



## UH211

## LINEAR INTEGRATED CIRCUIT

### HIGH SENSITIVITY HALL EFFECT SENSOR IC WITH FG OUTPUT

#### DESCRIPTION

The UTC **UH211** is a semiconducting integrated Hall Effect Sensor IC.

It is just like all the hall sensitive Hall Effect Sensors designed to work in the situations which the accurate track is extremely small and the changes in magnetic flux density-changes are generally too small to be operated.

Besides those features shared in all Hall Effect Sensors, **UH211** can apply to various kinds of applications, such as contact-less switches, motion detectors, gear tooth sensors, proximity detectors, and electric communication of DC brushless motors, etc.

#### FEATURES

- \* Hall Sensor On-Chip
- \* Output Zener Diodes to Clamp the Peak Output Voltage
- \* Frequency Generation Output
- \* High Output Sinking Capability (nearly to 400mA)
- \* High Sensitivity Hall Effect Sensor IC:  $\pm 65G$

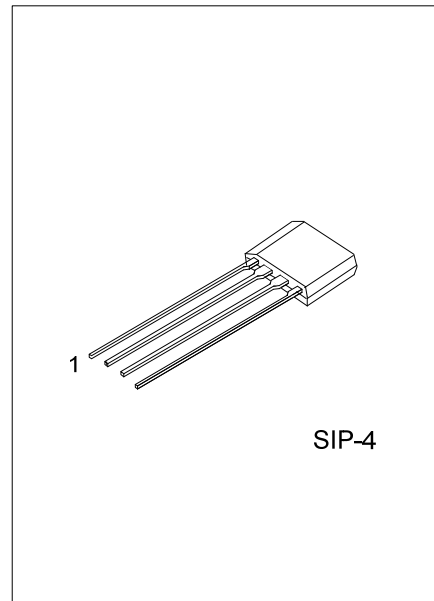
#### ORDERING INFORMATION

Ordering Number		Package	Packing
Lead Free	Halogen Free		
UH211L-G04-K	UH211G-G04-K	SIP-4	Bulk

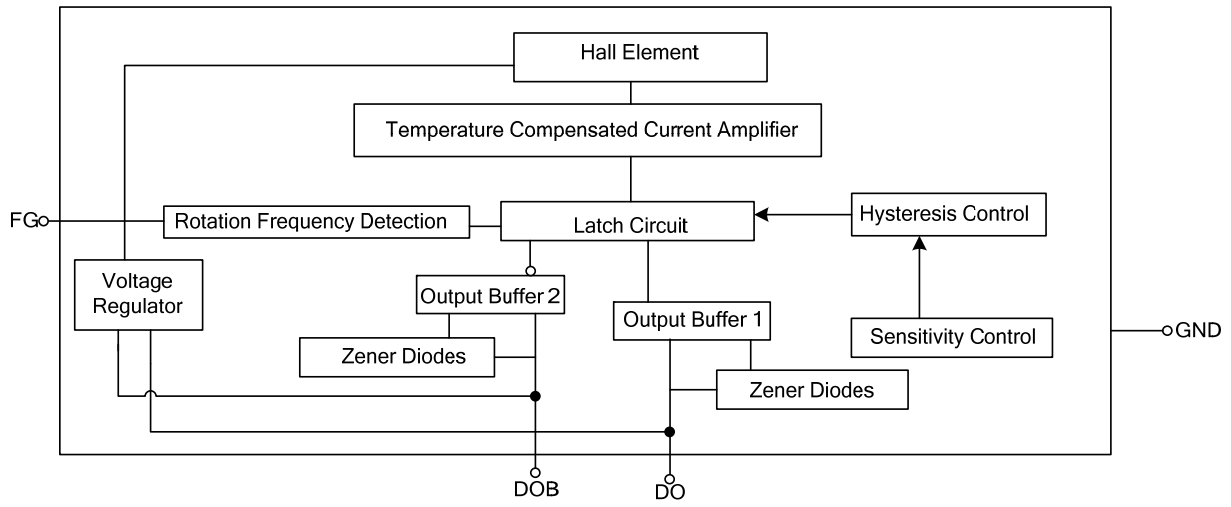
<p>UH211L-G04-K</p> <p>(1) Packing Type (2) Package Type (3) Lead Plating</p>	<p>(1) B: Bulk (2) G04: SIP-4 (3) G: Halogen Free, L: Lead Free</p>
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#### PIN DESCRIPTION

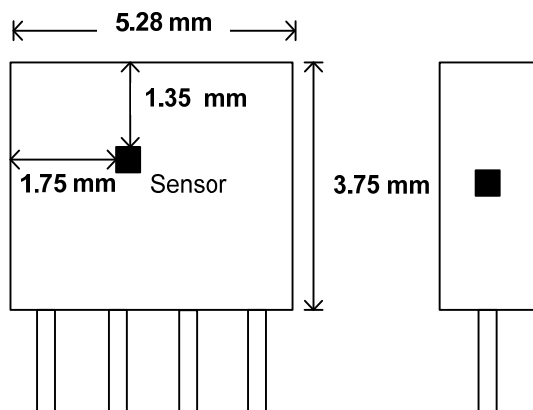
PIN NO.	PIN NAME	DESCRIPTION
1	FG	Open collector pin: for rotation frequency detection
2	DO	Coil output or power input
3	DOB	Coil output or Power input
4	GND	IC ground



## ■ BLOCK DIAGRAM



## ■ SENSOR LOCATIONS



ABSOLUTE MAXIMUM RATINGS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNITS
Supply Voltage (DO/DOB Voltage)	$V_{CC}$	25	V
FG Pin Off Voltage	$V_{OFF}$	25	V
FG Sink Current	$I_{FG}$	10	mA
Output Current	$I_{OUT}$	500	mA
Power Dissipation	$P_D$	500	mW
Junction Temperature	$T_J$	-20 ~ +150	$^\circ\text{C}$
Storage Temperature	$T_{STG}$	-65 ~ +150	$^\circ\text{C}$

Note: Absolute maximum ratings are those values beyond which the device could be permanently damaged. Absolute maximum ratings are stress ratings only and functional device operation is not implied.

■ RECOMMENDED OPERATING CONDITIONS ( $T_A=25^\circ\text{C}$ , unless otherwise specified)

PARAMETER	SYMBOL	RATINGS	UNITS
Supply voltage (DO/DOB Voltage)	$V_{CC}$	3.7~20	V
Maximum FG Pin Off Voltage	$V_{OFF}$	20	V
Maximum Output Sink Current	$I_{OUT}$	400	mA
Maximum FG Sink Current	$I_{FG}$	5	mA
Junction Temperature	$T_J$	-20~ +125	$^\circ\text{C}$
Operating Temperature	$T_{OPR}$	-20 ~ +85	$^\circ\text{C}$

■ ELECTRICAL CHARACTERISTICS ( $T_A=25^\circ\text{C}$ ,  $V_{CC}=12\text{V}$ , unless otherwise specified)

PARAMETER	SYMBOL	TEST CONDITIONS	MIN	TYP	MAX	UNITS
Output Saturation Voltage	$V_{O(SAT)}$	$I_{OUT} = 400\text{mA}$		700	900	mV
Supply Current	$I_{CC}$			11	25	mA
FG OFF Leakage Current	$I_{OFF}$				1	$\mu\text{A}$
FG ON Saturation Voltage	$V_{ON}$	$I_{FG} = 5\text{mA}$		0.2	0.4	V
Clamp Output Voltage	$V_{CLAMP}$			33		V
Output Rise Time	$t_R$	$R_L = 200\Omega, C_L = 10\text{pF}$		0.4		$\mu\text{S}$
Output Fall Time	$t_F$			0.1		$\mu\text{S}$
Propagation Delay Time	$t_D$			2		$\mu\text{S}$

■ MAGNETIC CHARACTERISTICS ( $T_A=25^\circ\text{C}$ ,  $V_{CC}=12\text{V}$  unless otherwise specified)

## A grade

PARAMETR	SYMBOL	MIN	TYP	MAX	UNIT
Operate Point	$B_{OP}$		60		G
Release Point	$B_{RP}$		-60		G
Hysteresis	$B_{HYS}$			120	G

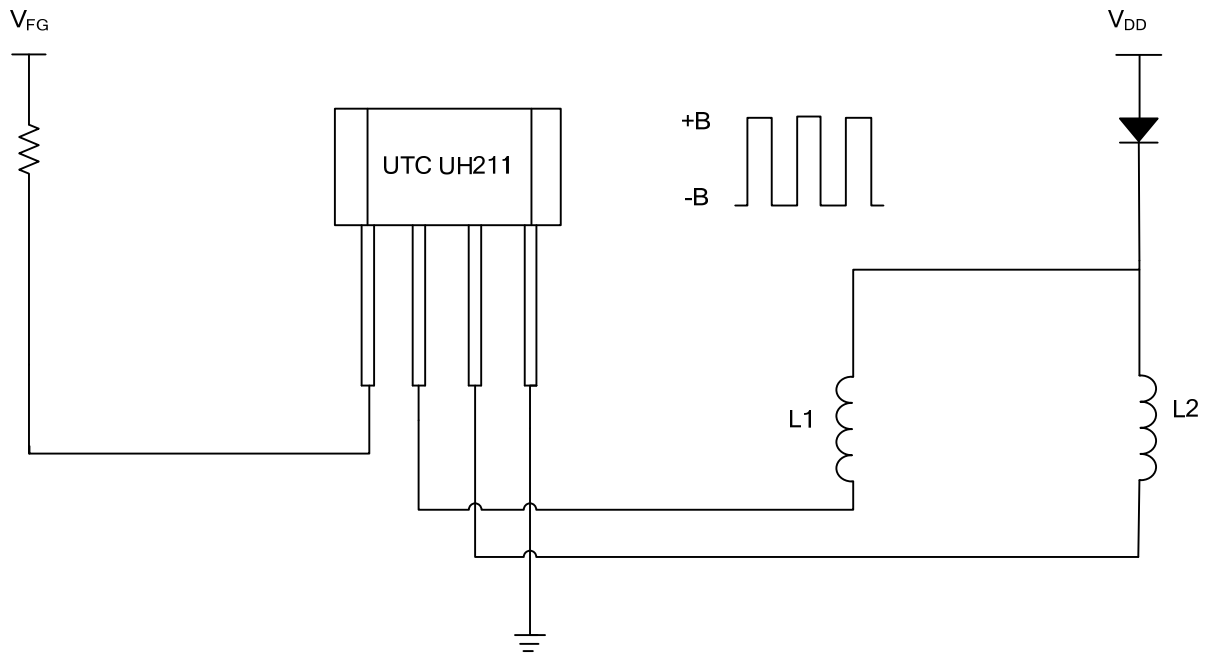
## B grade

PARAMETR	SYMBOL	MIN	TYP	MAX	UNIT
Operate Point	$B_{OP}$		90		G
Release Point	$B_{RP}$		-90		G
Hysteresis	$B_{HYS}$			120	G

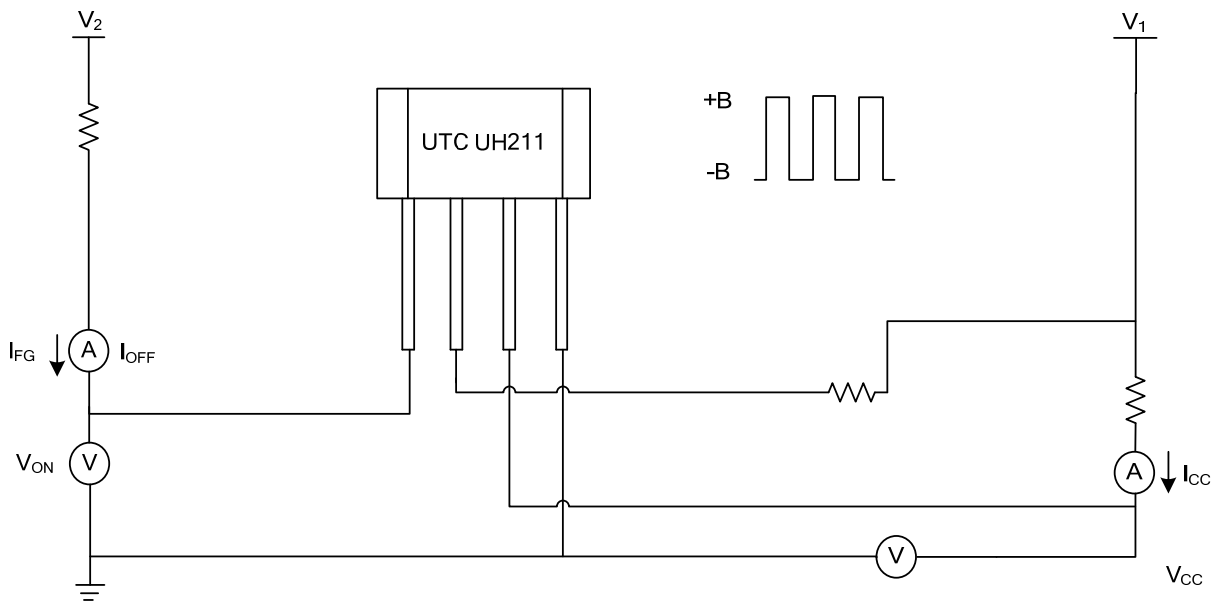
## C grade

PARAMETR	SYMBOL	MIN	TYP	MAX	UNIT
Operate Point	$B_{OP}$		110		G
Release Point	$B_{RP}$		-110		G
Hysteresis	$B_{HYS}$			120	G

### APPLICATION CIRCUIT

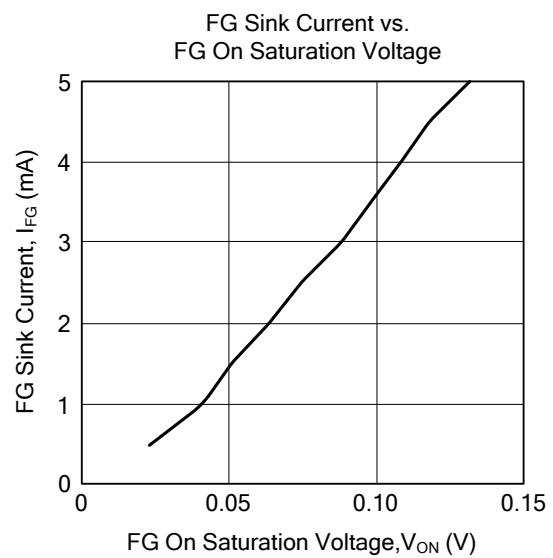
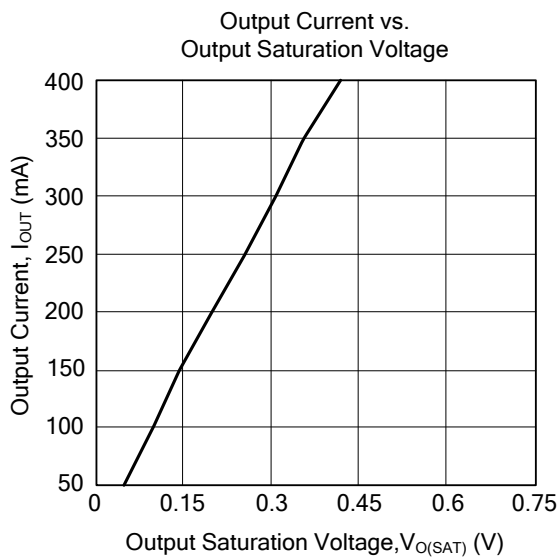
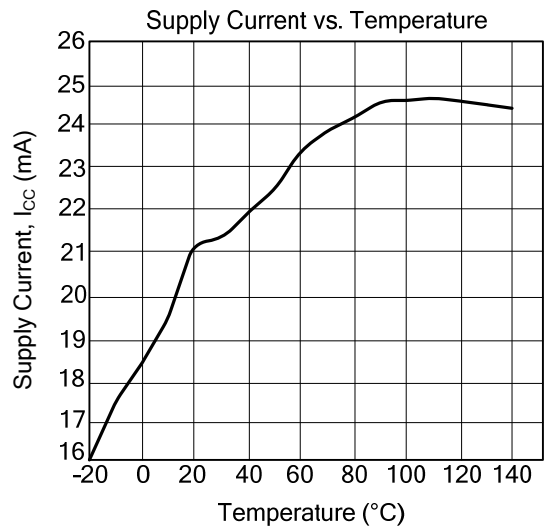
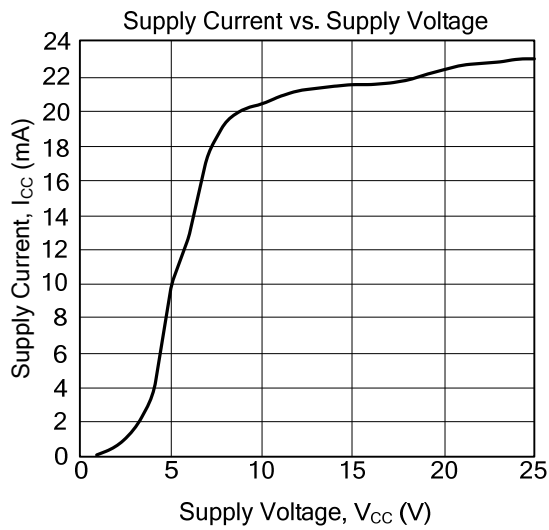


### TEST CIRCUIT



Measure  $V_{CC}, I_{CC}$  when DO is off. Measure  $V_{ON}, I_{FG}$  when FG is on. Measure  $I_{OFF}$  when FG is off.

■ TYPICAL APPLICATION CIRCUITS ( $T_A = 25^\circ\text{C}, V_{CC} = 12\text{V}$  unless otherwise noted)



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