

QUAD SCHOTTKY DIODE ARRAY

FEATURES

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

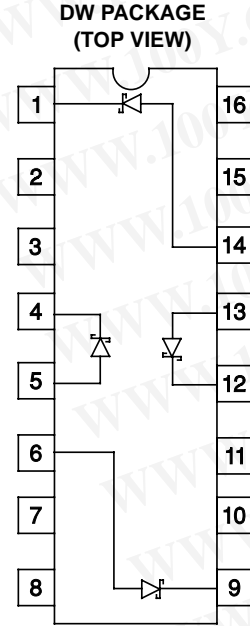
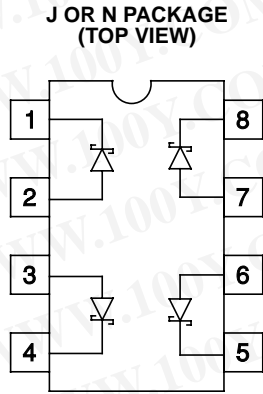
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DESCRIPTION

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-eaded plastic packages. The UC1611 in ceramic is designed for -55°C to 125°C environments but with reduced peak current capability: while the UC3611 in plastic has higher current rating over a 0°C to 70°C ambient temperature range.

AVAILABLE OPTIONS

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



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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_{stg} | -65°C to 150°C |
| Lead temperature (soldering, 10 seconds) | 300°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

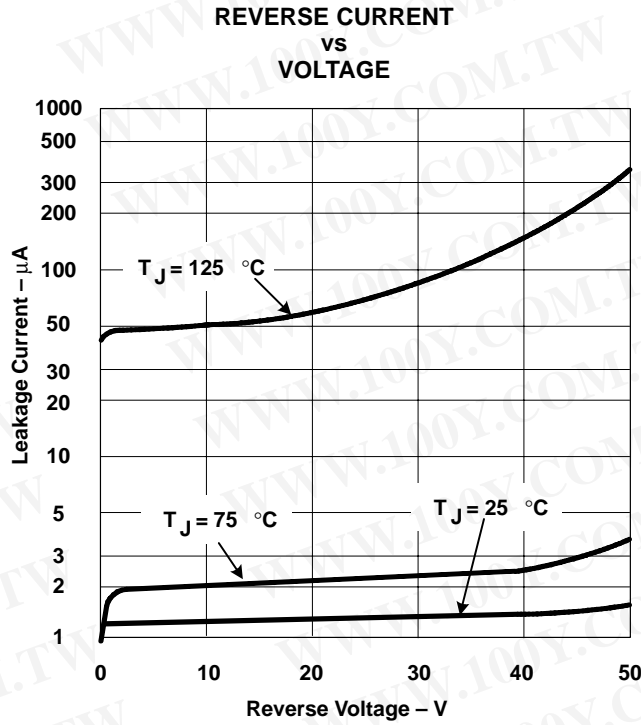


Figure 1

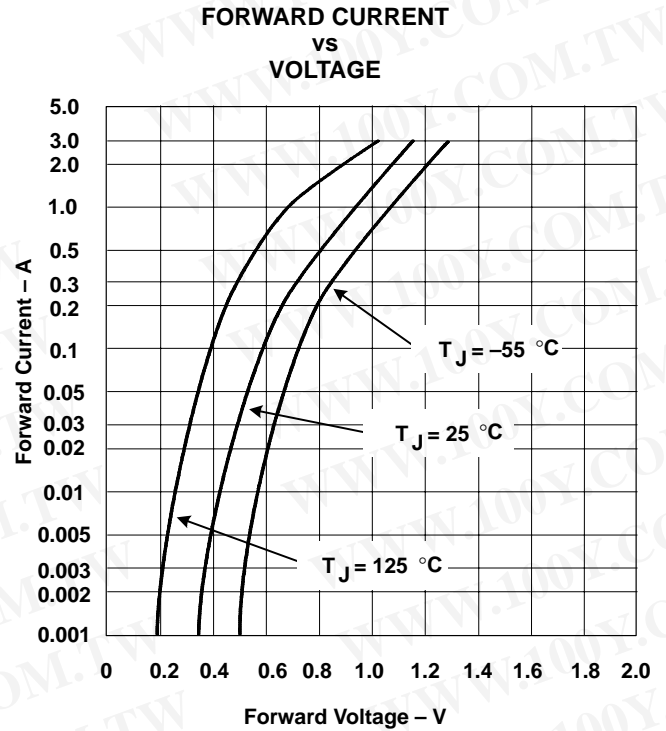


Figure 2

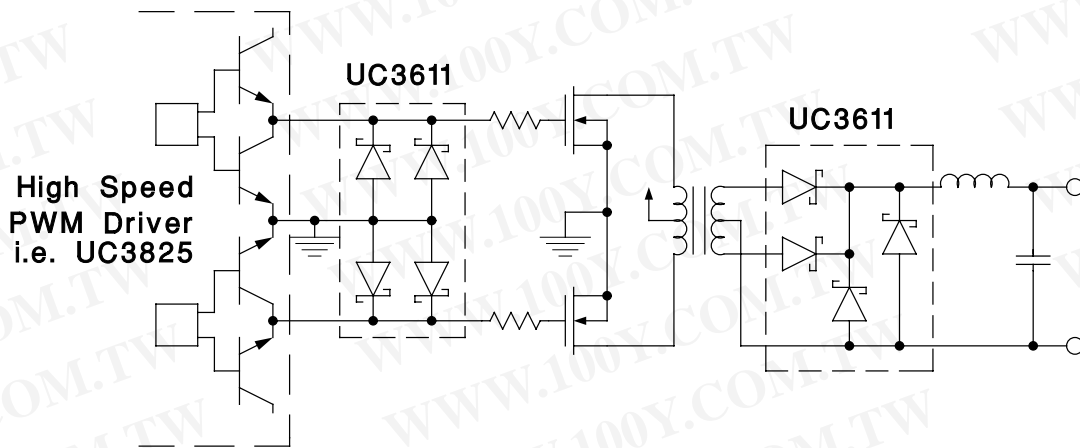


Figure 3. Clamp Diodes – PWMs and Drivers

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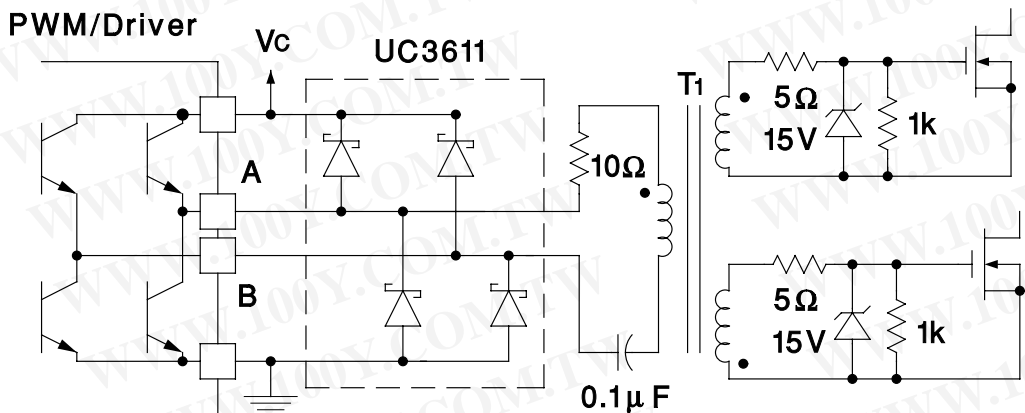


Figure 4. Transformer Coupled Drive Circuits

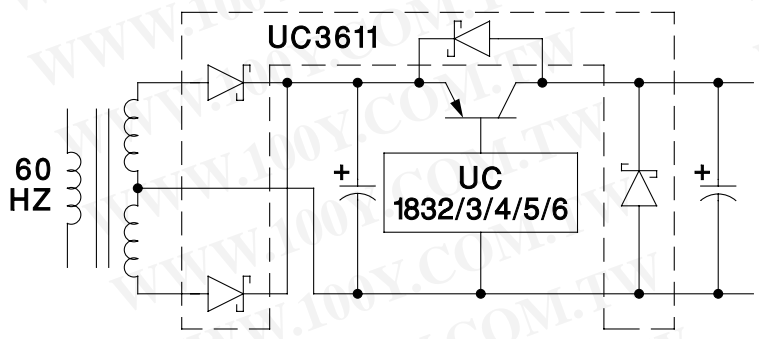


Figure 5. Linear Regulations

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PACKAGING INFORMATION

| Orderable Device | Status (1) | Package Type | Package Drawing | Pins | Package Qty | Eco Plan (2) | Lead/Ball Finish | MSL Peak Temp (3) | Op Temp (°C) | Device Marking (4/5) | Samples |
|------------------|---------------|--------------|--------------------|------|----------------|----------------------------|------------------|----------------------|--------------|--|-------------------------|
| 5962-90538012A | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | 5962- 90538012A UC1611L/ 883B | Samples |
| 5962-9053801PA | ACTIVE | CDIP | JG | 8 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 9053801PA UC1611 | Samples |
| 5962-9053801V2A | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | 5962- 9053801V2A UC1611L QMLV | Samples |
| 5962-9053801VPA | ACTIVE | CDIP | JG | 8 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 9053801VPA UC1611 | Samples |
| UC1611J | ACTIVE | CDIP | JG | 8 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | UC1611J | Samples |
| UC1611J883B | ACTIVE | CDIP | JG | 8 | 1 | TBD | A42 | N / A for Pkg Type | -55 to 125 | 9053801PA UC1611 | Samples |
| UC1611L883B | ACTIVE | LCCC | FK | 20 | 1 | TBD | POST-PLATE | N / A for Pkg Type | -55 to 125 | 5962- 90538012A UC1611L/ 883B | Samples |
| UC3611DW | ACTIVE | SOIC | DW | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR | 0 to 70 | UC3611DW | Samples |
| UC3611DWG4 | ACTIVE | SOIC | DW | 16 | 40 | Green (RoHS & no Sb/Br) | CU NIPDAU | Level-2-260C-1 YEAR | 0 to 70 | UC3611DW | Samples |
| UC3611J | ACTIVE | CDIP | JG | 8 | 1 | TBD | A42 | N / A for Pkg Type | 0 to 70 | UC3611J | Samples |
| UC3611N | ACTIVE | PDIP | P | 8 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | UC3611N | Samples |
| UC3611NG4 | ACTIVE | PDIP | P | 8 | 50 | Green (RoHS & no Sb/Br) | CU NIPDAU | N / A for Pkg Type | 0 to 70 | UC3611N | Samples |
| UC3611Q | OBSOLETE | PLCC | FN | 20 | | TBD | Call TI | Call TI | 0 to 70 | | |
| UC3611QTR | OBSOLETE | PLCC | FN | 20 | | TBD | Call TI | Call TI | 0 to 70 | | |

(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.

OBSELETE: TI has discontinued the production of the device.

⁽²⁾ Eco Plan - The planned eco-friendly classification: Pb-Free (RoHS), Pb-Free (RoHS Exempt), or Green (RoHS & no Sb/Br) - please check <http://www.ti.com/productcontent> for the latest availability information and additional product content details.

TBD: The Pb-Free/Green conversion plan has not been defined.

Pb-Free (RoHS): TI's terms "Lead-Free" or "Pb-Free" mean semiconductor products that are compatible with the current RoHS requirements for all 6 substances, including the requirement that lead not exceed 0.1% by weight in homogeneous materials. Where designed to be soldered at high temperatures, TI Pb-Free products are suitable for use in specified lead-free processes.

Pb-Free (RoHS Exempt): This component has a RoHS exemption for either 1) lead-based flip-chip solder bumps used between the die and package, or 2) lead-based die adhesive used between the die and leadframe. The component is otherwise considered Pb-Free (RoHS compatible) as defined above.

Green (RoHS & no Sb/Br): TI defines "Green" to mean Pb-Free (RoHS compatible), and free of Bromine (Br) and Antimony (Sb) based flame retardants (Br or Sb do not exceed 0.1% by weight in homogeneous material)

⁽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.

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

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

● Military: [UC1611](#)

● Space: [UC1611-SP](#)

NOTE: Qualified Version Definitions:

● Catalog - TI's standard catalog product

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- 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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