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**

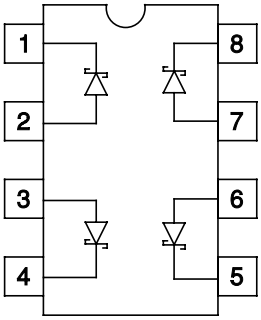
DESCRIPTION

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.

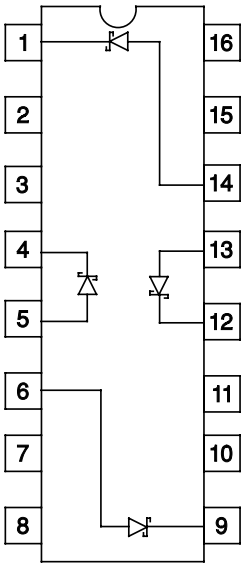
AVAILABLE OPTIONS

$T_A = T_J$	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

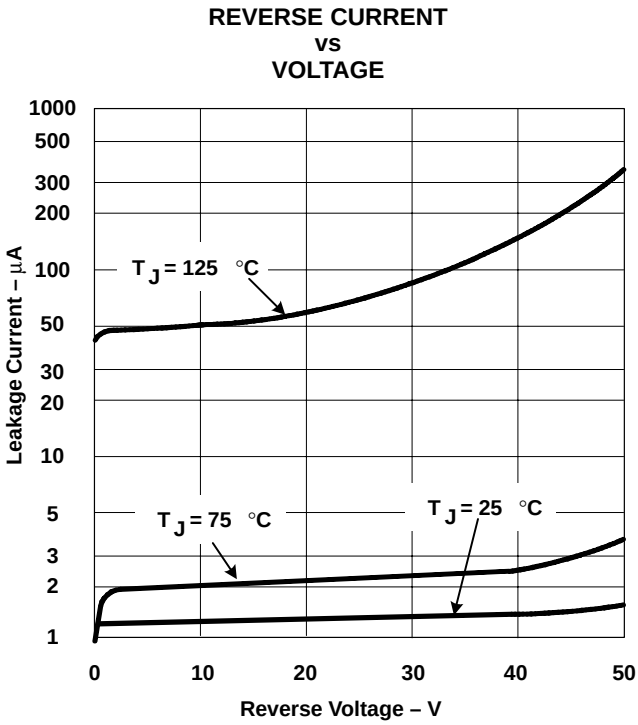


Figure 1

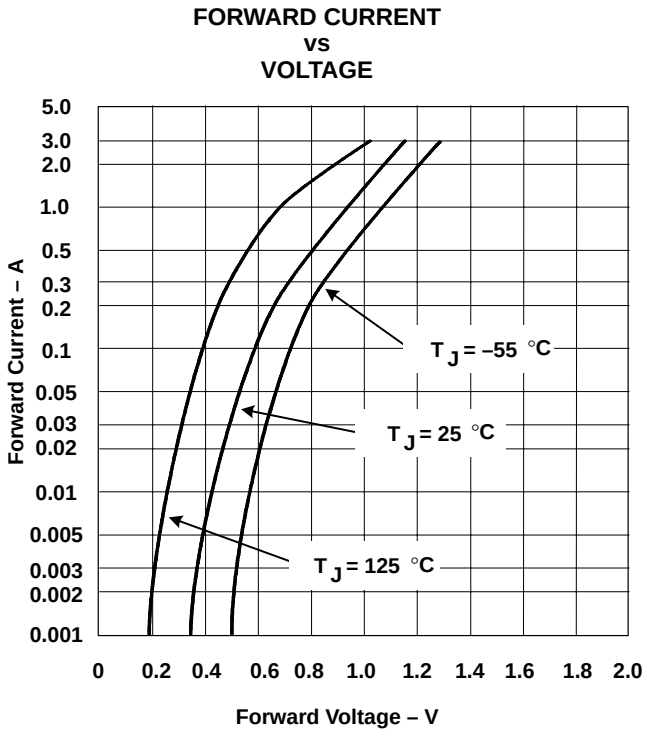


Figure 2

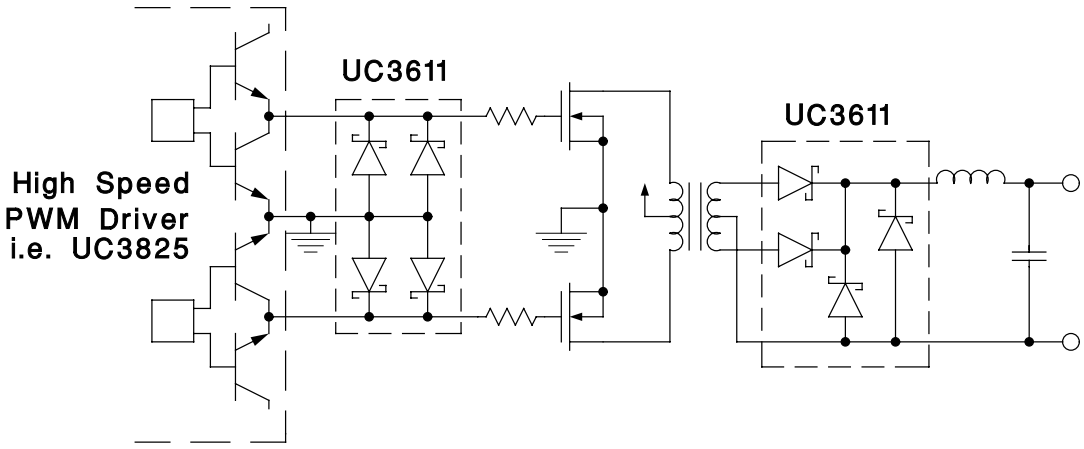


Figure 3. Clamp Diodes – PWMs and Drivers

APPLICATION INFORMATION

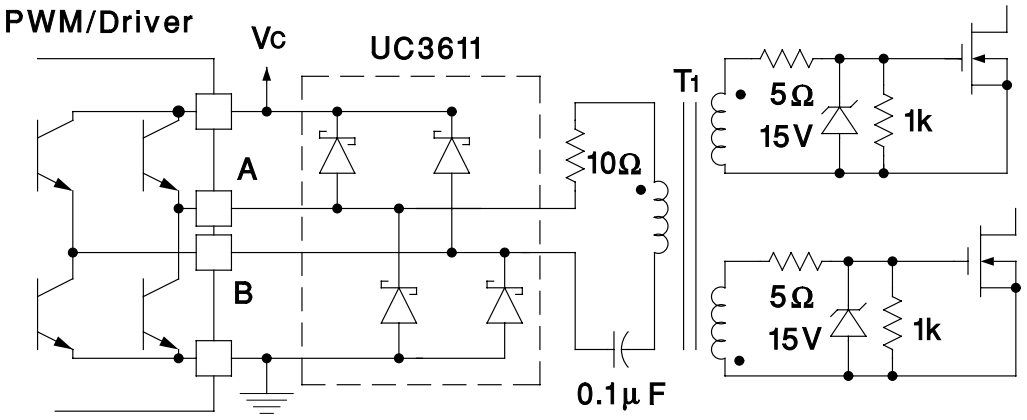


Figure 4. Transformer Coupled Drive Circuits

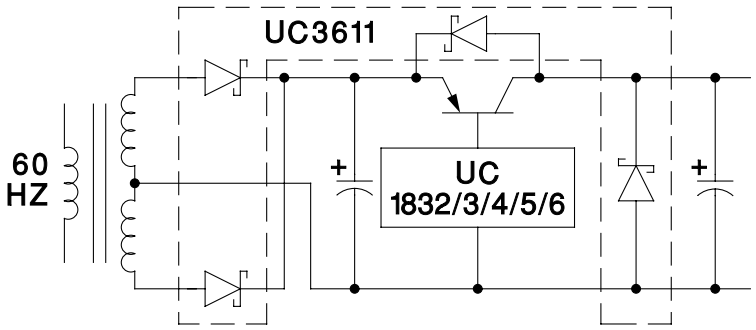


Figure 5. Linear Regulations

PACKAGING INFORMATION

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

(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) 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.

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