

iC-PG

Miniature Reflective Optical Absolute Encoder

Description

iC-PG is an advanced optical, reflective, lensless, absolute encoder iC featuring integrated photosensors and a blue LED. It provides high signal quality with relaxed alignment tolerances.

The device provides a capped 5-bit gray-coded parallel output signal with 30 positions and 12° resolution. Push-Button functionality is realized by an analog 0.5 to 4.5V output representing the distance between chip and code disc. Typical applications are absolute encoders for motor control and rotary switches as human-machine interfaces (HMI) for front-panel rotary control and data entry. Blue-enhanced photosensors are adapted to the short wavelength of the embedded blue LED.

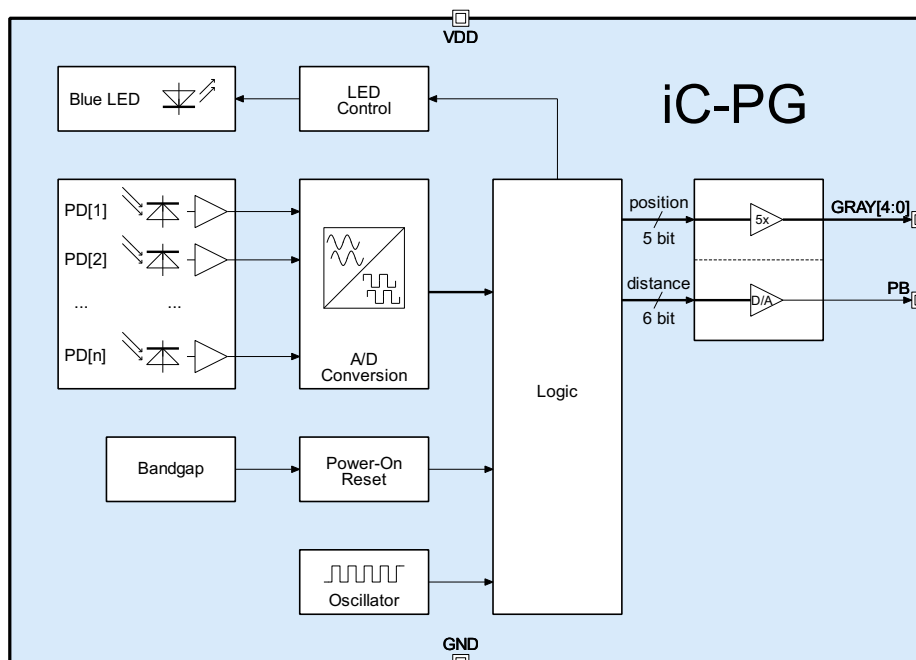
Applications

- Absolute encoders
- Car AV equipment
- Human-machine interface
- Rotary control knob

Features

- Lensless reflective opto-encoder iCs, compact, absolute
- Suitable reflective code discs of \varnothing 8 mm
- Monolithic PD Array with excellent signal matching
- Integrated blue LED, EncoderBlue®
- Low-noise signal amplifiers with high EMI tolerance
- 5-bit Gray code with 30 positions
- 2 positions reserved for PowerOn/Error indication
- Push-Button function, analog output: 0.5 to 4.5V with 64 steps
- Gray output: Push-Pull Driver, with 1.6mA
- Operating Temperature -40 to +105 °C
- Low power consumption from single 4.5 to 5.5V supply
- Compact and lensless optoDFN mold package
- Evaluation kits on request

Block Diagram



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Key Specifications

General

Supply Voltage	VDD: 4.5 to 5.5V
Supply Current	typ. 15mA
ESD Susceptibility	CDM, HBM (JEDEC)
Operational Temperature	-40 to +105 °C
Package (RoHS compliant)	8-pin optoDFN (3.0 mm x 3.0 mm, thickness 0.9 mm)

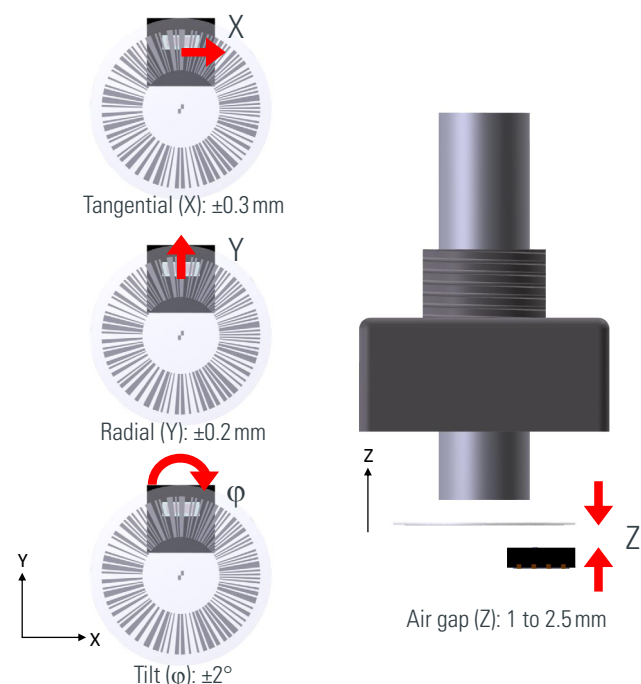
Outputs

Max. Rotation Speed	300 RPM
Gray Output	Push-Pull Driver, with 1.6mA
Push-Button Output	10 to 90% VDD, subject to air gap

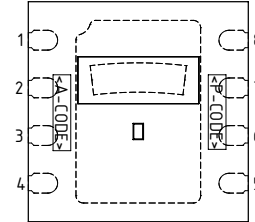
Pin Functions

No.	Name	Function
1	PB	Push-Button
2	GND	Ground
3	VDD	Supply Voltage 4.5 to 5.5V
4	G4	Gray Output 4
5	G3	Gray Output 3
6	G2	Gray Output 2
7	G1	Gray Output 1
8	G0	Gray Output 0

Assembly Tolerances



Pin Configuration oDFN8-3x3



Gray Code Assignment

5 Bit (30 Positions, Power, Error)					
Position	G4	G3	G2	G1	G0
Power off					
1					•
2				•	•
3				•	
4			•	•	
5			•	•	•
6			•		•
7			•		
8		•	•		
9		•	•		•
10		•	•	•	•
11		•	•	•	
12		•		•	
13		•		•	•
14		•			•
15		•			
16	•	•			
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21	•	•	•	•	•
22	•	•	•	•	•
23	•	•	•		
24	•		•		
25	•		•		•
26	•		•	•	•
27	•		•	•	
28	•			•	•
29	•			•	•
30	•				•
Error	•				

• = Logic high