overflow condition in the course of its usual function.

KEY MATRIX



% - Computes and displays a percentage of a number which may be added to (tax) or subtracted from (discount) the original value.

N - Recalls the number of entries in a list. This may be divided into the total to compute the average value.

I - Permits the calculator to be used as a counter. Each depression of the key increments the display by one.

DESCRIPTION

The MK 50283 is a six-function (+, −, X, ÷, %, √), 8-digit calculator featuring automatic constant, floating negative sign, algebraic entry, floating decimal point, chain calculations, credit balance, leading zero suppression, display blanking during calculations, and completely internal clock oscillator. A floating negative sign eliminates the need for a ninth digit.

OUTPUTS

The digit outputs, D_1—D_{11}, are selected (conduct to V_{ss}) sequentially. Note that there is inter-digit blanking. The digit lines are also fed back to the chip (min level =) as keyboard inputs

The segment outputs (SA—SG, Sdp) select the appropriate seven-segment code (with decimal point) for each digit as that digit is selected. ** A segment output conducts to V_{ss} when selected. When not selected, a segment output is in an open-drain state. The resultant display font is shown.* Segment output current is controlled by the I_{set} input (see direct drive).

*leading zeros are blanked
**The floating negative sign is always selected during the digit position to the immediate left of the most significant digit

DIRECT DRIVE

The regulated segment outputs of the MK 50283 are capable of sourcing up to mA for the purpose of driving the segments of common cathode LED displays. I_{set} (pin 24) regulates the segment output current. Placing a resistor between pin 24 and V determines the peak segment current in the following manner

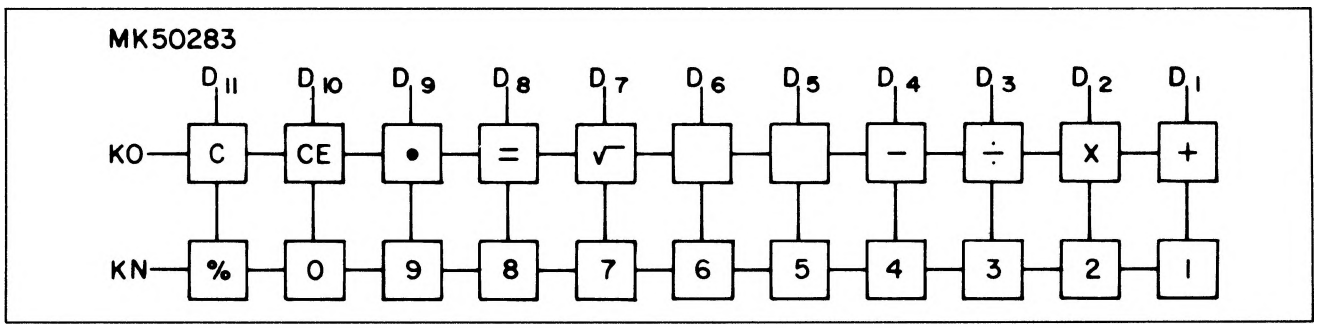
$$\text{Peak current} = 10 \times \frac{V_{DD}}{R}$$

OVERFLOW

Attempting an entry of more than 8 digits exceeds the capacity of the MK 50283 and results in an entry overflow condition. This causes the display to blink repetitively as an overflow condition. All keys except C/CE will be inoperative. These, however, may be used to clear the overflow condition in the course of their usual function.

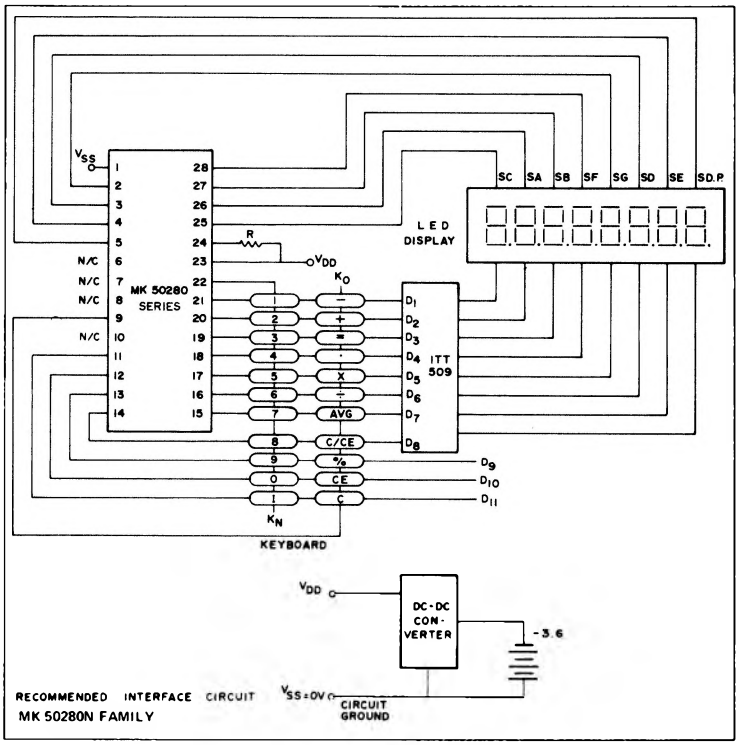
A calculated result in excess of 8 digits exceeds the capacity of the MK 50283 and produces a result overflow condition. This causes the display to blink repetitively as an overflow indication. The display will contain the correct answer (÷ by 10^8 to 8 significant decimal places). All keys except C/CE will be inoperative. This may be used to clear the overflow condition in the course of its usual function.

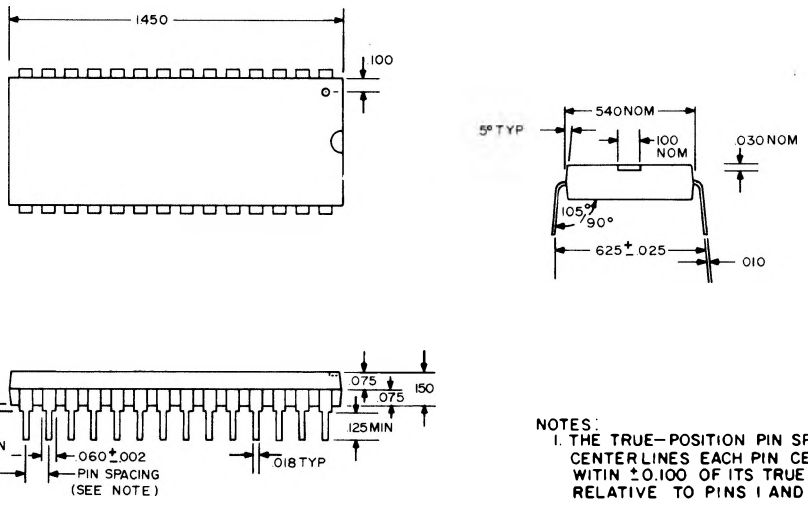
KEY MATRIX



% - Computes and displays a percentage of a number which may be added to (tax) or subtracted from (discount) the original value.

√ Computes the square root of the display.





NOTES:
1. THE TRUE-POSITION PIN SPACING IS .0100 BETWEEN CENTERLINES EACH PIN CENTERLINE IS LOCATED WITIN ±0.100 OF ITS TRUE LONGITUDINAL POSITION RELATIVE TO PINS 1 AND 28.

Consumer