



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.

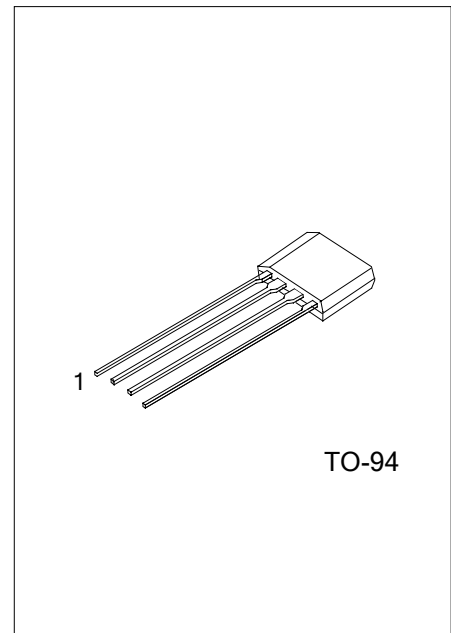
When the magnetic flux density larger than threshold B_{OP} , DO will be turned on(low) and DOB be turned off(high). The output state is held until the magnetic flux density is lower than B_{RP} , and then DO is reversal to turned off and DOB turned on.

■ 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.

■ ORDERING INFORMATION

Order Number		Package	Packing
Normal	Lead free plating		
H654-T94-K	H654L-T94-K	TO-94	Bulk

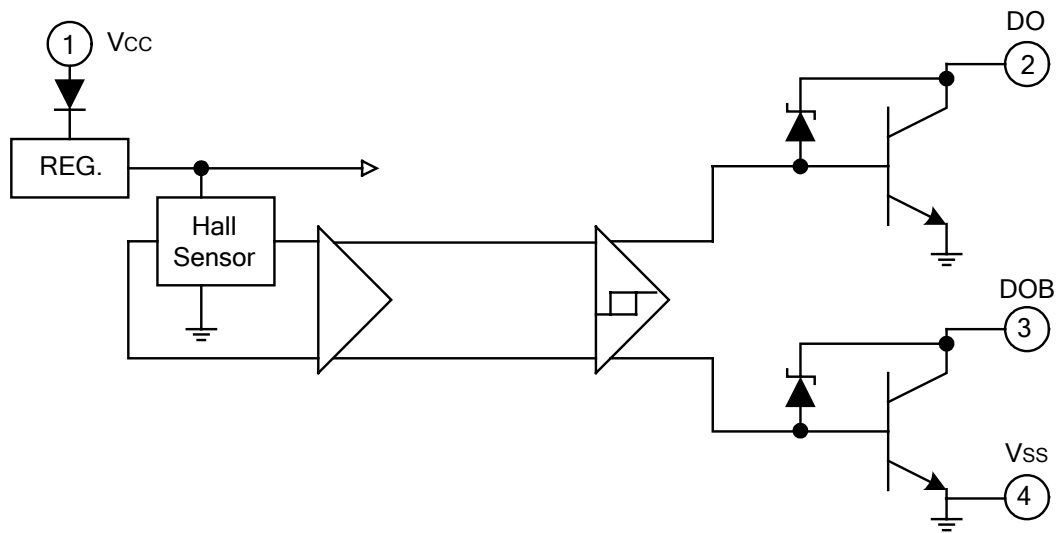


*Pb-free plating product number: H654L

■ PIN DESCRIPTION

PIN NO.	PIN NAME	P/I/O	DESCRIPTION
1	Vcc	P	Positive Power Supply
2	DO	O	Output Pin
3	DOB	O	Output Pin
4	Vss	P	Ground

■ BLOCK DIAGRAM



■ ABSOLUTE MAXIMUM RATINGS (Ta=25°C)

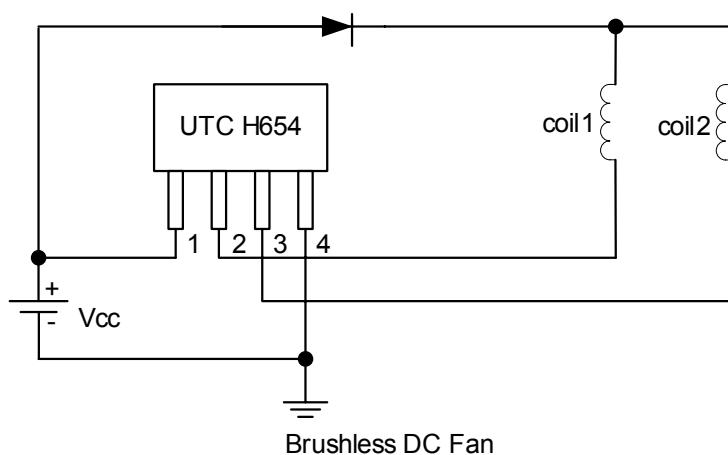
PARAMETER	SYMBOL	RATINGS	UNIT
Supply Voltage	V_{CC}	20	V
Reverse V_{CC} Polarity Voltage	V_{RCC}	-35	V
Output OFF Voltage	V_{CE}	50	V
Magnetic flux density	B	Unlimited	
Output ON Current	Continuous	0.3	A
	Hold	0.4	
	Peak (Start Up)	0.7	
Power Dissipation	P_D	500	mW
Operating Temperature	T_{OPR}	0 ~ +70	°C
Junction Temperature	T_J	+125	°C
Storage Temperature	T_{STG}	-40 ~ +150	°C

Note 1: Output Zener protection voltage

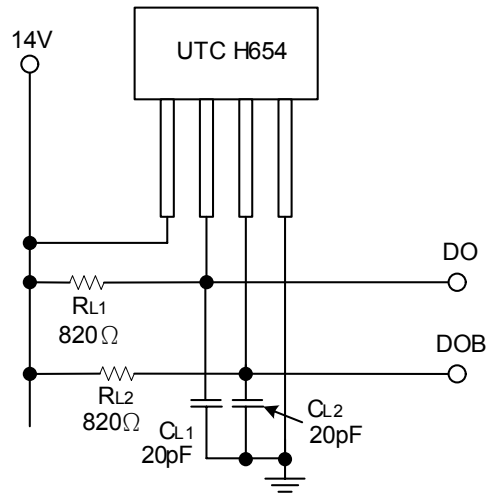
■ ELECTRICAL CHARACTERISTICS (Ta =25°C, unless otherwise specified.)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNIT
Low Supply Voltage	V_{CE}	$V_{CC}=3.5V, I_L=100mA$		0.4		V
Supply Voltage	V_{CC}		3.5		20	V
Output Saturation Voltage	$V_{CE(sat)}$	$V_{CC}=14V, I_L=300mA$		0.3	0.6	V
Output Leakage Current	I_{CEX}	$V_{CE}=14V, V_{CC}=14V$		<0.1	10	μA
Supply Current	I_{CC}	$V_{CC}=20V, \text{Output Open}$		16	25	mA
Output Rise Time	t_R	$V_{CC}=14V, R_L=820\Omega, C_L=20pF$		3.0	10	μS
Output Falling Time	t_F	$V_{CC}=14V, R_L=820\Omega, C_L=20pF$		0.3	1.5	μS
Switch Time Differential	Δt	$V_{CC}=14V, R_L=820\Omega, C_L=20pF$		3.0	10	μS

■ TYPICAL APPLICATION CIRCUIT



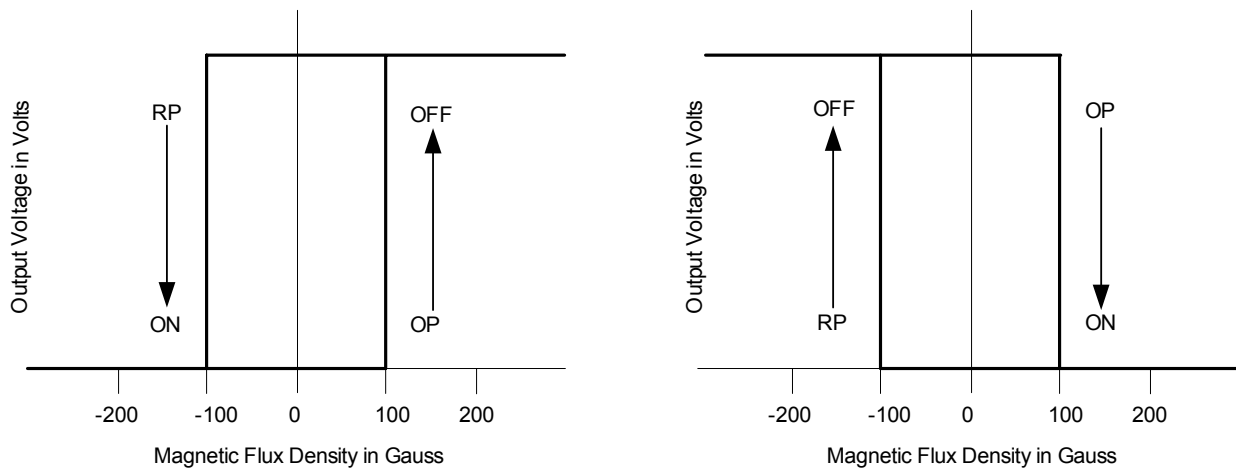
■ TEST CIRCUIT



■ MAGNETIC CHARACTERISTICS

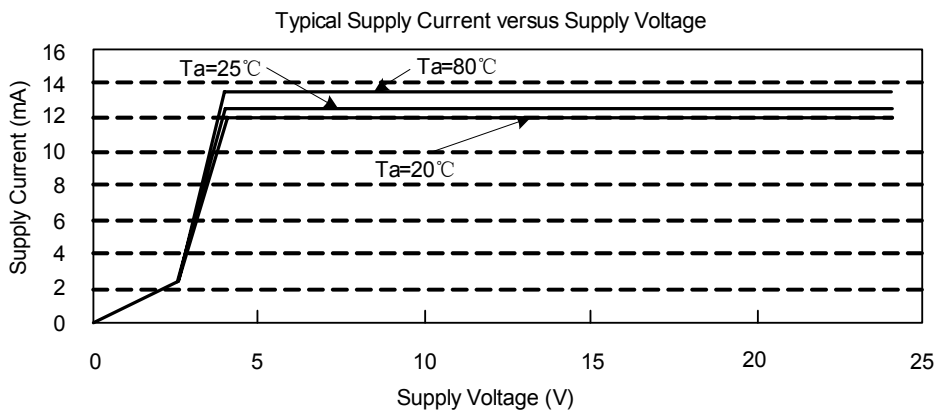
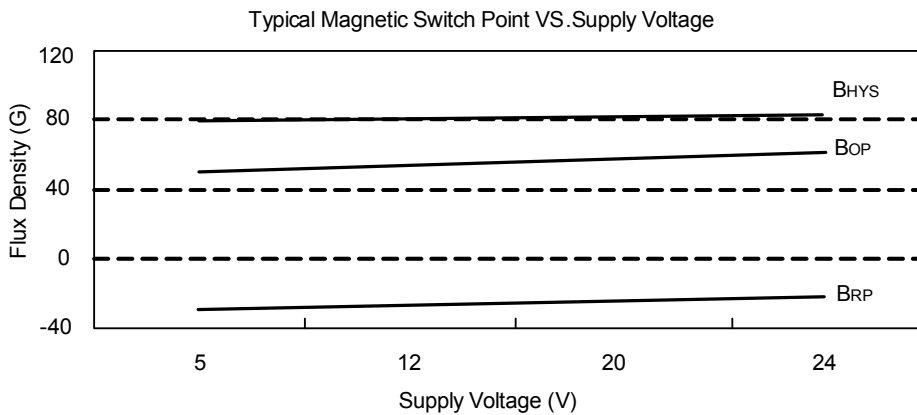
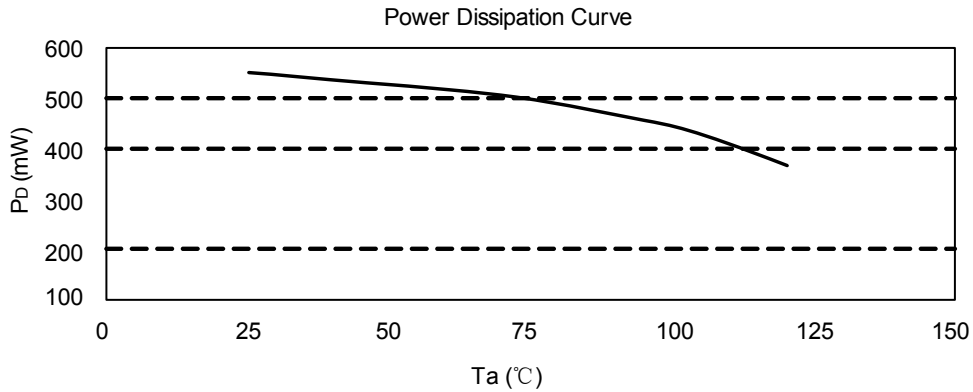
PARAMETR	SYMBOL	Ta= 25°C		Ta= 0 ~ +70°C		UNIT
		MIN	MAX	MIN	MAX	
Operate Point	B _{OP}		100		100	G
Release Point	B _{RP}	-100		-100		G
Hysteresis	B _{HYS}	50	200	30	200	G

■ HYSTERESIS CHARACTERISTICS



■ PERFORMANCE CHARACTERISTICS

Ta(°C)	25	50	60	70	80	85	90	95	100	105	110	115	120
P _D (mW)	550	525	515	505	485	475	465	455	445	425	405	385	365



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