

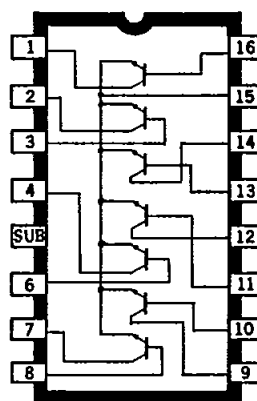
ULN-2081A AND ULN-2082A

GENERAL-PURPOSE HIGH-CURRENT TRANSISTOR ARRAYS

SPRAGUE TYPE ULN-2081A and ULN-2082A Transistor Arrays are comprised of seven high-current silicon NPN transistors on a common monolithic substrate. The Type ULN-2081A is connected in a common-emitter configuration and the Type ULN-2082A is connected in a common-collector configuration.

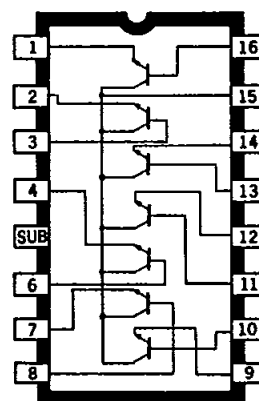
Both arrays are capable of directly driving seven segment displays and LED displays. They are ideal for a variety of other driver applications such as relay control and thyristor firing.

Type ULN-2081A and ULN-2082A are housed in 16-lead Dip plastic packages which include a separate substrate connection for maximum circuit design flexibility.



Dwg No A-9042B

ULN-2081A



Dwg. No. A-9043B

ULN-2082A

ABSOLUTE MAXIMUM RATINGS

Power Dissipation (any one transistor)	500 mW
(total package)	750 mW
Ambient Temperature Range (operating)	-20°C to +85°C
Individual Transistor Ratings:	
Collector-to-Emitter Voltage, V_{CE0}	16 V
Collector-to-Base Voltage, V_{CBO}	20 V
Collector-to-Substrate Voltage, V_{C10}	20 V
Emitter-to-Base Voltage, V_{EBO}	5 V
Collector Current, I_C	200 mA
Base Current, I_B	20 mA

NOTE:

The collector of each transistor in the Type ULN-2081A and ULN-2082A is isolated from the substrate by an integral diode. The substrate must be connected to a voltage which is more negative than any collector voltage so as to maintain isolation between transistors, and to provide normal transistor action. Undesired coupling between transistors is avoided by maintaining the substrate terminal (5) at either d-c or signal (a-c) ground. An appropriate bypass capacitor can be used to establish a signal ground.

ELECTRICAL CHARACTERISTICS at $T_A = +25^\circ\text{C}$

Characteristic	Symbol	Test Conditions	Limits			Units
			Min.	Typ.	Max.	
Collector-Emitter Breakdown Voltage	BV_{CES}	$I_C = 500 \mu\text{A}$	20	80		V
Collector-Substrate Breakdown Voltage	BV_{C1E}	$I_{C1} = 500 \mu\text{A}$	20	80		V
Collector-Emitter Breakdown Voltage	BV_{CE0}	$I_C = 1 \text{ mA}$	16	40		V
Emitter-Base Breakdown Voltage	BV_{EBO}	$I_E = 500 \mu\text{A}$	5	7		V
Forward Current Transfer Ratio	h_{FE}	$V_{CE} = 0.5 \text{ V}, I_C = 30 \text{ mA}$	30	80		
		$V_{CE} = 0.8 \text{ V}, I_C = 50 \text{ mA}$	40			
Base-Emitter Saturation Voltage	$V_{BE(SAT)}$	$I_C = 30 \text{ mA}$		0.75	1	V
Collector-Emitter Saturation Voltage	$V_{CE(SAT)}$	$I_C = 30 \text{ mA}$		0.13	0.5	V
		$I_C = 50 \text{ mA}$		0.2	0.7	V
Collector Cutoff Current	I_{CEO}	$V_{CE} = 10 \text{ V}$			10	μA
	I_{CBO}	$V_{CB} = 10 \text{ V}$			1	μA