SLUS338A – JUNE 1993 – REVISED MAY 2001

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**

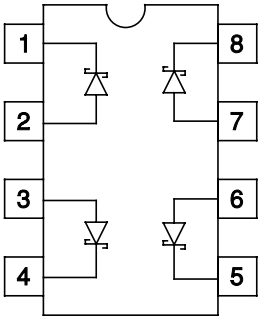
DESCRIPTION

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-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.

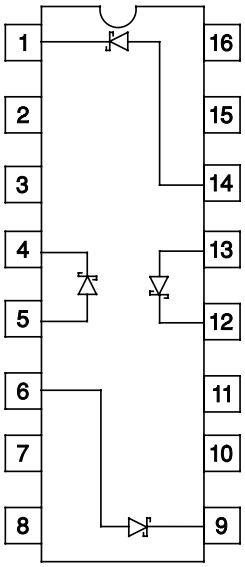
AVAILABLE OPTIONS

$T_A = T_J$	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

J OR N PACKAGE
(TOP VIEW)



DW PACKAGE
(TOP VIEW)



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°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°C, $T_A = T_J$, (except as noted)

PARAMETER	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Forward voltage drop	I_F = 100 mA	0.3	0.4	0.7	V
	I_F = 1 A		0.9	1.2	V
Leakage current	V_R = 40 V		0.01	0.1	mA
	V_R = 40 V, T_J = 100°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 = 5V		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

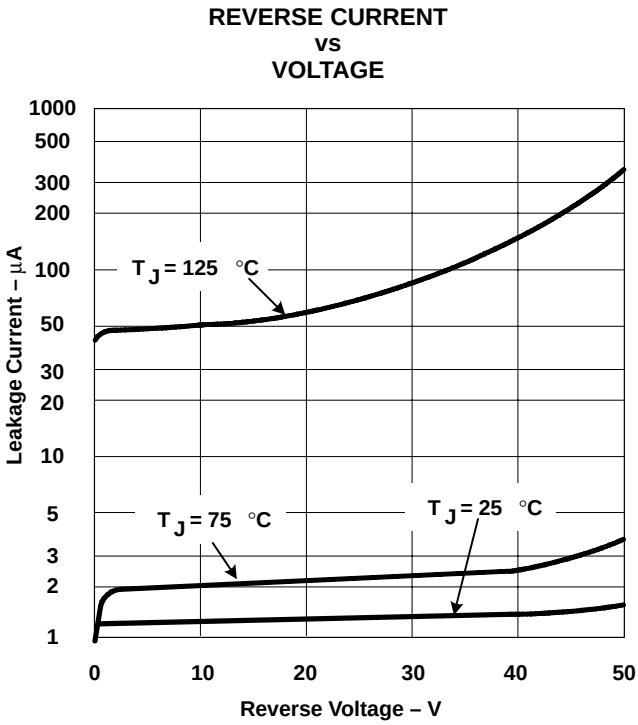


Figure 1

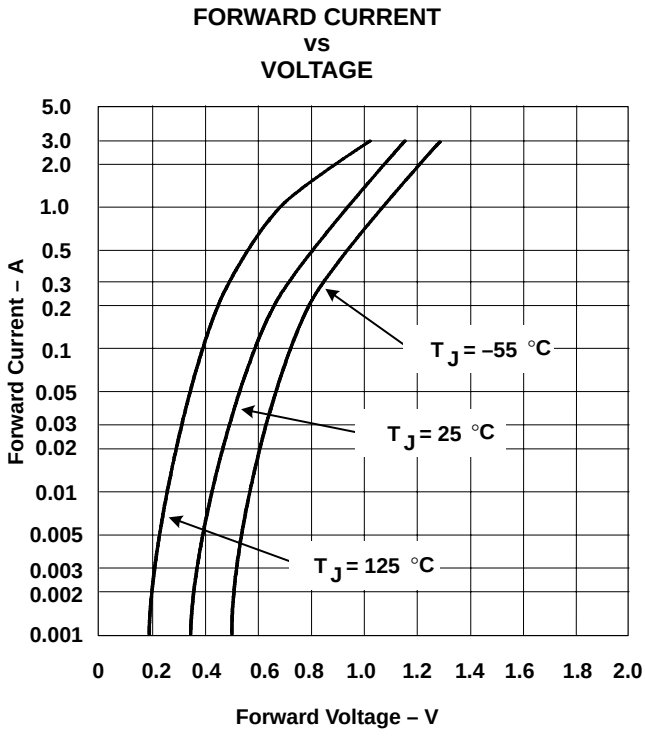


Figure 2

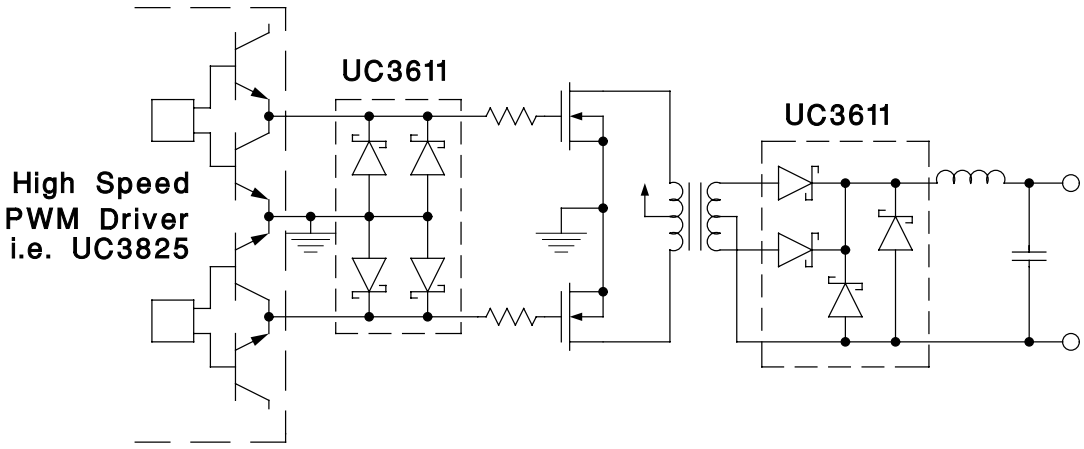


Figure 3. Clamp Diodes – PWMs and Drivers

APPLICATION INFORMATION

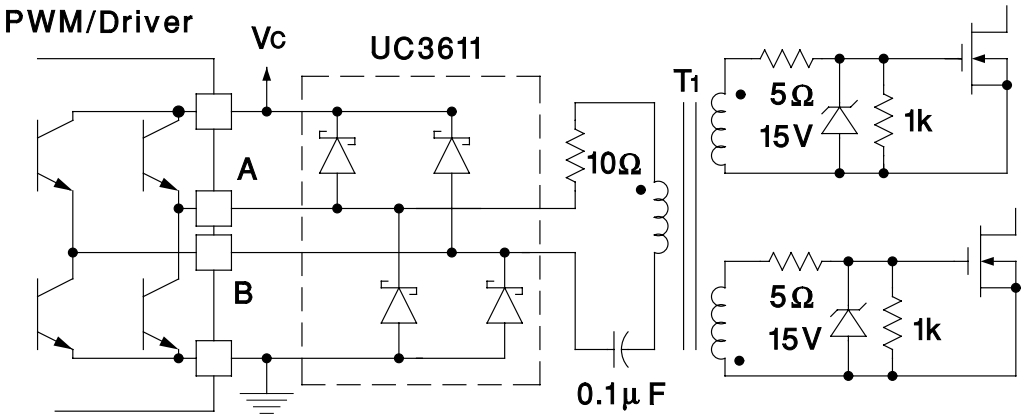


Figure 4. Transformer Coupled Drive Circuits

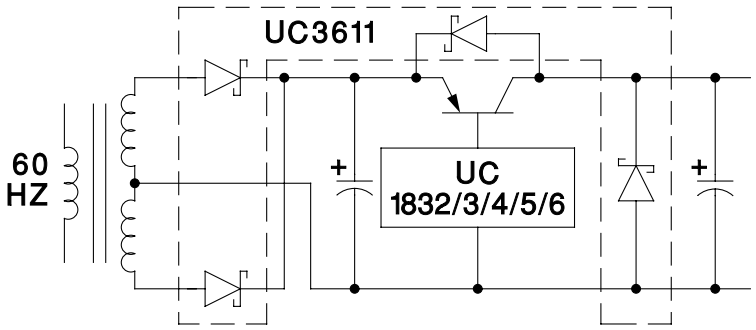


Figure 5. Linear Regulations

PACKAGING INFORMATION

Orderable part number	Status (1)	Material type (2)	Package | Pins	Package qty | Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
5962-90538012A	Active	Production	LCCC (FK) | 20	55 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-90538012A UC1611L/ 883B
5962-9053801PA	Active	Production	CDIP (JG) | 8	50 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	9053801PA UC1611
5962-9053801V2A	Active	Production	LCCC (FK) | 20	55 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9053801V2A UC1611L QMLV
5962-9053801V2A.A	Active	Production	LCCC (FK) | 20	55 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-9053801V2A UC1611L QMLV
5962-9053801VPA	Active	Production	CDIP (JG) | 8	50 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	9053801VPA UC1611
5962-9053801VPA.A	Active	Production	CDIP (JG) | 8	50 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	9053801VPA UC1611
UC1611J	Active	Production	CDIP (JG) | 8	50 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	UC1611J
UC1611J.A	Active	Production	CDIP (JG) | 8	50 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	UC1611J
UC1611J883B	Active	Production	CDIP (JG) | 8	50 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	9053801PA UC1611
UC1611J883B.A	Active	Production	CDIP (JG) | 8	50 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	9053801PA UC1611
UC1611L883B	Active	Production	LCCC (FK) | 20	55 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-90538012A UC1611L/ 883B
UC1611L883B.A	Active	Production	LCCC (FK) | 20	55 | TUBE	No	SNPB	N/A for Pkg Type	-55 to 125	5962-90538012A UC1611L/ 883B
UC3611DW	Active	Production	SOIC (DW) | 16	40 | TUBE	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3611DW
UC3611DW.A	Active	Production	SOIC (DW) | 16	40 | TUBE	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3611DW

Orderable part number	Status (1)	Material type (2)	Package | Pins	Package qty | Carrier	RoHS (3)	Lead finish/ Ball material (4)	MSL rating/ Peak reflow (5)	Op temp (°C)	Part marking (6)
UC3611J	Active	Production	CDIP (JG) | 8	50 | TUBE	No	SNPB	N/A for Pkg Type	0 to 70	UC3611J
UC3611J.A	Active	Production	CDIP (JG) | 8	50 | TUBE	No	SNPB	N/A for Pkg Type	0 to 70	UC3611J
UC3611N	Active	Production	PDIP (P) | 8	50 | TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	UC3611N
UC3611N.A	Active	Production	PDIP (P) | 8	50 | TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	UC3611N

(1) **Status:** For more details on status, see our product life cycle.

(2) **Material type:** When designated, preproduction parts are prototypes/experimental devices, and are not yet approved or released for full production. Testing and final process, including without limitation quality assurance, reliability performance testing, and/or process qualification, may not yet be complete, and this item is subject to further changes or possible discontinuation. If available for ordering, purchases will be subject to an additional waiver at checkout, and are intended for early internal evaluation purposes only. These items are sold without warranties of any kind.

(3) **RoHS values:** Yes, No, RoHS Exempt. See the TI RoHS Statement for additional information and value definition.

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

(5) **MSL rating/Peak reflow:** The moisture sensitivity level ratings and peak solder (reflow) temperatures. In the event that a part has multiple moisture sensitivity ratings, only the lowest level per JEDEC standards is shown. Refer to the shipping label for the actual reflow temperature that will be used to mount the part to the printed circuit board.

(6) **Part marking:** There may be an additional marking, which relates to the logo, the lot trace code information, or the environmental category of the part.

Multiple part markings will be inside parentheses. Only one part marking contained in parentheses and separated by a "~" will appear on a part. If a line is indented then it is a continuation of the previous line and the two combined represent the entire part marking for that device.

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

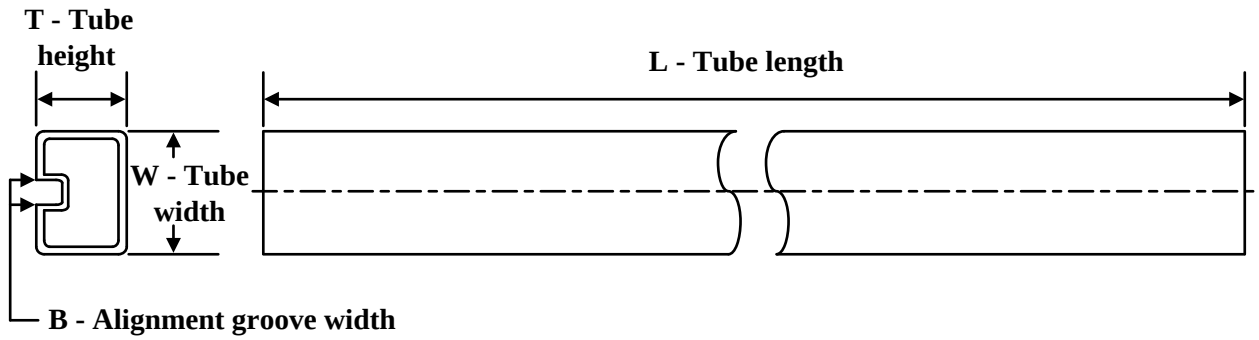
- Catalog : UC3611, UC1611, UC3611M, UC3611

- 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

TUBE



*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (µm)	B (mm)
5962-90538012A	FK	LCCC	20	55	506.98	12.06	2030	NA
5962-9053801V2A	FK	LCCC	20	55	506.98	12.06	2030	NA
5962-9053801V2A.A	FK	LCCC	20	55	506.98	12.06	2030	NA
UC1611L883B	FK	LCCC	20	55	506.98	12.06	2030	NA
UC1611L883B.A	FK	LCCC	20	55	506.98	12.06	2030	NA
UC3611DW	DW	SOIC	16	40	507	12.83	5080	6.6
UC3611DW.A	DW	SOIC	16	40	507	12.83	5080	6.6
UC3611N	P	PDIP	8	50	506	13.97	11230	4.32
UC3611N.A	P	PDIP	8	50	506	13.97	11230	4.32

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