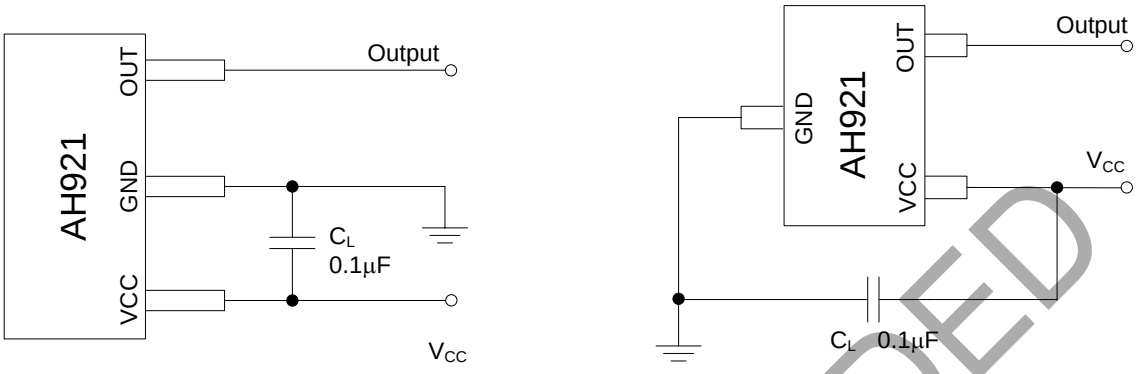
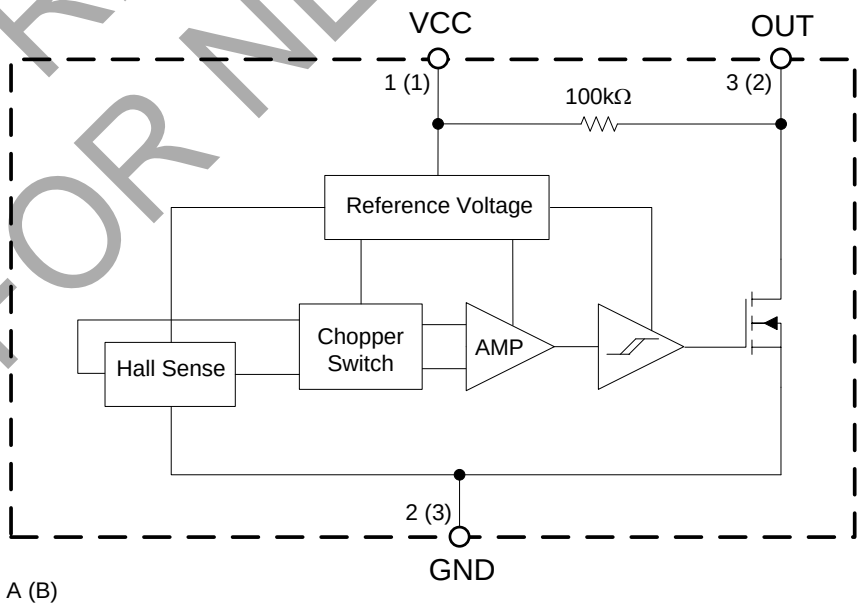
Typical Applications Circuit



Pin Descriptions

Pin Number		Pin Name	Function
TO-92S-3	SOT-23-3		
1	1	VCC	Supply voltage
2	3	GND	Ground pin
3	2	OUT	Output Pin

Functional Block Diagram



A (B)
A for TO-92S-3
B for SOT-23-3

Absolute Maximum Ratings (Note 4)

Symbol	Parameter	Rating		Unit
V_{CC}	Supply Voltage	28		V
I_{CC}	Supply Current (Fault)	5		mA
I_{OUT}	Output Current (Continuous)	25		mA
P_D	Power Dissipation	TO-92S-3	400	mW
		SOT-23-3	230	
T_A	Operating Temperature	-50 to +150		ºC
T_{STG}	Storage Temperature	-65 to +150		ºC
T_J (Max)	Maximum Junction Temperature	+165		ºC
ESD	ESD (Human Body Model)	3500		V

Note: 4. Stresses greater than those listed under *Absolute Maximum Ratings* can 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 Ratings* for extended periods can affect device reliability.

Recommended Operating Conditions

Symbol	Parameter	Min	Max	Unit
V_{CC}	Supply Voltage	3.5	24	V
T_A	Operating Temperature	-40	+125	ºC

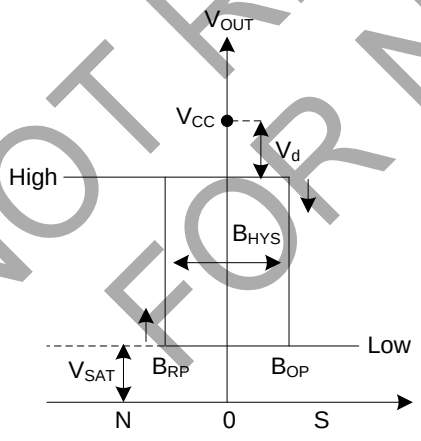
Electrical Characteristics (@V_{CC}=12V, T_A=+25°C, unless otherwise specified. Notes 5 & 6.)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
V_{CC}	Supply Voltage	Operating	3.5	12	24	V
I_{CC}	Supply Current	B<B_{RP}	–	3.0	5.0	mA
		B>B_{OP}	–	3.0	5.0	
V_{SAT}	Saturation Voltage	V_{CC}=3.5V, I_{OUT} =5mA, B>B_{OP} (Note 7)	–	50	120	mV
		I_{OUT}=20mA, B>B_{OP} (Note 7)	–	185	500	
		V_{CC}=24V, I_{OUT} =20mA, B>B_{OP} (Note 7)	–	185	500	
$I_{LEAKAGE}$	Output Leakage Current	V_{CC}=V_{OUT}=24V, B<B_{RP} (Note 8)	–	0.1	10	μA
t_{RISING}	Output Rising Time	C_L=20pF	–	0.4	2	μs
$t_{FALLING}$	Output Falling Time	C_L=20pF	–	0.4	2	μs

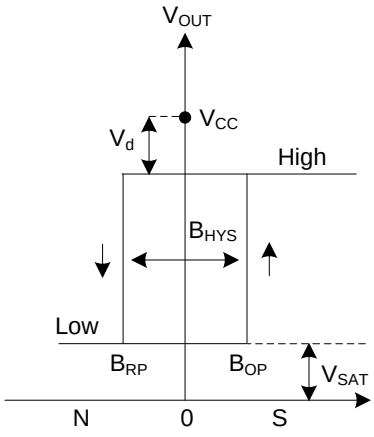
Notes: 5. Output initial status is low when powering on.
6. The supply current I_{CC} represents the average supply current. The output is open during measurement.
7. The device is put under the magnetic field: B>B_{OP}.
8. The device is put under the magnetic field: B<B_{RP}.

Magnetic Characteristics (@V_{CC}=12V, T_A=+25°C, unless otherwise specified.)

Symbol	Parameter	Min	Typ	Max	Unit
B_{OP}	Operating Point	5	22	40	Gauss
B_{RP}	Releasing Point	-40	-22	-5	Gauss
B_{HYS}	Hysteresis	–	45	–	Gauss



For TO-92S-3



For SOT-23-3

Figure 1. Magnetic Flux Density of AH921

Magnetic Characteristics (Continued)

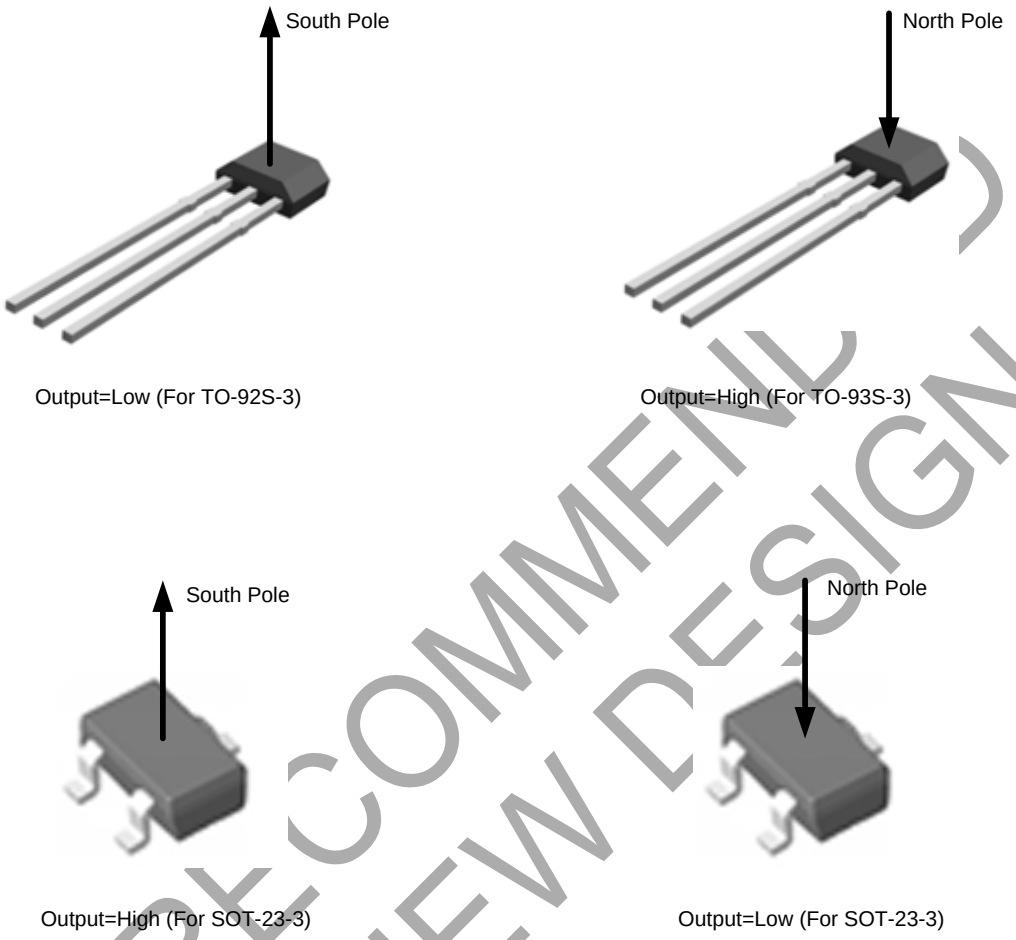


Figure 2. Output Status vs. Magnetic Pole

Package Type	Parameter	Test Condition	Output
TO-92S-3	South Pole	$B > B_{OP}$	Low
	North Pole	$B < B_{RP}$	High
SOT-23-3	South Pole	$B > B_{OP}$	High
	North Pole	$B < B_{RP}$	Low

Table 1. Output Status vs. Magnetic Pole

Magnetic Characteristics (Continued)

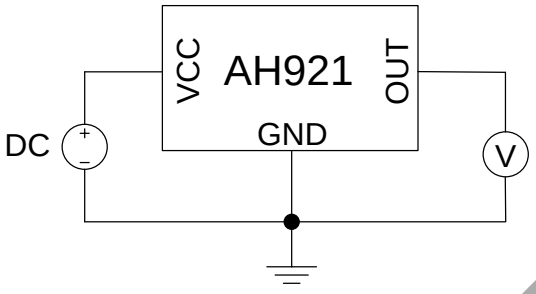


Figure 3. Magnetic Thresholds

Test Circuit and Test Conditions

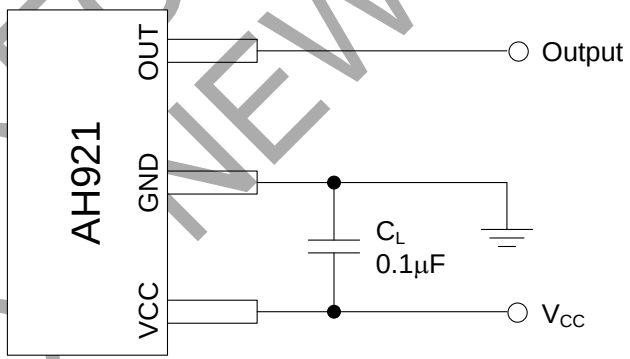


Figure 4. Test Circuit of AH921

Test Circuit and Test Conditions (Continued)

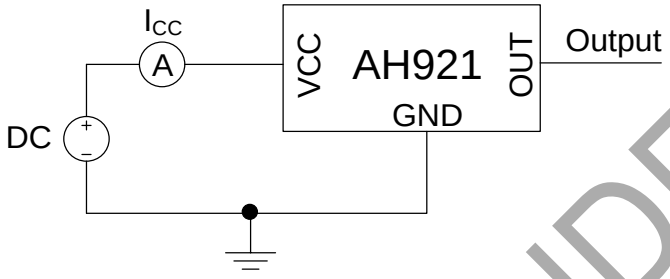


Figure 5. Test Condition of AH921 (Supply Current)

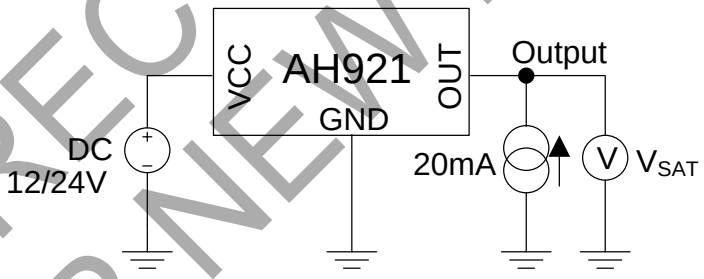


Figure 6. Test Condition of AH921 (Output Saturation Voltage)

Test Circuit and Test Conditions (Continued)

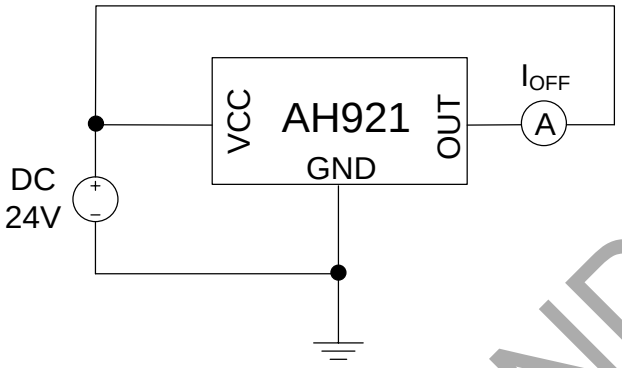
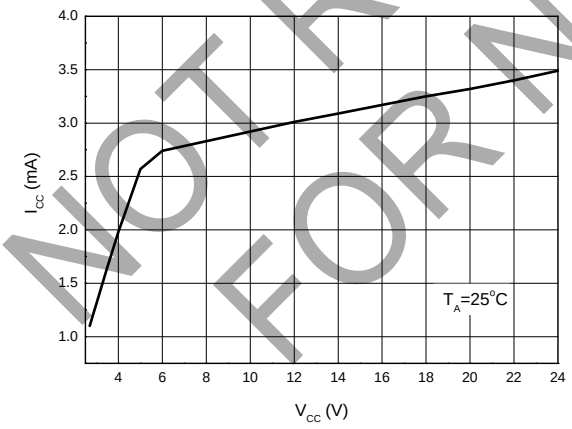


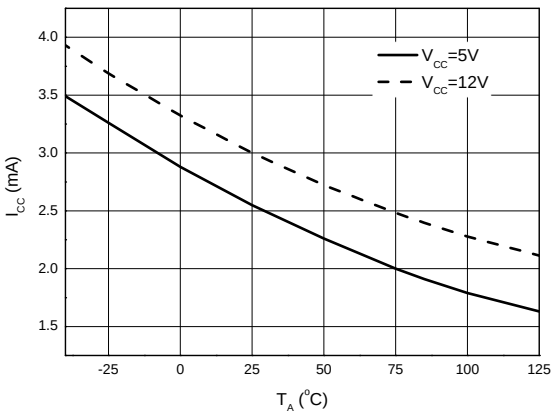
Figure 7. Test Condition of AH921 (Output Leakage Current)

Performance Characteristics

ICC vs. VCC

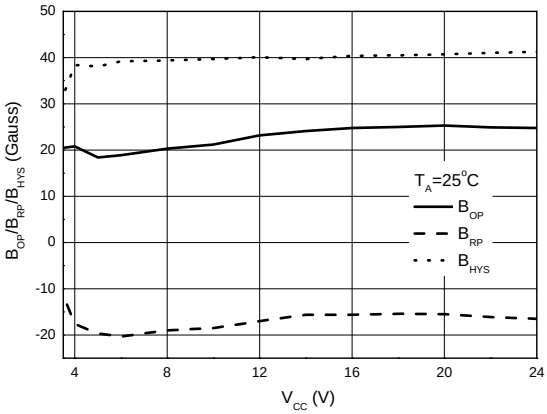


ICC vs. TA

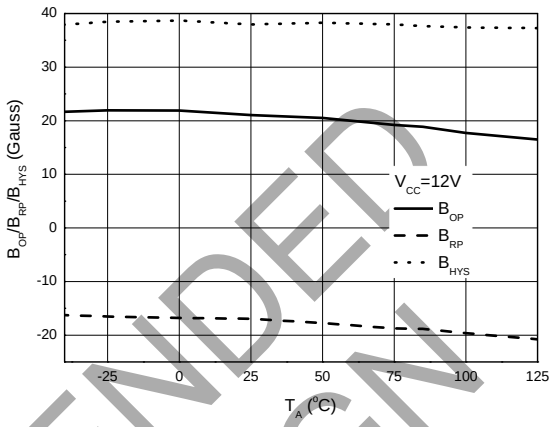


Performance Characteristics (Continued)

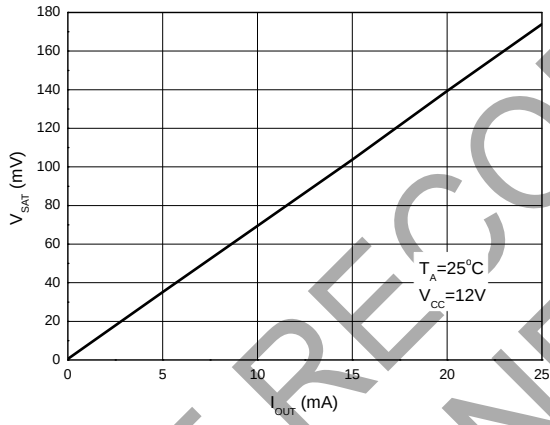
$B_{OP}/B_{RP}/B_{HYS}$ vs. V_{CC}



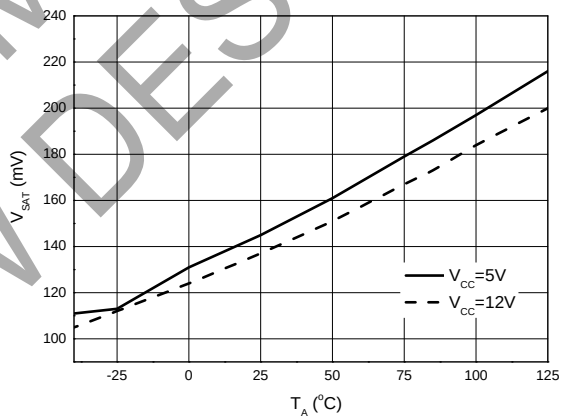
$B_{OP}/B_{RP}/B_{HYS}$ vs. T_A



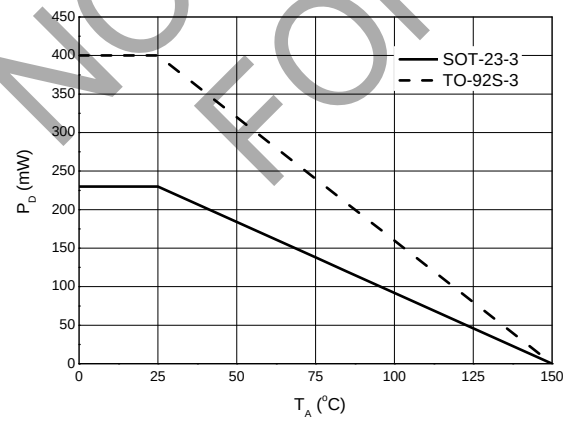
V_{SAT} vs. I_{OUT}



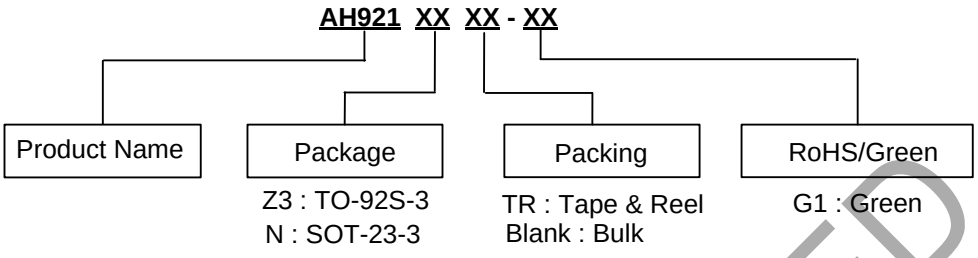
V_{SAT} vs. T_A



P_D vs. T_A



Ordering Information

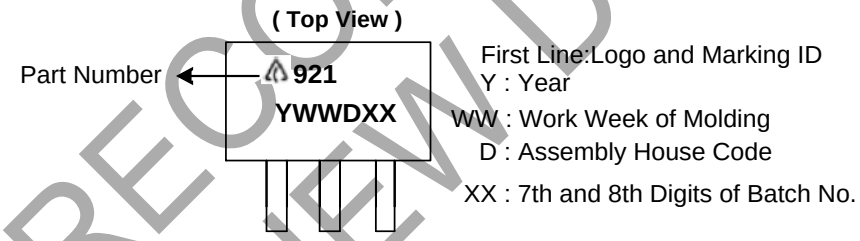


Device	Status(Note 9)	Package Code	Packaging	Bulk	7" Tape and Reel
				Quantity	Quantity
AH921Z3-G1	NRND	Z3	TO-92S-3	1000/Bulk	NA
AH921NTR-G1	NRND	N	SOT-23-3	NA	3000/Tape & Reel

Note 9: NRND = Not Recommended for New Design.

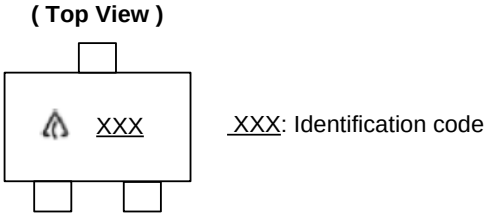
Marking Information

(1) Package Type: TO-92S-3



Part Number	Package	Identification Code
AH921	TO-92S-3	921

(2) Package Type: SOT-23-3

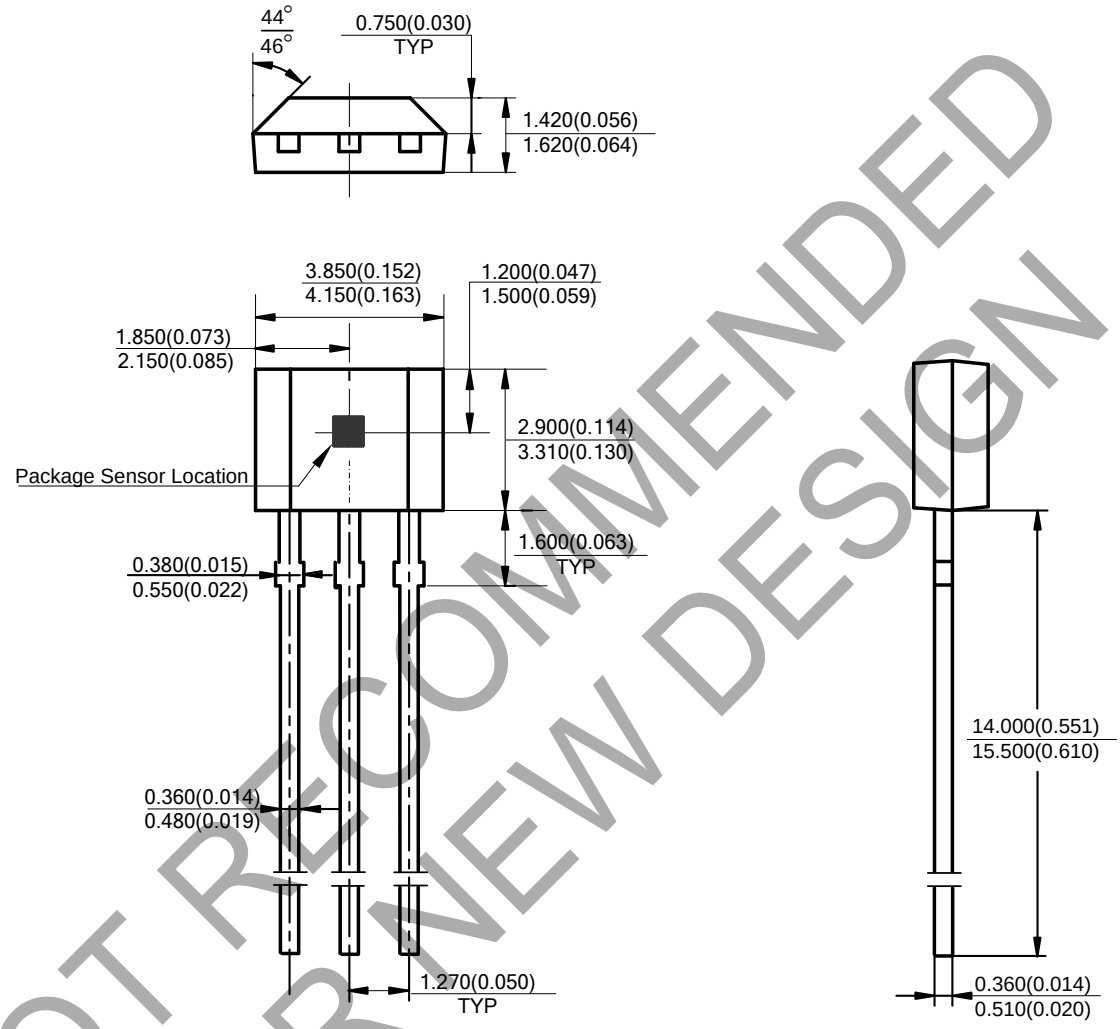


Part Number	Package	Identification Code
AH921	SOT-23-3	GS6

Package Outline Dimensions (All dimensions in mm(inch).)

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

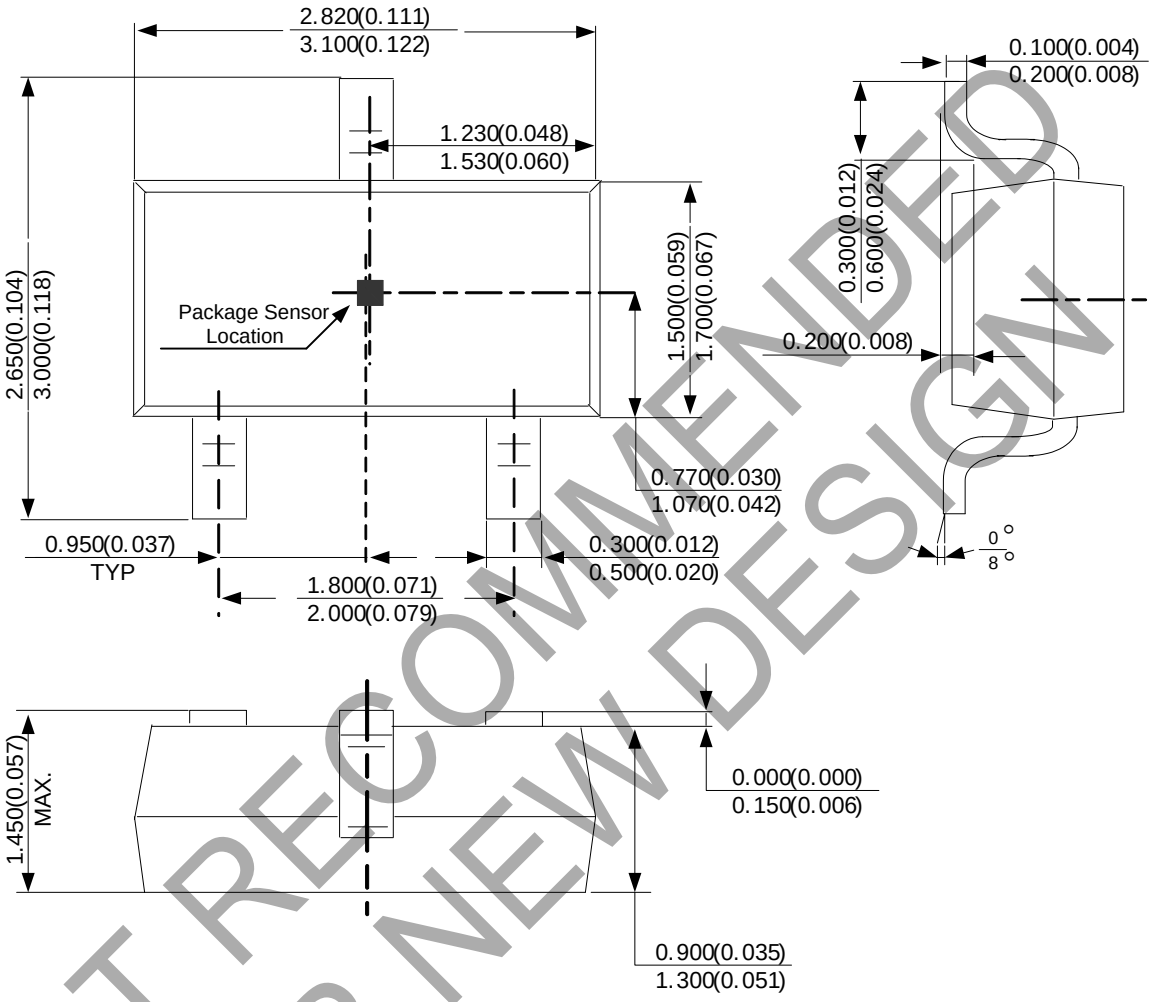
(1) Package Type: TO-92S-3



Package Outline Dimensions (All dimensions in mm(inch) (Continued)

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

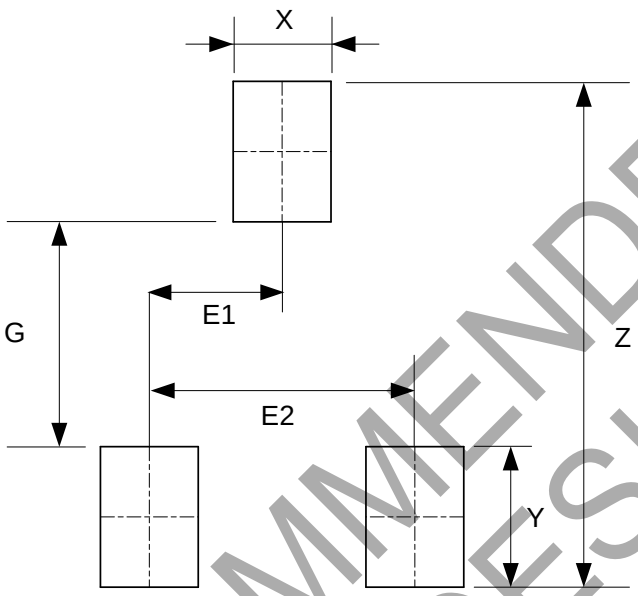
(2) Package Type: SOT-23-3



Suggested Pad Layout

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

(1) Package Type: SOT-23-3



Dimensions	Z (mm)/(inch)	G (mm)/(inch)	X (mm)/(inch)	Y (mm)/(inch)	E1 (mm)/(inch)	E2 (mm)/(inch)
Value	3.600/0.142	1.600/0.063	0.700/0.028	1.000/0.039	0.950/0.037	1.900/0.075

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