



ATS278

Two Phase Hall Effect Latch With FG Output

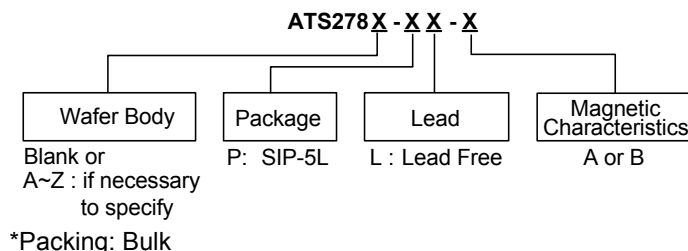
■ Features

- On-chip Hall plate
- Operating voltage: 3.5V~20V
- Internal bandgap regulator allows temperature compensated operations and a wide operating voltage range
- High output sinking capability up to 400mA for driving large load
- Built-in protection diode only for chip reverse power connecting
- Frequency Generation (FG) output
- Package: SIP-5L

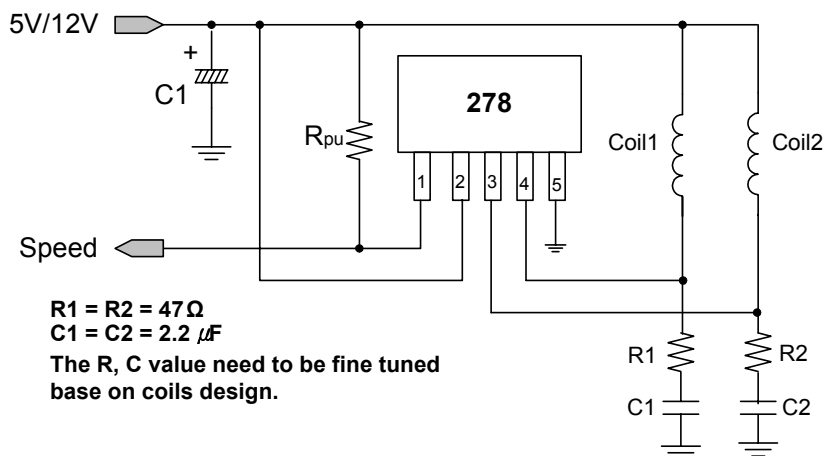
■ Applications

- Dual-coil Brush-less DC Motor
- Dual-coil Brush-less DC Fan
- Revolution Counting
- Speed Measurement

■ Ordering Information



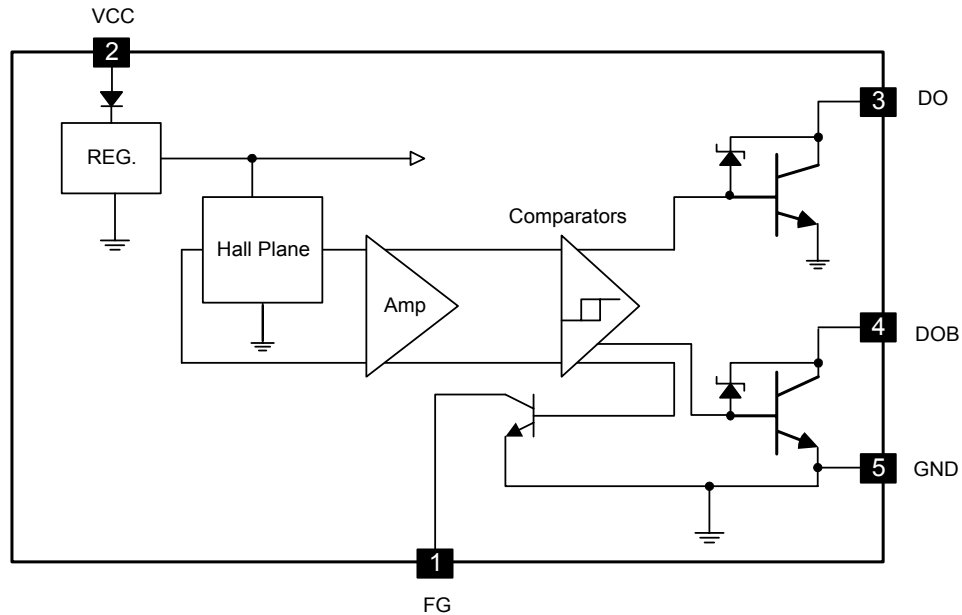
■ Typical Application Circuit



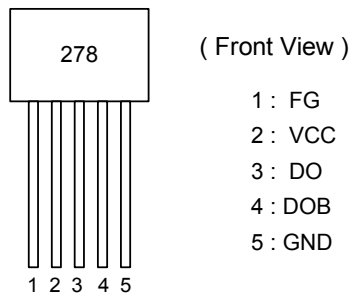
5V/12V DC Brush-less Fan with FG output function

Two Phase Hall Effect Latch With FG Output

■ Block Diagram



■ Pin Configuration



Name	P/I/O	Pin #	Description
FG	O	1	Frequency detection output
VCC	P	2	Positive power input
DO	O	3	Driver Output
DOB	O	4	Driver Output (Inverting)
GND	P	5	Ground

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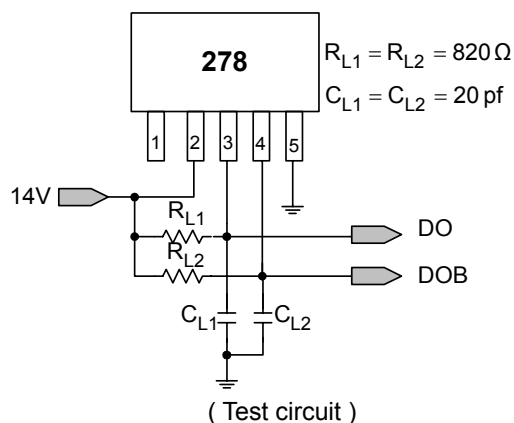
■ Absolute Maximum Ratings

Characteristics		Symbol	Values	Unit
Supply voltage		V_{CC}	20	V
Reverse V_{CC} Polarity Voltage		V_{RCC}	-20	V
Magnetic flux density		B	Unlimited	
Output "on" current	Continuous	I_c	0.4	A
	Hold		0.5	
	Peak (Start Up)		0.7	
Sink current of FG		I_{FG}	40	mA
Operating temperature range		T_a	-20~+85	°C
Storage temperature range		T_s	-65~+150	°C
Package Power Dissipation		PD	550	mW

■ Electrical Characteristics ($T_a=+25^{\circ}\text{C}$)

Characteristic	Symbol	Conditions	Min	Typ	Max	Unit
Supply Voltage	VCC		3.5	----	20	V
Output Saturation Voltage	$V_{ce(sat)}$	$V_{cc}=14\text{V}$, $I_L=300\text{mA}$	----	300	800	mV
Output Zener Breakdown	V_z^*			46		V
Output Leakage Current	I_{cex}	$V_{ce}=14\text{V}$, $V_{cc}=14\text{V}$	----	<0.1	10	μA
Supply Current	I_{cc}	$V_{cc}=20\text{V}$, Output Open	----	16	25	mA
Output Rise Time	t_r	$V_{cc}=14\text{V}$, $R_L=820\Omega$, $C_L=20\text{pF}$ (Test Circuit)	----	3.0	10	μs
Output Falling Time	t_f	$V_{cc}=14\text{V}$, $R_L=820\Omega$, $C_L=20\text{pF}$ (Test Circuit)	----	0.3	1.5	μs
Switch Time Differential	Δt	$V_{cc}=14\text{V}$, $R_L=820\Omega$, $C_L=20\text{pF}$ (Test Circuit)	----	3.0	10	μs
FG saturation voltage	V_{FG}	$V_{cc}=14\text{V}$, $I_L=20\text{mA}$	----	200	700	mV

*Note: The V_z may vary with the inductance/resistance of DC Fan. In order to reduce the risk of dynamic operation, the capacitor/resistor is recommended to add below the DO/DOB as Application Circuit (on page 1).



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■ Magnetic Characteristics(Ta=+25°C)

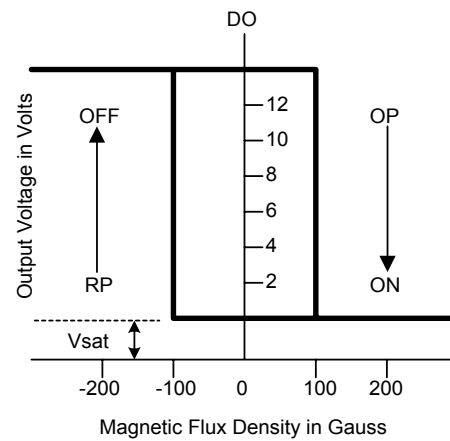
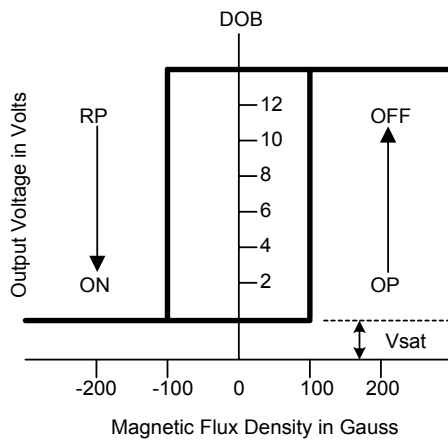
(1mT=10 Gauss)

A grade

Characteristic	Symbol	Min.	Typ.	Max.	Unit
Operate Point	B _{OP}	10	-	60	Gauss
Release Point	B _{RP}	-60	-	-10	Gauss
Hysteresis	B _{HYS}	-	75	-	Gauss

B grade

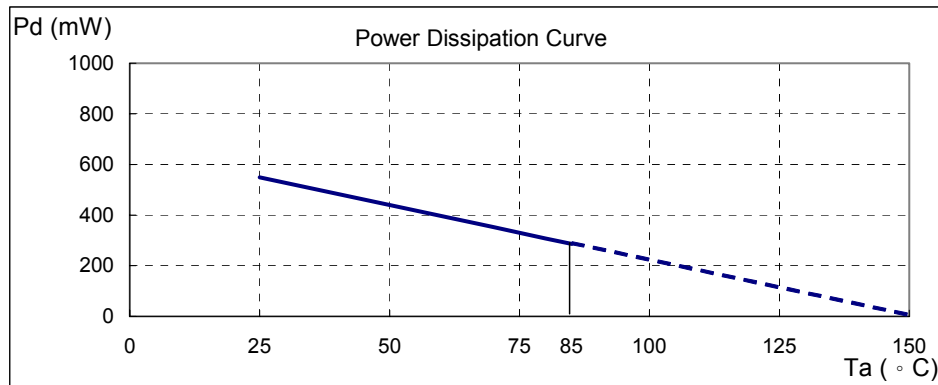
Characteristic	Symbol	Min.	Typ.	Max.	Unit
Operate Point	B _{OP}	5	-	80	Gauss
Release Point	B _{RP}	-80	-	-5	Gauss
Hysteresis	B _{HYS}	-	75	-	Gauss



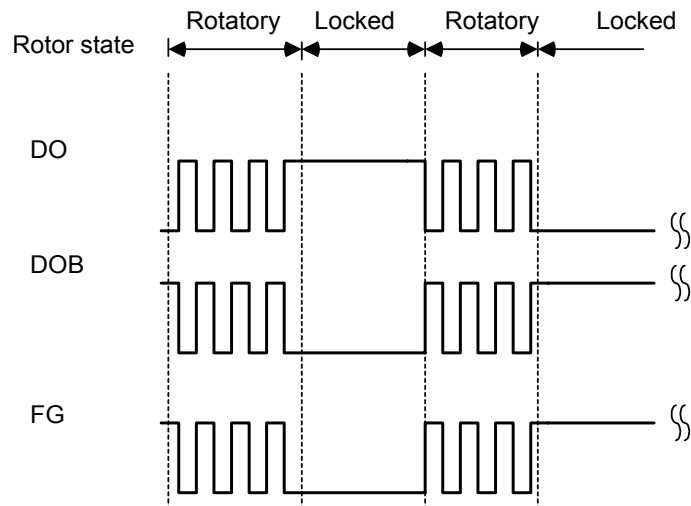
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■ Performance Characteristics (SIP5)

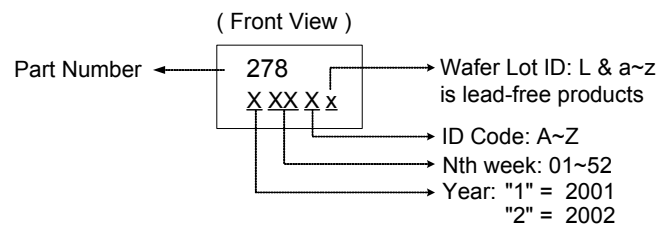
Ta (°C)	25	50	60	70	80	85	90	95	100
Pd (mW)	550	440	396	352	308	286	264	242	220
Ta (°C)	105	110	115	120	125	130	135	140	150
Pd (mW)	198	176	154	132	110	88	66	44	0



■ Timing Diagram



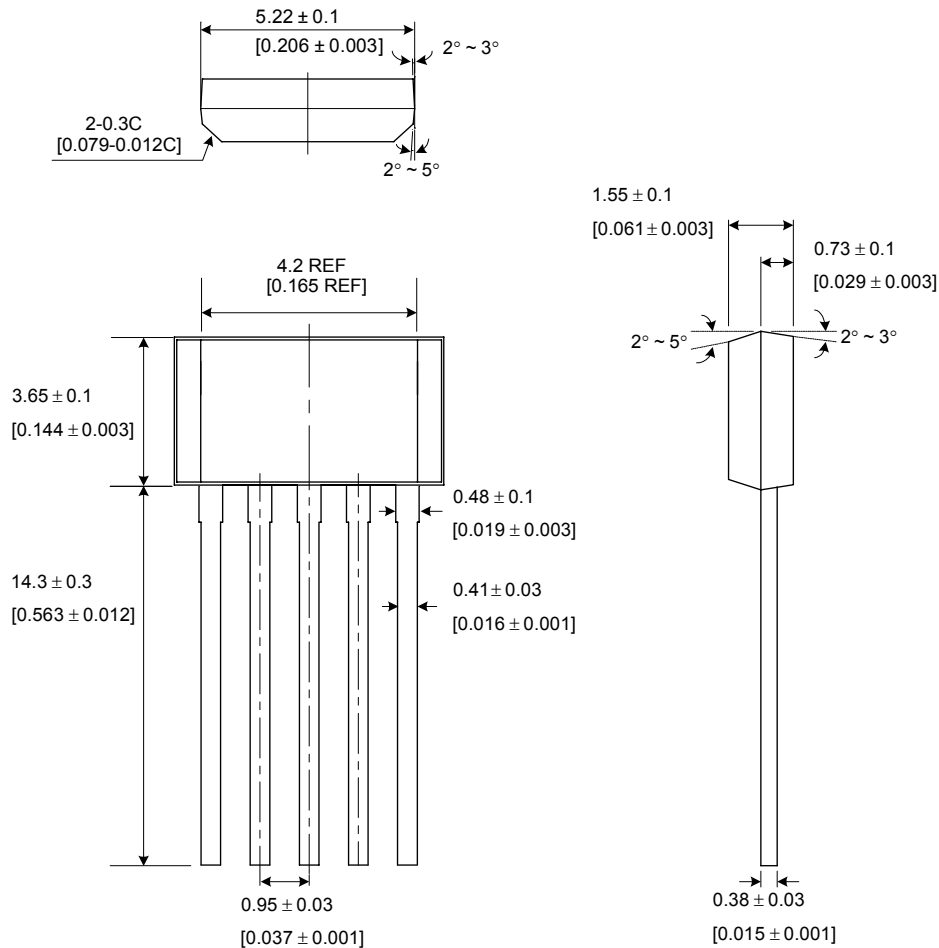
■ Marking Information



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■ Package Information

Package type: SIP-5L (unit: mm / [inch])



■ Location of Sensing Point

