

U18, Hall-Effect sensor, designed for electronic commutation of brush-less 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 band gap regulator is used to provide temperature compensated supply voltage for internal circuits and allows a wide operating supply range. The device is identical except for magnetic switch points.

The device includes on a single silicon chip a voltage regulator, Hall-voltage generator, small-signal amplifier, chopper stabilization, Schmitt trigger, open-collector output to sink up to 25mA. A south pole of sufficient strength will turn the output on. The North Pole is necessary to turn the output off. An on-board regulator permits operation with supply voltages of 3.5V to 20 V.

The package type is in a lead Halogen Free version was verified by third party organization.

Features and Benefits

- Temperature compensation.
- Wide operating voltage range.
- Open-Collector pre-driver.
- Reverse bias protection on power supply pin.

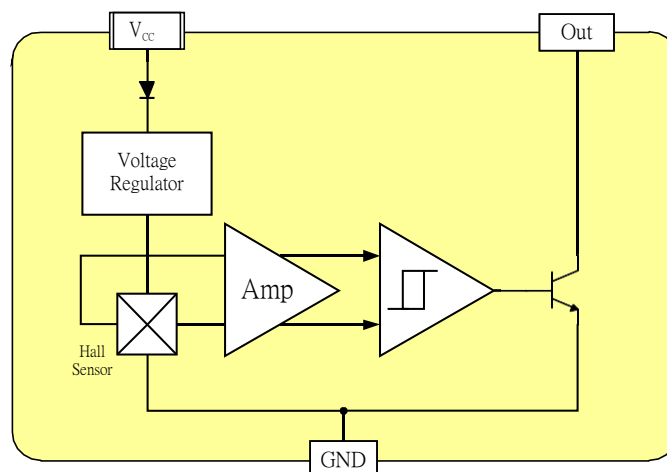
Applications

- High temperature Hall IC application
- Fan motor application
- BLDC motor application

Ordering number

Part No.	Temperature Suffix	Package Type
U18KUA	(-40°C to + 125°C)	(TO-92S)

Functional Diagram



Absolute Maximum Ratings At ($T_a=25^{\circ}\text{C}$)

Characteristics		Values	Unit
Supply voltage, (V_{CC})		20	V
Output Voltage, (V_{OUT})		30	V
Reverse voltage, (V_{CC}) (V_{OUT})		-20	V
Magnetic flux density		Unlimited	Gauss
Output current, (I_{SINK})		25	mA
Operating Temperature Range, (T_a)	“E” version	-20 to +85	$^{\circ}\text{C}$
Storage temperature range, (T_s)		-55 to +150	$^{\circ}\text{C}$
Maximum Junction Temp, (T_j)		150	$^{\circ}\text{C}$
Thermal Resistance	(θ_{ja}) UA	206	$^{\circ}\text{C}/\text{W}$
	(θ_{jc}) UA	148	$^{\circ}\text{C}/\text{W}$
Package Power Dissipation, (P_D) UA		606	mW

Note: Do not apply reverse voltage to V_{CC} and V_{OUT} Pin, It may be caused for Miss function or damaged device.

Electrical Specifications

DC Operating Parameters: $T_a=+25^{\circ}\text{C}$, $V_{CC}=12\text{V}$

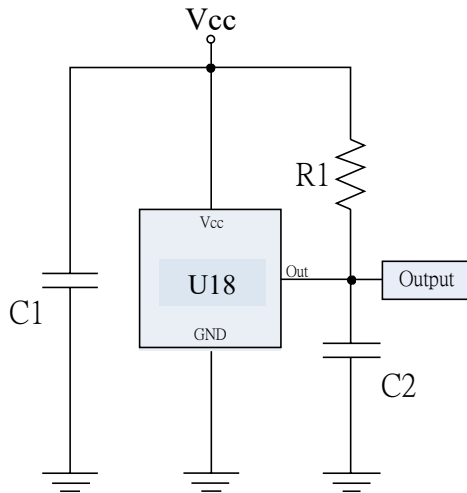
Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, (V_{CC})	Operating	3.5		20.0	V
Supply Current, (I_{CC})	$B < B_{OP}$		4.0	8.0	mA
Output Saturation Voltage, (V_{Sat})	$I_{OUT} = 10 \text{ mA}$, $B > B_{OP}$			700.0	mV
Output Leakage Current, (I_{off})	$I_{OFF} B < B_{RP}$, $V_{OUT} = 12\text{V}$			10.0	μA
Output Rise Time, (T_R)	$R_L=820 \Omega$, $C_L=20\text{pF}$			1.5	μS
Output Fall Time, (T_F)	$R_L=820 \Omega$; $C_L=20\text{pF}$			1.5	μS

U18EUA Magnetic Specifications

DC Operating Parameters: $T_A=+25^{\circ}\text{C}$, $V_{CC}=12\text{V}$

Parameter	Symbol	Test condition	Min	Typ	Max	Unit
Operate Point	B_{OP}	UA	5(-60)		60(-5)	Gauss
Release Point	B_{RP}	UA	-60 (5)		-5 (60)	Gauss
Hysteresis	B_{HYS}			60		Gauss

Typical application circuit

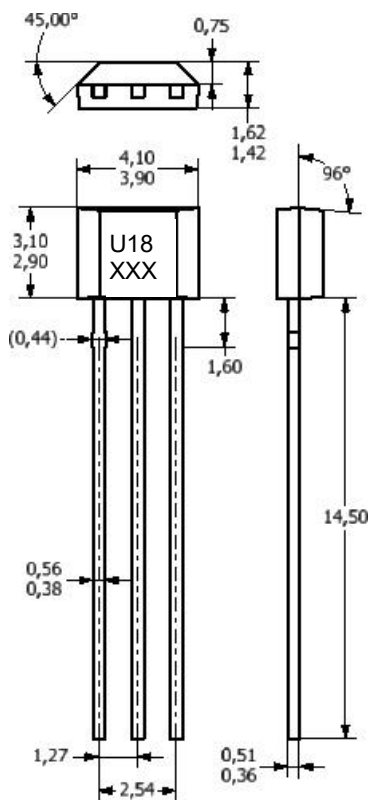


C1: 1000PF
C2: 15PF
R1: 10K Ω

Sensor Location, Package Dimension and Marking

U18EUA Package

UA Package

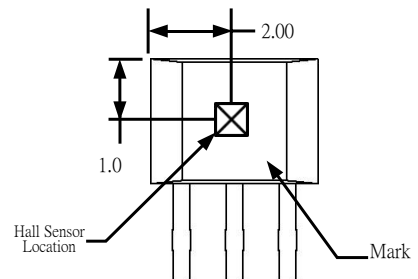


NOTES:

- 1).Controlling dimension: mm
- 2).Leads must be free of flash and plating voids
- 3).Do not bend leads within 1 mm of lead to package interface.
- 4).PINOUT:

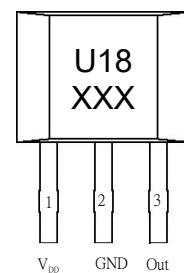
Pin 1 Vcc
Pin 2 GND
Pin 3 Output

Hall Chip location



Output Pin Assignment

(Top view)



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