

Complementary Output Hall Effect Latch

DTS276/277

■ Features

- On-chip Hall sensor with two different sensitivity and hysteresis settings for DTS276/277
- 3.5V to 18V operating voltage
- 350mA (avg) output sink current
- Built-in protecting diode only for chip reverse power connecting
- -40°C to 85°C operating temperature
- Low profile 4 pin SIP package

■ Applications

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

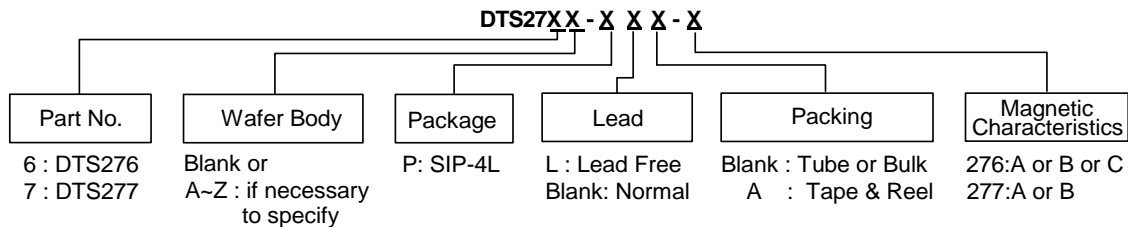
■ General Description

DTS276/277 are integrated Hall sensors with output drivers, mainly designed for electronic commutation of brush-less DC Fan. This IC internally includes the regulator, protecting diode, Hall plate, amplifier, comparator, and a pair of complementary open-collector outputs (**DO**, **DOB**).

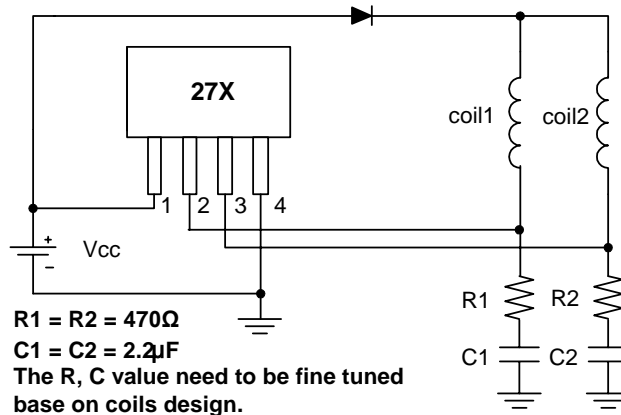
While the magnetic flux density (**B**) is larger than operate point (**Bop**), **DO** will turn on (low), and meanwhile **DOB** will turn off (high). Each output is latched until **B** is lower than release point (**Brp**), and then **DO**、**DOB** transfer each state.

For DC fan application, sometimes need to test power reverse connection condition. Internal diode only protects chip-side but not for coil-side. If necessary, add one external diode to block the reverse current from coil-side.

■ Ordering Information



■ Typical Application Circuit

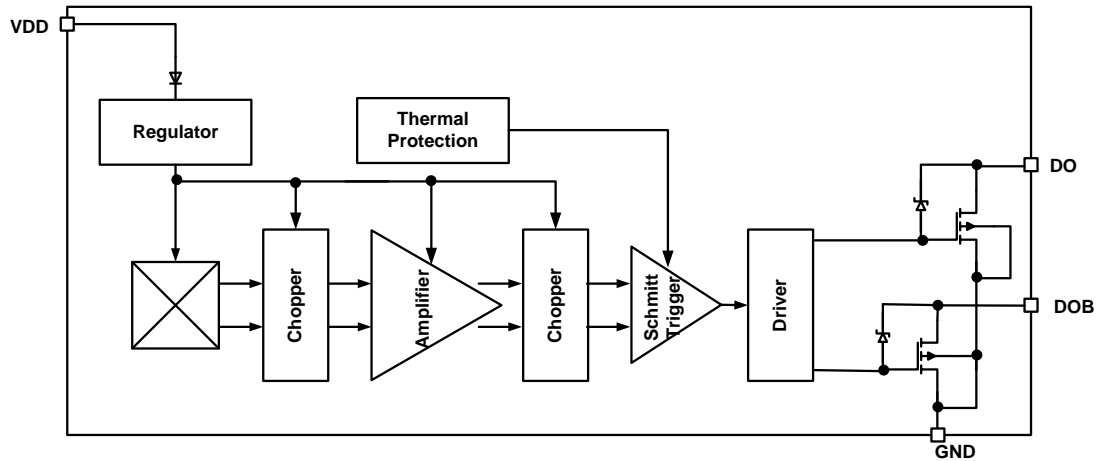


Brush-less DC Fan

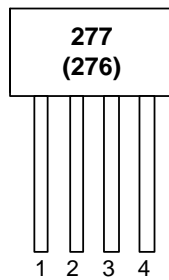
Complementary Output Hall Effect Latch

DTS276/277

■ **Block Diagram**



■ **Pin Assignment**



Front View

1 : VCC

2 : DO

3 : DOB

4 : GND

Name	P/I/O	Pin #	Description
Vcc	P	1	Power Supply Input
DO	O	2	Output Pin
DOB	O	3	Output Pin
GND	P	4	Ground

Complementary Output Hall Effect Latch

DTS276/277

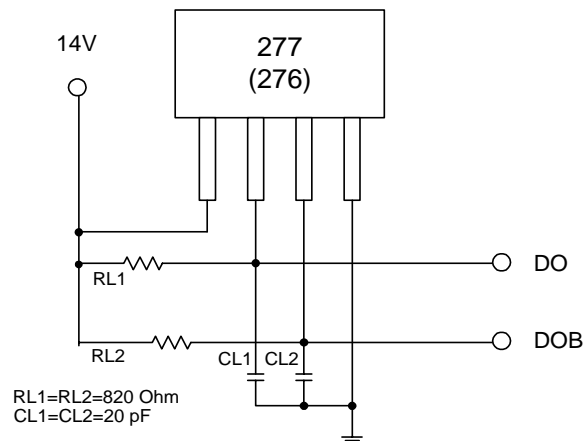
■ **Absolute Maximum Ratings** (at Ta=25°C)

Symbol	Parameter	Value	Unit
VDD	Supply Voltage	18	V
VDDR	Reversed Supply Voltage	-18	V
B	Magnetic Flux Density	Un-limited	
Io	Output Current	Continuous	0.35
		Hold	0.5
		Peak	0.7
Ta	Ambient Temp	-40~85	°C
Ts	Storage Temp	-65~150	°C
PD	Power Dissipation	550	mW
TJ	Maximum Junction Temp	150	°C
RJC	Thermal Resistance	227	°C/W

■ **Electrical Characteristics** (T=+25°C Vcc = 4.0V to 20V)

Symbol	Parameter	Condition	Min.	Typ.	Max.	Unit
VDD	Supply voltage		3.5		18	V
Vz	Output protect voltage		-	31.5	-	V
Idd	Operating Current	VDD=18V, DO、 DOB open	-	1.5	3	mA
Vsat	Output saturation voltage	VDD=3.5V, Io=100mA	-	0.2	-	V
		Io=350mA	-	0.5	0.8	V
Ioff	Output Leakage current	VDD=18V, Vo=18V	-	0.1	10	uA
Tr	Output rise time	RL=820Ohm, CL=20pF	-	3	10	uS
Tf	Output fall time	RL=820Ohm, CL=20pF	-	0.3	1	uS
ΔT	Switch time differential	RL=820Ohm, CL=20pF	-	3	10	uS
TSD	Thermal protect temp		-	165	-	°C
TREL	Thermal release temp		-	135	-	°C
ΔTSD	Thermal protection window		-	30	-	°C

■ **Test Circuit**



Complementary Output Hall Effect Latch

DTS276/277

■ Magnetic Characteristics(Ta=+25°C)

(1mT=10 Gauss)

A grade

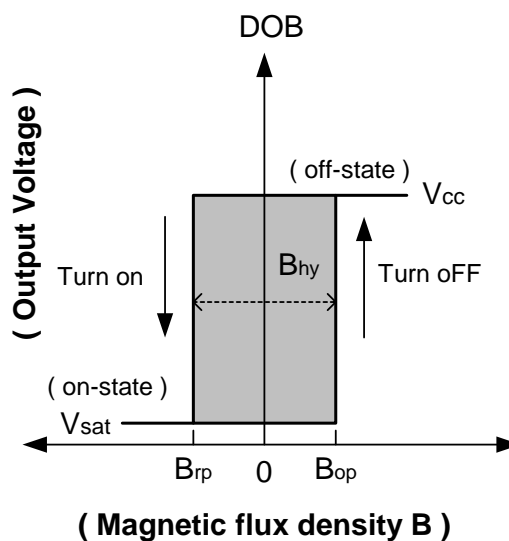
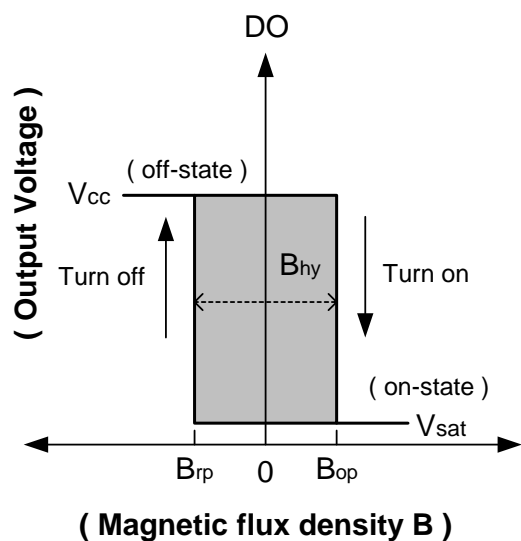
Characteristic		Symbol	Min.	Typ.	Max.	Unit
Operate Point	DTS276	Bop	10	-	50	Gauss
	DTS277		10	-	50	
Release Point	DTS276	Brp	-50	-	-10	Gauss
	DTS277		-50	-	-10	
Hysteresis	DTS276	Bhy	-	75	-	Gauss
	DTS277		-	75	-	

B grade

Characteristic		Symbol	Min.	Typ.	Max.	Unit
Operate Point	DTS276	Bop	5	-	70	Gauss
	DTS277		5	-	70	
Release Point	DTS276	Brp	-70	-	-5	Gauss
	DTS277		-70	-	-5	
Hysteresis	DTS276	Bhy	-	75	-	Gauss
	DTS277		-	75	-	

C grade

Characteristic		Symbol	Min.	Typ.	Max.	Unit
Operate Point	DTS276	Bop	-	-	100	Gauss
Release Point	DTS276	Brp	-100	-	-	Gauss
Hysteresis	DTS276	Bhy	-	75	-	Gauss

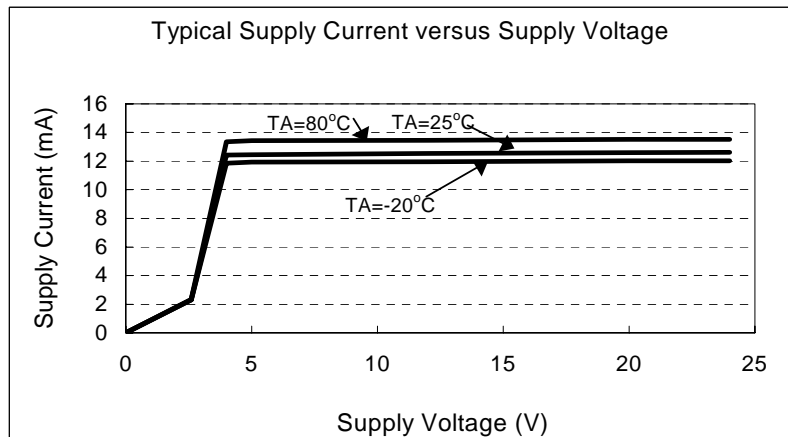
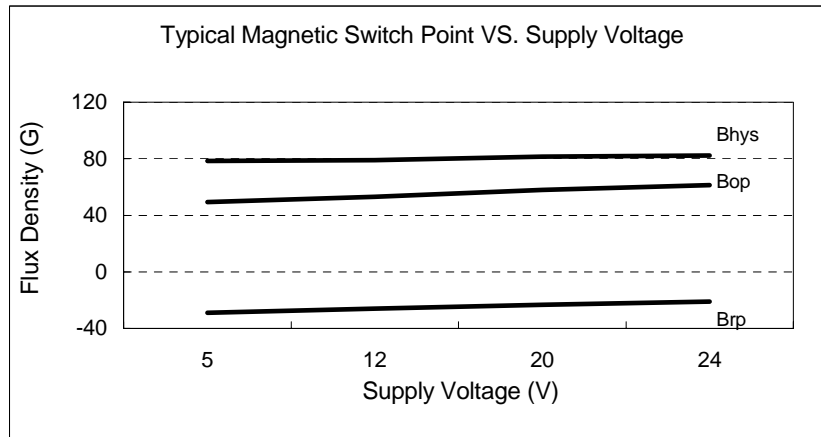
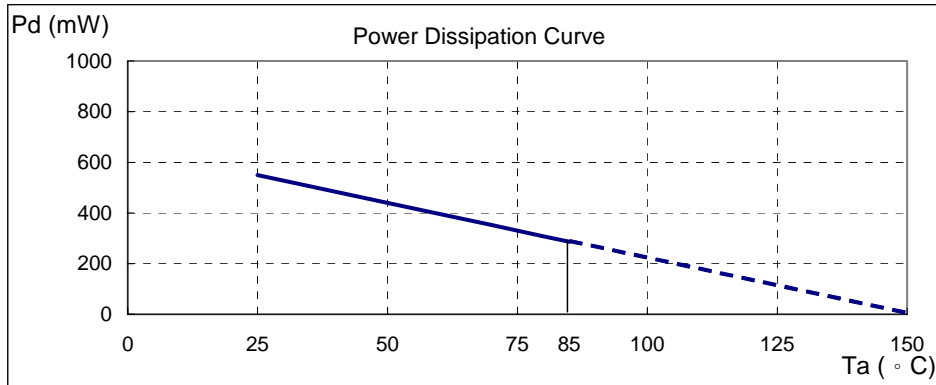


Complementary Output Hall Effect Latch

DTS276/277

■ Performance Characteristics (SIP4)

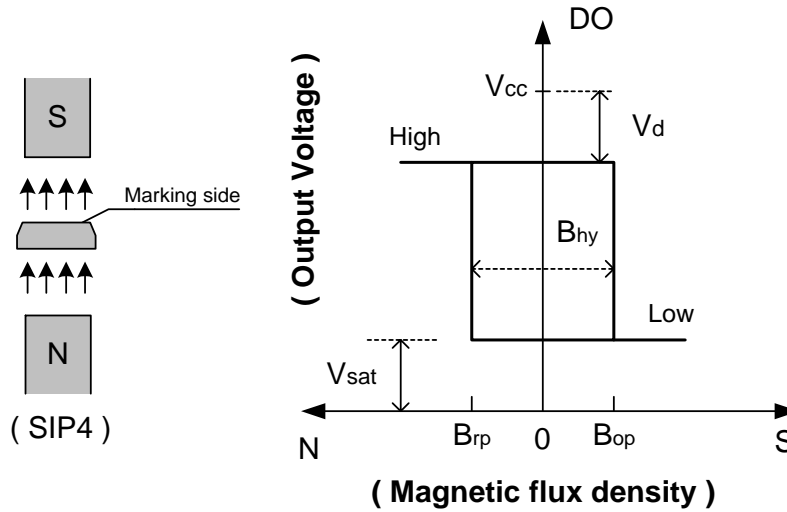
Ta (°C)	25	50	60	70	80	85	90	95	100
Pd (mW)	550	440	396	352	308	286	264	242	220
Ta (°C)	105	110	115	120	125	130	135	140	150
Pd (mW)	198	176	154	132	110	88	66	44	0



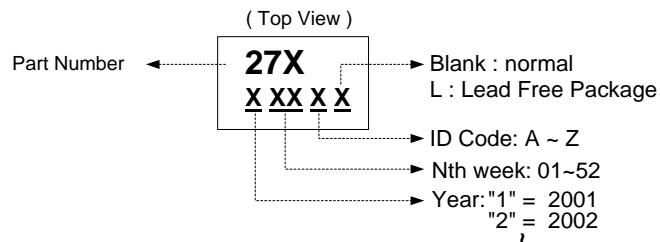
Complementary Output Hall Effect Latch

DTS276/277

■ Operating Characteristics



■ Marking Information

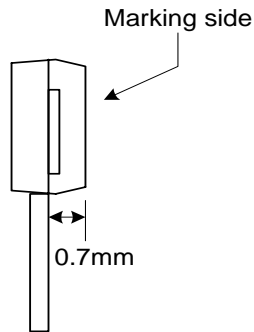


Complementary Output Hall Effect Latch

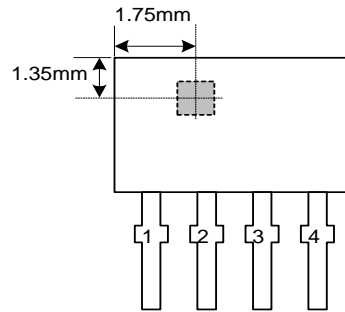
DTS276/277

■ Package Information

Active Area Depth



Package Sensor Location



Package Dimension

