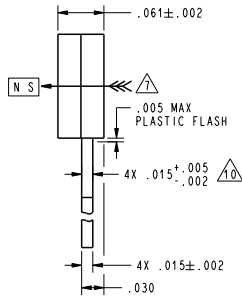
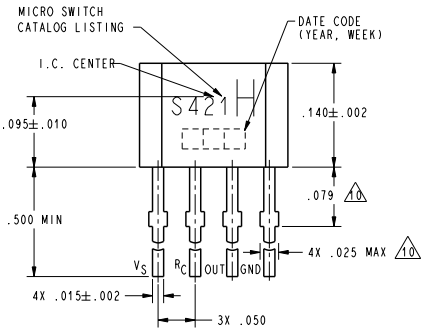
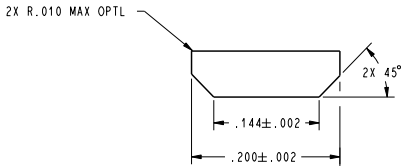
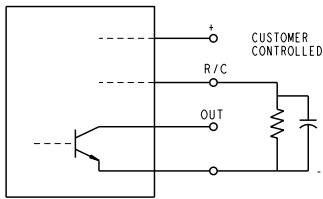


HIGH WHEN FREQUENCY IS > SET POINT



BLOCK DIAGRAM



SS421H

1. ABSOLUTE MAXIMUM RATINGS (9)
(Circuit function is not guaranteed. If exceeded, permanent damage may result)

ITEM	PARAMETER	MIN	MAX	UNIT	CONDITIONS
1.1	AMBIENT TEMPERATURE	-40	+125	°C	Storage, no power applied
1.2	AMBIENT TEMPERATURE	-40	+105	°C	Operating, power applied
1.3	SUPPLY VOLTAGE	-25	+25	VDC	-40°C TO +105°C ambient temperature
1.4	VOLTAGE AT OUTPUT	-0.5	+25	VDC	off condition of output over temperature
1.5	OPEN COLLECTOR NPN		+20	mA	Operated over temperature, Current sinking output inverted or non-inverted

2. ELECTRICAL CHARACTERISTICS
(over operating temperature and voltage range unless otherwise noted)
REQUIRED -25°C TO +105°C AMBIENT

ITEM	PARAMETER	MIN	MAX	UNIT	CONDITIONS
2.1	SUPPLY VOLTAGE (Vs)	4.5	16	VDC	
2.2	SUPPLY CURRENT (Is)	15	15	mA	Output released, Vs=16V Tj=+25°C
2.3	SUPPLY CURRENT (Is)	15	15	mA	Output operated, Vs=16V Tj=+25°C
2.4	OUTPUT VOLTAGE		0.4	VDC	Sinking 15mA, Vs=16V
2.5	OUTPUT LEAKAGE CURRENT	10		µA	Output at 25V
2.6	RISE TIME (10% TO 90%)		1.5	µS	Vs=12V, R=800ohms, C=50pf
2.7	FALL TIME (90% TO 10%)		1.5	µS	Vs=12V, R=800ohms, C=50pf

3. MAGNETIC CHARACTERISTICS (8)
(over operating temperature and voltage range unless otherwise noted)
REQUIRED -25°C TO +105°C AMBIENT

ITEM	PARAMETER	MIN	MAX	UNIT	CONDITIONS
3.1	OPERATE POINT		250	G	Ta=+25°C (See note 3.1)
3.2	OPERATE POINT		250	G	-25°C TO +105°C (See note 3.1)
3.3	RELEASE POINT	-250		G	Ta=+25°C
3.4	RELEASE POINT	-250		G	-25°C TO +105°C (See note 3.2)
3.4	DIFFERENTIAL	50		G	Operate minus release

Frequency Trip Point (FTP)(RPM)

Delay Time (DST) (Seconds)

$$FTP = \frac{60}{RC \log \frac{Vr1 - IcB}{Vr2 - IcB}}$$

$$DST = 7RC \log \left[\frac{Vr2}{Vr1} + \frac{IcB}{Vr1} \right]$$

WHERE,
R, C ARE EXTERNAL COMPONENTS
Vr1=2 VOLTS Vr2=4 VOLTS
Ic=196 µA
LOG IS NATURAL LOG

NOTES

- 1. THE MAGNETIC FLUX USED TO OPERATE THE SWITCH MUST BE IN THE DIRECTION AND LOCATION SHOWN (THIS ASSUMES THE CONVENTION THAT THE DIRECTION OF THE EXTERNAL FLUX OF A MAGNET IS FROM THE NORTH TO THE SOUTH POLE OF THE MAGNET)
- 2. THE MAGNETIC FIELD STRENGTH (GAUSS) REQUIRED TO CAUSE THE SWITCH TO CHANGE STATE (OPERATE AND RELEASE) WILL BE AS SPECIFIED IN THE MAGNETIC CHARACTERISTICS. TO TEST THE SWITCH AGAINST THE SPECIFIED MAGNETIC CHARACTERISTICS THE SWITCH MUST BE PLACED IN A UNIFORM MAGNETIC FIELD
- 3. ABSOLUTE MAXIMUM RATINGS ARE THE EXTREME LIMITS THAT THE DEVICE WILL WITHSTAND WITHOUT DAMAGE TO THE DEVICE. HOWEVER, THE ELECTRICAL AND MAGNETIC CHARACTERISTICS ARE NOT GUARANTEED AS THE MAXIMUM LIMITS (ABOVE RECOMMENDED OPERATING CONDITIONS) ARE APPROACHED NOR WILL THE DEVICE NECESSARILY OPERATE AT ABSOLUTE MAXIMUM RATING
- 4. DIMENSIONS NOTED ARE DUE TO TIE BAR REMOVAL AND ARE VALID ONLY IN .079 DIMENSION. BURRS EXTEND BACK FROM FRONT SURFACE ONLY

THIRD ANGLE PROJECTION		
SCALE	10:1	
DO NOT SCALE PRINT		
UNLESS OTHERWISE SPECIFIED TOLERANCES ARE		
ONE PLACE	(.01)	±.030
TWO PLACES	(.001)	±.015
THREE PLACES	(.0001)	±.005
ANGLES		± 2°
WEIGHT		

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MICRO SWITCH a Honeywell Division	SOLID STATE SWITCH	CATALOG LISTING SS421H
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FED. MFG. CODE 9129

ANSI Y14.5M-1982 APPLIES

SS421H
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4. TIMING CHARACTERISTICS
(over operating temperature and voltage range unless otherwise noted. Does not include R & C shifts over temperature)
REQUIRED -25°C TO +105°C AMBIENT

ITEM	PARAMETER	MIN	MAX	UNIT	CONDITIONS
4.1	TRIP POINT RANGE	1800	5200	PPM	Ta = 25°C (See note 4.1)
4.2	TRIP POINT TOLERANCE	-16.0	16.0	%	Variation from calculated value (See note 4.2)
4.3	TRIP POINT DELAY & POWER UP DELAY				
	DELATED VERSION	5.0	16.0	SEC	Ta = 25°C, 1800 TO 5200 PPM
	NON-DELATED VERSION		1.2	SEC	Ta = 25°C, 1800 TO 5200 PPM (See note 4.3)
4.4	DELAY SET TIME TOLERANCE THE SMALLER OF 4.4.1 & 4.4.2				
4.4.1		-40	+40	%	% of delay set time
4.4.2		-4.0	4.0	SEC	
4.5	PASSING DELAY FAIL TO PASS CONDITION		20	%	% of delay set time (See note 4.5)
4.6	EXTERNAL CAPACITOR LEAKAGE COEFFICIENT		0.05		(See note 4.6)

5. LATCH CHARACTERISTICS
(over operating temperature and voltage range unless otherwise noted. External components must be connected between the output and the program/oscillator pin)
REQUIRED -25°C TO +105°C AMBIENT

ITEM	PARAMETER	MIN	MAX	UNIT	CONDITIONS#
5.1	LATCH VOLTAGE				(See note 5.1)
5.11		3.5	4.5	V	at VS = 5.0
5.12		2.0	4.5	V	
5.2	LATCH CURRENT				NOT APPLICABLE ON THIS NON-INVERTED DEVICE

6. EXTERNAL R&C CHARACTERISTICS
(over operating temperature and voltage range unless otherwise noted)
REQUIRED -25°C TO +105°C AMBIENT

ITEM	PARAMETER	MIN	MAX	UNIT	CONDITIONS
6.1	EXTERNAL RESISTOR		±5	%	Directly related to 4.2 Trip Accuracy
6.2	EXTERNAL CAPACITOR		±5	%	Directly related to 4.2 Trip Accuracy
6.3	EXTERNAL CAPACITOR LEAKAGE COEFFICIENT		0.05		(See note 6.3)

- 3.1 Operate point is defined as the gauss level above which the internal circuitry will always be indicating the presence of a south pole at the IC surface.
- 3.2 Release point is defined as the gauss level below which the internal circuitry will always be indicating the presence of a north pole at the IC surface.
- 4.1 Trip point is the frequency in PPM (pulses per minute) that causes the output to change state. A non-inverted output is high when speed is greater than the trip point. For example, a 2 pole magnet translates to 1 pulse/revolution while the 4 pole magnet translates into 2 pulses/revolution. The trip point is externally adjustable by varying the value of R and C. Maximum required value of the external capacitor is 3.3 uF.
- 4.2 This is the accuracy required from unit to unit and includes R and C each varying ±5%, over speed, supply voltage, and temperature.
- 4.3 Trip point delay is the delay in output response to an input frequency below the trip point. The time delay is determined by the value of the external resistor and capacitor. Delayed version powers up in the passing condition.
- 4.5 Passing delay tolerance is based on delay set time, its tolerance is proportional to delay set time tolerance.
- 4.6 Capacitor leakage coefficient is used to calculate leakage current in the following formula:
Leakage Current = Leakage Coefficient x Capacitance x Capacitor Voltage
where capacitance is value of the external capacitor.
Capacitor Voltage is the actual variable voltage across the capacitor in operation.
- 5.1 The open collector output can be used to drive external circuitry that applies a latching voltage to the program/oscillator pin to latch the IC output in the fail state. This latch mode is to be used only on products with delay set times greater than 5 seconds and with inverted output version of the SS42IH. Va is externally applied voltage on the RC pin. (Not applicable on this non-inverted device)
- 5.2 Latching current is the sourcing current required of the applied external voltage to maintain the latch. (Not applicable on this non-inverted device)
- 6.3 Leakage coefficient is the external capacitor leakage current coefficient such that:
Leakage Current = Leakage Coefficient x Capacitance x Capacitor Voltage.
For example: Leakage Coefficient = 0.05; Capacitance = 3.3 uF; Capacitor Voltage of 3V; DC leakage current 0.49 uA.

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 SS42IH
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 REV 2 OF 3
 MICRO SWITCH
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 REVISIONS
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MICRO SWITCH
a Honeywell Division

SOLID STATE SWITCH

CATALOG LISTING
SS42IH

FED. MFG. CODE 91929

THIRD ANGLE PROJECTION

SCALE NONE

DO NOT SCALE PRINT

UNLESS OTHERWISE SPECIFIED TOLERANCES ARE

ONE PLACE	(.01)	±.030
TWO PLACES	(.001)	±.015
THREE PLACES	(.0001)	±.005
ANGLES		± 2°

WEIGHT

ANSI Y14.5M-1982 APPLIES

