

## UDN-6510A/R AND UDN-6514A/R HIGH-VOLTAGE SOURCE DRIVERS

### FEATURES

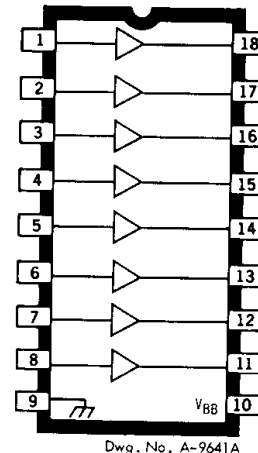
- TTL/MOS-Compatible Inputs
- High Output-Breakdown Voltage
- 40 mA Output-Current Capability
- Low Power Dissipation
- Reliable Monolithic Construction

**E**ASY, EFFECTIVE INTERFACE for low-level TTL or MOS circuitry and high-voltage loads is available with Sprague UDN-6510A/R and UDN-6514A/R bipolar integrated circuits. These eight-channel devices drive the anodes of gas-discharge displays or the grids and anodes of large, multiplexed dot-matrix vacuum-fluorescent display panels.

Types UDN-6510A and UDN-6510R supply an output-voltage swing of up to 100 V with a maximum  $V_{BB}$  of 200 V. Typically, the output is switched between +100 V and +180 V.

Types UDN-6514A and UDN-6514R can switch output-voltage levels from ground to +135 V with appropriate pull-down circuitry and a maximum supply voltage of +140 V.

Each device in the series has eight independent drivers made up of switched constant-current level



shifters and PNP/NPN driver stages. Driver inputs operate with open-drain PMOS or CMOS, or with open-collector or standard TTL.

Types UDN-6510R and UDN-6514R are furnished in 18-pin dual in-line industrial-grade, hermetically sealed ceramic packages. Types UDN-6510A and UDN-6514A are supplied in inexpensive 18-pin dual in-line plastic packages. To simplify applications designs, all units have input connections on one side of the package and output pins on the other. All devices are rated for operation over the temperature range of  $-20^{\circ}\text{C}$  to  $+85^{\circ}\text{C}$ .

### ABSOLUTE MAXIMUM RATINGS

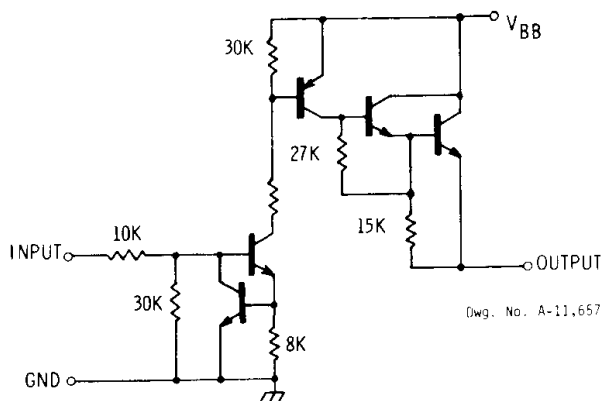
at  $T_A = +25^{\circ}\text{C}$

( $V_{REF} = \text{GROUND}$  unless otherwise specified)

Supply Voltage, $V_{BB}$ (UDN-6510A/R)	200 V
(UDN-6514A/R)	140 V
Output OFF Voltage ( $V_{REF} = V_{BB}$ ), $V_{OUT}$ (UDN-6510A/R)	-100 V
Input Voltage, $V_{IN}$	20 V
Output Current, $I_{OUT}$	-40 mA
Package Power Dissipation, $P_D$	See Graph
Operating Temperature Range, $T_A$	$-20^{\circ}\text{C}$ to $+85^{\circ}\text{C}$
Storage Temperature Range, $T_S$	$-55^{\circ}\text{C}$ to $+150^{\circ}\text{C}$

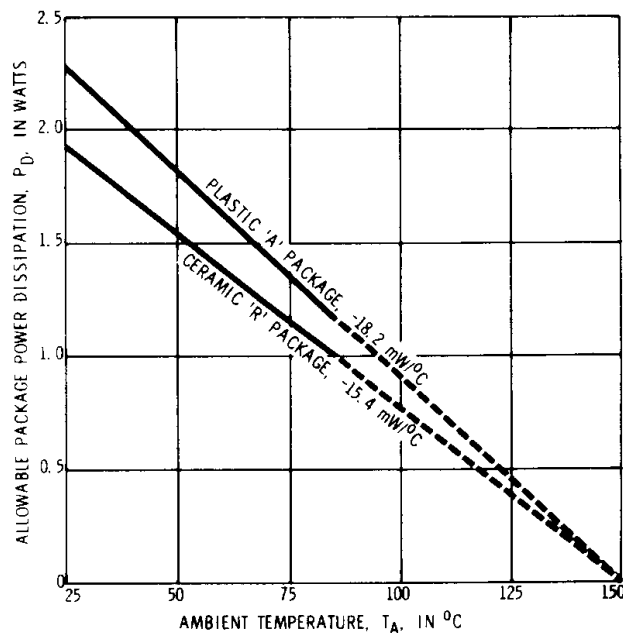
# UDN-6510A/R AND UDN-6514A/R HIGH-VOLTAGE SOURCE DRIVERS

**PARTIAL SCHEMATIC**  
One Driver (All Types)



Dwg. No. A-11,657

**PACKAGE POWER DISSIPATION  
AS A FUNCTION OF TEMPERATURE**



Dwg. No. A-11,658

*Caution: The high input impedance of these devices makes them susceptible to static discharge damage associated with handling and testing. Techniques similar to those used for handling MOS devices should be employed.*

**ELECTRICAL CHARACTERISTICS at  $T_A = +25^\circ\text{C}$ ,  $V_{BB} = 200\text{ V}$  (UDN-6510A/R) or  $140\text{ V}$  (UDN-6514A/R), all voltage measurements are referenced to ground (unless otherwise noted)**

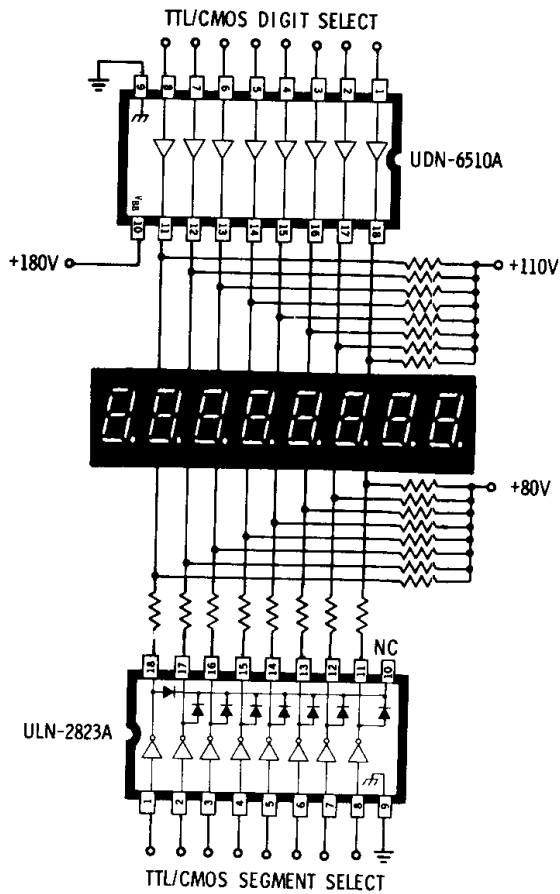
Characteristic	Symbol	Applicable Devices	Test Conditions	Limits			Units
				Min.	Typ.	Max.	
Output Leakage Current	$I_{OUT}$	UDN-6510A/R	$V_{OUT} = 100\text{ V}$ , $V_{IN} = 0.4\text{ V}$ , $T_A = +70^\circ\text{C}$	—	—	15	$\mu\text{A}$
		UDN-6514A/R	$V_{OUT} = 0\text{ V}$ , $V_{IN} = 0.4\text{ V}$ , $T_A = +70^\circ\text{C}$	—	—	15	$\mu\text{A}$
Output ON Voltage	$V_{OUT}$	UDN-6510A/R	$V_{IN} = 2.4\text{ V}$ , $I_{OUT} = -25\text{ mA}$	195	197	—	V
		UDN-6514A/R	$V_{IN} = 2.4\text{ V}$ , $I_{OUT} = -25\text{ mA}$	135	137	—	V
Input ON Current	$I_{IN}$	All	$V_{IN} = 2.4\text{ V}$	—	120	225	$\mu\text{A}$
			$V_{IN} = 5.0\text{ V}$	—	375	650	$\mu\text{A}$
Supply Current	$I_{BB}$	All	All inputs open	—	10	100	$\mu\text{A}$
			One input = 3.5 V	—	—	500	$\mu\text{A}$

**RECOMMENDED OPERATING CONDITIONS**

Supply Voltage	$V_{BB}$	UDN-6510A/R	55	—	180	V
		UDN-6514A/R	55	—	130	V
Output OFF Voltage	$V_{OUT}$	UDN-6510A/R	—	—	-80	V
Input ON Voltage	$V_{IN}$	All	2.4	—	15	V
Output ON Current	$I_{OUT}$	All	—	—	-25	mA

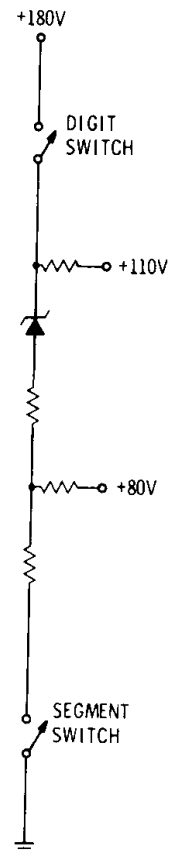
NOTE: Negative current is defined as coming out of the specified device pin.

TYPICAL PLASMA GAS-DISCHARGE DISPLAY APPLICATION



Dwg. No. A-11,655

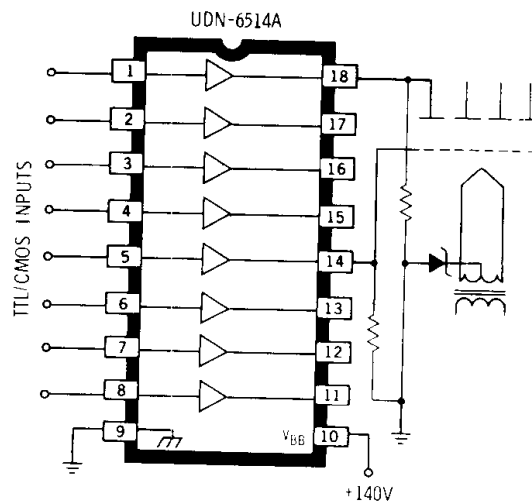
EQUIVALENT CIRCUIT



Dwg. No. A-11,656

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MULTIPLEXED DOT-MATRIX VACUUM-FLUORESCENT DISPLAY APPLICATION



Dwg. No. A-11,654