



## Description

DIODES™ AH337 is a unipolar Hall-Effect sensor for contactless switching applications. The device includes an on-chip Hall voltage generator for magnetic sensing, an amplifier that amplifies the Hall voltage, a Schmitt trigger to provide switching hysteresis for noise rejection, and an open-collector output. The band-gap regulator allows a wide operating voltage range.

When the magnetic flux density (**B**) is larger than operate point (**Bop**), output is switched on (OUT pin is pulled low). The output state is held on until a magnetic flux density falls below Brp. When **B** is less than Brp, the output is switched off.

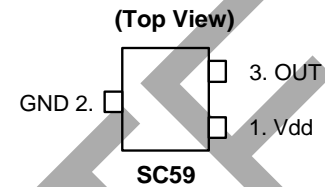
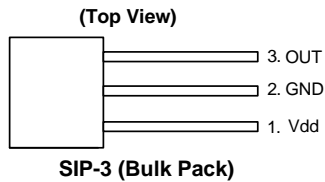
The AH337 is available in SIP-3 (Ammo Pack), SIP-3 (Bulk Pack) and SC59 packages.

## Features

- Unipolar Hall-Effect Sensor
- 4.2V to 28V DC Operating Voltage
- Temperature Compensation
- Open Drain Pre-Driver
- 25mA Maximum Output Sink Current
- Operating Temperature: -40°C to +125°C
- SIP-3 (Ammo Pack), SIP-3 (Bulk Pack) and SC59 Packages (SC59 is Commonly Known as SOT23 in Asia)
- **Totally Lead-Free & Fully 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-Q100/101/104/200, PPAP capable, and manufactured in IATF 16949 certified facilities), please [contact us](#) or your local Diodes representative. <https://www.diodes.com/quality/product-definitions/>**

- Notes:
1. No purposely added lead. Fully EU Directive 2002/95/EC (RoHS), 2011/65/EU (RoHS 2) & 2015/863/EU (RoHS 3) compliant.
  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.

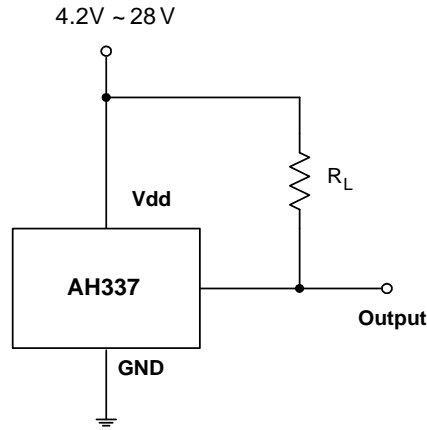
## Pin Assignments



## Applications

- VCD/DVD loaders, CD/DVD ROM
- Cover detectors
- Speed measurements
- Home appliances
- Home safeties

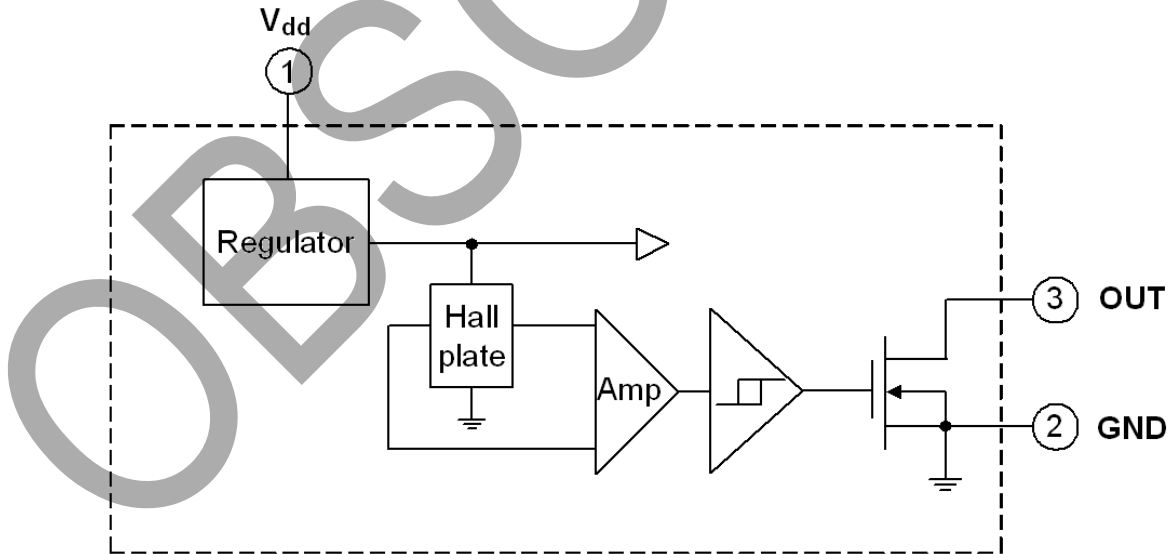
**Typical Applications Circuit**



**Pin Descriptions**

Pin Name	P/I/O	Pin Number	Description
Vdd	P	1	Positive Power Supply
GND	P	2	Ground
OUT	O	3	Output Pin

**Functional Block Diagram**



**Absolute Maximum Ratings** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Symbol	Characteristics	Values	Unit
$V_{dd}$	Supply Voltage	30	V
B	Magnetic Flux Density	Unlimited	—
$V_{DS}$	Output "OFF" Voltage	30	V
$I_d$	Output "ON" Current	Continuous	25
$T_S$	Storage Temperature Range	-65 to +150	$^\circ\text{C}$
$T_{J(\text{MAX})}$	Maximum Junction Temperature	+150	$^\circ\text{C}$
$P_D$	Package Power Dissipation	SIP-3 (Ammo Pack)	550
		SIP-3 (Bulk Pack)	550
		SC59	230

**Recommended Operating Conditions** (@ $T_A = +25^\circ\text{C}$ , unless otherwise specified.)

Symbol	Parameter	Conditions	Min	Max	Unit
$V_{dd}$	Supply Voltage (Note 4)	Operating	4.2	28	V
$T_A$	Operating Ambient Temperature	Operating	-40	+125	$^\circ\text{C}$

Note: 4. The output of IC will be switched after the supply voltage is over 4.2V, but the magnetic characteristics won't be normal until the supply is over 4.5V.

**Electrical Characteristics** (@ $T_A = +25^\circ\text{C}$ ,  $V_{dd} = 12\text{V}$ , unless otherwise specified.)

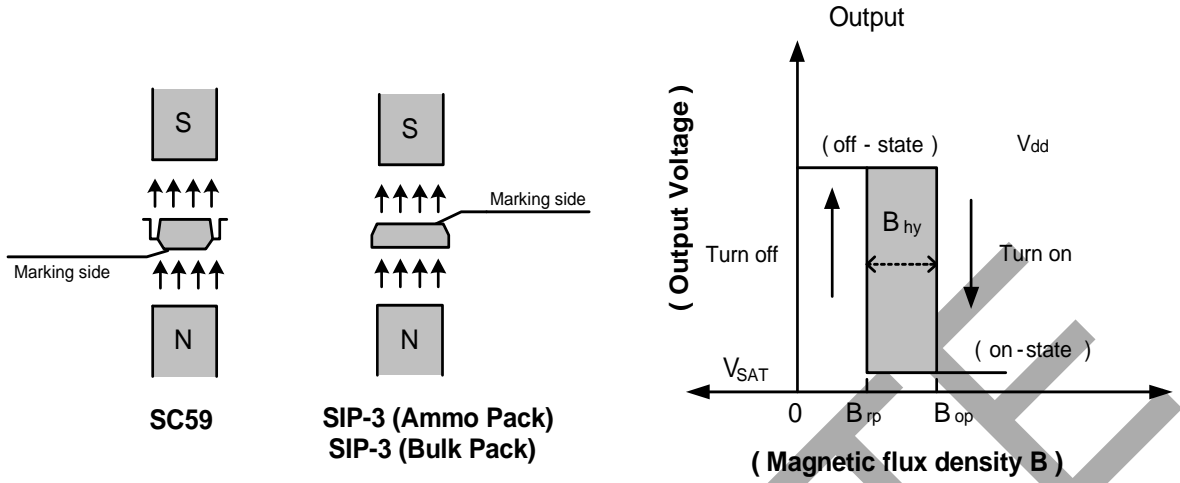
Symbol	Characteristic	Test Conditions	Min	Typ	Max	Unit
$V_{DS(\text{SAT})}$	Output Saturation Voltage	$I_{\text{OUT}} = 10\text{mA}$ , $B > B_{\text{op}}$	—	300	400	mV
$I_{\text{off}}$	Output Leakage Current	$B < B_{\text{rp}}$	—	< 0.1	10	$\mu\text{A}$
$I_{\text{dd}}$	Supply Current	Output Open	—	2	4	mA

**Magnetic Characteristics** ( $T_A = +25^\circ\text{C}$ ,  $V_{dd} = 4.5\text{V}$  to  $28\text{V}$ ) (Note 5)

Symbol	Parameter	Min	Typ	Max	Unit
Bops (South Pole to Brand Side)	Operation Point	90	120	150	Gauss
Brps (South Pole to Brand Side)	Release Point	30	60	90	Gauss
Bhy ( $ B_{\text{opx}}  -  B_{\text{rpx}} $ )	Hysteresis	—	60	—	Gauss

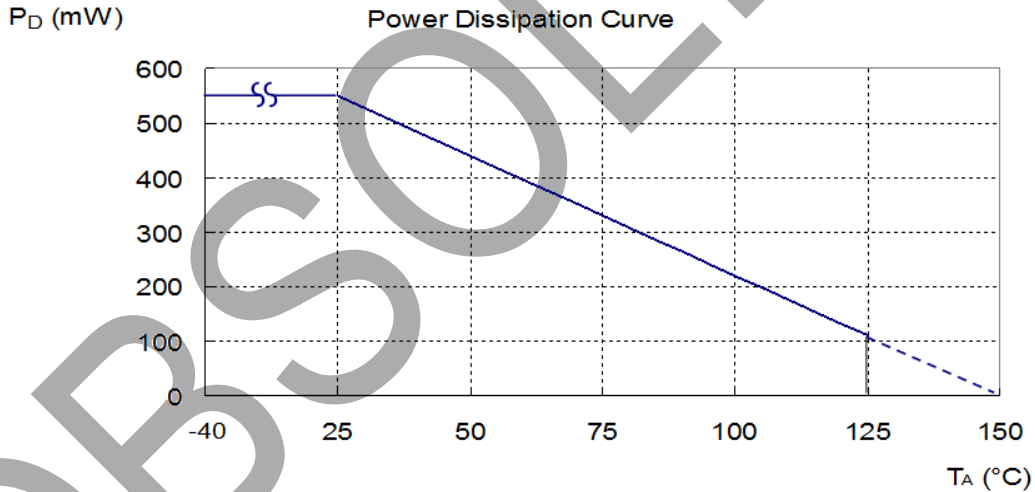
Note: 5. Magnetic characteristics may vary with supply voltage, operating temperature and after soldering.

**Performance Characteristics**



(1) SIP-3 (Ammo Pack), SIP-3 (Bulk Pack)

$T_A$ (°C)	+25	+50	+60	+70	+80	+85	+90	+95	+100	+105	+110	+115	+120	+125	+130	+135	+140	+150
$P_D$ (mW)	550	440	396	352	308	286	264	242	220	198	176	154	132	110	88	66	44	0

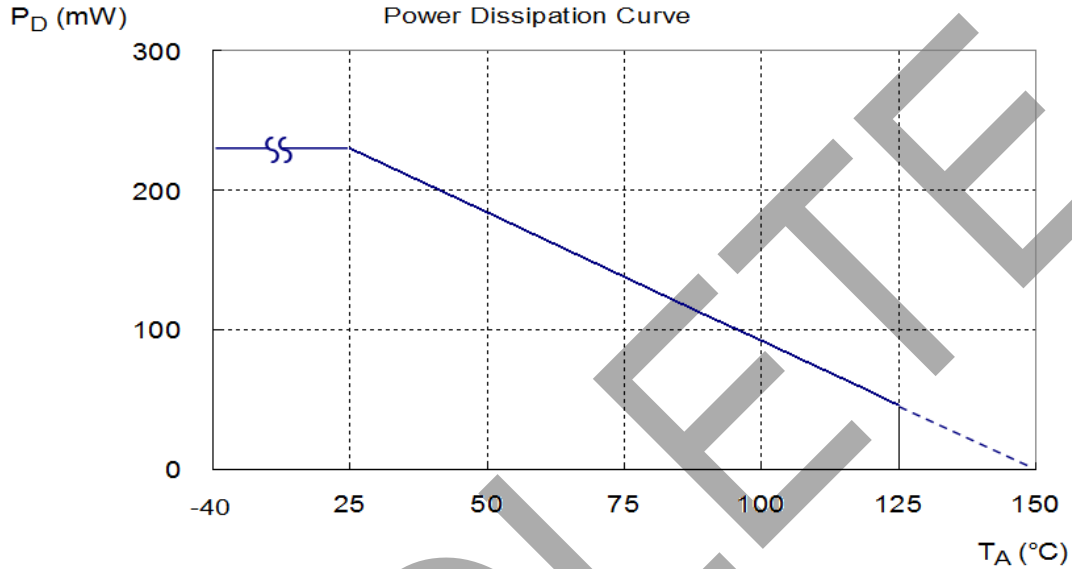


OBSOLETE - PART DISCONTINUED

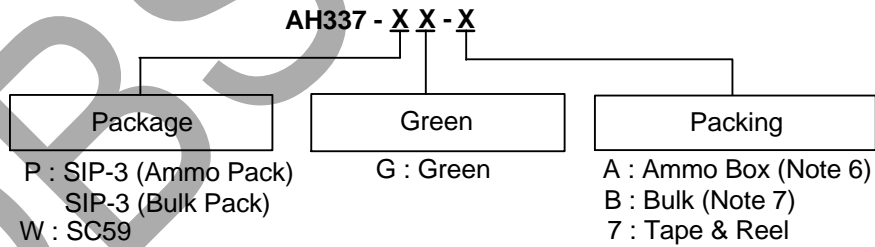
**Performance Characteristics** (continued)

(2) SC59 (Commonly Known as SOT23 in Asia)

T <sub>A</sub> (°C)	+25	+50	+60	+70	+80	+85	+90	+100	+110	+120	+130	+140	+150
P <sub>D</sub> (mW)	230	184	166	147	129	120	110	92	74	55	37	18	0



**Ordering Information**



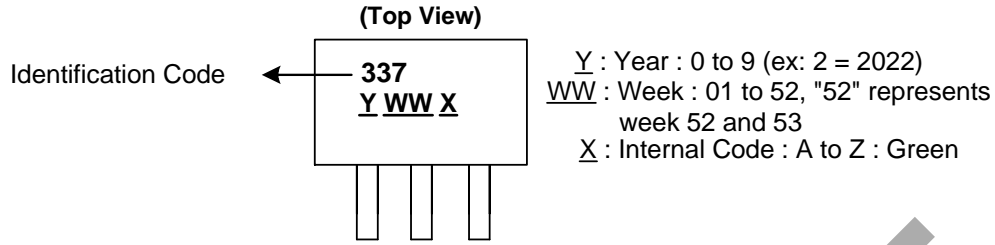
Part Number	Part Number Suffix	Package Code	Package (Note 8)	Packing	
				Qty.	Carrier
AH337-PG-A	-A	P	SIP-3 (Ammo Pack)	4000	Box
AH337-PG-B	-B	P	SIP-3 (Bulk Pack)	1000	Bulk
AH337-WG-7	-7	W	SC59	3000	7" Tape & Reel

Notes: 6. Ammo Box is for SIP-3 spread lead.  
7. Bulk is for SIP-3 straight lead.  
8. Pad layout as shown on Diodes Incorporated's suggested pad layout, which can be found on website at <http://www.diodes.com/package-outlines.html>.

OBSOLETE - PART DISCONTINUED

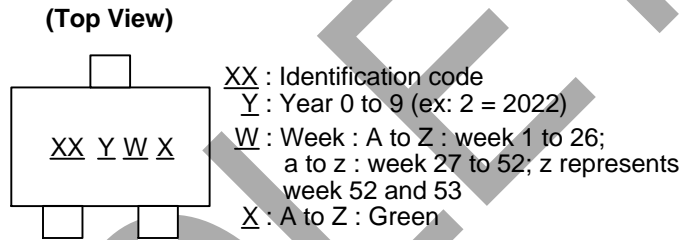
**Marking Information**

(1) Package Types: SIP-3 (Ammo Pack), SIP-3 (Bulk Pack)



Part Number	Package	Identification Code
AH337-PG-A	SIP-3 (Ammo Pack)	337
AH337-PG-B	SIP-3 (Bulk Pack)	337

(2) Package Type: SC59



Part Number	Package	Identification Code
AH337-WG-7	SC59	P1

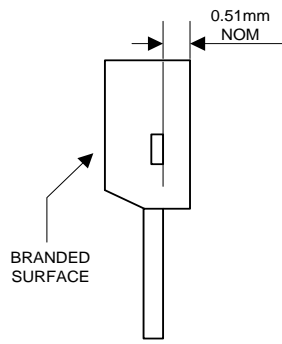
OBSOLETE - PART DISCONTINUED

OBSOLETE

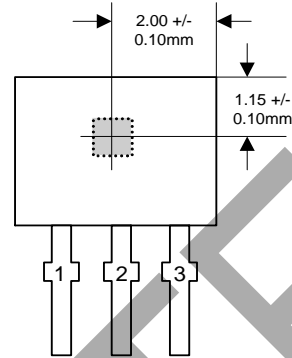
**Package Outline Dimensions**

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

**(1) Package Type: SIP-3 (Bulk Pack)**

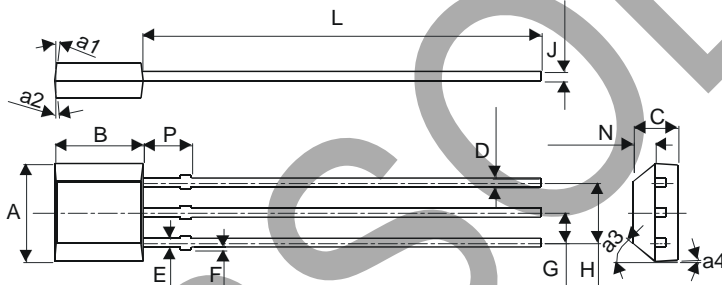


Active Area Depth



Sensor Location

**Package Dimensions**



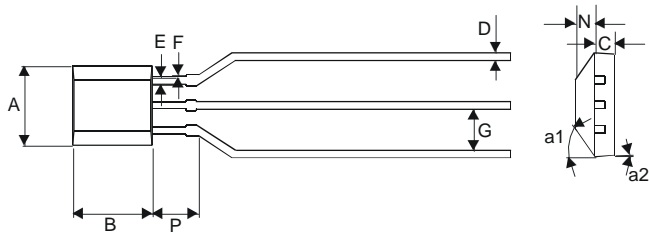
SIP-3 (Bulk Pack)		
Dim	Min	Max
A	3.9	4.3
a1	5° Typ	
a2	5° Typ	
a3	45° Typ	
a4	3° Typ	
B	2.8	3.2
C	1.40	1.60
D	0.33	0.432
E	0.40	0.508
F	0	0.2
G	1.24	1.30
H	2.51	2.57
J	0.35	0.43
L	14.0	15.0
N	0.63	0.84
P	1.55	-
All Dimensions in mm		

OBSOLETE - PART DISCONTINUED

**Package Outline Dimensions** (continued)

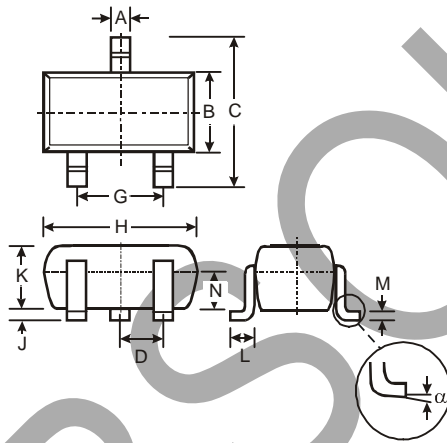
Please see <http://www.diodes.com/package-outlines.html> for the latest version.

(2) Package Type: SIP-3 (Ammo Pack)

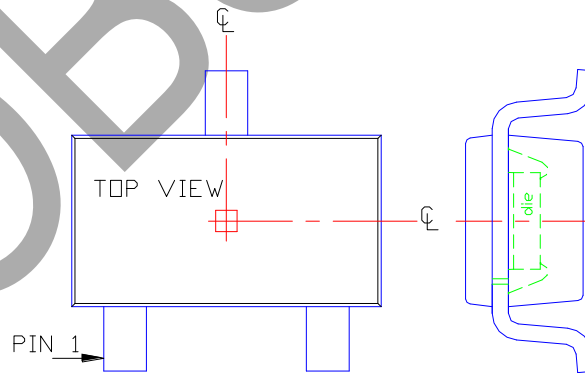


SIP-3 (Ammo Pack)		
Dim	Min	Max
A	3.9	4.3
a1	45° Typ	
a2	3° Typ	
B	2.8	3.2
C	1.40	1.60
D	0.35	0.41
E	0.43	0.48
F	0	0.2
G	2.4	2.9
N	0.63	0.84
P	1.55	-
All Dimensions in mm		

(3) Package Type: SC59 (Commonly Known as SOT23 in Asia)



SC59			
Dim	Min	Max	Typ
A	0.35	0.50	0.38
B	1.50	1.70	1.60
C	2.70	3.00	2.80
D	-	-	0.95
G	-	-	1.90
H	2.90	3.10	3.00
J	0.013	0.10	0.05
K	1.00	1.30	1.10
L	0.35	0.55	0.40
M	0.10	0.20	0.15
N	0.70	0.80	0.75
α	0°	8°	-
All Dimensions in mm			



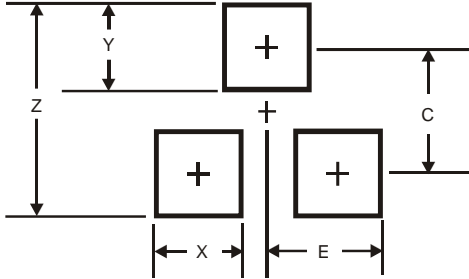
CL = Package Center Line

OBSOLETE - PART DISCONTINUED

**Suggested Pad Layout**

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

(1) Package Type: SC59 (Commonly Known as SOT23 in Asia)



Dimensions	Value (in mm)
Z	3.4
X	0.8
Y	1.0
C	2.4
E	1.35

OBSOLETE - PART DISCONTINUED

OBSOLETE

**IMPORTANT NOTICE**

1. DIODES INCORPORATED (Diodes) AND ITS SUBSIDIARIES MAKE NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH REGARDS TO ANY INFORMATION CONTAINED IN THIS DOCUMENT, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE OR NON-INFRINGEMENT OF THIRD PARTY INTELLECTUAL PROPERTY RIGHTS (AND THEIR EQUIVALENTS UNDER THE LAWS OF ANY JURISDICTION).
2. The Information contained herein is for informational purpose only and is provided only to illustrate the operation of Diodes' products described herein and application examples. Diodes does not assume any liability arising out of the application or use of this document or any product described herein. This document is intended for skilled and technically trained engineering customers and users who design with Diodes' products. Diodes' products may be used to facilitate safety-related applications; however, in all instances customers and users are responsible for (a) selecting the appropriate Diodes products for their applications, (b) evaluating the suitability of Diodes' products for their intended applications, (c) ensuring their applications, which incorporate Diodes' products, comply the applicable legal and regulatory requirements as well as safety and functional-safety related standards, and (d) ensuring they design with appropriate safeguards (including testing, validation, quality control techniques, redundancy, malfunction prevention, and appropriate treatment for aging degradation) to minimize the risks associated with their applications.
3. Diodes assumes no liability for any application-related information, support, assistance or feedback that may be provided by Diodes from time to time. Any customer or user of this document or products described herein will assume all risks and liabilities associated with such use, and will hold Diodes and all companies whose products are represented herein or on Diodes' websites, harmless against all damages and liabilities.
4. Products described herein may be covered by one or more United States, international or foreign patents and pending patent applications. Product names and markings noted herein may also be covered by one or more United States, international or foreign trademarks and trademark applications. Diodes does not convey any license under any of its intellectual property rights or the rights of any third parties (including third parties whose products and services may be described in this document or on Diodes' website) under this document.
5. Diodes' products are provided subject to Diodes' Standard Terms and Conditions of Sale (<https://www.diodes.com/about/company/terms-and-conditions/terms-and-conditions-of-sales/>) or other applicable terms. This document does not alter or expand the applicable warranties provided by Diodes. Diodes does not warrant or accept any liability whatsoever in respect of any products purchased through unauthorized sales channel.
6. Diodes' products and technology may not be used for or incorporated into any products or systems whose manufacture, use or sale is prohibited under any applicable laws and regulations. Should customers or users use Diodes' products in contravention of any applicable laws or regulations, or for any unintended or unauthorized application, customers and users will (a) be solely responsible for any damages, losses or penalties arising in connection therewith or as a result thereof, and (b) indemnify and hold Diodes and its representatives and agents harmless against any and all claims, damages, expenses, and attorney fees arising out of, directly or indirectly, any claim relating to any noncompliance with the applicable laws and regulations, as well as any unintended or unauthorized application.
7. While efforts have been made to ensure the information contained in this document is accurate, complete and current, it may contain technical inaccuracies, omissions and typographical errors. Diodes does not warrant that information contained in this document is error-free and Diodes is under no obligation to update or otherwise correct this information. Notwithstanding the foregoing, Diodes reserves the right to make modifications, enhancements, improvements, corrections or other changes without further notice to this document and any product described herein. This document is written in English but may be translated into multiple languages for reference. Only the English version of this document is the final and determinative format released by Diodes.
8. Any unauthorized copying, modification, distribution, transmission, display or other use of this document (or any portion hereof) is prohibited. Diodes assumes no responsibility for any losses incurred by the customers or users or any third parties arising from any such unauthorized use.
9. This Notice may be periodically updated with the most recent version available at <https://www.diodes.com/about/company/terms-and-conditions/important-notice>

DIODES is a trademark of Diodes Incorporated in the United States and other countries.  
The Diodes logo is a registered trademark of Diodes Incorporated in the United States and other countries.  
© 2022 Diodes Incorporated. All Rights Reserved.

[www.diodes.com](http://www.diodes.com)

## Looking for pricing, stock, or lifecycle information?

Click below to explore more details on WIN SOURCE:

- ⊖ [View AH337-WG-7 on WIN SOURCE](#)
- ⊖ [Diodes Incorporated Information](#)

## Optimize Your Supply Chain with WIN SOURCE Solutions

- ✓ Global Sourcing Solution
- ✓ Obsolete Management
- ✓ Cost Control Management
- ✓ Shortage Management
- ✓ Alternative Solution
- ✓ Excess Inventory Management