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NTE916
Integrated Circuit
High Current, NPN Transistor Array, Common Emitter

Description:

The NTE916 is a high current transistor array in a 16–Lead DIP type package consisting of seven silicon NPN transistors on a common monolithic substrate connected in a common–emitter configuration designed for directly driving seven–segment displays and light–emitting diodes (LED) displays. This device is also well suited for a variety of other drive applications including relay control and thyristor firing.

Features:

- Seven Transistors Permit a Wide Range of Applications
- High Collector Current: I_C = 100mA Max
- Low Collector–Emitter Saturation Voltage: $V_{CE(sat)}$ = 400mV Typ @ 50mA

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

Power Dissipation (Total Package), P_D 750mW
Per Transistor 500mW
Derate Linearly Above 55°C . . . . . 6.67mW/°C
Operating Ambient Temperature Range, T_A . . . . . –55° to +125°C
Storage Temperature Range, T_{stg} . . . . . –65° to +150°C
Lead Temperature (During Soldering, 1/16” from case, 10sec max), T_L . . . . . +265°C

The Following Ratings Apply for Each Transistor in the Device

Collector–Emitter Voltage, V_{CEO} 16V
Collector–Base Voltage, V_{CBO} 20V
Collector–Substrate Voltage (Note 1), V_{CIO} 20V
Emitter–Base Voltage, V_{EBO} 5V
Collector Current, I_C 100mA
Base Current, I_B 20mA

Note 1. The collector of each transistor of the NTE916 is isolated from the substrate by an integral diode. The substrate must be connected to a voltage which is more negative that any collector voltage in order to maintain isolation between transistors and provide normal transistor action. To avoid undesired coupling between transistors, the substrate terminal (Pin5) should be maintained at either DC or signal (AC) ground. A suitable bypass capacitor can be used to establish a signal ground.

Electrical Characteristics: (T_A = +25°C unless otherwise specified)

Parameter	Symbol	Test Conditions	Min	Typ	Max	Unit
Collector–Base Breakdown Voltage	$V_{(BR)CES}$	I_C = 500µA, I_E = 0	20	60	–	V
Collector–Substrate Breakdown Voltage	$V_{(BR)CIO}$	I_{CI} = 500µA, I_E = 0, I_B = 0	20	60	–	V
Collector–Emitter Breakdown Voltage	$V_{(BR)CEO}$	I_C = 1mA, I_B = 0	16	24	–	V
Emitter–Base Breakdown Voltage	$V_{(BR)EBO}$	I_C = 500µA	5.0	6.9	–	V
DC Forward Current Transfer Ratio	h_{FE}	V_{CE} = 500mV, I_C = 30mA	30	68	–	
		V_{CE} = 800mV, I_C = 50mA	40	70	–	
Base–Emitter Saturation Voltage	$V_{BE(sat)}$	I_C = 30mA, I_B = 1mA	–	0.87	1.0	V
Collector–Emitter Saturation Voltage	$V_{CE(sat)}$	I_C = 30mA, I_B = 1mA	–	0.27	0.5	V
		I_C = 50mA, I_B = 5mA	–	0.4	0.7	V
Collector Cutoff Current	I_{CEO}	V_{CE} = 10V, I_B = 0	–	–	10	µA
	I_{CBO}	V_{CB} = 10V, I_E = 0	–	–	1	µA

Pin Connection Diagram