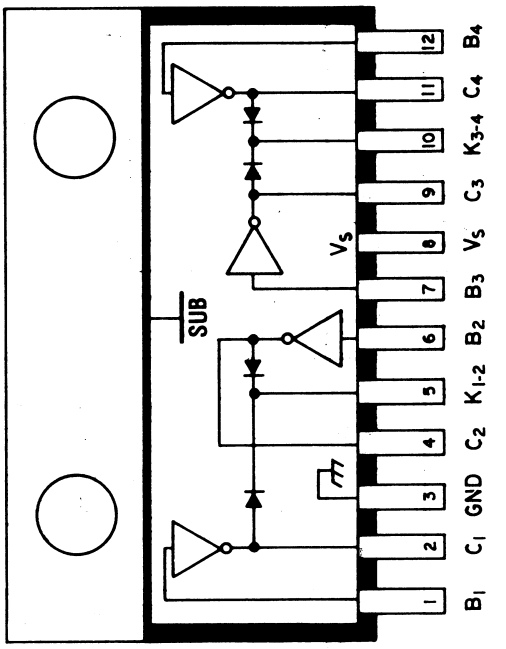
# 2878 AND 2879

Data Sheet 29305.10B‡

## *QUAD HIGH-CURRENT DARLINGTON SWITCHES*




Dwg. No. A-11,974

### ABSOLUTE MAXIMUM RATINGS
**at +25°C Free-Air Temperature for any driver (unless otherwise noted)**

Output Voltage, $V_{CEX}$
(UDN2878W) . . . . . **50 V**
(UDN2879W & UDN2879W-2) . . **80 V**
Output Current, $I_C$
(UDN2878W & UDN2879W) . . . **5.0 A**
(UDN2879W-2) . . . . . **4.0 A**
Input Voltage, $V_{IN}$ . . . . . **15 V**
Input Current, $I_{IN}$ . . . . . **25 mA**
Supply Voltage, $V_S$ . . . . . **10 V**
Total Package Power Dissipation,
$P_D$ . . . . . **See Graph**
Operating Ambient Temperature Range,
$T_A$ . . . . . **-20°C to +85°C**
Storage Temperature Range,
$T_S$ . . . . . **-55°C to +150°C**

These quad Darlington arrays are designed to serve as interface between low-level logic and peripheral power devices such as solenoids, motors, incandescent displays, heaters, and similar loads of up to 320 W per channel. Both integrated circuits include transient-suppression diodes that enable use with inductive loads. The input logic is compatible with most TTL, DTL, LSTTL, and 5 V CMOS logic.

Type UDN2878W and UDN2879W 4 A arrays are identical except for output-voltage ratings. The former is rated for operation to 50 V (35 V sustaining), while the latter has a minimum output breakdown rating of 80 V (50 V sustaining). The lower-cost UDN2879W-2 is recommended for applications requiring load currents of 3 A or less. These less expensive devices are identical to the basic parts except for the maximum allowable load-current rating.

For maximum power-handling capability, all drivers are supplied in a 12-pin single in-line power-tab package. The tab needs no insulation. External heat sinks are usually required for proper operation of these devices.

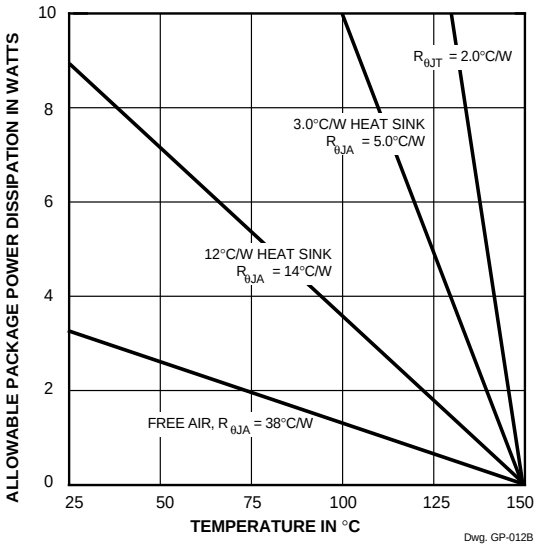
### FEATURES

- Output Currents to 4 A
- Output Voltages to 80 V
- Loads to 1280 W
- TTL, DTL, or CMOS Compatible Inputs
- Internal Clamp Diodes
- Plastic Single In-Line Package
- Heat-Sink Tab

**The UDN2879W and UDN2879W-2 are last-time buy. Orders accepted until April 15, 2002.**

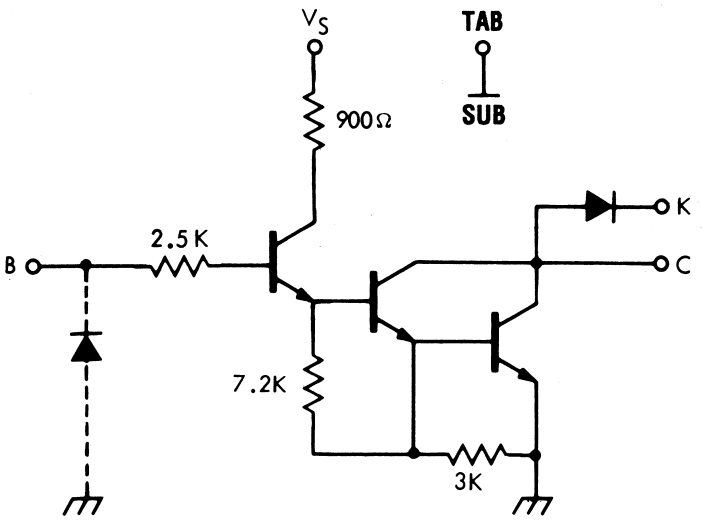
Always order by complete part number:

| Part Number | Max. $I_C$ | Max. $V_{CEX}$ | Min. $V_{CE\ (sus)}$ |
|---|---|---|---|
| UDN2878W | 5.0 A | 50 V | 35 V |
| UDN2879W | 5.0 A | 80 V | 50 V |
| UDN2879W-2 | 4.0 A | 80 V | 50 V |




## PARTIAL SCHEMATIC

One of 4 Drivers




Dwg. No. A-12,037

NOTE: Pin 3 must be connected to ground for proper operation.

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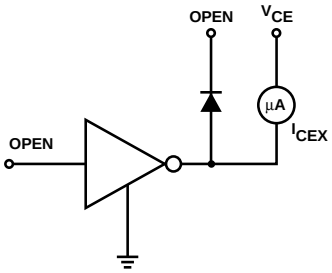
## ELECTRICAL CHARACTERISTICS at $V_S$ = 5.0 V, $T_A$ = +25°C (unless otherwise noted).

| Characteristic | Symbol | Test Fig. | Applicable Devices | Test Conditions | Limits Min. | Limits Max. | Limits Units |
|---|---|---|---|---|---|---|---|
| Output Leakage Current | $I_{CEX}$ | 1 | UDN2878W | $V_{CE}$ = 50 V | — | 100 | µA |
| | | | | $V_{CE}$ = 50 V, $T_A$ = +70°C | — | 500 | µA |
| | | | UDN2879W/W-2 | $V_{CE}$ = 80 V | — | 100 | µA |
| | | | | $V_{CE}$ = 80 V, $T_A$ = +70°C | — | 500 | µA |
| Output Sustaining Voltage | $V_{CE(sus)}$ | — | UDN2878W | $I_C$ = 4 A, L = 10 mH | 35 | — | V |
| | | | UDN2879W | $I_C$ = 4 A, L = 10 mH | 50 | — | V |
| | | | UDN2879W-2 | $I_C$ = 3 A, L = 10 mH | 50 | — | V |
| Collector-Emitter Saturation Voltage | $V_{CE(SAT)}$ | 2 | All | $I_C$ = 500 mA, $V_{IN}$ = 2.75 V | — | 1.1 | V |
| | | | | $I_C$ = 1.0 A, $V_{IN}$ = 2.75 V | — | 1.3 | V |
| | | | | $I_C$ = 2.0 A, $V_{IN}$ = 2.75 V | — | 1.5 | V |
| | | | | $I_C$ = 3.0 A, $V_{IN}$ = 2.75 V | — | 1.9 | V |
| | | | UDN2878/79W | $I_C$ = 4.0 A, $V_{IN}$ = 3.0 V | — | 2.4 | V |
| Input Current | $I_{IN}$ | 3 | All | $V_{IN}$ = 2.75 V | — | 550 | µA |
| | | | | $V_{IN}$ = 3.75 V | — | 1000 | µA |
| Input Voltage | $V_{IN(ON)}$ | 4 | All | $V_{CE}$ = 2.2 V, $I_C$ = 3.0 A | — | 2.75 | V |
| | | | UDN2878/79W | $V_{CE}$ = 2.2 V, $I_C$ = 4.0 A | — | 2.75 | V |
| Supply Current per Driver | $I_S$ | 7 | All | $I_C$ = 500 mA, $V_{IN}$ = 2.75 V | — | 6.0 | mA |
| Turn-On Delay | $t_{PLH}$ | — | All | 0.5 $E_{in}$ to 0.5 $E_{out}$ | — | 1.0 | µs |
| Turn-Off Delay | $t_{PHL}$ | — | All | 0.5 $E_{in}$ to 0.5 $E_{out}$, $I_C$ = 3.0 A | — | 1.5 | µs |
| Clamp Diode Leakage Current | $I_R$ | 5 | All | $V_R$ = 50 V | — | 50 | µA |
| | | | | $V_R$ = 50 V, $T_A$ = +70°C | — | 100 | µA |
| | | | UDN2879W/W-2 | $V_R$ = 80 V | — | 50 | µA |
| | | | | $V_R$ = 80 V, $T_A$ = +70°C | — | 100 | µA |
| Clamp Diode Forward Voltage | $V_F$ | 6 | All | $I_F$ = 3.0 A | — | 2.5 | V |
| | | | UDN2878/79W | $I_F$ = 4.0 A | — | 3.0 | V |

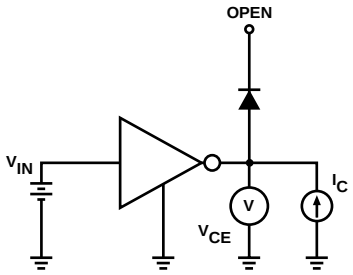
Caution: High-current tests are pulse tests or require heat sinking.

## TEST FIGURES



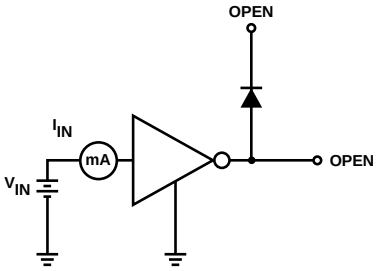

Dwg. No. A-9729A

**FIGURE 1**



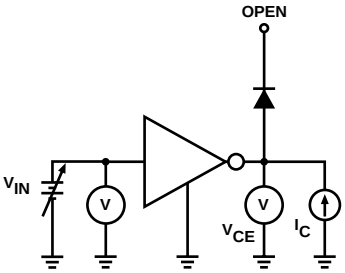

Dwg. No. A-10,350

**FIGURE 2**



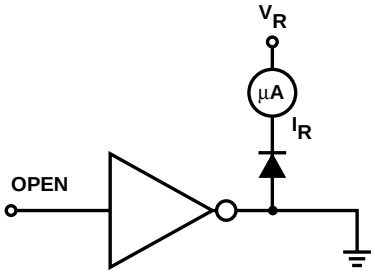

Dwg. No. A-9732

**FIGURE 3**



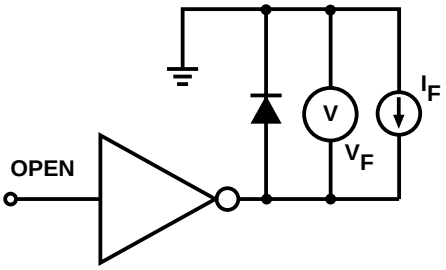

Dwg. No. A-9734A

**FIGURE 4**



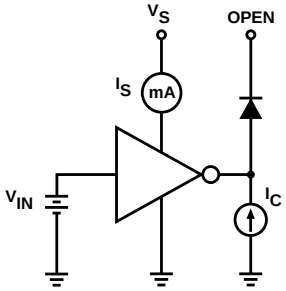

Dwg. No. A-9735A

**FIGURE 5**




Dwg. No. A-9736

**FIGURE 6**




Dwg. No. A-10,351

**FIGURE 7**

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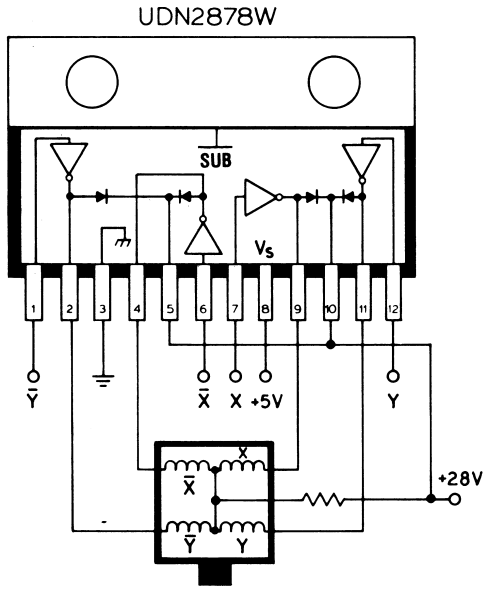
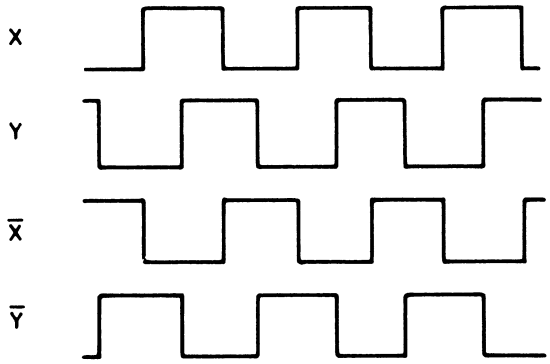
## TYPICAL APPLICATIONS

### INPUT WAVEFORMS



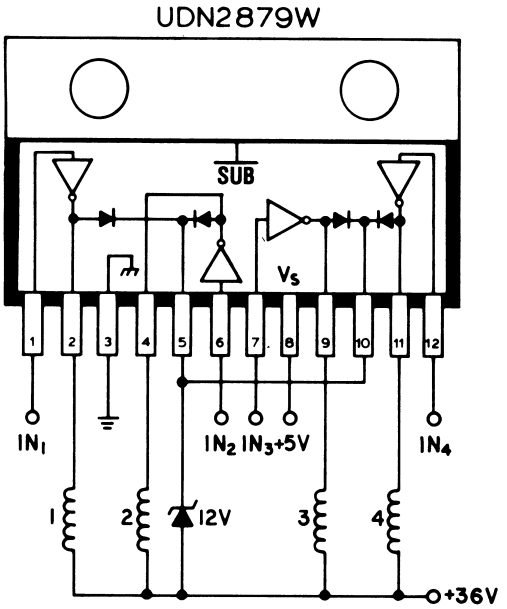

Dwg. No. A-11,975

### STEPPER-MOTOR DRIVER



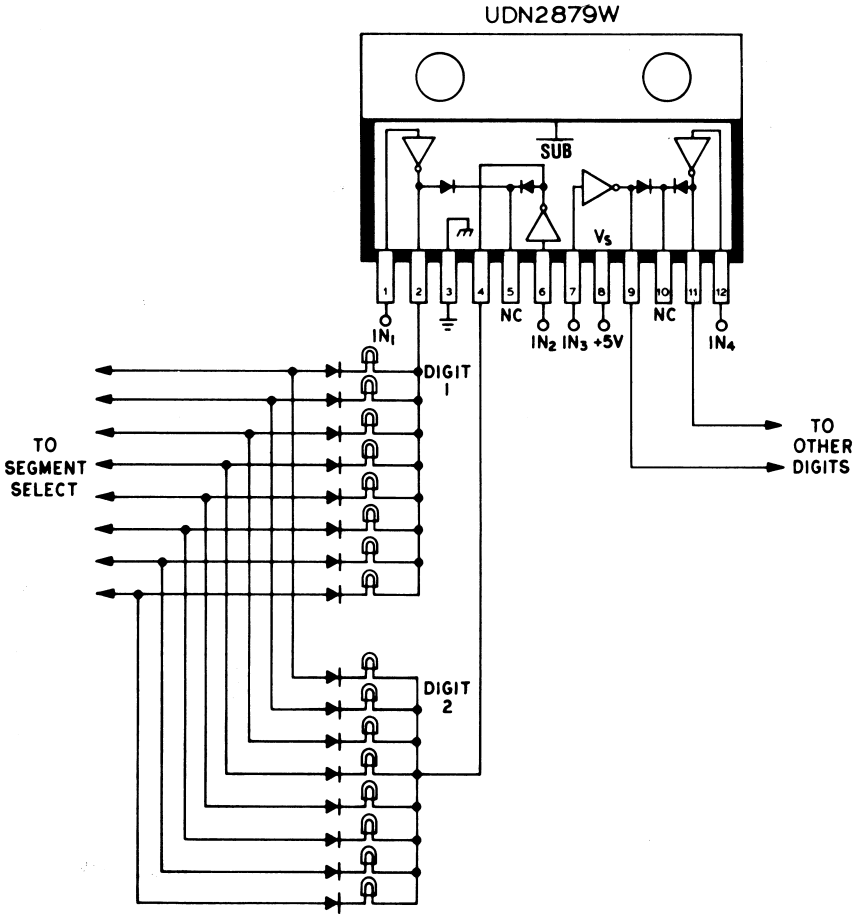

Dwg. No. A-11,795

### PRINT-HAMMER DRIVER




Dwg. No. A-11,976

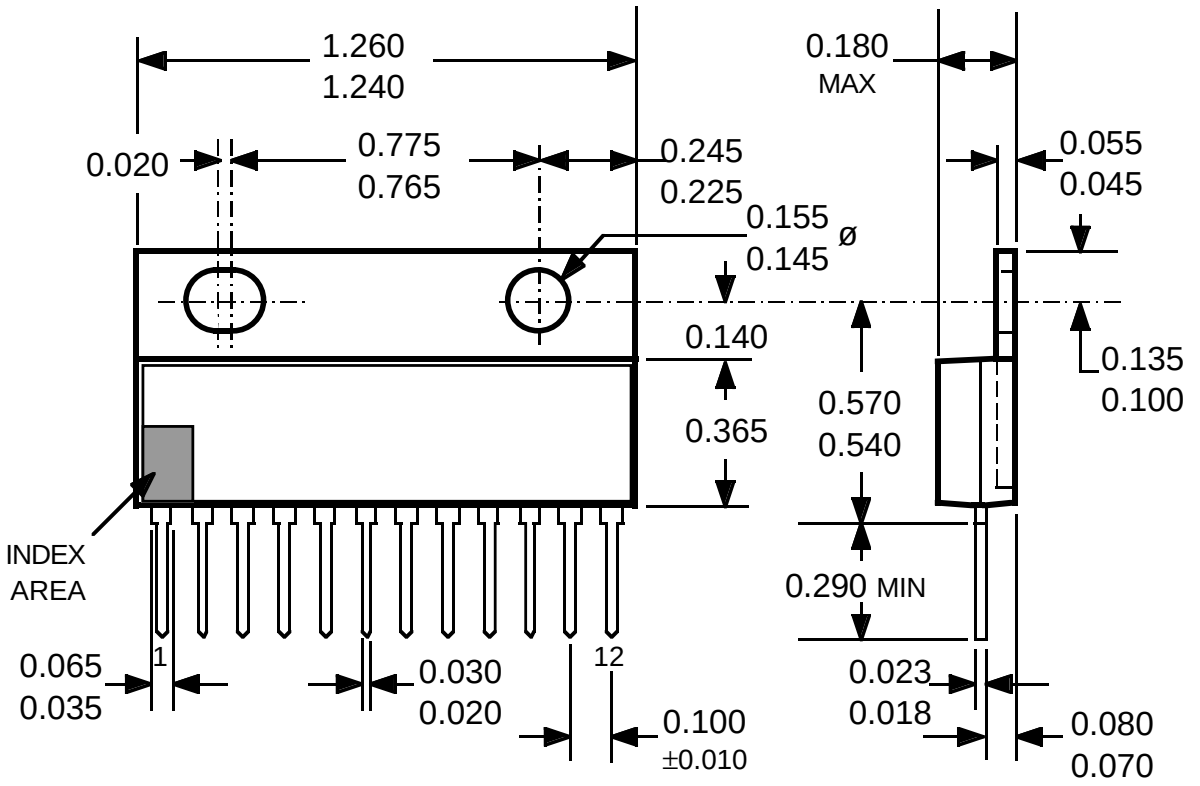
### DIGIT DRIVER FOR MULTIPLEXED INCANDESCENT LAMP DISPLAY




Dwg. No. B-1512

# 2878 AND 2879
# *QUAD HIGH-CURRENT DARLINGTON SWITCHES*

**Dimensions in Inches**
(controlling dimensions)




Dwg. MP-007 in

NOTES:
1. Lead thickness is measured at seating plane or below.
2. Lead spacing tolerance is non-cumulative.
3. Exact body and lead configuration at vendor s option within limits shown.
4. Lead gauge plane is 0.030 below seating plane.
5. Supplied in standard sticks/tubes of 15 devices.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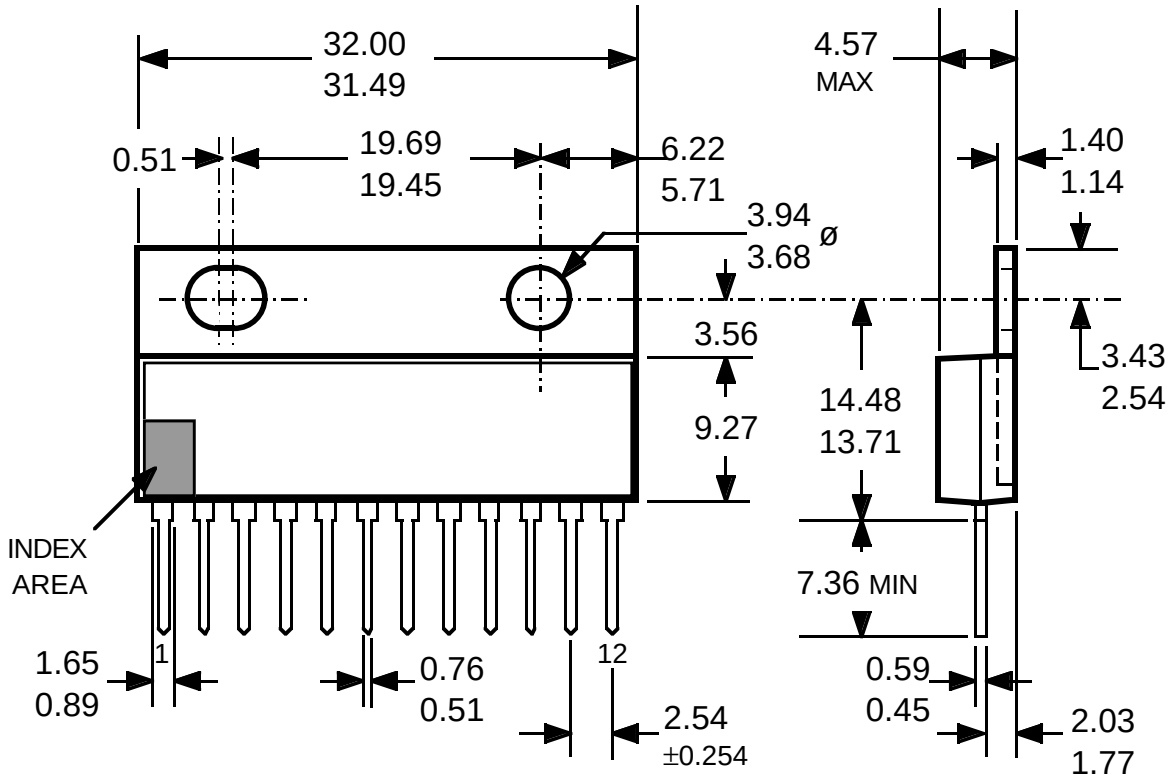
**Dimensions in Millimeters**
**(for reference only)**




Dwg. MP-007 mm

NOTES:
1. Lead thickness is measured at seating plane or below.
2. Lead spacing tolerance is non-cumulative.
3. Exact body and lead configuration at vendor's option within limits shown.
4. Lead gauge plane is 0.762 mm below seating plane.
5. Supplied in standard sticks/tubes of 15 devices.

# 2878 AND 2879
# *QUAD HIGH-CURRENT DARLINGTON SWITCHES*

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