![TEXAS INSTRUMENTS logo]

DUAL SCHOTTKY DIODE BRIDGE

FEATURES

- **Monolithic Eight-Diode Array**
- **Exceptional Efficiency**
- **Low Forward Voltage**
- **Fast Recovery Time**
- **High Peak Current**
- **Small Size**

DESCRIPTION

This eight-diode array is designed for high-current, low duty-cycle applications typical of flyback voltage clamping for inductive loads. The dual bridge connection makes this device particularly applicable to bipolar driven stepper motors.

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-leaded plastic packages. The UC1610 in ceramic is designed for $-55°C$ to $125°C$ environments but with reduced peak current capability. The UC2610 in plastic and ceramic is designed for $-25°C$ to $125°C$ environments also with reduced peak current capability; while the UC3610 in plastic has higher current rating over a $0°C$ to $70°C$ temperature range.

AVAILABLE OPTIONS

$T_A = T_J$	Packaged Devices		
	SOIC Wide (DW)	DIL (J)	DIL (N)
$-55°C$ to $125°C$	UC1610DW	UC1610J	UC1610N
$-25°C$ to $125°C$	UC2610DW	UC2610J	UC2610N
$0°C$ to $70°C$	UC3610DW	UC3610J	UC3610N

THERMAL INFORMATION

PACKAGE	θ**ja**	θ**jc**
SOIC (DW) 16 pin	50 – 100[1]	27
DIP (J) 8 pin	125 – 160	20[2]
DIP (N) 8 pin	103[1]	50

NOTES: 1. Specified θja (junction-to-ambient) is for devices mounted to 5-in^2 FR4 PC board with one ounce copper where noted. When resistance range is given, lower values are for 5-in^2 aluminum PC board. Test PWB was 0.062 in thick and typically used 0.635-mm trace widths for power packages and 1.3-mm trace widths for non-power packages with a 100-mil x 100-mil probe land area at the end of each trace.
2. θjc data values stated were derived from MIL–STD–1835B. MIL–STD–1835B states that the baseline values shown are worst case (mean + 2s) for a 60-mil x 60-mil microcircuit device silicon die and applicable for devices with die sizes up to 14400 square mils. For device die sizes greater than 14400 square mils use the following values; dual-in-line, 11°C/W; flat pack, 10°C/W; pin grid array, 10°C/W.

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UC1610
UC3610

N OR J PACKAGE
TOP VIEW

DW PACKAGE
TOP VIEW
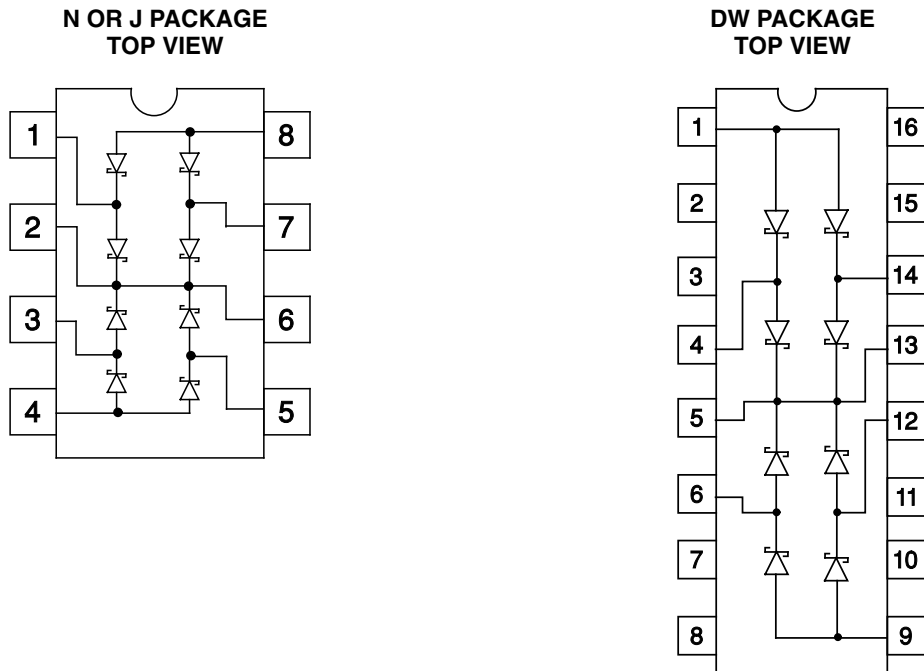
absolute maximum ratings over operating free-air temperature (unless otherwise noted)†‡

Peak inverse voltage (per diode)	50 V
Peak forward current	
UC1611	1 A
UC2610	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.

‡ Consult packaging section of databook 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	0.35	0.5	0.7	V
	$I_F = 1$ A	0.8	1.0	1.3	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		15		ns
Forward recovery	1 A forward to 1.1 V recovery		30		ns
Junction capacitance	$V_R = 5$ V		70		pF

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

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APPLICATION INFORMATION

REVERSE CURRENT
vs
VOLTAGE
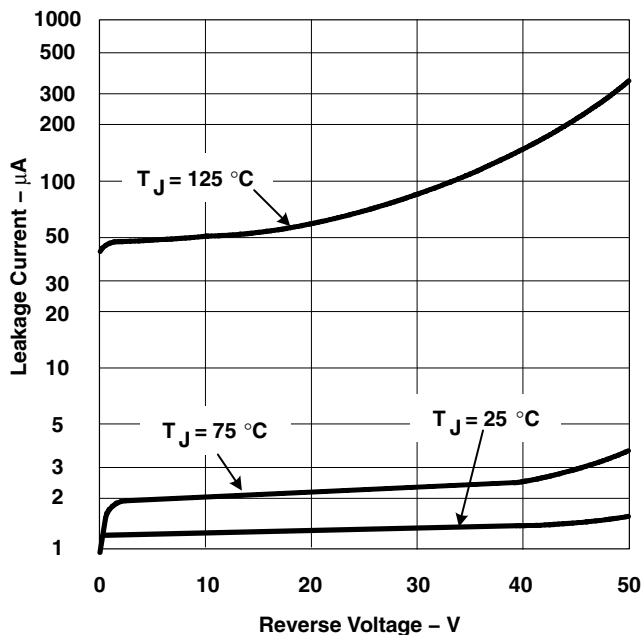
Figure 1

FORWARD CURRENT
vs
VOLTAGE
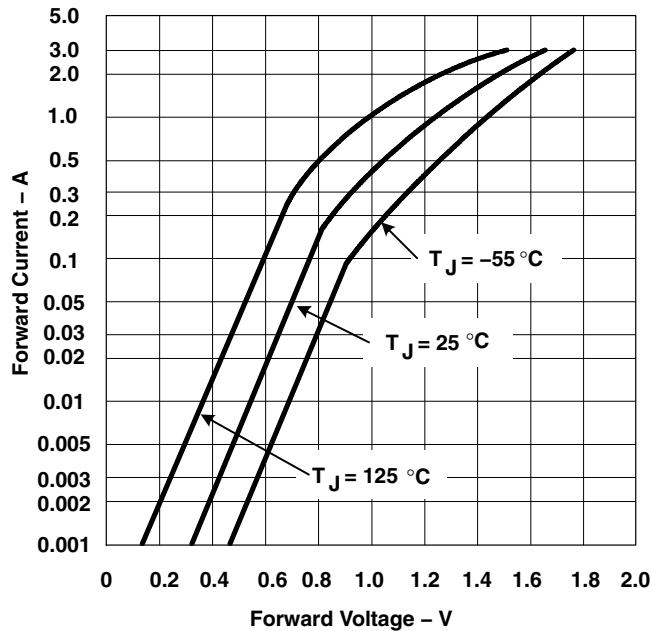

Figure 2

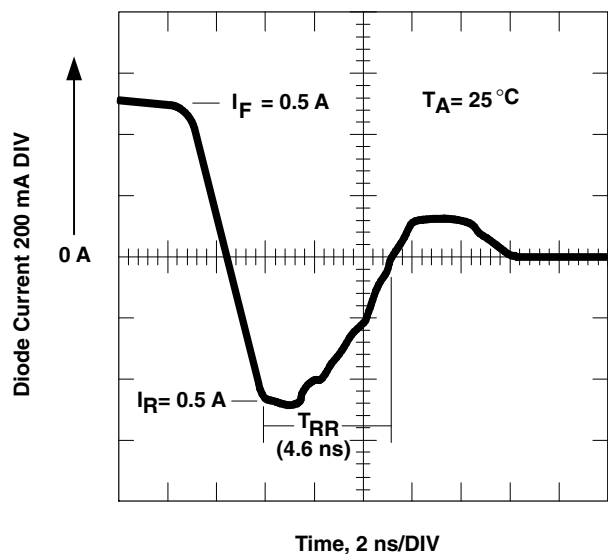### REVERSE RECOVERY CHARACTERISTICS

Figure 3

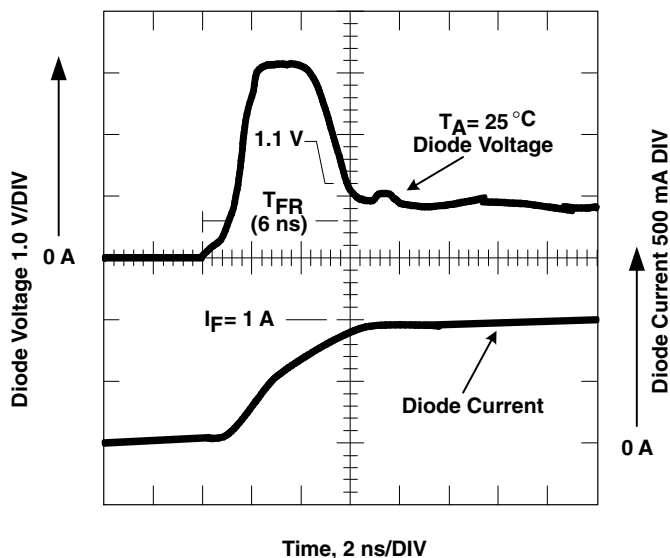### FORWARD RECOVERY CHARACTERISTICS

Figure 4

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)
UC2610N	Active	Production	PDIP (P) | 8	50 | TUBE	Yes	NIPDAU	N/A for Pkg Type	-40 to 85	UC2610N
UC2610N.A	Active	Production	PDIP (P) | 8	50 | TUBE	Yes	NIPDAU	N/A for Pkg Type	-40 to 85	UC2610N
UC3610DW	Active	Production	SOIC (DW) | 16	40 | TUBE	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3610DW
UC3610DW.A	Active	Production	SOIC (DW) | 16	40 | TUBE	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3610DW
UC3610DWTR	Active	Production	SOIC (DW) | 16	2000 | LARGE T&R	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3610DW
UC3610DWTR.A	Active	Production	SOIC (DW) | 16	2000 | LARGE T&R	Yes	NIPDAU	Level-2-260C-1 YEAR	0 to 70	UC3610DW
UC3610N	Active	Production	PDIP (P) | 8	50 | TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	UC3610N
UC3610N.A	Active	Production	PDIP (P) | 8	50 | TUBE	Yes	NIPDAU	N/A for Pkg Type	0 to 70	UC3610N

(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.

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TAPE AND REEL INFORMATION

REEL DIMENSIONS

Reel Diameter

Reel Width (W1)

TAPE DIMENSIONS

A0	Dimension designed to accommodate the component width
B0	Dimension designed to accommodate the component length
K0	Dimension designed to accommodate the component thickness
W	Overall width of the carrier tape
P1	Pitch between successive cavity centers

QUADRANT ASSIGNMENTS FOR PIN 1 ORIENTATION IN TAPE

Sprocket Holes

User Direction of Feed

Pocket Quadrants

*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Reel Diameter (mm)	Reel Width W1 (mm)	A0 (mm)	B0 (mm)	K0 (mm)	P1 (mm)	W (mm)	Pin1 Quadrant
UC3610DWTR	SOIC	DW	16	2000	330.0	16.4	10.75	10.7	2.7	12.0	16.0	Q1

TAPE AND REEL BOX DIMENSIONS

*All dimensions are nominal

Device	Package Type	Package Drawing	Pins	SPQ	Length (mm)	Width (mm)	Height (mm)
UC3610DWTR	SOIC	DW	16	2000	353.0	353.0	32.0

PACKAGE MATERIALS INFORMATION

TUBE

T - Tube height

L - Tube length

W - Tube width

B - Alignment groove width

*All dimensions are nominal

Device	Package Name	Package Type	Pins	SPQ	L (mm)	W (mm)	T (µm)	B (mm)
UC2610N	P	PDIP	8	50	506	13.97	11230	4.32
UC2610N.A	P	PDIP	8	50	506	13.97	11230	4.32
UC3610DW	DW	SOIC	16	40	507	12.83	5080	6.6
UC3610DW.A	DW	SOIC	16	40	507	12.83	5080	6.6
UC3610N	P	PDIP	8	50	506	13.97	11230	4.32
UC3610N.A	P	PDIP	8	50	506	13.97	11230	4.32

This image is a representation of the package family, actual package may vary.
Refer to the product data sheet for package details.

4224780/A

C

SEATING PLANE

⌒ 0.1 C

10.63 / 9.97 TYP

A

PIN 1 ID AREA

1

16

14X 1.27

10.5 / 10.1 NOTE 3

2X 8.89

8

9

16X 0.51 / 0.31

⊕ 0.25Ⓜ C A B

B

7.6 / 7.4 NOTE 4

2.65 MAX

0.33 / 0.10 TYP

SEE DETAIL A

0.25 GAGE PLANE

0° - 8°

1.27 / 0.40

(1.4)

0.3 / 0.1

DETAIL A TYPICAL

4220721/A   07/2016

NOTES:

1. All linear dimensions are in millimeters. Dimensions in parenthesis are for reference only. Dimensioning and tolerancing per ASME Y14.5M.
2. This drawing is subject to change without notice.
3. This dimension does not include mold flash, protrusions, or gate burrs. Mold flash, protrusions, or gate burrs shall not exceed 0.15 mm, per side.
4. This dimension does not include interlead flash. Interlead flash shall not exceed 0.25 mm, per side.
5. Reference JEDEC registration MS-013.

16X (2)

SYMM

SEE
DETAILS

1

16

16X (0.6)

SYMM

14X (1.27)

8

9

R0.05 TYP

(9.3)

LAND PATTERN EXAMPLE
SCALE:7X

METAL

SOLDER MASK
OPENING

SOLDER MASK
OPENING

METAL

0.07 MAX
ALL AROUND

0.07 MIN
ALL AROUND

NON SOLDER MASK
DEFINED

SOLDER MASK
DEFINED

SOLDER MASK DETAILS

4220721/A   07/2016

NOTES: (continued)

6. Publication IPC-7351 may have alternate designs.
7. Solder mask tolerances between and around signal pads can vary based on board fabrication site.

16X (2)

SYMM

1

16

16X (0.6)

SYMM

14X (1.27)

8

9

R0.05 TYP

(9.3)

SOLDER PASTE EXAMPLE
BASED ON 0.125 mm THICK STENCIL
SCALE:7X

4220721/A   07/2016

NOTES: (continued)

8. Laser cutting apertures with trapezoidal walls and rounded corners may offer better paste release. IPC-7525 may have alternate design recommendations.
9. Board assembly site may have different recommendations for stencil design.

P (R-PDIP-T8)   PLASTIC DUAL-IN-LINE PACKAGE

0.400 (10,16)
0.355 (9,02)

8   5

0.260 (6,60)
0.240 (6,10)

1   4

0.070 (1,78)
0.045 (1,14)

0.045 (1,14)
0.030 (0,76)

0.020 (0,51) MIN

0.200 (5,08) MAX

0.325 (8,26)
0.300 (7,62)

0.015 (0,38)

Gauge Plane

Seating Plane

0.125 (3,18) MIN

0.010 (0,25) NOM

0.100 (2,54)

0.430 (10,92)
MAX

0.021 (0,53)
0.015 (0,38)

⊕ 0.010 (0,25) Ⓜ

4040082/E 04/2010

NOTES: A.   All linear dimensions are in inches (millimeters).
         B.   This drawing is subject to change without notice.
         C.   Falls within JEDEC MS-001 variation BA.

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