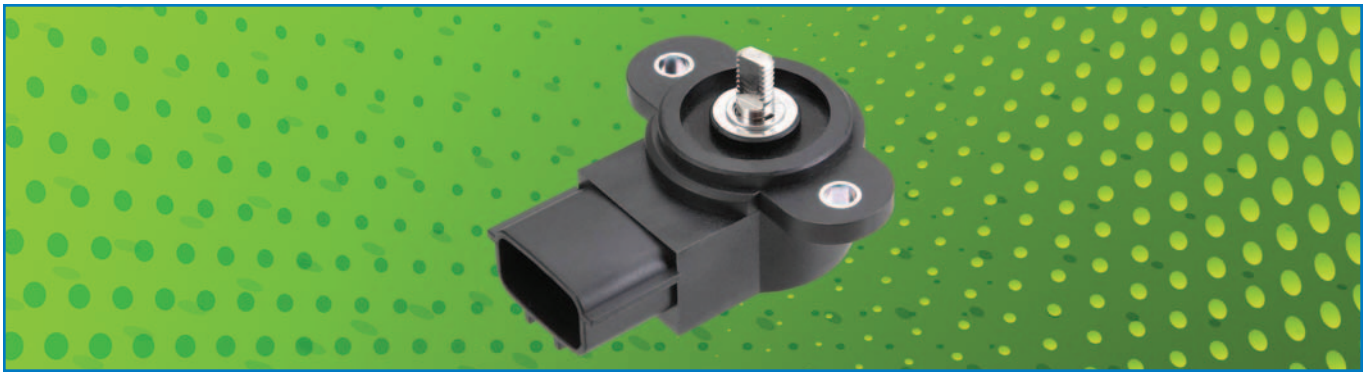
RSM134 Series

TOCOS SENSORS

Single Output, Non-Contact Angle/Position Sensors



Features

- All-in-one housing with angle/position sensor, threaded flat shaft, and integral female connector
- Reliable, durable magnetic circuit, Hall IC technology
- Long life of 15 million cycles
- Single output angle/position detection customizable within 20° to 140°
- Flat threaded shaft actuated in the CCW direction for angle/position detection and automatic return operation
- Compatible with industry-standard mating connectors
- Built-in magnet shield reduces interference from external magnetic field and isolates sensors from magnetic noise found in nearby motors
- 0.07W power rating
- Waterproof as standard with an IP65 rating
- Operating temperature range of −30°C to +120°C
- Screw mounting flange with two round (Ø4.6mm) mounting holes (hardware not included)
- RoHS compliant

Applications

- Angle/position detection in electronically controlled devises found in automobiles or construction/agricultural machinery
- Manufacturing control systems, i.e. robotics, conveyors, and tooling
- Sensor settings for steering and speed control for off-road vehicles such as golf carts, ATVs, and snowmobiles
- Wide variety of applications for non-contact, single output angle/position sensors requiring reliability and long life

Specifications

Basic Characteristics

Electrical Angle	50° (Customizable within 20° to 140°)	**Operating Temperature Range**	−30°C to +120°C
Mechanical Angle	150±5°	**Storage Temperature Range**	−40°C to +130°C
Rated Voltage	5±0.5VDC	**Circuit Structure**	See *Figure 1*
Maximum Rated Voltage	12VDC	**Measurement Circuit**	See *Figure 2*
Power Rating	0.07W	**Output Characteristics**	See *Figure 5*
Mounting Hole Pitch	41mm	**Environmental Load Substances**	RoHS compliant

Significant Characteristics

Output Linearity	±3% (±150mV) before test; ±5% (±250mV) after test; in percentage based on deviation of output voltage from referenced straight line (reference position: 2.5V when applying 5VDC); and within output characteristics guaranteed range of 0.7V to 4.3V (see *Figure 5*)
Hysteresis	±1% (±80mV) before test; ±1.5% (±120mV) after test; output characteristics guaranteed range: 0.7V to 4.3V
Insulation Resistance	100MΩ min. before test; 100MΩ min. after test; 500VDC, MEGA between each lead and shaft
Operating Torque-Minimum	0.020N•m min. before test; 25% max. change of initial value after test (see (a) in *Figure 4*)
Operating Torque-Maximum	0.094N•m max. before test; 25% max. change of initial value after test (see (b) in *Figure 4*)

Specifications Continued

Endurance Performance

Operating Endurance

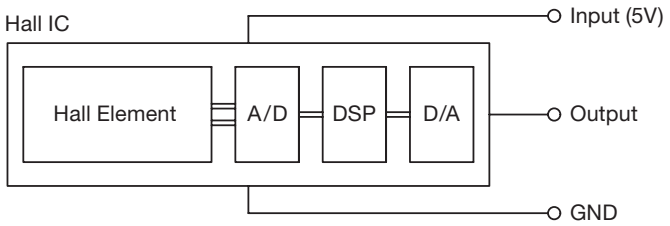
Rotational Life	15 million cycles (guaranteed output voltage range of 0.7V to 4.3V)
Low Temperature Exposure	−40°C, 72 hours
High Temperature Exposure	+130°C, 72 hours
Temperature Cycle	−25°C for 1 hour ⇄ +70°C for 1 hour, 10 cycles
Vibration	JIS D1601 3-B-70
Electromagnetic Susceptibility	200 V/m, 1MHz to 1GHz
Electrostatic Discharge	±8kV contact discharge; ±15kV air discharge; IEC-61000-4-2
International Protection	IP65 rating

Precautions

1. Product Handling: If installing a lever to the product, do not apply an operating torque that exceeds 0.49N•m (5kgf•cm) to the internal stopper.
2. About Washing: Do not wash the product as this will adversely affect the components, especially plastics.
3. About Storage: Do not store the product under hot, humid conditions or expose the product to corrosive gases.
4. About Automatic Return Operation: To avoid damaging the internal stopper, do not allow the shaft to travel from fully open position to fully closed position in one motion.
5. About Operating Environment: Do not use materials that generate harmful gases (sulfide gas, chlorine gas, etc.) for components that will be assembled in the product.

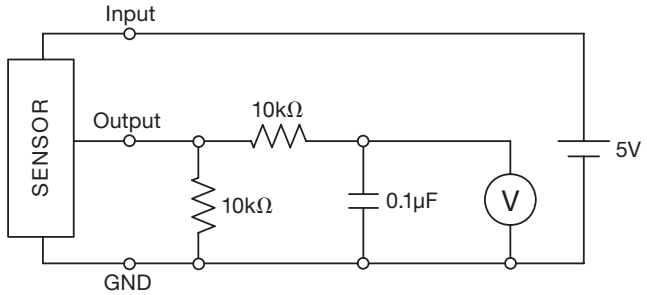
Circuit Structure

Figure 1: **Hall IC Magnetic Circuit**



Electrical Schematic

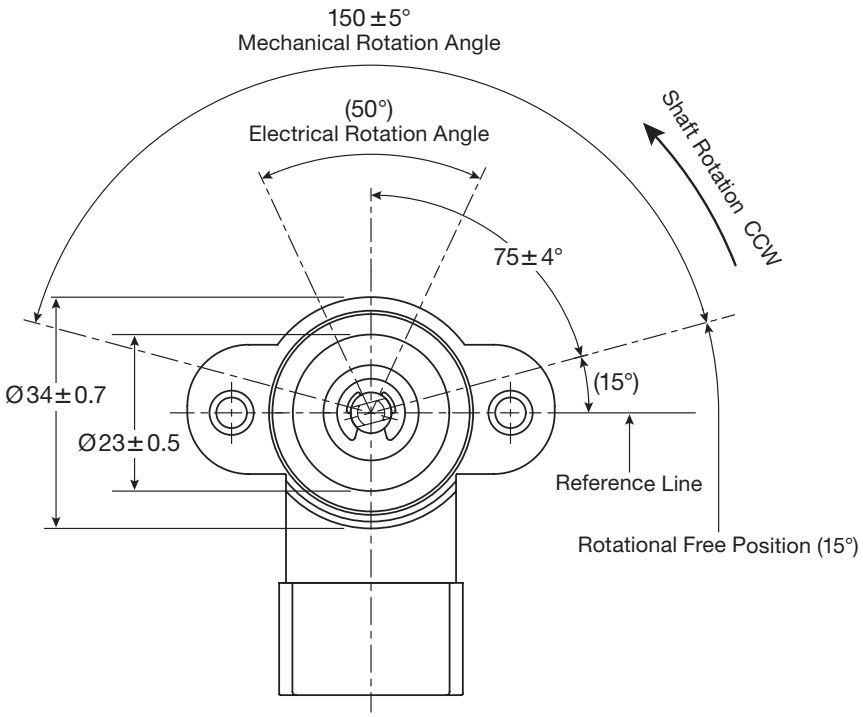
Figure 2: **Measurement Circuit**



TOCOS AMERICA, INC.
1177 East Tower Road, Schaumburg, IL 60173 Tel: 847-884-6664 Fax: 847-884-6665 E-mail: sales@tocos.com www.tocos.com

Dimensional Drawing of Front View A

Unit: mm

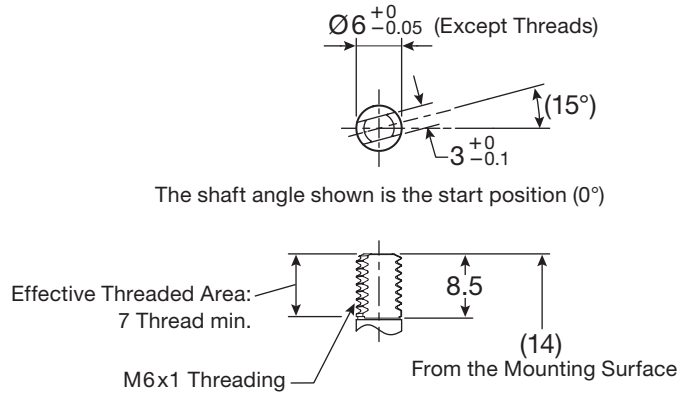


Front View A

Shaft Specifications

Figure 3: **Shaft Shape and Threading**

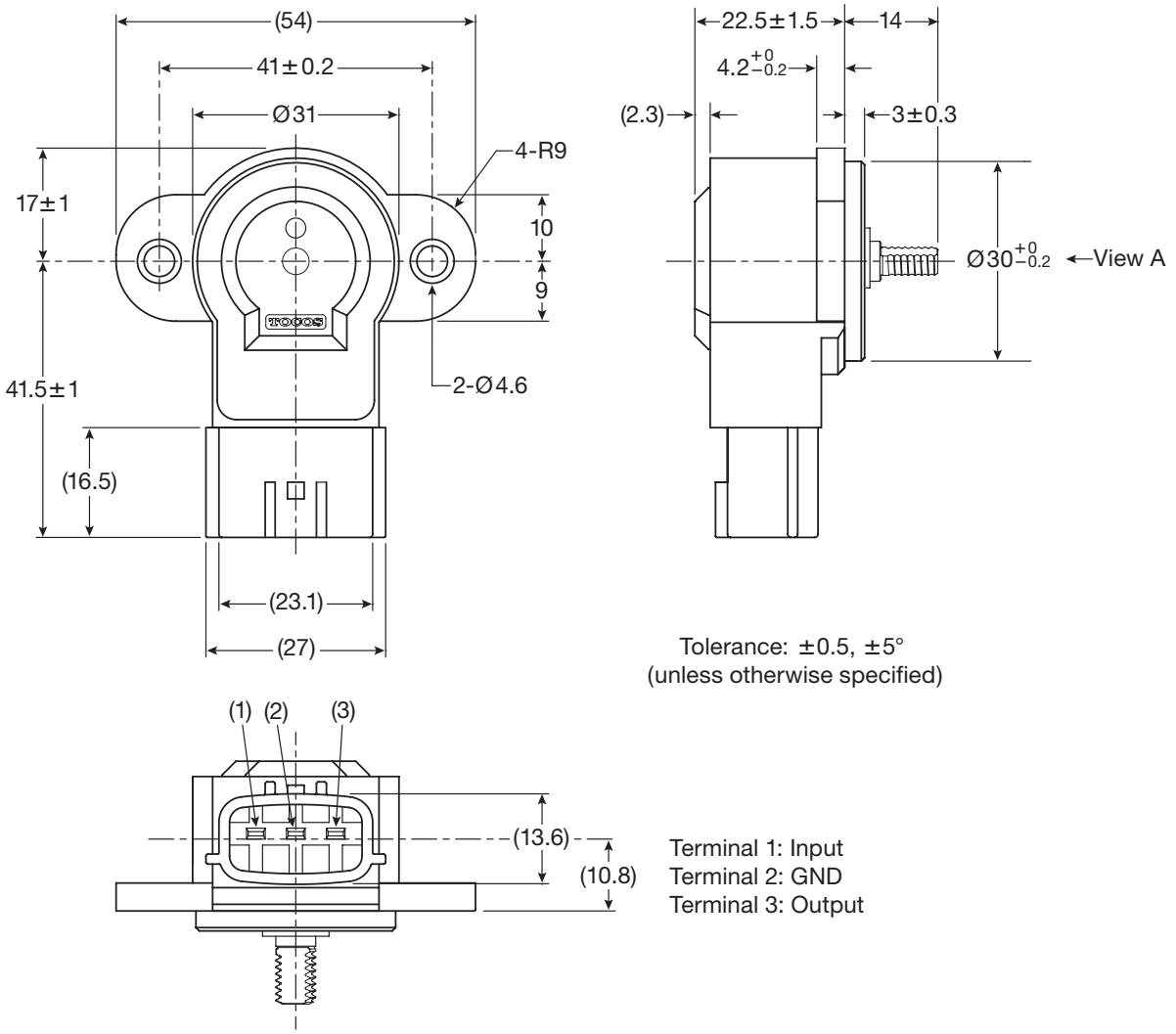
Unit: mm



TOCOS AMERICA, INC.
1177 East Tower Road, Schaumburg, IL 60173 Tel: 847-884-6664 Fax: 847-884-6665 E-mail: sales@tocos.com www.tocos.com

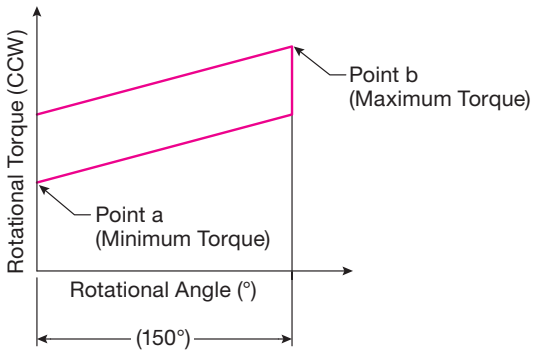
Dimensional Drawings of Back, Side, and Bottom Views

Unit: mm



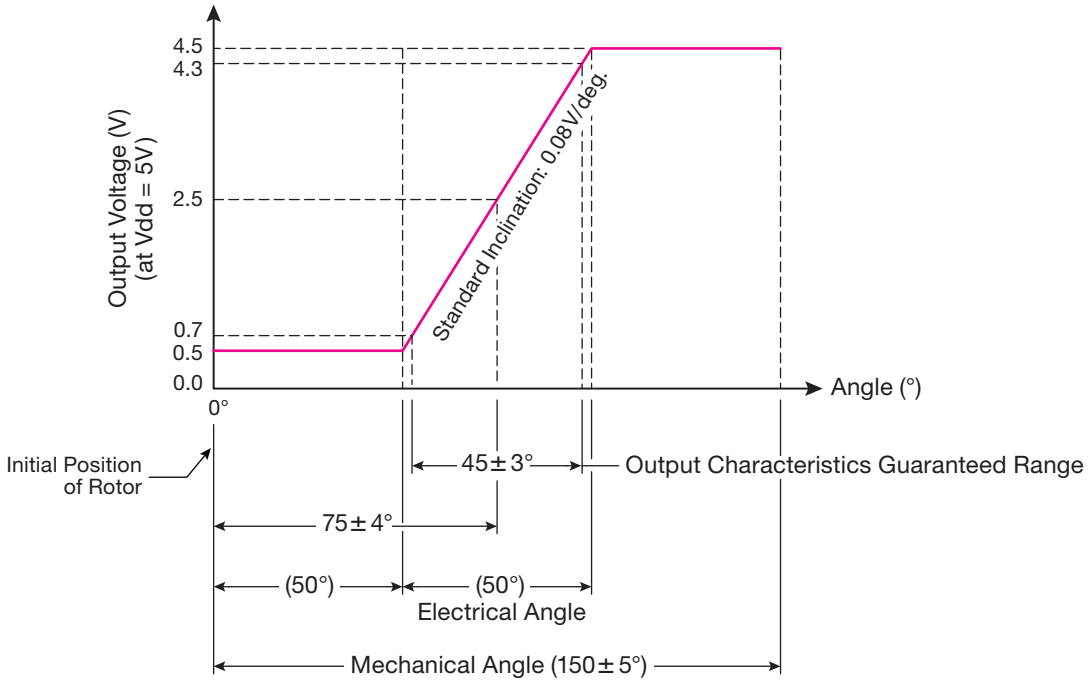
Rotational Torque

Figure 4: **Operating Torque**



TOCOS AMERICA, INC.
1177 East Tower Road, Schaumburg, IL 60173 Tel: 847-884-6664 Fax: 847-884-6665 E-mail: sales@tocos.com www.tocos.com

Figure 5: **Output Characteristics (Applied Voltage: 5.0V Constant)**



When the applied voltage changes within the rated voltage range, the output voltage changes at the same rate.

TOCOS AMERICA, INC.
1177 East Tower Road, Schaumburg, IL 60173
Tel: 847-884-6664 Fax: 847-884-6665 E-mail: sales@tocos.com www.tocos.com

TocosAmerica, Inc.
is affiliated with
COSMOS TOKYO