

# UTC U652 LINEAR INTEGRATED CIRCUIT

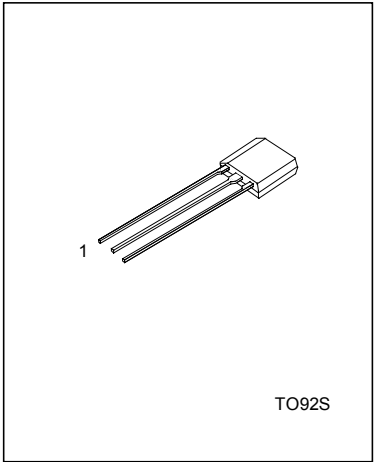
## SINGLE OUTPUT HALL EFFECT LATCH

### GENERAL DESCRIPTION

The UTC U652 is a Integrated Hall sensor with latch designed for electronic commutation of brushless DC motor applications. The device includes an on-chip Hall voltage generator for magnetic sensing, a comparator that amplifies the Hall voltage, and a Schmitt trigger to provide switching hysteresis for noise rejection, and open-collector output. An internal bandgap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range.

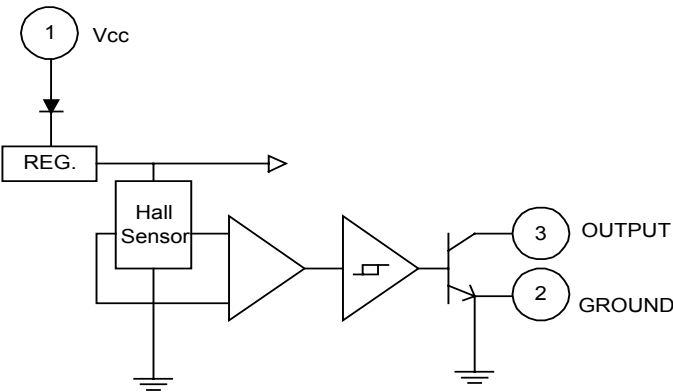
### FEATURES

- \*3.5V to 20V operation
- \*On-chip Hall sensor with two different sensitivity and hysteresis settings.
- \*Internal bandgap regulator allows temperature compensated operations and a wide operating voltage range.
- \*Open-Collector 25mA Output.
- \*Reverse Polarity Protection.



1: Vcc 2: GND 3: OUTPUT

### BLOCK DIAGRAM



### PIN DESCRIPTIONS

| NAME | P/I/O | PIN NO. | DESCRIPTION           |
|------|-------|---------|-----------------------|
| Vcc  | P     | 1       | Positive Power Supply |
| Vss  | P     | 2       | Ground                |
| DO   | O     | 3       | OUTPUT Pin            |

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## ABSOLUTE MAXIMUM RATINGS(Ta=25°C )

| CHARACTERISTIC               | SYMBOL | VALUE     | UNIT |
|------------------------------|--------|-----------|------|
| Supply Voltage               | Vcc    | 20        | V    |
| Reverse Vcc Polarity Voltage | VRCC   | -20       | V    |
| Magnetic flux density        | B      | Unlimited |      |
| Output OFF Voltage           | Vce    | 30        | V    |
| Output ON Current            | Ic     | 30        | mA   |
| Operating Temperature Range  | Ta     | 0 ~ 70    | °C   |
| Storage Temperature Range    | Ts     | -65 ~ 150 | °C   |
| Package Power Dissipation    | Pd     | 400       | mW   |

## ELECTRICAL CHARACTERISTICS( Ta=25°C,Vcc=3.5V to 20V )

| CHARACTERISTIC            | SYMBOL   | TEST CONDITION          | MIN | TYP. | MAX | UNIT |
|---------------------------|----------|-------------------------|-----|------|-----|------|
| Operating Supply Voltage  | Vcc      |                         | 8   |      | 20  | V    |
| Output Saturation Voltage | Vce(sat) | Vcc=14V,Ic=20mA         |     | 300  | 700 | mV   |
| Output Leakage Current    | Icex     | Vce=14V,Vcc=14V         |     | <0.1 | 10  | uA   |
| Supply Current            | Icc      | Vcc=20V, Output Open    |     | 5    | 10  | mA   |
| Output Rise Time          | tr       | Vcc=14V,RL=820Ω,CL=20pF |     | 0.3  | 1.5 | us   |
| Output Falling Time       | tf       | Vcc=14V,RL=820Ω,CL=20pF |     | 0.3  | 1.5 | us   |

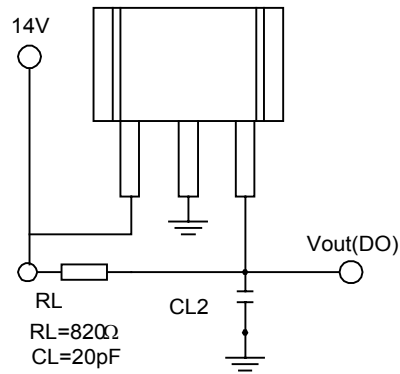
## MAGNETIC CHARACTERISTICS

| CHARACTERISTIC | SYMBOL | Ta=25°C |     | Ta=0 ~ 70°C |     | UNIT |
|----------------|--------|---------|-----|-------------|-----|------|
|                |        | Min     | Max | Min         | Max |      |
| Operate Point  | Bop    | 10      | 120 | 5           | 120 | G    |
| Release Point  | Brp    | -120    | -10 | -120        | -5  | G    |
| Hysteresis     | Bhys   | 20      | 240 | 10          | 240 | G    |

## CLASSIFICATION OF OPERATING POINT

| RANK | A   |     | B   |      |
|------|-----|-----|-----|------|
| Bop  | 10  | 70  | 60  | 120  |
| Brp  | -10 | -70 | -60 | -120 |
| Bhys | 20  | 140 | 120 | 240  |

## TEST CIRCUIT



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