

GT177yESO-K 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, 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, Schmitt trigger, open-collector output to sink up to 100mA. 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.
- Reliable and low shifting on high Temp condition.
- Good ESD Protection.
- RoHS compliant 2011/65/EU and Halogen Free

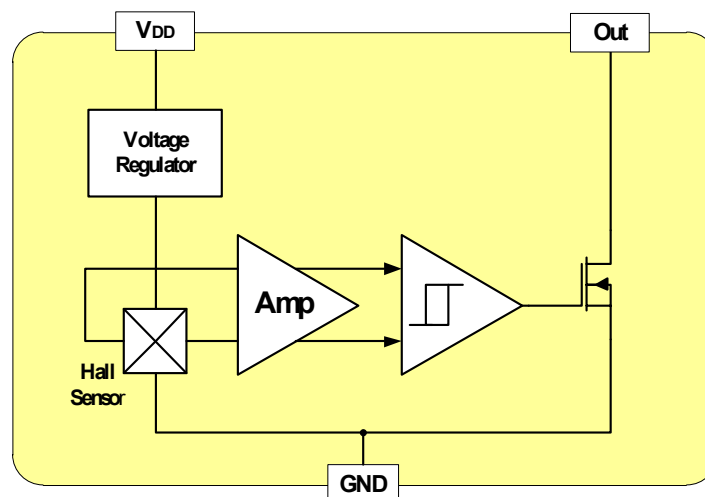
Applications

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

Ordering number

Part No.	Temperature Suffix	Package Type
GT177yESO-K	(-25°C to + 85°C)	(SOT-23)

Functional Diagram



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

Characteristics		Values	Unit
Supply voltage, (V_{CC})		30	V
Reverse Vcc Polarity Voltage, (V_{CC})		-30	V
Magnetic flux density		Unlimited	Gauss
Output “on” current, (I_{OUT})	Continuous	200	mA
Operating Temperature Range, (T_a)		-40 to +85	$^\circ\text{C}$
Storage temperature range, (T_s)		-65 to +150	$^\circ\text{C}$
Maximum Junction Temp, (T_j)		150	$^\circ\text{C}$
Thermal Resistance	(θ_{JA})	543	$^\circ\text{C/W}$
	(θ_{JC})	410	$^\circ\text{C/W}$
Package Power Dissipation, (P_D)		230	mW

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

Electrical Specifications

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

Parameters	Test Conditions	Min	Typ	Max	Units
Supply Voltage, (V_{CC})	Operating	3.5		20.0	V
Supply Current, (I_{CC})	$B < B_{OP}$	7	14	25.0	mA
Output Saturation Voltage, (V_{sat})	$I_{OUT} = 5\text{ mA}$, $B > B_{OP}$		600.0	950.0	mV
Output Leakage Current, (I_{off})	$I_{OFF} B < B_{RP}$, $V_{OUT} = 24\text{V}$		<0.1	10.0	μA
Output Rise Time, (TR)	$R_L=820\Omega$, $C_L=20\text{pF}$		3.0	10.0	μs
Output Fall Time, (TF)	$R_L=820\Omega$; $C_L=20\text{pF}$		0.3	1.5	μs
Electro-Static Discharge	HBM	4			KV

GT177yESO-K A Magnetic Specifications

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

Parameter	Symbol	Min.	Typ.	Max.	Units
Operate Point	B_{OP}	30		65	Gauss
Release Point	B_{RP}	-65		-30	Gauss
Hysteresis	B_{HYS}		70		Gauss

GT177yESO-K B Magnetic Specifications

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

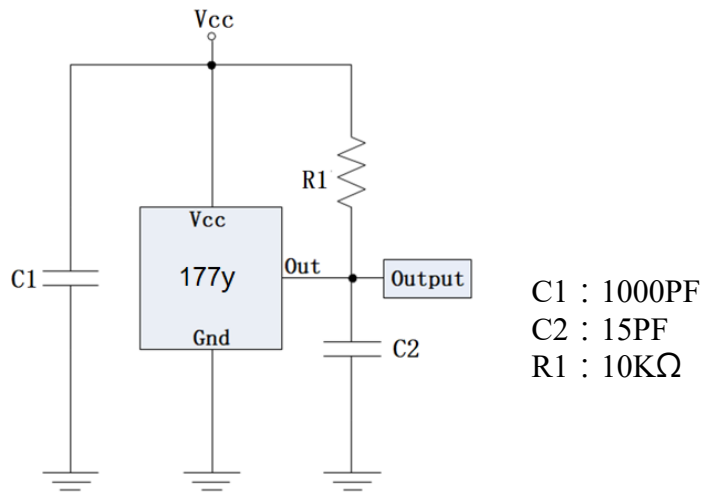
Parameter	Symbol	Min.	Typ.	Max.	Units
Operate Point	B_{OP}	-5		90	Gauss
Release Point	B_{RP}	-90		5	Gauss
Hysteresis	B_{HYS}		70		Gauss

GT177yESO-K C Magnetic Specifications

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

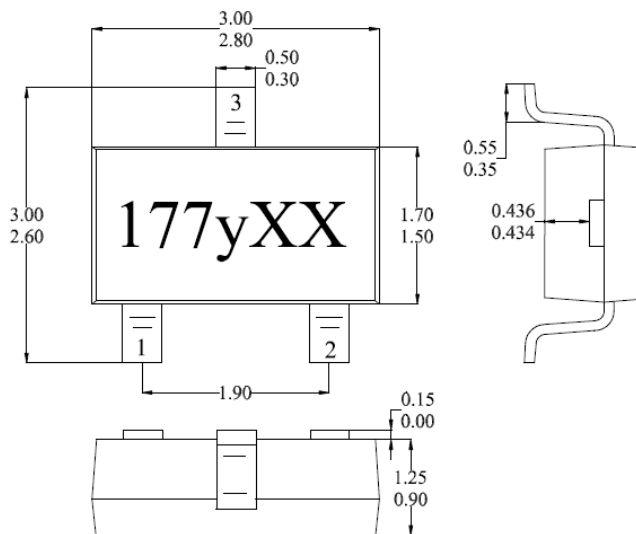
Parameter	Symbol	Min.	Typ.	Max.	Units
Operate Point	B_{OP}	-20		90	Gauss
Release Point	B_{RP}	-90		20	Gauss
Hysteresis	B_{HYS}		70		Gauss

Typical application circuit

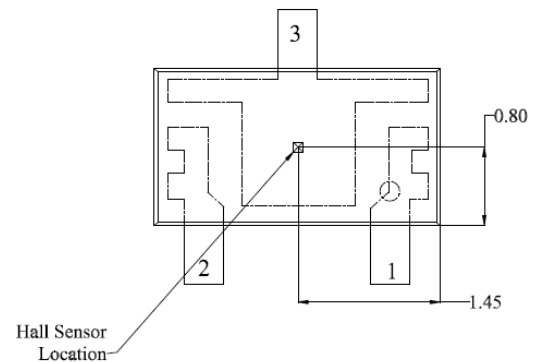


Sensor Location, Package Dimension and Marking

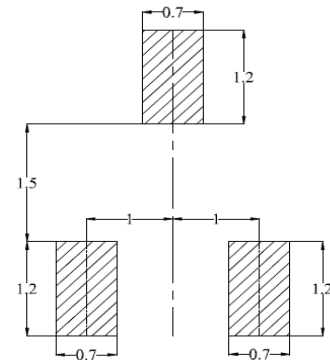
Package (SOT-23) (Top View)



Hall Plate Chip Location (Bottom view)



(For reference only) Land Pattern



NOTES:

- PINOUT (See Top View at left :)
Pin 1 Vcc
Pin 2 Output
Pin 3 GND
- Controlling dimension: mm
- Lead thickness after solder plating will be 0.254mm maximum