4.0A 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	4.0	0.98	5

Features and Benefits

- Glass Passivated Die Construction
- Miniature Surface Mount Package Saves Space on PC Boards
- High Current Capability
- High Forward Current Capability up to 4.0A
- High Heat Dissipation Capability
- Low Profile Package
- Low Forward Voltage Drop
- **Lead-Free Finish; RoHS Compliant (Notes 1 & 2)**
- **Halogen and Antimony Free. "Green" Device (Note 3)**
- **For automotive applications requiring specific change control (i.e. parts qualified to AEC-Q100/101/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please contact us or your local Diodes representative. https://www.diodes.com/quality/product-definitions/**

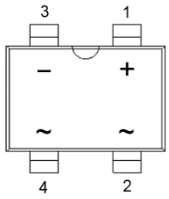
Description and Applications

General purpose use in AC-to-DC bridge full wave rectification for Fast Charging, Switching Power Supply, USB PD, Adapter and 3-in-1 DTV Power Board, etc.

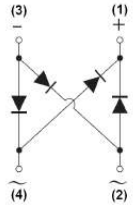
Mechanical Data

- Case: HBS
- 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: 0.384grams (Approximate)

Top View



Pin Diagram



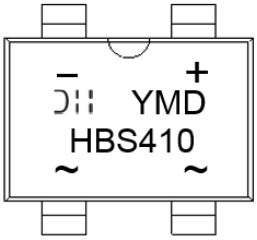
Internal Schematic

Ordering Information (Note 4)

Part Number	Compliance	Case	Packaging
HBS410-13	Commercial	HBS	2,500/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



HBS410 = Product Type Marking Code
YM = Manufacturers' Code Marking
YMD = Date Code Marking
Y = Last Digit of Year (ex: 0 = 2020)
M = See Month/Code Table Below
D = Day 1 to 9 = 1 to 9; Day 10 to 31 = A to V

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Code	1	2	3	4	5	6	7	8	9	O	N	D

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 Working Peak Reverse Voltage DC Blocking Voltage	V_{RRM} V_{RWM} 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 Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	120	A
Non-Repetitive Peak Forward Surge Current, 1.0ms Single Half Sine-Wave Superimposed on Rated Load	I_{FSM}	240	A
I^2t Rating for Fusing (1ms < t < 8.3ms)	I^2t	60	A^2S

Thermal Characteristics

Characteristic	Symbol	Value	Unit
Typical Thermal Resistance, Junction to Ambient (Note 5) (Per Element)	$R_{\theta JA}$	75	°C/W
Typical Thermal Resistance, Junction to Lead (Per Element)	$R_{\theta JL}$	21	°C/W
Typical Thermal Resistance, Junction to Case (Per Element)	$R_{\theta JC}$	13	°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	— — —	0.84 0.88 0.93	0.89 0.93 0.98	V	I_F = 1A, T_A = +25°C I_F = 2A, T_A = +25°C I_F = 4A, T_A = +25°C
Leakage Current (Note 6) (Per Element)	I_R	— —	0.15 20	5 100	μA	V_R = 1,000V, T_A = +25°C 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.

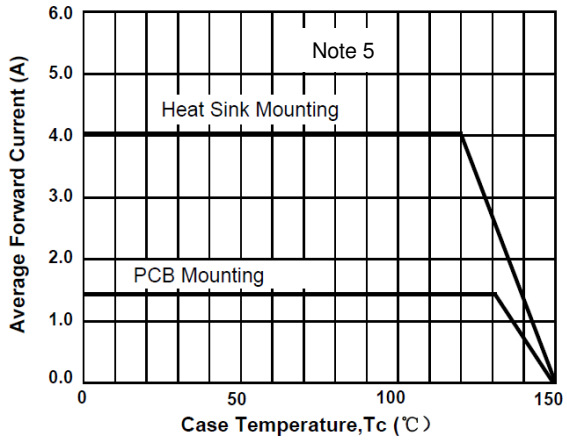


Figure 1. Forward Current Derating

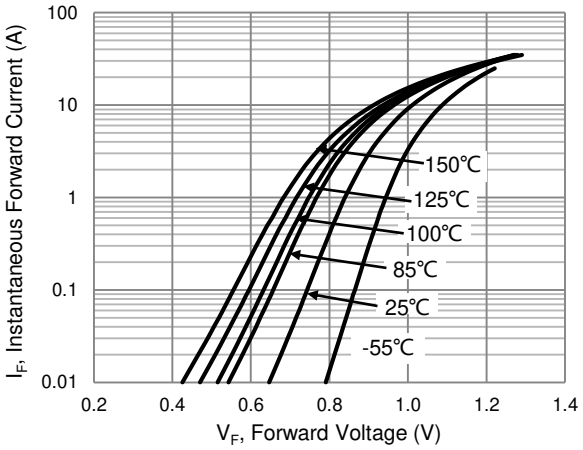


Figure 2. Typical Forward Characteristics

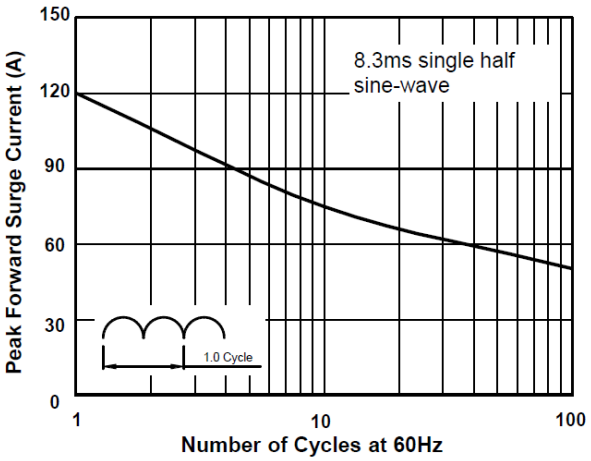


Figure 3. Maximum Non-Repetitive Forward Surge Current

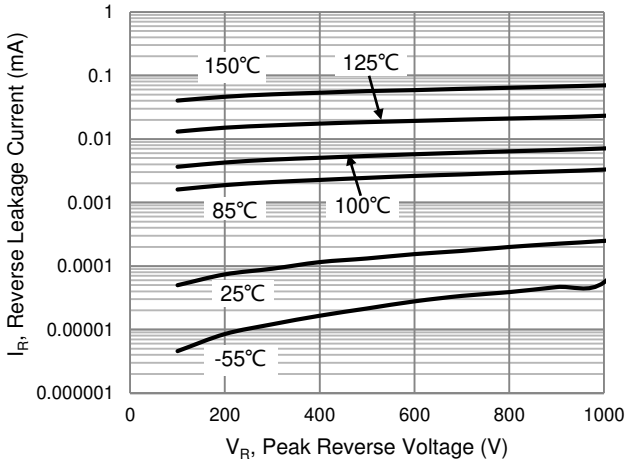


Figure 4. Typical Reverse Characteristics

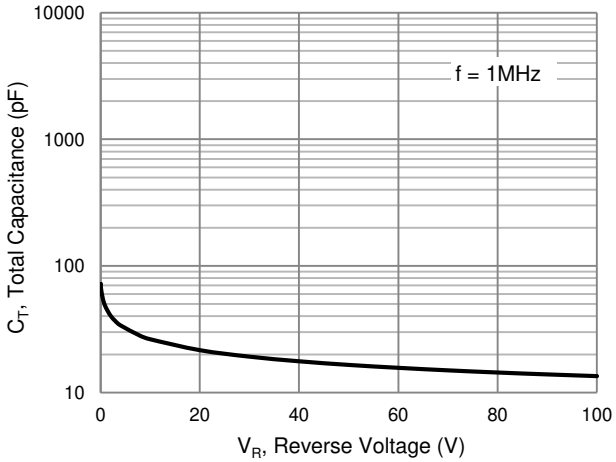
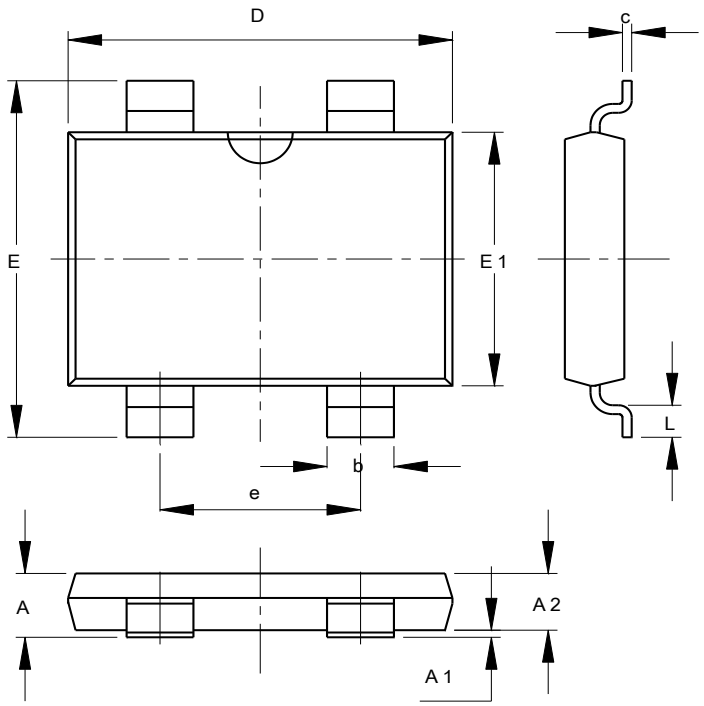


Figure 5. Typical Total Capacitance

Package Outline Dimensions

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

HBS

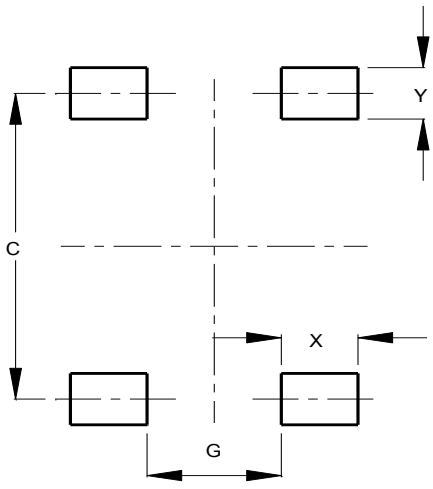


HBS			
Dim	**Min**	**Max**	**Typ**
A	1.45	1.80	--
A1	0.00	0.20	--
A2	1.45	1.65	--
b	1.70	1.90	--
c	0.15	0.35	--
D	10.05	10.35	--
E	9.75	10.05	--
E1	6.85	7.15	--
e	5.25	5.60	--
L	0.45	0.95	--
All Dimensions in mm			

Suggested Pad Layout

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

HBS



Dimensions	Value (in mm)
C	8.92
G	3.50
X	2.00
Y	1.50

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