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NTE1503
Integrated Circuit
5–Step LED Driver Circuit for Logarithmic Response

Description:

The NTE1503 is an integrated circuit in a 9–Lead SIP type package designed for driving 5–LED bar graphs or dot displays so that the LEDs may light logarithmically (dB) for input signal. Brightness of the LEDs can be controlled by using the output current adjustment pin provided.

Features:

- 5–LED Bar Graph or Dot Display Drive
- Logarithmic Response with Respect to Input
- Brightness Externally Adjustable
- High Output Current, Suitable for Green LED Drive
- Lamp ON/OFF Hysteresis, No Flickering by Noise

Absolute Maximum Ratings: (T_A = +25°C unless otherwise specified)

Supply Voltage, V_{CC} . . . . . –0.5V to +18V
Circuit Voltage, $V_{8–5}$ . . . . . –0.5V to +16V
Load Current Set Input Voltage, $V_{7–5}$ . . . . . +16V
Output Voltage (Note 1), V_O . . . . . –0.5V to +16V
Supply Current, I_{CC} 18mA
Load Current Set Input Current, I_7 . . . . . 4.25mA
Output Current, I_O 20mA
Power Dissipation, P_D 550mW
Operating Ambient Temperature Range, T_{opr} . . . . . –20° to +75°C
Storage Temperatuere Range, T_{stg} . . . . . –55° to +150°C

Note 1. Output Pin1, Pin2, Pin3, Pin4, and Pin6.

Electrical Characteristics: (T_A = +25°C, V_{CC} = 16V unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage (LED ON)						
LED 1	$V_{I(ON)1}$		–	–	1.12	V
LED 2	$V_{I(ON)2}$		–	–	1.86	V
LED 3	$V_{I(ON)3}$		–	–	3.10	V
LED 4	$V_{I(ON)4}$		–	–	5.18	V
LED 5	$V_{I(ON)5}$		–	–	8.66	V

Electrical Characteristics (Cont'd): (T_A = +25°C, V_{CC} = 16V unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Input Voltage (LED OFF)						
LED 1	$V_{I(OFF)1}$		0.80	–	–	V
LED 2	$V_{I(OFF)2}$		1.49	–	–	V
LED 3	$V_{I(OFF)3}$		2.54	–	–	V
LED 4	$V_{I(OFF)4}$		4.28	–	–	V
LED 5	$V_{I(OFF)5}$		7.23	–	–	V
Load Current						
Pin6	I_6	V_O = 1.2V, I_7 = 4.25mA	13	16	–	mA
Pin1 to Pin4	I_1 to I_4	V_O = 2.5V, I_7 = 4.25mA	13	16	–	mA
Pin1 to Pin4, Pin6	I_1 to I_4, I_6	V_O = 16V, I_7 = 4.25mA	–	16	19	mA
Input Current	I_8	$V_{8–5}$ = 8.7V	–	–	50	µA
		$V_{8–5}$ = 16V	–	–	5	mA
Supply Current	I_9	$V_{8–5}$ = 16V	–	–	18	mA
Output Pin Leakage Current	I_1 to I_4, I_6	V_O = 16V	–	–	15	µA

Pin Connection Diagram
(Front View)