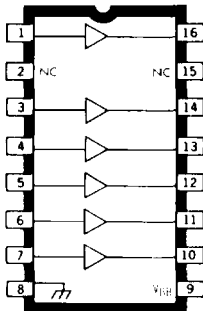


# 6116 AND 6118

## FLUORESCENT DISPLAY DRIVERS

### UDN6116A/R



Dwg No. A-9643A

### ABSOLUTE MAXIMUM RATINGS at $T_A = +25^\circ\text{C}$

|   |                 |
|---|-----------------|
| Supply Voltage, $V_{BB}$                      |                 |
| (suffix A, LW, or R)                          | 85 V            |
| (suffix A-1)                                  | 115 V           |
| (suffix A-2 or R-2)                           | 65 V            |
| Input Voltage, $V_{IN}$                       | 20 V            |
| Output Current, $I_{OUT}$                     | -40 mA          |
| Allowable Package Power Dissipation,<br>$P_D$ | See Graph       |
| Operating Temperature Range,<br>$T_A$         | -20°C to +85°C  |
| Storage Temperature Range,<br>$T_S$           | -55°C to +150°C |

*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.*

Consisting of six or eight NPN Darlington output stages and the associated common-emitter input stages, these drivers are designed to interface between low-level digital logic and vacuum fluorescent displays. All devices are capable of driving the digits and/or segments of these displays and are designed to permit all outputs to be activated simultaneously. Pull-down resistors are incorporated into each output and no external components are required for most fluorescent display applications. The highest voltage parts (suffix A-1) are also used in gas-discharge display applications as anode (digit) drivers.

Eleven standard devices are listed, so that a circuit designer may select the optimum device for his application. Input characteristics, number of drivers, package style, and output voltage are tabulated for each device in the Device Type Number Designation chart. With any device, the output load is activated when the input is pulled towards the positive supply (active 'high'). All units operate over the temperature range of -20°C to +85°C.

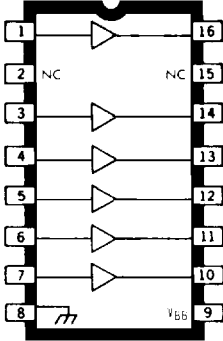
### FEATURES

- Digit or Segment Drivers
- Low Input Current
- Integral Output Pull-Down Resistors
- High Output Breakdown Voltage
- Single or Split Supply Operation

Always order by complete part number, e.g., **UDN6118R-2**. See matrix on third page. Note that all devices are not available in all package types.

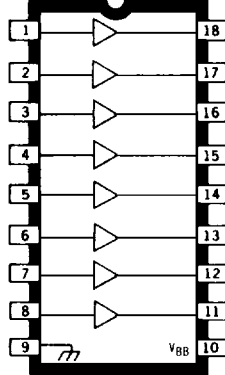
# 6116 AND 6118 FLUORESCENT DISPLAY DRIVERS

**UDN6116A/R\***



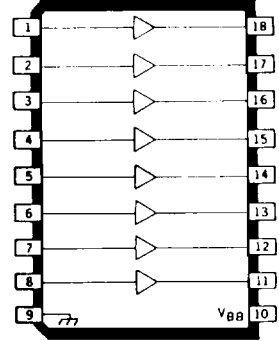
Dwg. No. A-9643A

**UDN6118A/R\***



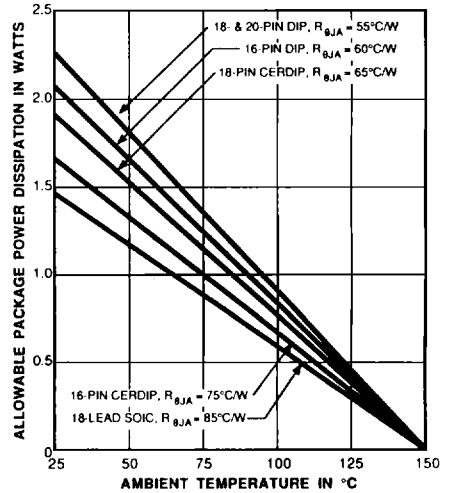
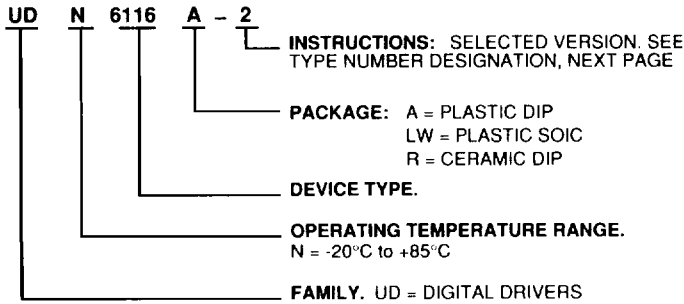
Dwg. No. A-9641A

**UDN6118LW**



Dwg. No. A-14,370

\* Always specify complete part number, such as:



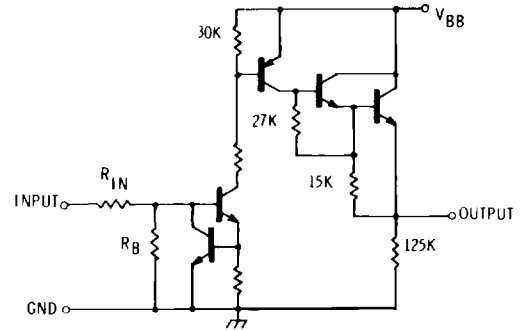
Dwg. GP-022

# 6116 AND 6118 FLUORESCENT DISPLAY DRIVERS

## DEVICE TYPE NUMBER DESIGNATION

| Input Compatibility | No. of Drivers | V <sub>OUT</sub> | No. of Pins | Type Number |             |              |
|---------------------|----------------|------------------|-------------|-------------|-------------|--------------|
|                     |                |                  |             | Plastic DIP | Ceramic DIP | Plastic SOIC |
| 5 V TTL, CMOS       | 6              | 60 V             | 16          | UDN6116A-2  | UDN6116R-2  | —            |
|                     |                | 80 V             | 16          | UDN6116A    | UDN6116R    | —            |
|                     |                | 110 V            | 16          | UDN6116A-1  | —           | —            |
|                     | 8              | 60 V             | 18          | UDN6118A-2  | UDN6118R-2  | —            |
|                     |                | 80 V             | 18          | UDN6118A    | UDN6118R    | UDN6118LW    |
|                     |                | 110 V            | 18          | UDN6118A-1  | —           | —            |

### PARTIAL SCHEMATIC ONE DRIVER (ALL TYPES)



Dwg. No. A-10.592C

| R <sub>IN</sub> | R <sub>B</sub> |
|-----------------|----------------|
| 10 kΩ           | 30 kΩ          |

# 6116 AND 6118 FLUORESCENT DISPLAY DRIVERS

## ELECTRICAL CHARACTERISTICS (over operating temperature range).

Note: All Values Specified At —

| Suffixes   | A  | LW | R  | A-1 | A-2 | R-2 |       |
|------------|----|----|----|-----|-----|-----|-------|
| $V_{BB} =$ | 80 | 80 | 80 | 110 | 60  | 60  | Volts |

| Characteristic           | Symbol             | Applicable Devices |             | Test Conditions                    | Limits |      |      |         |
|--------------------------|--------------------|--------------------|-------------|------------------------------------|--------|------|------|---------|
|                          |                    | Basic Part. No.    | Suffix      |                                    | Min.   | Typ. | Max. | Units   |
| Output Leakage Current   | $I_{OUT}$          | All                | All         | $V_{IN} = 0.4 V$                   | —      | —    | 15   | $\mu A$ |
| Output OFF Voltage       | $V_{OUT}$          | All                | All         | $V_{IN} = 0.4 V$                   | —      | —    | 1.0  | V       |
| Output Pull-Down Current | $I_{OUT}$          | All                | A, LW, or R | Input Open, $V_{OUT} = V_{BB}$     | 450    | 650  | 1100 | $\mu A$ |
|                          |                    |                    | A-1         |                                    | 600    | 900  | 1500 | $\mu A$ |
|                          |                    |                    | A-2 or R-2  |                                    | 350    | 500  | 775  | $\mu A$ |
| Output ON Voltage        | $V_{OUT}$          | All                | A, LW, or R | $V_{IN} = 2.4 V, I_{OUT} = -25 mA$ | 77     | 78   | —    | V       |
|                          |                    |                    | A-1         |                                    | 107    | 108  | —    | V       |
|                          |                    |                    | A-2 or R-2  |                                    | 57     | 58   | —    | V       |
| Input ON Current         | $I_{IN}$           | All                | All         | $V_{IN} = 2.4 V$                   | —      | 120  | 225  | $\mu A$ |
|                          |                    |                    |             | $V_{IN} = 5.0 V$                   | —      | 375  | 650  | $\mu A$ |
| Supply Current           | $I_{BB}$           | All                | All         | All Inputs Open                    | —      | 10   | 100  | $\mu A$ |
|                          |                    | UDN6116            | A or R      | All Inputs = 2.4 V                 | —      | 5.0  | 7.5  | mA      |
|                          |                    |                    | A-1         | Two Inputs = 2.4 V                 | —      | 2.5  | 4.5  | mA      |
|                          |                    |                    | A-2 or R-2  | All Inputs = 2.4 V                 | —      | 4.0  | 6.0  | mA      |
|                          |                    | UDN6118            | A, LW, or R | All Inputs = 2.4 V                 | —      | 6.0  | 9.0  | mA      |
|                          |                    |                    | A-1         | Two Inputs = 2.4 V                 | —      | 2.5  | 4.5  | mA      |
| A-2 or R-2               | All Inputs = 2.4 V |                    | —           | 5.5                                | 8.0    | mA   |      |         |

# 6116 AND 6118 FLUORESCENT DISPLAY DRIVERS

## RECOMMENDED OPERATING CONDITIONS

| Characteristic    | Symbol    | Applicable Devices |             | Test Conditions | Limits |      |      | Units |
|-------------------|-----------|--------------------|-------------|-----------------|--------|------|------|-------|
|                   |           | Basic Part. No.    | Suffix      |                 | Min.   | Typ. | Max. |       |
| Supply Voltage    | $V_{BB}$  | UDN6116/18         | A, LW, or R |                 | 5.0    | —    | 70   | V     |
|                   |           |                    | A-1         |                 | 5.0    | —    | 100  | V     |
|                   |           |                    | A-2 or R-2  |                 | 5.0    | —    | 50   | V     |
| Input ON Voltage  | $V_{IN}$  | UDN6116/18         | All         |                 | 2.4    | —    | 15   | V     |
| Output ON Current | $I_{OUT}$ | All                | All         |                 | —      | —    | -25  | mA    |

NOTE: Positive (negative) current is defined as going into (coming out of) the specified device pin.

