

Features

- Micropower operation
- Operation with magnetic field of either north or south pole (omnipolar)
- 2.5V to 5.5V battery operation
- Chopper stabilized
 - Superior temperature stability
 - Extremely Low Switch-Point Drift
 - Insensitive to Physical Stress
- Good RF noise immunity
- -40°C to 85°C operating temperature
- SC59/ Low profile DFN2020, DFN2015 packages
- ESD (HBM) > 5KV for DFN2020-6, DFN2020-3 and DFN2015H4-3
> 6KV for SC59
- SC59 (commonly known as SOT23 in Asia), DFN2020-6, DFN2020-3 and DFN2015H4-3: Available in "Green" Molding Compound (No Br, Sb)
- Lead Free Finish/ RoHS Compliant (Note 1)

General Description

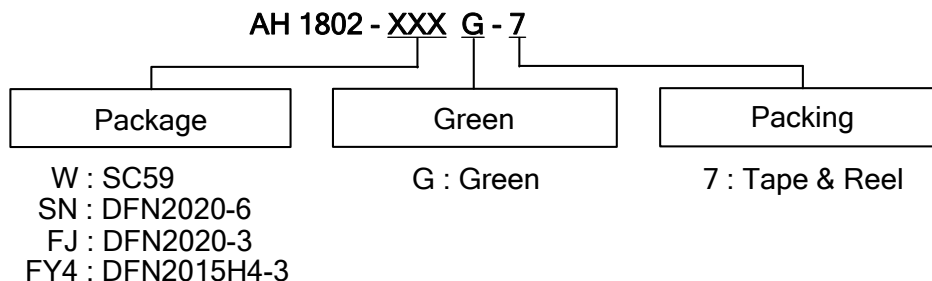
AH1802 is comprised of two Hall effect plates and an open-drain output driver, mainly designed for battery-operation, hand-held equipment (such as Cellular and Cordless Phone, PDA). The total power consumption in normal operation is typically 24μW with a 3V power source.

Either north or south pole of sufficient strength will turn the output on. The output will be turned off under no magnetic field. While the magnetic flux density (**B**) is larger than operating point (**Bop**), the output will be turned on (low), the output is held until **B** is lower than release point (**Brp**), then turned off.

Applications

- Cover switch in clam-shell cellular phones
- Cover switch in Notebook PC/PDA
- Contact-less switch in consumer products

Ordering Information

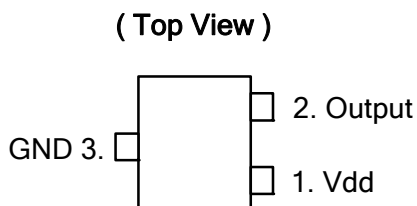


Device	Package Code	Packaging (Note 2)	7" Tape and Reel	
			Quantity	Part Number Suffix
 AH1802-WG-7	W	SC59	3000/Tape & Reel	-7
 AH1802-SNG-7	SN	DFN2020-6	3000/Tape & Reel	-7
 AH1802-FJG-7	FJ	DFN2020-3	3000/Tape & Reel	-7
 AH1802-FY4G-7	FY4	DFN2015H4-3	3000/Tape & Reel	-7

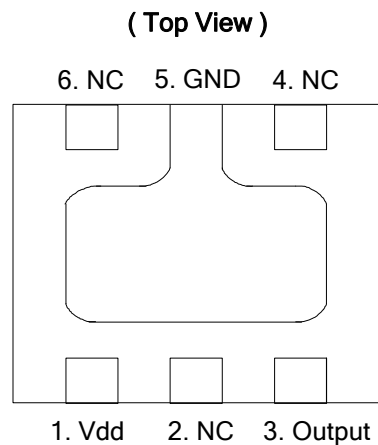
Notes: 1. EU Directive 2002/95/EC (RoHS). All applicable RoHS exemptions applied. Please visit our website at http://www.diodes.com/products/lead_free.html.
2. Pad layout as shown on Diodes Inc. suggested pad layout document AP02001, which can be found on our website at <http://www.diodes.com/datasheets/ap02001.pdf>.

Pin Assignments

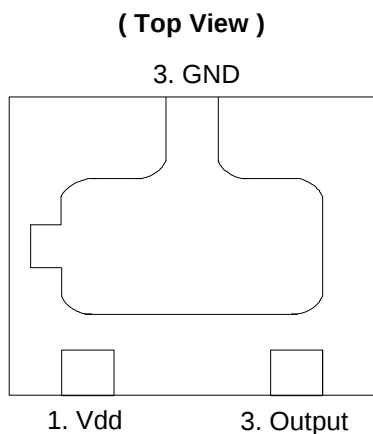
(1) SC59



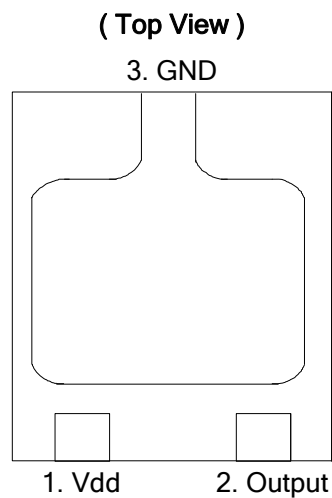
(2) DFN2020-6



(3) DFN2020-3



(4) DFN2015H4-3

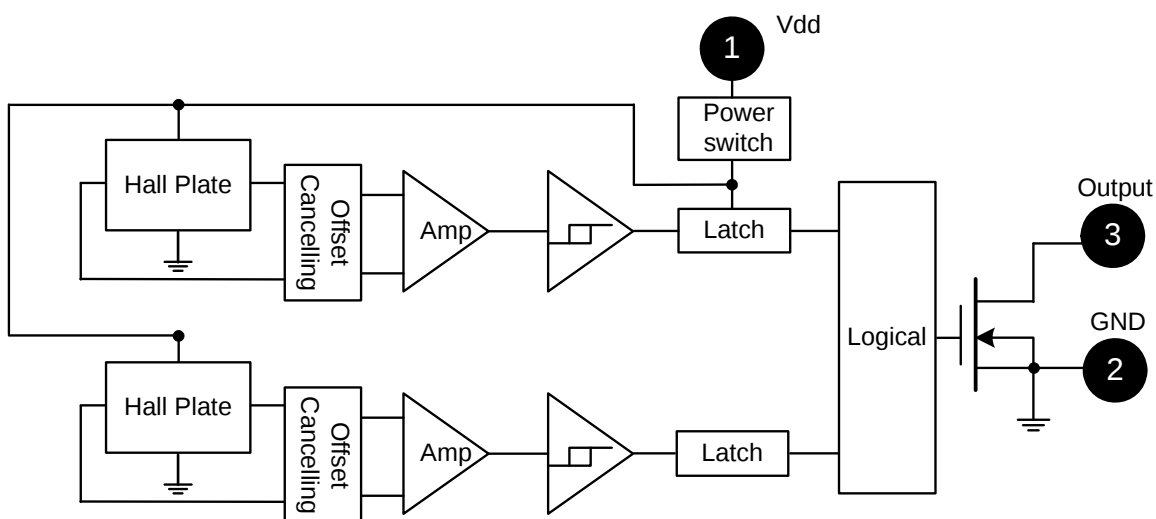


Notes: 3. NC is "No Connection" which is recommended to be tied to ground.

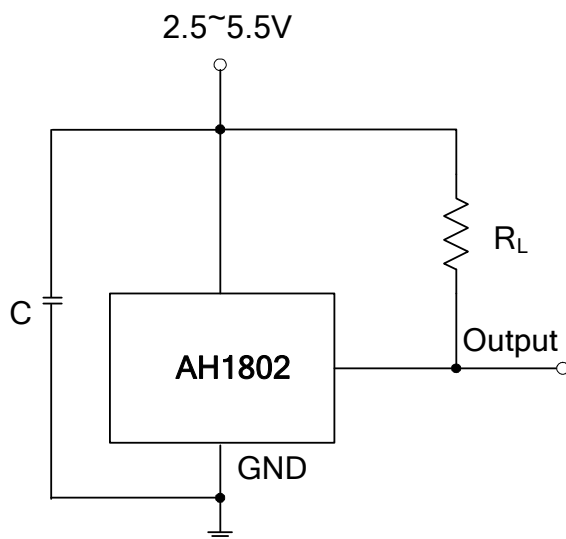
Pin Descriptions

Pin Name	P/I/O	Description
Vdd	P/I	Power Supply Input
GND	P/I	Ground
Output	O	Output Pin
NC		No Connected

Block Diagram



Typical Circuit



Notes: 4. C is for power stabilization and to strengthen the noise immunity, the recommended capacitance is 10nF~100nF.
R_L is the pull-up resistor, the recommended resistance is 10KΩ~100KΩ.

Absolute Maximum Ratings (at $T_A = 25^\circ\text{C}$)

Symbol	Characteristics	Values	Unit
V _{dd}	Supply voltage	7	V
B	Magnetic flux density	Unlimited	
T _s	Storage Temperature Range	-65 to +150	°C
P _D	Package Power Dissipation	230	mW
T _J	Maximum Junction Temperature	150	°C

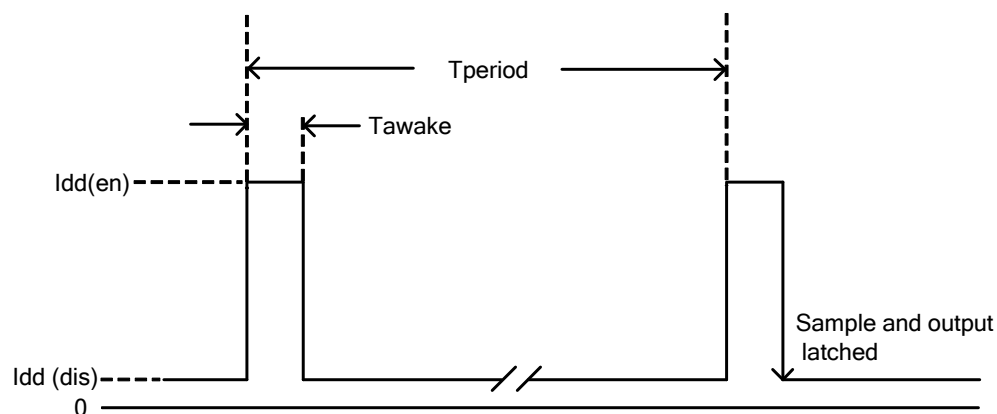
Recommended Operating Conditions ($T_A = 25^\circ\text{C}$)

Symbol	Parameter	Conditions	Rating	Unit
V _{dd}	Supply Voltage	Operating	2.5~5.5	V
T _A	Operating Temperature Range	Operating	-40 to +85	°C

Electrical Characteristics ($T_A = +25^\circ\text{C}$, $V_{DD} = 3\text{V}$; unless otherwise specified)

Symbol	Characteristic	Conditions	Min	Typ.	Max	Unit
Vout	Output On Voltage	Iout=1mA	-	0.1	0.3	V
Ioff	Output Leakage Current	Vout=5.5V, B < Brp	-	<0.1	1	μA
Idd(en)	Supply Current	Chip enable, TA= 25°C, Vdd = 3V	-	3	6	mA
		Chip enable, TA= -40~85°C, Vdd = 2.5~5.5V	-	3	10	mA
Idd(dis)		Chip disable, TA= 25°C, Vdd = 3V	-	5	10	μA
		Chip disable, TA= -40~85°C, Vdd = 2.5~5.5V	-	5	18	μA
Idd(avg)		Average supply current , TA= 25°C, Vdd = 3V	-	8	16	μA
		Average supply current , TA= -40~85°C, Vdd = 2.5~5.5V	-	8	23	μA
FC	Chopping Frequency	For design information only	-	300	-	KHz
Tawake	Awake Time	(Note 5)	-	75	150	μs
Tperiod	Period	(Note 5)	-	75	150	ms
D.C.	Duty Cycle		-	0.1	-	%

Notes: 5. When power is initially on, the operating V_{DD} (2.5V to 5.5V) must be applied to be guaranteed for the output sampling. The output state is valid after the second operating phase (typical 150ms).

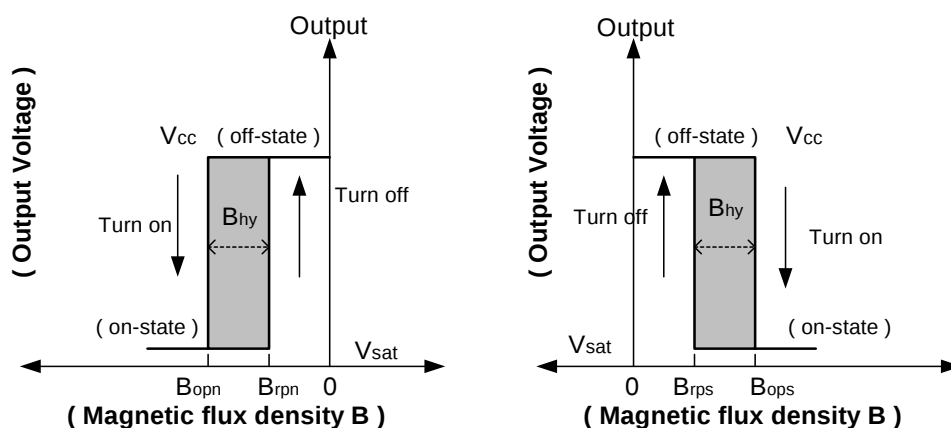


Magnetic Characteristics (TA=25°C, Vdd=3V, Note 6, 7)

(1mT=10 Gauss)

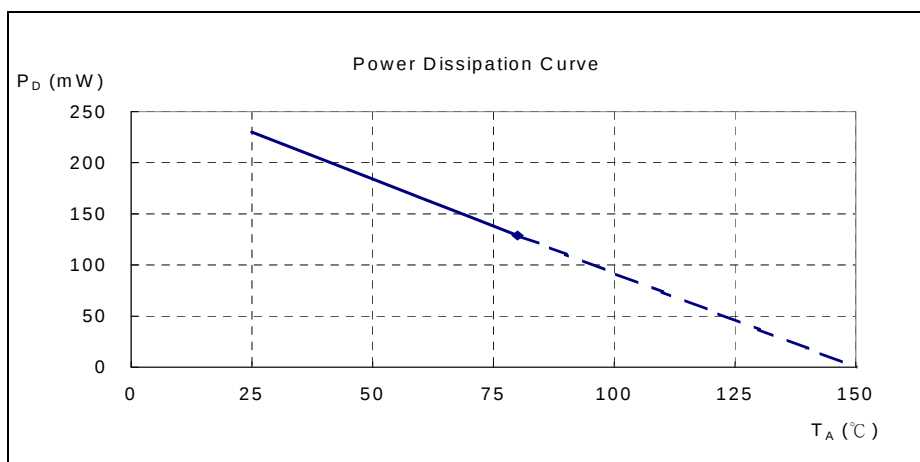
Symbol	Characteristic	Min	Typ.	Max	Unit
Bops(south pole to brand side)	Operate Point	20	28	40	Gauss
Bopn(north pole to brand side)		-40	-28	-20	
Brps(south pole to brand side)	Release Point	10	20	-	
Brpn(north pole to brand side)		-	-20	-10	
Bhy(Bopx – Brpx)	Hysteresis	5	8	-	

Notes: 6. Typical data is at TA = 25°C, Vdd = 3V, and for design information only.
7. Operating point and release point will vary with supply voltage and operating temperature.



Performance Characteristics

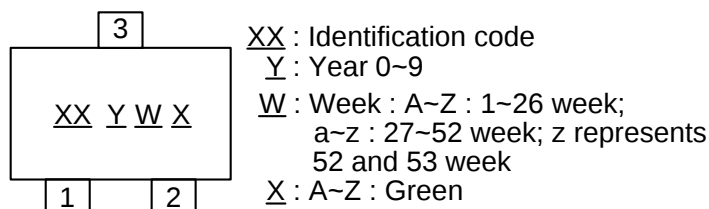
TA (°C)	25	50	60	70	80	85	90	100	110	120	130	140	150
PD (mW)	230	184	166	147	129	120	110	92	74	55	37	18	0



Marking Information

(1) SC59 (commonly known as SOT23 in Asia)

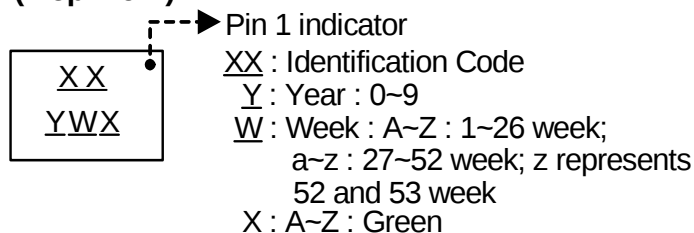
(Top View)



Part Number	Package	Identification Code
AH1802	SC59	KC

(2) DFN2020-6

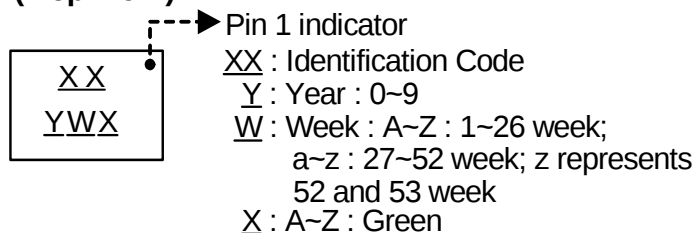
(Top View)



Part Number	Package	Identification Code
AH1802	DFN2020-6	KC

(3) DFN2020-3

(Top View)

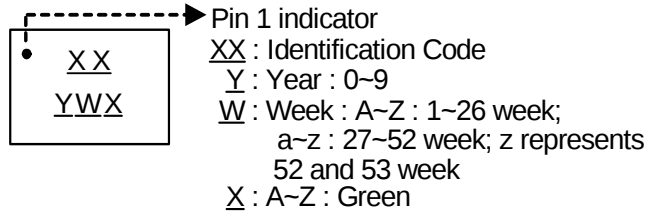


Part Number	Package	Identification Code
AH1802	DFN2020-3	KE

Marking Information (Continued)

(4) DFN2015H4-3

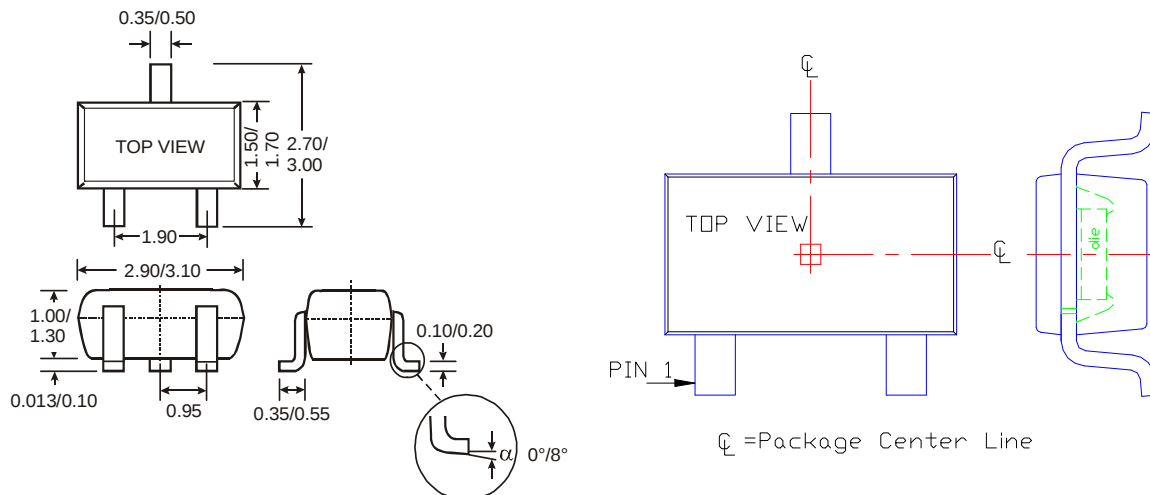
(Top View)



Part Number	Package	Identification Code
AH1802	DFN2015H4-3	KF

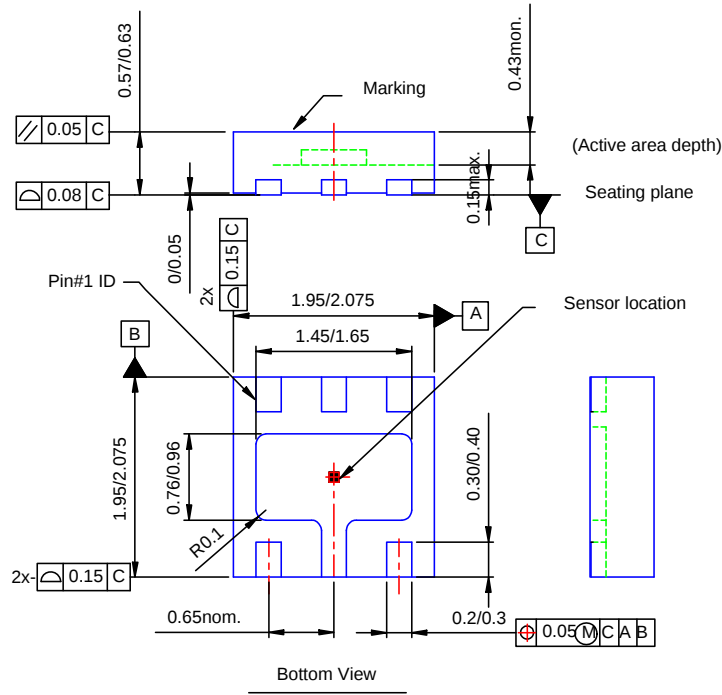
Package Information (All Dimensions in mm)

(1) Package type: SC59 (commonly known as SOT23 in Asia)

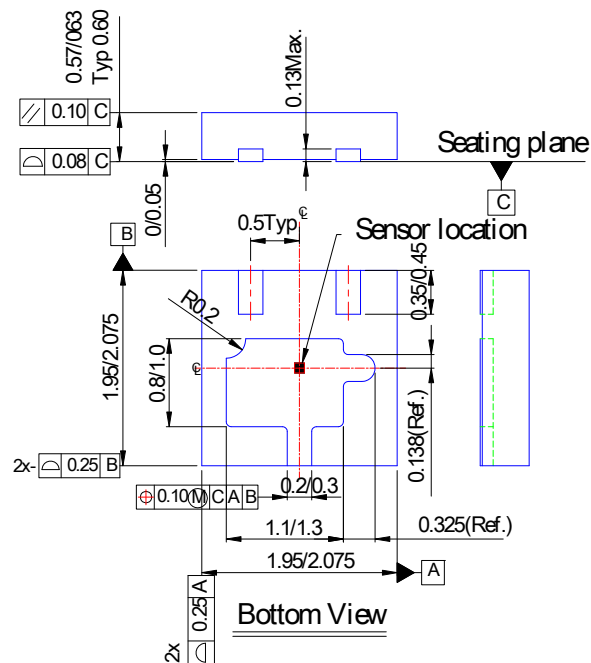


Package Information (Continued)

(2) Package type: DFN2020-6

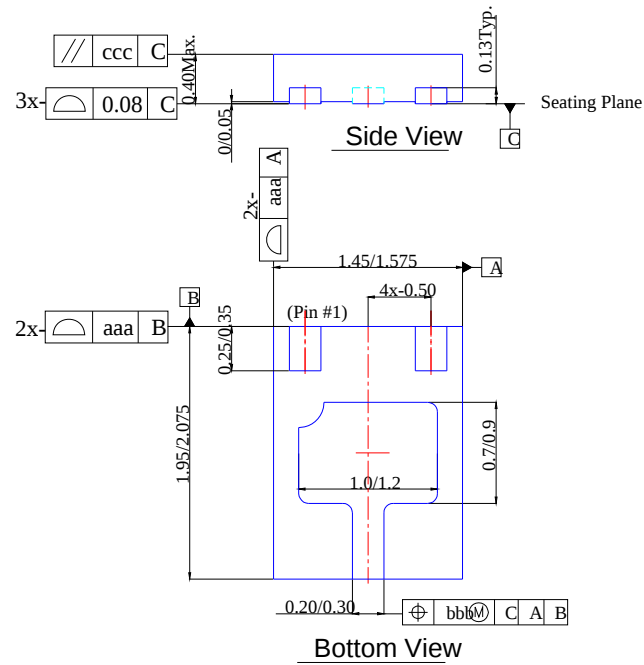


(3) Package type: DFN2020-3



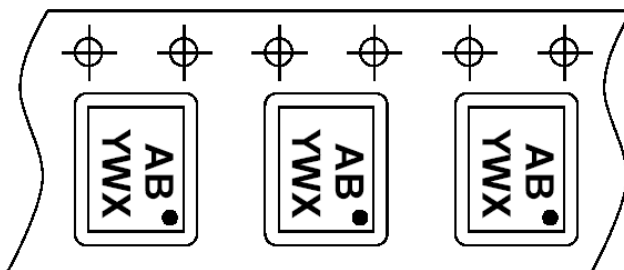
Package Information (Continued)

(4) Package type: DFN2015H4-3

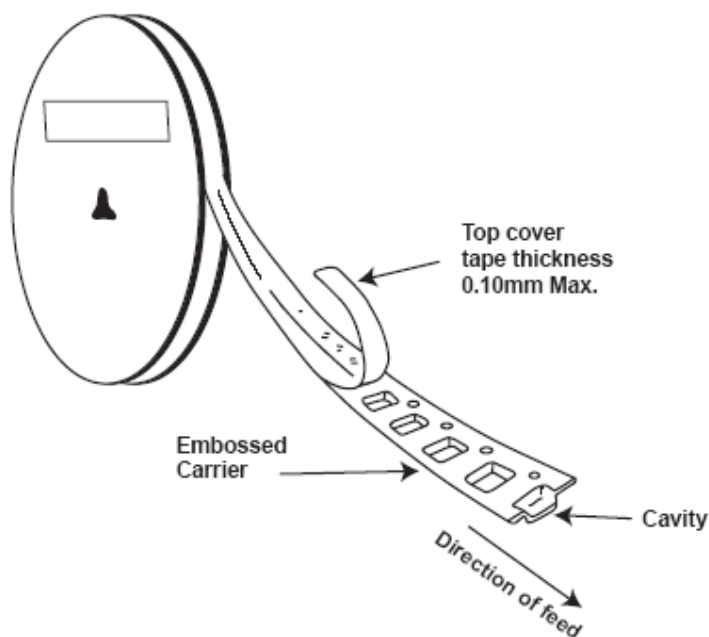
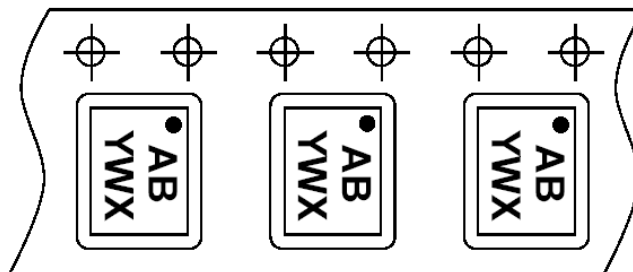


Taping Orientation

(1) DFN2020-6 and DFN2020-3



(2) DFN2015H4-3



Notes: 8. The taping orientation of the other package type can be found on our website at <http://www.diodes.com/datasheets/ap02007.pdf>.

**MICROPOWER, ULTRA-SENSITIVE OMNIPOLAR
HALL-EFFECT SENSOR SWITCH****IMPORTANT NOTICE**

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