

**MOS/LSI
DATABOOK**

**NATIONAL
SEMICONDUCTOR**



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Interface Drivers

DS8874

DS8874 9-digit shift input LED driver

general description

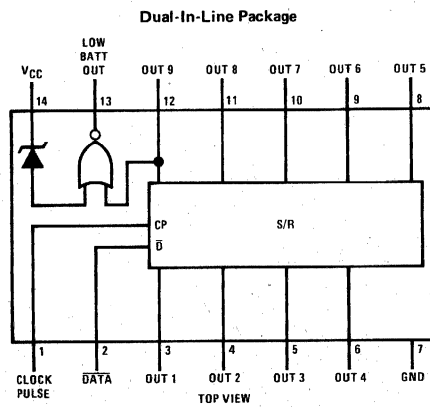
The DS8874 is a 9-digit LED driver which incorporates a shift register input decoding circuit and a low battery indicator. Outputs will sink 110 mA at less than 0.5V drop when sequentially selected. When the V_{CC} supply falls below 6.5V typical, segment current will be furnished at digit 9 time to indicate a low battery condition. Pin 13 is generally connected to the decimal point segment on the display so that when a low battery condition exists, the left-most decimal point lights up. The digit driver is intended to be used with the

MM5784N 5-function, 9-digit accumulating memory calculator circuit, or any other circuit which supplies the 9-digit information in a similar serial format.

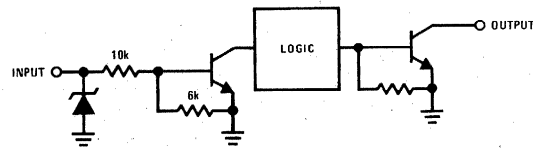
features

- 110 mA digit sink
- Low battery indicator
- Minimum number of connections
- MOS compatible inputs

connection diagram

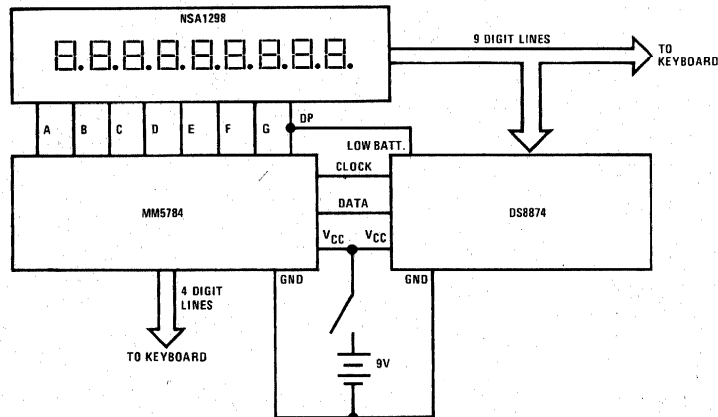


equivalent schematic



typical application

Typical Application of the DS8874 Digit Driver with the MM5784 5-Function Calculator Circuit, NSA1298 9-Digit LED Display and a 9V Battery



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absolute maximum ratings (Note 1)

Supply Voltage	10V
Input Voltage	3V
Output Voltage	10V
Storage Temperature Range	-65°C to +150°C
Lead Temperature (Soldering, 10 seconds)	300°C

operating conditions

	MIN	MAX	UNITS
Supply Voltage (V _{CC})	6.0	9.5	V
Temperature (T _A)	0	+70	°C

electrical characteristics

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
I _{IH}	Logical "1" Input Current V _{CC} = Max, V _{IN} = 3V		0.25	0.4	mA
I _{IL}	Logical "0" Input Current V _{CC} = Max, V _{IN} = 0.8V		0.05	0.1	mA
VCCL	Decimal Point "ON" V _{dp} = 2.3V, I _{dp} = -4 mA, O ₉ = V _{OL}			6.0	V
VCCH	Decimal Point "OFF" V _{dp} = 1V, I _{dp} = -10µA, O ₉ = V _{OL}	7.0			V
I _{OH}	Logical "1" Output Current V _{CC} = Max, Output Not Selected			100	µA
V _{OL}	Logical "0" Output Voltage V _{CC} = Min, Output Selected, I _{O1} = 80 mA		0.45	1	V
	V _{CC} = Max, Output Selected, I _{O1} = 110 mA		0.6	1.5	V
I _{CC}	Supply Current V _{CC} = Max, One Output Selected		13	17	mA

Note 1: "Absolute Maximum Ratings" are those values beyond which the safety of the device cannot be guaranteed. Except for "Operating Temperature Range" they are not meant to imply that the device should be operated at these limits. The table of "Electrical Characteristics" provides conditions for actual device operation.

Note 2: Unless otherwise specified min/max limits apply across the 0°C to +70°C range. All typicals are given for T_A = 25°C.

Note 3: All currents into device pins shown as positive, out of device pins as negative, all voltages referenced to ground unless otherwise noted. All values shown as max or min on absolute value basis.

timing diagram (Upper Level More Positive)

