



## H654

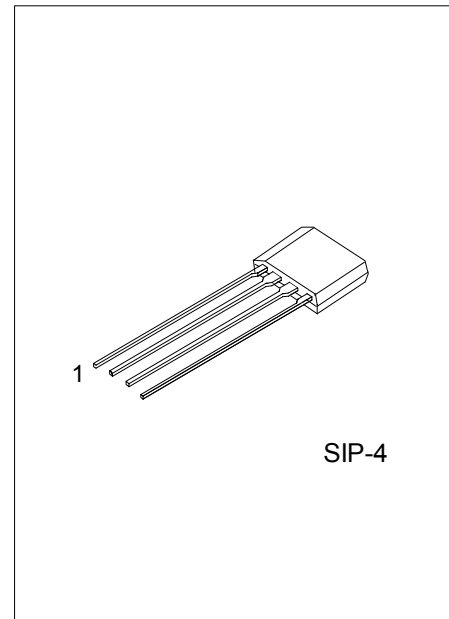
## LINEAR INTEGRATED CIRCUIT

### COMPLEMENTARY OUTPUT HALL EFFECT LATCH

#### DESCRIPTION

The UTC **H654** is integrated Hall sensors with complementary output drivers designed for electronic commutation of brushless DC Fan. It composed of an on-chip Hall voltage generator, a differential amplifier, Schmitt trigger, an open-collector output on a single chip. Furthermore, an internal bandgap regulator allows temperature compensated operations and a wide operating supply range. An on-chip protection diode is implemented to prevent reverse power fault.

When the magnetic flux density larger than threshold  $B_{OP}$ , DO will be turned on(low) and DOB be turned off(high). The output state is held until the magnetic flux density is lower than  $B_{RP}$ , and then DO is reversal to turned off and DOB turned on.



\*Pb-free plating product number: H654L

#### FEATURES

- \* Operate from 3.5V ~ 20V supply voltage.
- \* On-chip Hall sensor with two different sensitivity and hysteresis settings.
- \* High output sinking capability up to 300mA for driving large load.
- \* Lower current change rate reduces the peak output voltages during switching.
- \* Build-in protecting diode for chip reversal power connecting.(Note1)

#### ORDERING INFORMATION

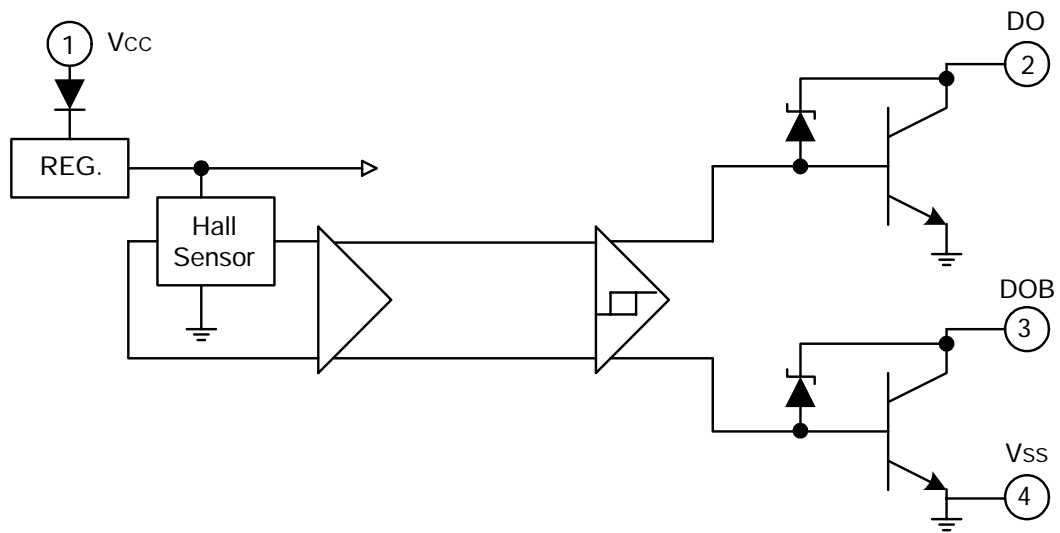
Order Number		Package	Packing
Normal	Lead Free Plating		
H654-G04-K	H654L-G04-K	SIP-4	Bulk

<p>H654L-G04-K</p> <p>(1)Packing Type (2)Package Type (3)Lead Plating</p>	<p>(1) B: Bulk (2) G04: SIP-4 (3) L: Lead Free Plating Blank: Pb/Sn</p>
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#### PIN DESCRIPTION

PIN NO.	PIN NAME	P/I/O	DESCRIPTION
1	$V_{CC}$	P	Positive Power Supply
2	DO	O	Output Pin
3	DOB	O	Output Pin
4	$V_{SS}$	P	Ground

### ■ BLOCK DIAGRAM



### ■ ABSOLUTE MAXIMUM RATINGS (Ta=25 )

PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V <sub>CC</sub>	20	V
Reverse V <sub>CC</sub> Polarity Voltage	V <sub>RCC</sub>	-35	V
Output OFF Voltage	V <sub>CE</sub>	50	V
Magnetic flux density	B	Unlimited	
Output ON Current	Continuous	0.3	A
	Hold	0.4	
	Peak (Start Up)	0.7	
Power Dissipation	P <sub>D</sub>	500	mW
Junction Temperature	T <sub>J</sub>	+150	
Operating Temperature	T <sub>OPR</sub>	-20 ~ +85	
Storage Temperature	T <sub>STG</sub>	-65 ~ +150	

Note 1: Output Zener protection voltage

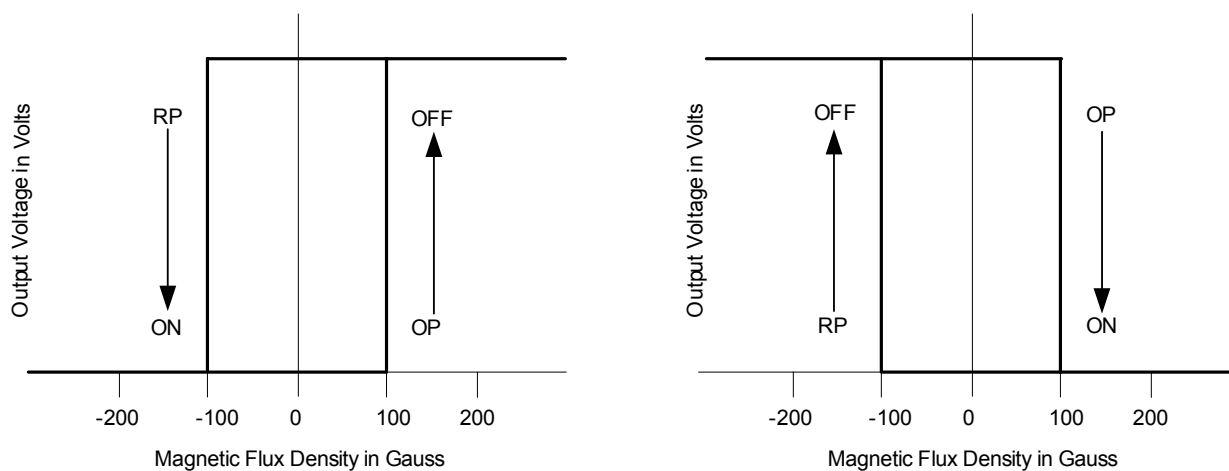
### ■ ELECTRICAL CHARACTERISTICS (Ta =25 , unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Low Supply Voltage	V <sub>CE</sub>	V <sub>CC</sub> =3.5V, I <sub>L</sub> =100mA		0.4		V
Supply Voltage	V <sub>CC</sub>		3.5		20	V
Output Saturation Voltage	V <sub>CE(SAT)</sub>	V <sub>CC</sub> =14V, I <sub>L</sub> =300mA		0.3	0.6	V
Output Leakage Current	I <sub>CEX</sub>	V <sub>CE</sub> =14V, V <sub>CC</sub> =14V		<0.1	10	μA
Supply Current	I <sub>CC</sub>	V <sub>CC</sub> =20V, Output Open		16	25	mA
Output Rise Time	t <sub>R</sub>	V <sub>CC</sub> =14V, R <sub>L</sub> =820Ω, C <sub>L</sub> =20pF		3.0	10	μS
Output Falling Time	t <sub>F</sub>	V <sub>CC</sub> =14V, R <sub>L</sub> =820Ω, C <sub>L</sub> =20pF		0.3	1.5	μS
Switch Time Differential	Δt	V <sub>CC</sub> =14V, R <sub>L</sub> =820Ω, C <sub>L</sub> =20pF		3.0	10	μS

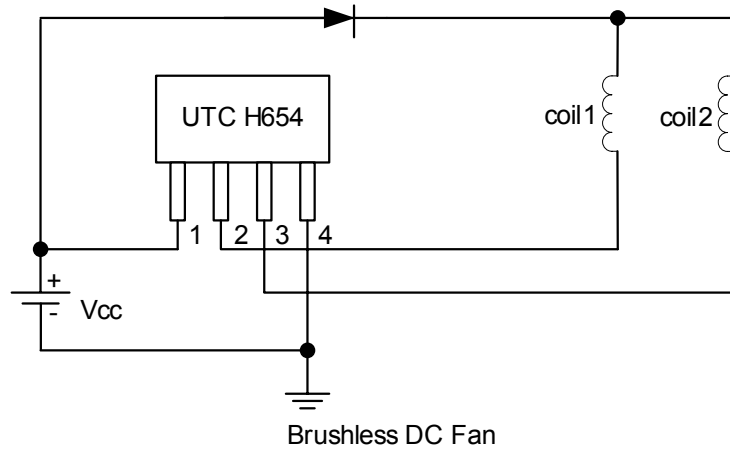
### ■ MAGNETIC CHARACTERISTICS

PARAMETR	SYMBOL	Ta= 25		Ta= 0 ~ +70		UNIT
		MIN	MAX	MIN	MAX	
Operate Point	B <sub>OP</sub>		100		100	G
Release Point	B <sub>RP</sub>	-100		-100		G
Hysteresis	B <sub>HYS</sub>	50	200	30	200	G

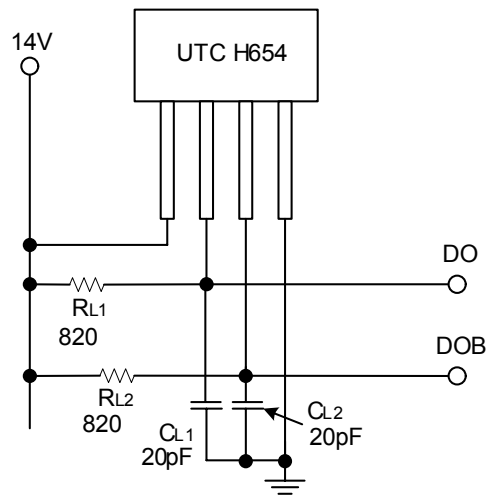
### ■ HYSTERESIS CHARACTERISTICS



## ■ TYPICAL APPLICATION CIRCUIT

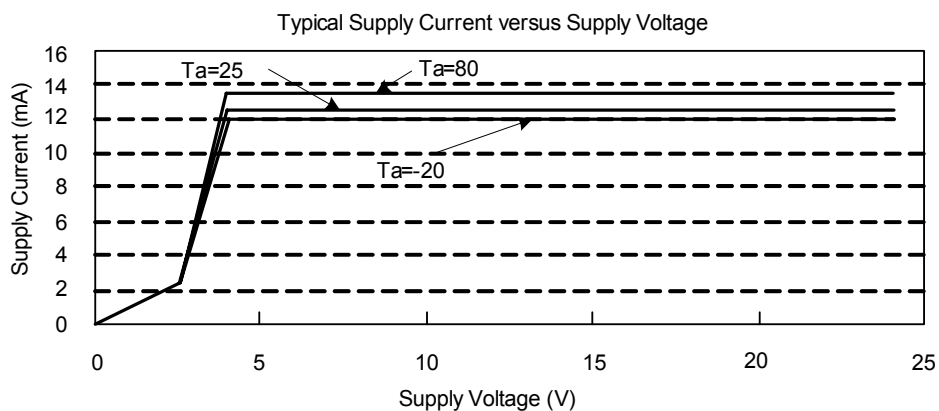
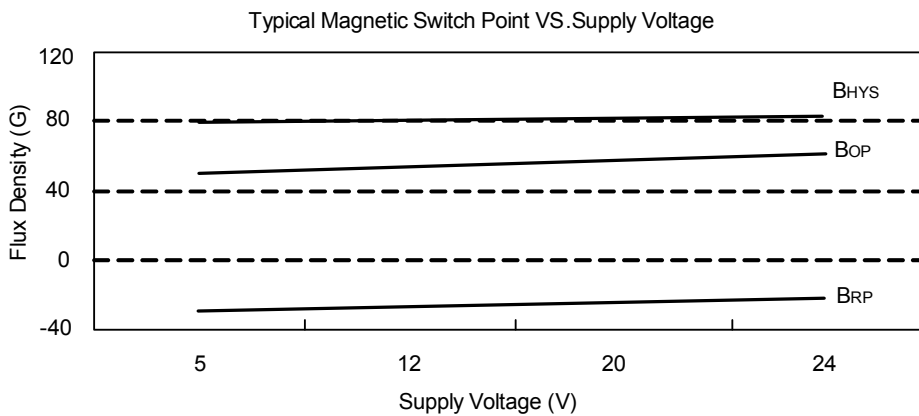
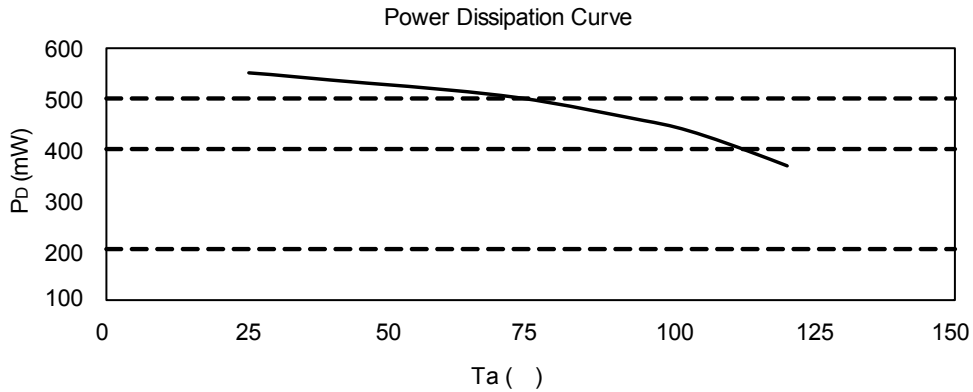


## ■ TEST CIRCUIT



## ■ PERFORMANCE CHARACTERISTICS

Ta( )	25	50	60	70	80	85	90	95	100	105	110	115	120
P <sub>D</sub> (mW)	550	525	515	505	485	475	465	455	445	425	405	385	365



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