NOT RECOMMENDED FOR NEW DESIGN
USE HBS410

Green

**TT410**

# 4A SURFACE MOUNT GLASS PASSIVATED BRIDGE RECTIFIER

## Product Summary (@$T_A$ = +25°C)

| $V_{RRM}$ (V) | $I_O$ (A) | $V_F$ (V) | $I_R$ (µA) |
|---|---|---|---|
| 1000 | 4 | 1.0 | 5 |

## Features and Benefits

- Glass Passivated Die Construction
- Compact, Thin Profile Package Design
- Low Forward Voltage Drop Improves Power Efficiency
- High Current and Surge Capability
- Reliable Robust Construction
- Ideal for SMT Manufacturing
- Rated at 1000V PRV
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**

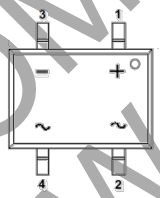
## Description and Applications

Suitable for AC to DC bridge full wave rectification for SMPS, LED lighting, adapter, battery charger, home appliances, office equipment, and telecommunication applications.

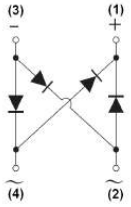
## Mechanical Data

- Case: TT
- Case Material: Molded Plastic.
  UL Flammability Classification Rating 94V-0
- Moisture Sensitivity: Level 1 per J-STD-020
- Terminals: Lead Free Plating (Matte Tin Finish).
  Solderable per MIL-STD-202, Method 208 e3
- Polarity: As Marked on Body
- Weight: 0.297 grams (Approximate)

Top View




Pin Diagram



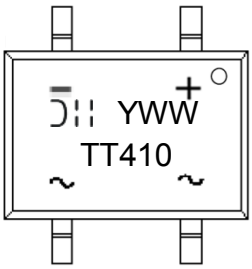

Internal Schematic

## Ordering Information (Note 4)

| Part Number | Compliance | Case | Packaging |
|---|---|---|---|
| TT410-13 | Commercial | TT | 1,500/Tape & Reel |

Notes:
1. EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant. All applicable RoHS exemptions applied.
2. See https://www.diodes.com/quality/lead-free/ for more information about Diodes Incorporated's definitions of Halogen- and Antimony-free, "Green" and Lead-free.
3. Halogen- and Antimony-free "Green" products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
4. For packaging details, go to our website at https://www.diodes.com/design/support/packaging/diodes-packaging/.

## Marking Information




TT410= Product Type Marking Code
= Manufacturers' Code Marking
YWW = Date Code Marking
Y = Last Digit of Year (ex: 7 = 2017)
WW = Week Code (01 to 53)

## Maximum Ratings (@$T_A$ = +25°C, unless otherwise specified.)

Single phase, half wave, 60Hz, resistive or inductive load.
For capacitive load, derate current by 20%.

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Peak Repetitive Reverse Voltage<br>Working Peak Reverse Voltage<br>DC Blocking Voltage | $V_{RRM}$<br>$V_{RWM}$<br>$V_R$ | 1,000 | V |
| RMS Reverse Voltage | $V_{R(RMS)}$ | 700 | V |
| Average Rectified Output Current (Note 5) @ $T_A$ = +25°C | $I_O$ | 4.0 | A |
| Non-Repetitive Peak Forward Surge Current, 8.3ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 120 | A |
| Non-Repetitive Peak Forward Surge Current, 1.0ms<br>Single Half Sine-Wave Superimposed on Rated Load | $I_{FSM}$ | 240 | A |
| $I^2t$ Rating for Fusing (1ms < t < 8.3ms) | $I^2t$ | 59 | $A^2S$ |

## Thermal Characteristics

| Characteristic | Symbol | Value | Unit |
|---|---|---|---|
| Typical Thermal Resistance, Junction to Ambient (Note 5) (Per Element) | $R_{\theta JA}$ | 13 | °C/W |
| Typical Thermal Resistance, Junction to Lead (Per Element) | $R_{\theta JL}$ | 8 | °C/W |
| Typical Thermal Resistance, Junction to Case (Per Element) | $R_{\theta JC}$ | 3 | °C/W |
| Operating and Storage Temperature Range | $T_J$, $T_{STG}$ | -55 to +150 | °C |

## Electrical Characteristics (@$T_A$ = +25°C, unless otherwise specified.)

| Characteristic | Symbol | Min | Typ | Max | Unit | Test Condition |
|---|---|---|---|---|---|---|
| Reverse Breakdown Voltage (Note 6) | $V_{(BR)R}$ | 1,000 | — | — | V | $I_R$ = 10μA |
| Forward Voltage (Per Element) | $V_F$ | —<br>— | 0.91<br>0.80 | 1.0<br>— | V | $I_F$ = 2A, $T_A$ = +25°C<br>$I_F$=2A, $T_A$ = +125°C |
| Leakage Current (Note 6) (Per Element) | $I_R$ | —<br>— | 0.15<br>55 | 5<br>500 | μA | $V_R$ = 1,000V, $T_A$ = +25°C<br>$V_R$ = 1,000V, $T_A$ = +125°C |
| Total Capacitance (Per Element) | $C_T$ | — | 40 | — | pF | $V_R$ = 4V, f = 1.0MHz |

Notes: 5. Device mounted on 15mmx12mmx1.6mm AL Pad attached on 100mmx75mmx27mm Fin heatsink. Thermal resistance test performed in accordance with JESD-51.
6. Short duration pulse test used to minimize self-heating effect.

FIG.1- FORWARD CURRENT DERATING CURVE

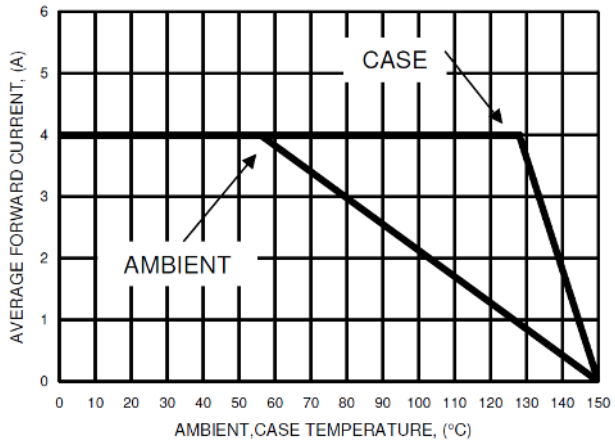



FIG.2- MAXIMUM NON-REPETITIVE SURGE CURRENT

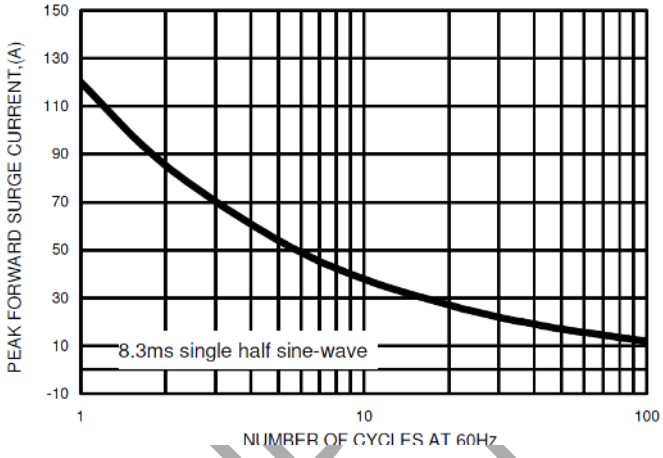



FIG.3- TYPICAL FORWARD CHARACTERISTICS

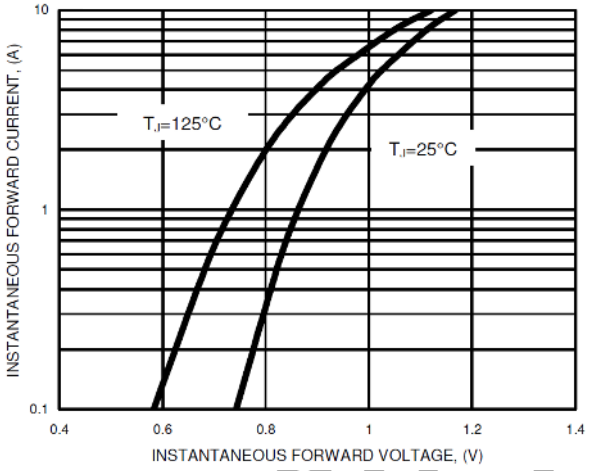



FIG.4- TYPICAL JUNCTION CAPACITANCE

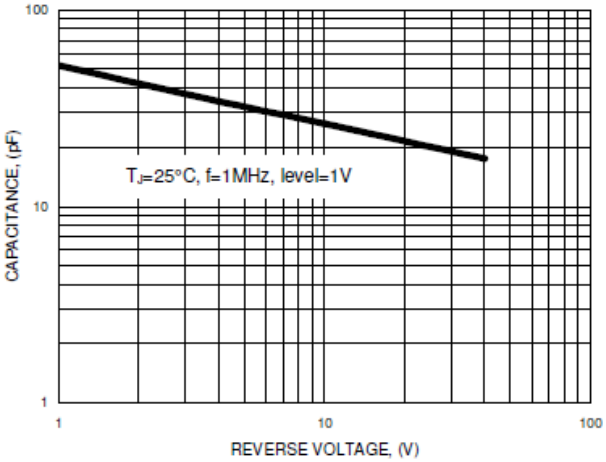
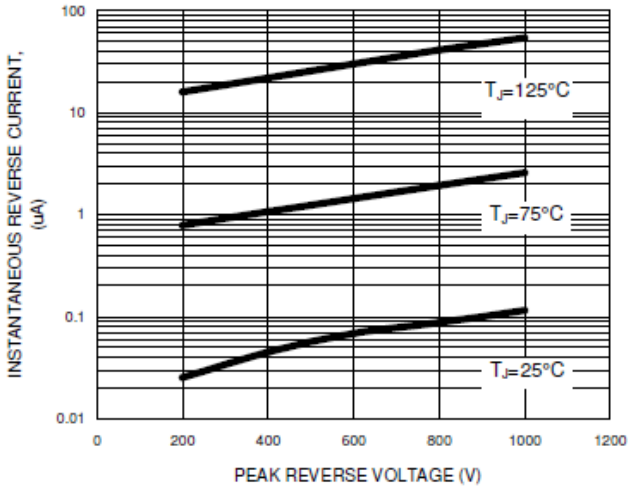



FIG.5- TYPICAL REVERSE CHARACTERISTICS



## Package Outline Dimensions

Please see http://www.diodes.com/package-outlines.html for the latest version.

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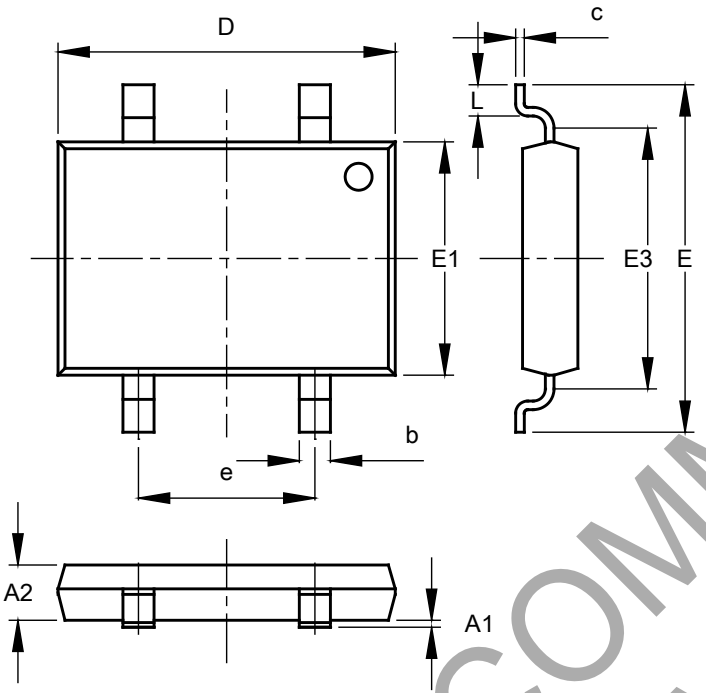


| TT | | | |
|---|---|---|---|
| **Dim** | **Min** | **Max** | **TYP** |
| **A1** | 0.10 | 0.20 | -- |
| **A2** | 1.40 | 1.60 | -- |
| **b** | 0.70 | 0.90 | -- |
| **c** | 0.15 | 0.35 | -- |
| **D** | 9.45 | 9.75 | -- |
| **E** | 9.75 | 10.05 | -- |
| **E1** | 6.30 | 6.75 | -- |
| **E3** | 7.85 | 8.15 | -- |
| **e** | 4.90 | 5.10 | -- |
| **L** | 0.45 | 0.95 | -- |
| **All Dimensions in mm** | | | |



## Suggested Pad Layout

Please see http://www.diodes.com/package-outlines.html for the latest version.

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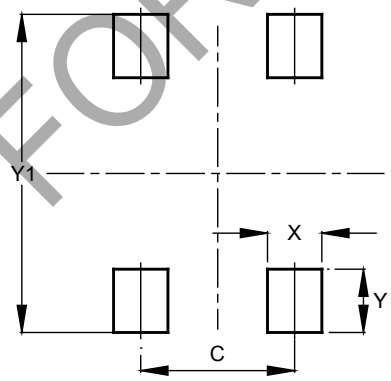


| Dimensions | Value (in mm) |
|---|---|
| **C** | 5.00 |
| **X** | 1.80 |
| **Y** | 2.10 |
| **Y1** | 11.70 |

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