

## QUAD SCHOTTKY DIODE ARRAY

### FEATURES

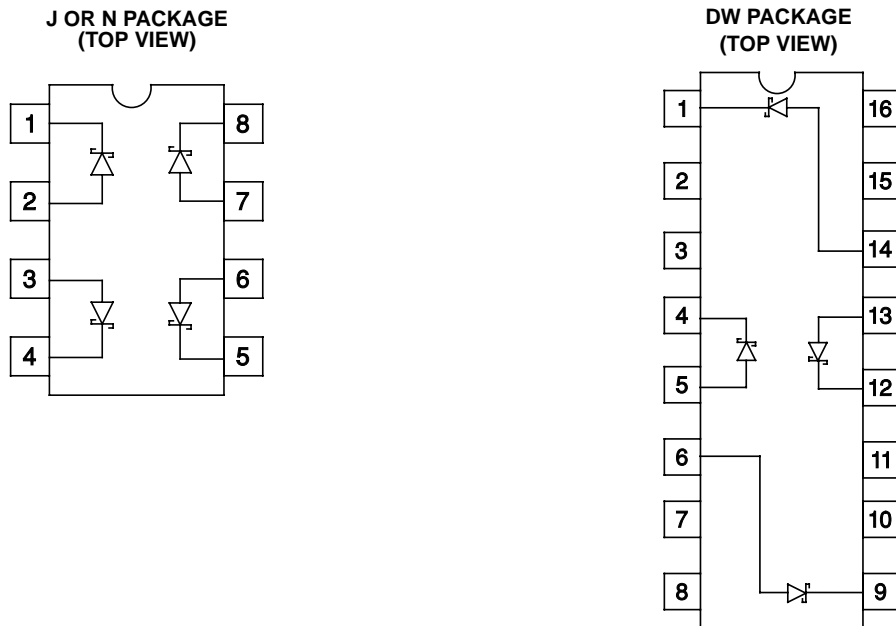
- Matched, Four-Diode Monolithic Array
- High Peak Current
- Low-Cost MINIDIP Package
- Low-Forward Voltage
- Parallelable for Lower  $V_F$  or Higher  $I_F$
- Fast Recovery Time
- Military Temperature Range Available

### DESCRIPTION

This four-diode array is designed for general purpose use as individual diodes or as a high-speed, high-current bridge. It is particularly useful on the outputs of high-speed power MOSFET drivers where Schottky diodes are needed to clamp any negative excursions caused by ringing on the driven line. These diodes are also ideally suited for use as voltage clamps when driving inductive loads such as relays and solenoids, and to provide a path for current free-wheeling in motor drive applications. The use of Schottky diode technology features high efficiency through lowered forward voltage drop and decreased reverse recovery time. This single monolithic chip is fabricated in both hermetic CERDIP and copper-eated plastic packages. The UC1611 in ceramic is designed for  $-55^{\circ}\text{C}$  to  $125^{\circ}\text{C}$  environments but with reduced peak current capability; while the UC3611 in plastic has higher current rating over a  $0^{\circ}\text{C}$  to  $70^{\circ}\text{C}$  ambient temperature range.

#### AVAILABLE OPTIONS

| $T_A = T_J$                                    | Packaged Devices |         |         |
|--|------------------|---------|---------|
|  | SOIC Wide (DW)   | DIL (J) | DIL (N) |
| $-55^{\circ}\text{C}$ to $125^{\circ}\text{C}$ | UC1611DW         | UC1611J | UC1611N |
| $0^{\circ}\text{C}$ to $70^{\circ}\text{C}$    | UC3611DW         | UC3611J | UC3611N |



**absolute maximum ratings over operating free-air temperature (unless otherwise noted)†**

|   |  |
|---|--|
| Peak inverse voltage (per diode) .....              | 50 V                                       |
| Diode-to-diode voltage .....                        | 80 V                                       |
| Peak forward current                                |  |
| UC1611 .....  | 1 A  |
| UC3611 .....  | 3 A  |
| Power dissipation at $T_A = 70^\circ\text{C}$ ..... | 1 W  |
| Storage temperature range, $T_{\text{stg}}$ .....   | $-65^\circ\text{C}$ to $150^\circ\text{C}$ |
| Lead temperature (soldering, 10 seconds) .....      | $300^\circ\text{C}$                        |

† Stresses beyond those listed under “absolute maximum ratings” may cause permanent damage to the device. These are stress ratings only, and functional operation of the device at these or any other conditions beyond those indicated under “recommended operating conditions” is not implied. Exposure to absolute-maximum-rated conditions for extended periods may affect device reliability.

‡ Please consult packaging section of data book for thermal limitations and considerations of package.

**electrical characteristics, all specifications apply to each individual diode,  $T_J = 25^\circ\text{C}$ ,  $T_A = T_J$ , (except as noted)**

| PARAMETER            | TEST CONDITIONS                                 | MIN | TYP  | MAX | UNITS |
|----------------------|---|-----|------|-----|-------|
| Forward voltage drop | $I_F = 100\text{ mA}$                           | 0.3 | 0.4  | 0.7 | V     |
|                      | $I_F = 1\text{ A}$                              |     | 0.9  | 1.2 | V     |
| Leakage current      | $V_R = 40\text{ V}$                             |     | 0.01 | 0.1 | mA    |
|                      | $V_R = 40\text{ V}$ , $T_J = 100^\circ\text{C}$ |     | 0.1  | 1.0 | mA    |
| Reverse recovery     | 0.5 A forward to 0.5 A reverse                  |     | 20   |     | ns    |
| Forward recovery     | 1 A forward to 1.1 V recovery                   |     | 40   |     | ns    |
| Junction capacitance | $V_R = 5\text{ V}$                              |     | 100  |     | pF    |

NOTE: At forward currents of greater than 1.0 A, a parasitic current of approximately 10 mA may be collected by adjacent diodes.

APPLICATION INFORMATION

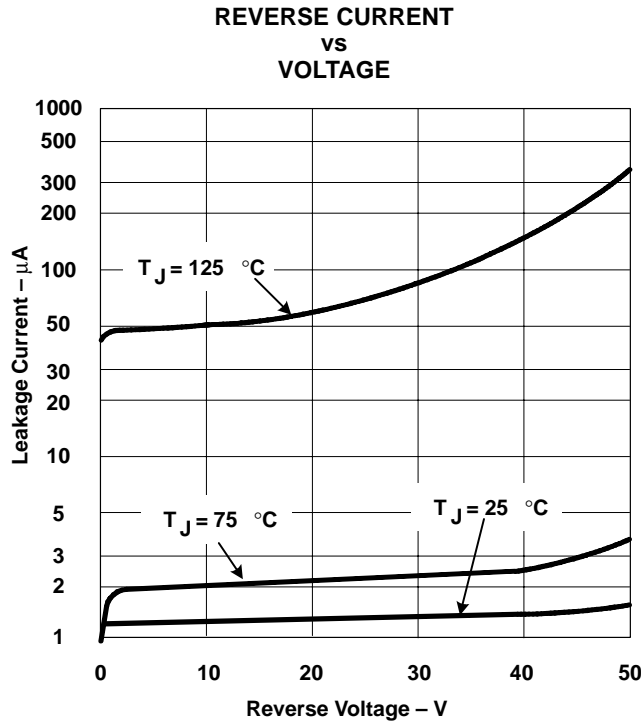


Figure 1

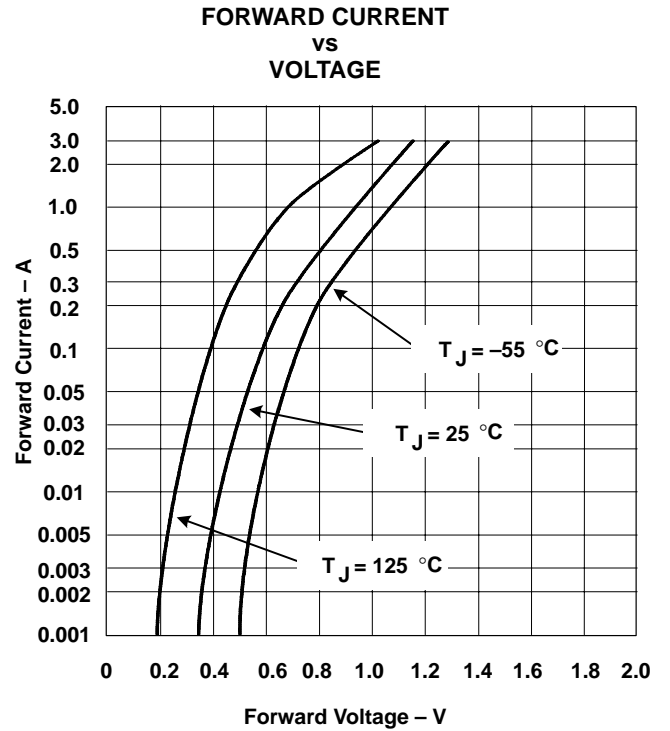


Figure 2

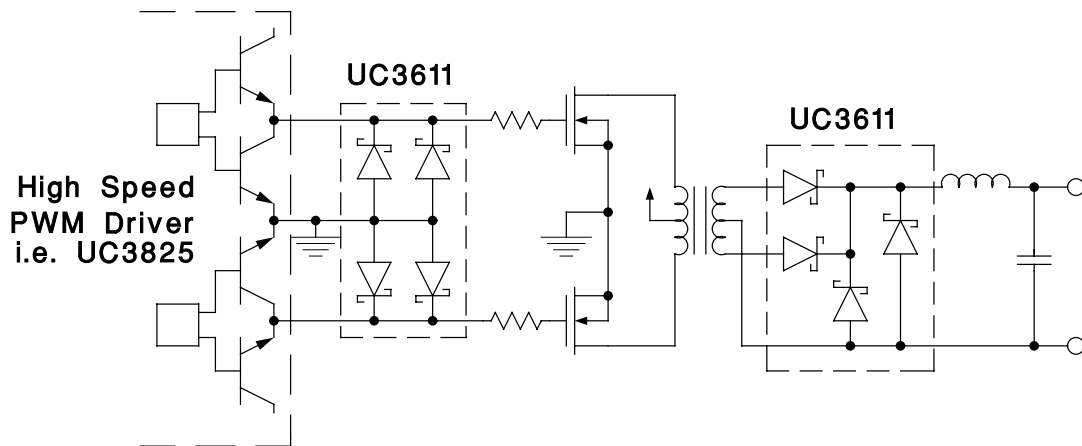
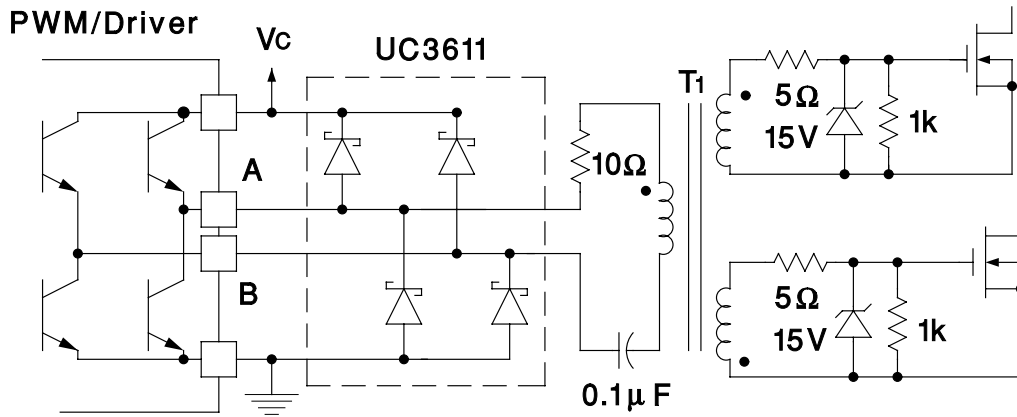
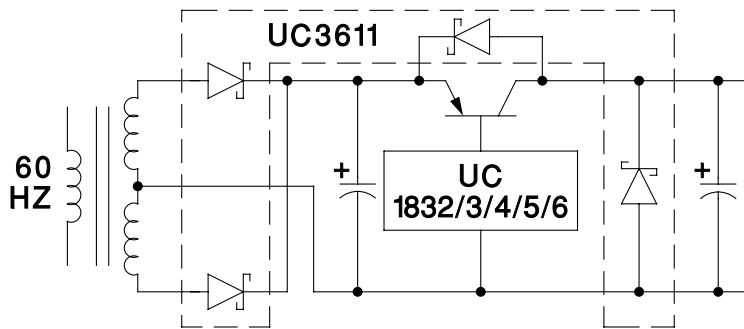


Figure 3. Clamp Diodes – PWMs and Drivers

**APPLICATION INFORMATION**



**Figure 4. Transformer Coupled Drive Circuits**



**Figure 5. Linear Regulations**

**PACKAGING INFORMATION**

| Orderable Device | Status<br>(1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan<br>(2)         | Lead/Ball Finish<br>(6) | MSL Peak Temp<br>(3) | Op Temp (°C) | Device Marking<br>(4/5)            | Samples                 |
|------------------|---------------|--------------|-----------------|------|-------------|-------------------------|-------------------------|----------------------|--------------|------------------------------------|-------------------------|
| 5962-90538012A   | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 5962-90538012A<br>UC1611L/<br>883B | <a href="#">Samples</a> |
| 5962-9053801PA   | ACTIVE        | CDIP         | JG              | 8    | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | 9053801PA<br>UC1611                | <a href="#">Samples</a> |
| 5962-9053801V2A  | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 5962-9053801V2A<br>UC1611L<br>QMLV | <a href="#">Samples</a> |
| 5962-9053801VPA  | ACTIVE        | CDIP         | JG              | 8    | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | 9053801VPA<br>UC1611               | <a href="#">Samples</a> |
| UC1611J          | ACTIVE        | CDIP         | JG              | 8    | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | UC1611J                            | <a href="#">Samples</a> |
| UC1611J883B      | ACTIVE        | CDIP         | JG              | 8    | 1           | TBD                     | A42                     | N / A for Pkg Type   | -55 to 125   | 9053801PA<br>UC1611                | <a href="#">Samples</a> |
| UC1611L883B      | ACTIVE        | LCCC         | FK              | 20   | 1           | TBD                     | POST-PLATE              | N / A for Pkg Type   | -55 to 125   | 5962-90538012A<br>UC1611L/<br>883B | <a href="#">Samples</a> |
| UC3611DW         | ACTIVE        | SOIC         | DW              | 16   | 40          | Green (RoHS & no Sb/Br) | CU NIPDAU               | Level-2-260C-1 YEAR  | 0 to 70      | UC3611DW                           | <a href="#">Samples</a> |
| UC3611J          | ACTIVE        | CDIP         | JG              | 8    | 1           | TBD                     | A42                     | N / A for Pkg Type   | 0 to 70      | UC3611J                            | <a href="#">Samples</a> |
| UC3611N          | ACTIVE        | PDIP         | P               | 8    | 50          | Green (RoHS & no Sb/Br) | CU NIPDAU               | N / A for Pkg Type   | 0 to 70      | UC3611N                            | <a href="#">Samples</a> |

(1) The marketing status values are defined as follows:

**ACTIVE:** Product device recommended for new designs.

**LIFEBUY:** TI has announced that the device will be discontinued, and a lifetime-buy period is in effect.

**NRND:** Not recommended for new designs. Device is in production to support existing customers, but TI does not recommend using this part in a new design.

**PREVIEW:** Device has been announced but is not in production. Samples may or may not be available.

**OBSOLETE:** TI has discontinued the production of the device.

(2) **RoHS:** TI defines "RoHS" to mean semiconductor products that are compliant with the current EU RoHS requirements for all 10 RoHS substances, including the requirement that RoHS substance do not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, "RoHS" products are suitable for use in specified lead-free processes. TI may reference these types of products as "Pb-Free".

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**RoHS Exempt:** TI defines "RoHS Exempt" to mean products that contain lead but are compliant with EU RoHS pursuant to a specific EU RoHS exemption.

**Green:** TI defines "Green" to mean the content of Chlorine (Cl) and Bromine (Br) based flame retardants meet JS709B low halogen requirements of  $\leq 1000$ ppm threshold. Antimony trioxide based flame retardants must also meet the  $\leq 1000$ ppm threshold requirement.

(3) MSL, Peak Temp. - The Moisture Sensitivity Level rating according to the JEDEC industry standard classifications, and peak solder temperature.

(4) There may be additional marking, which relates to the logo, the lot trace code information, or the environmental category on the device.

(5) Multiple Device Markings will be inside parentheses. Only one Device Marking contained in parentheses and separated by a "~" will appear on a device. If a line is indented then it is a continuation of the previous line and the two combined represent the entire Device Marking for that device.

(6) Lead/Ball Finish - Orderable Devices may have multiple material finish options. Finish options are separated by a vertical ruled line. Lead/Ball Finish values may wrap to two lines if the finish value exceeds the maximum column width.

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**OTHER QUALIFIED VERSIONS OF UC1611, UC1611-SP, UC3611, UC3611M :**

● Catalog: [UC3611](#), [UC1611](#), [UC3611M](#), [UC3611](#)

● Military: [UC1611](#), [UC1611](#)

● Space: [UC1611-SP](#)

NOTE: Qualified Version Definitions:

● Catalog - TI's standard catalog product

● Military - QML certified for Military and Defense Applications

● Space - Radiation tolerant, ceramic packaging and qualified for use in Space-based application

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