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NTE2024
Integrated Circuit
2–Digit BCD–to–7–Segment Decoder/Driver

Features:

- Separate BCD inputs and segment outputs for each digit
- Input loading less than 15μA
- I^2L logic with buffered inputs and outputs
- Internal input overrange protection circuit
- 5V supply operation
- Internal biasing circuits
- Output drive capability of 25mA per segment
- Open collector outputs drive indicators directly

Description:

The NTE2024 is a monolithic integrated circuit intended for 2–digit display such as “numbers” for tV and “CB” channel selection, and other 0–99 numerical or counting for consumer or industrial indicator applications. It consists of two independent BCD–to–7 segment decoder/drivers. Two sets of BCD inputs are buffered with p–n–p differential amplifier stages internally referenced to 1.7V. Each of the eight input terminals draws less than 15μA and is provided with an internal protection circuit.

Decoding is accomplished with I^2L ROM’s. The fourteen output terminals are buffered with Darlington pairs driving common–emitter output transistors. Each output is capable of sinking 25mA for an LED common–anode display device. The supply–voltage range (V_{CC}) is intended to be 4.5V to 6V. The output voltage (V_O) must not exceed 12V, which provides for a wide range of common–anode voltage sources.

Absolute Maximum Ratings:

Supply Voltage, V_{CC} 6V
Input–Voltage (Min/Max) . . . . . $-0.3V_{CC}$ V
Input Current (Protection Circuit) . . . . . ±10mA
Output Voltage, V_O 12V
Output Segment Current, $I_{Display}$ 25mA
Power Dissipation ($T_A \le +70°C$), P_D 400mW
Derate Linearly Above +70°C . . . . . 8.7mW/°C
Operating Ambient temperature Range, T_{opr} . . . . . 0° to 70°C
StorageTemperature range, T_{stg} . . . . . –55° to +150°C
Lead Temperature (During Soldering, 1/16” ± 1/32” from case, 10sec max), T_L . . . . . +265°C

Electrical Characterisitic: (V_{CC} = 5V, V_1 = GND, V_{DISP} = 12V, and T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage, High	V_{IH}		2.4	5.0	V_{CC}	V
Input Voltage, Low	V_{IL}		0	–	0.6	V
Input Current, High	I_{IH}	All BCD Inputs = 5V	–	–	15	µA
Input Current, Low	I_{IL}	All BCD Inputs = 0V	–10	–	–	µA
On–State Output Voltage	V_{OL}	$I_{O(Sink)}$ = 25mA	–	–	1	V
Off–State Output Current	I_{OL}		–	5	50	µA
Power Supply Drain Current	I_{CC}	V_{CC} = 6V	–	17	25	mA
Input Capacitance	C_I		–	5	–	[pF

Pin Connection Diagram