

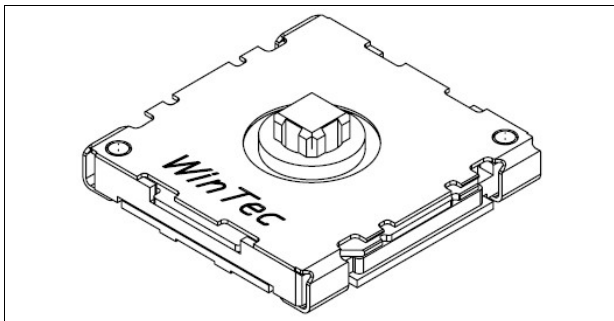
EasyPoint™ N40P107

Single Module (without IC, with push button)

1 General Description

EasyPoint™ N40P107 is a miniature joystick module concept based on contact-less, magnetic movement detection. The two-dimensional linear encoder IC AS5011 / AS5013 is mounted on the bottom side of the application's PCB, and monitors the movement of the magnet incorporated into the knob and provides directly the x and y coordinates via I²C output. An integrated mechanical push button built in the module provides a "select" function.

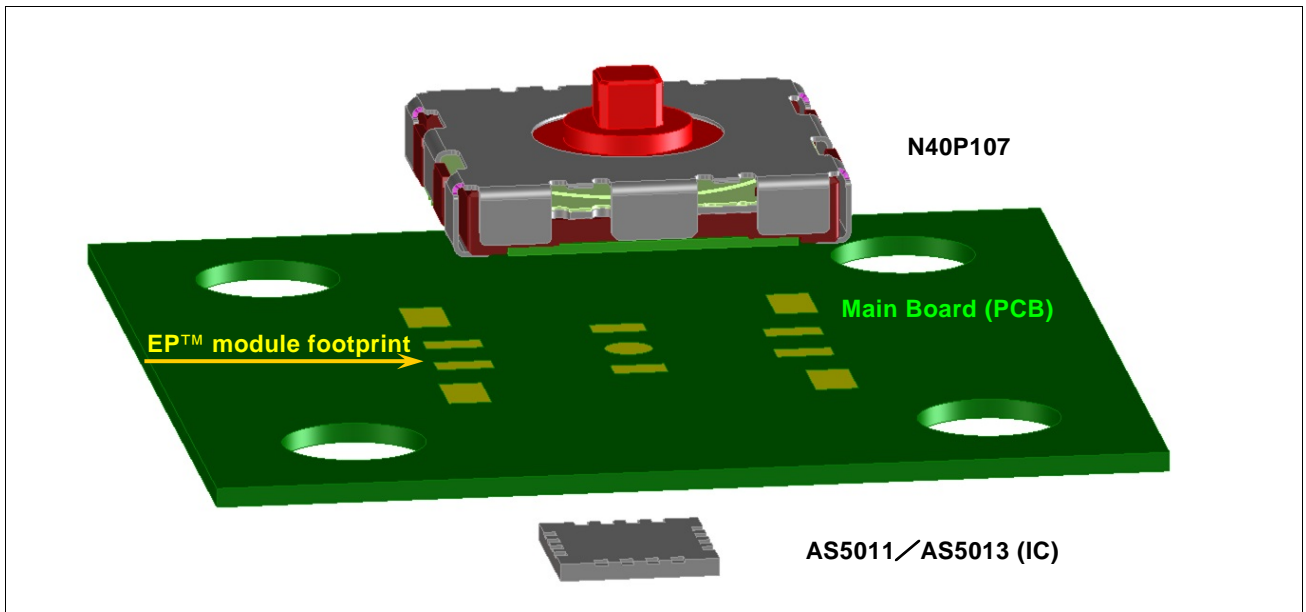
Figure 1. N40P107-xxxxx-H



2 Benefits

- High reliability due to magnetic contact-less sensing
- Easy to use and fast integration

Figure 2. Typical Application



3 Key Features

- Small form factor
- Lateral magnet movement radius up to +/-0.7mm
- Direct knob force feedback
- Push button output
- SMD mounting

4 Applications

The EasyPoint™ N40P107 in combination with the AS5011 / AS5013 is ideal for small form factor navigation user interfaces in battery driven portable devices, such as

- Mobile phones (especially for gaming)
- Remote Controls
- Gaming Consoles
- Analog joysticks (360 degree)
- MP3 players
- PDA's, PND, MID
- GPS

5 Mechanical Drawing

Figure 3. N40P107 Dimensions (mm ±0.15)

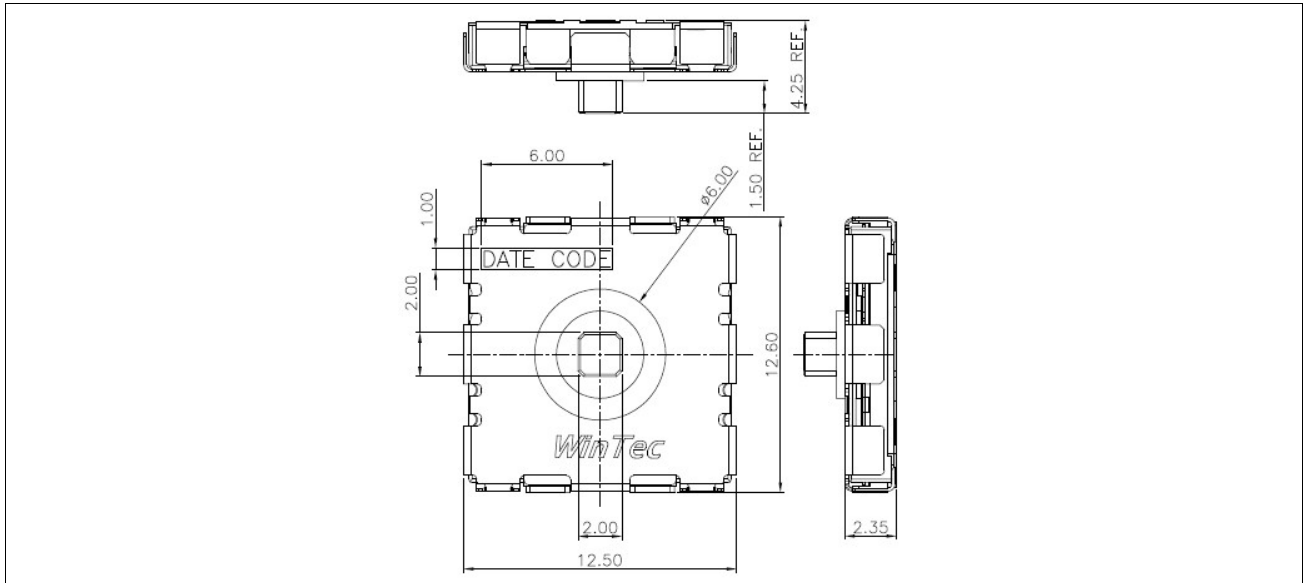


Figure 4. Recommended PCB Layout (mm ±0.05) & Circuit Diagram

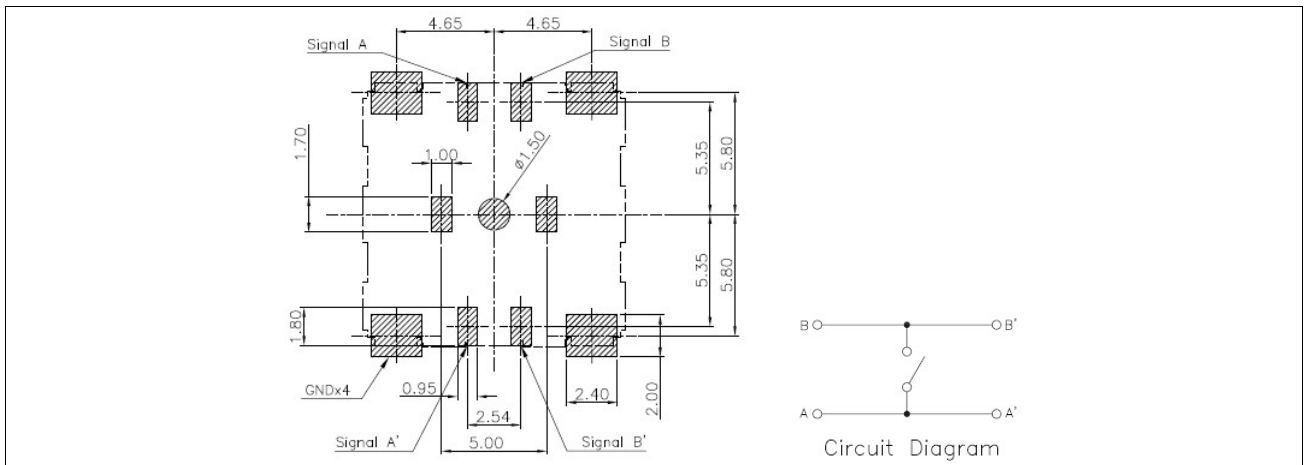


Figure 5. Recommended Stencil Design for 4 GND-Pads

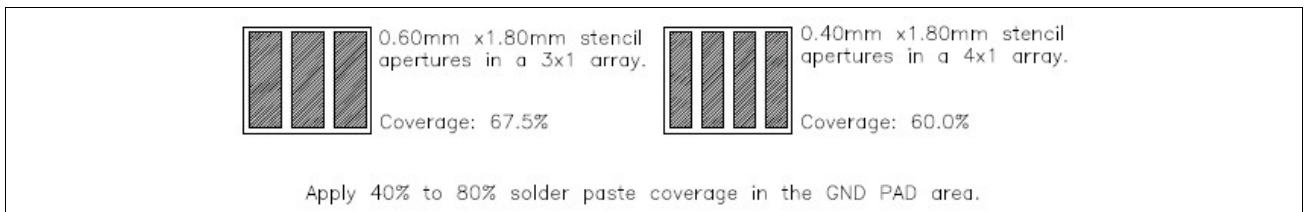
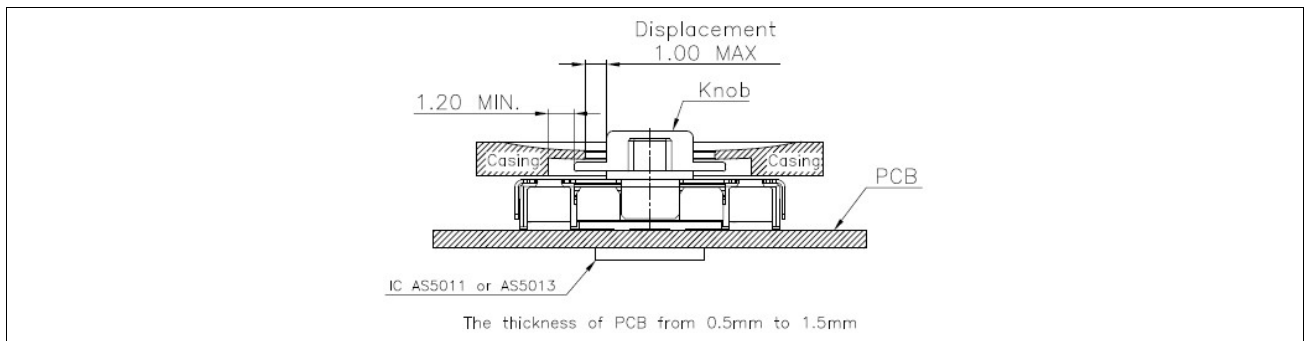
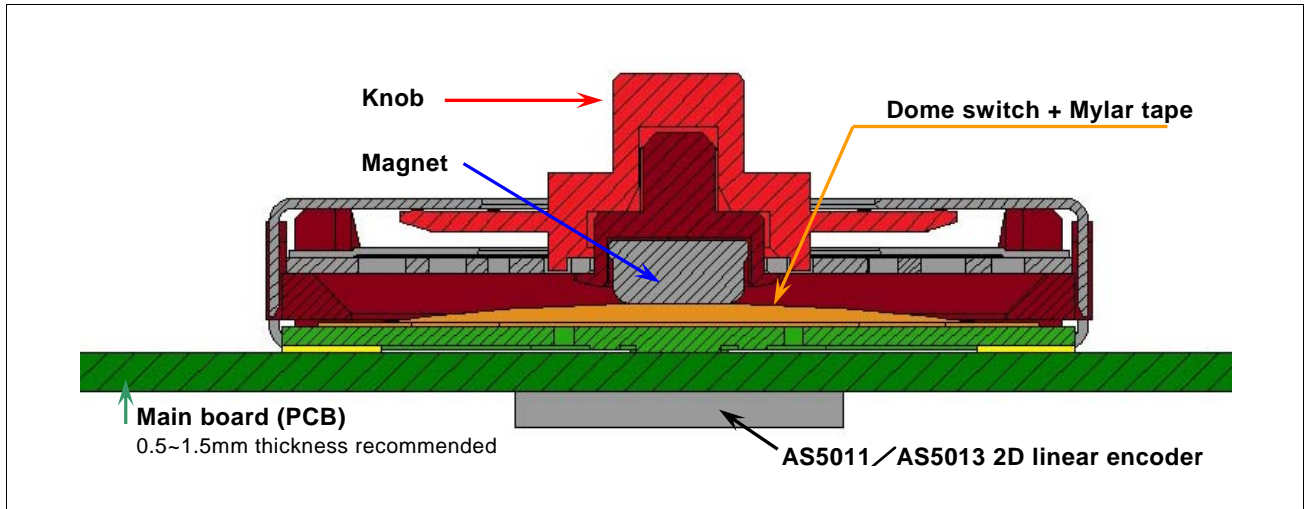


Figure 6. Recommended on Casing Design



6 Application using AS5011/AS5013 2D Linear Encoder

Figure 7. Application Diagram



For further information, please refer to the austriamicrosystems AS5011 encoder application note AN5011-20:
<http://www.austriamicrosystems.com/eng/products/magnetic-encoders/EasyPoint-Encoder/EasyPoint-AS5011/EasyPoint-AS5011-Downloads/EasyPoint-AS5011-Downloads>

And please refer to the austriamicrosystems AS5013 encoder application note AN5013-20:
<http://www.austriamicrosystems.com/eng/products/magnetic-encoders/EasyPoint-Encoder/EasyPoint-AS5013/EasyPoint-AS5013-Downloads/EasyPoint-AS5013-Downloads>

7 Specifications

7.1 Mechanical Specifications

Table 1. Mechanical Specifications

Parameter	Note
Number of operating shafts	Single shaft
Shaft material	LCP
Housing material	LCP & PA46
Shell material	Stainless Steel or Copper alloy
Travel (XY operation)	±1.00mm (±10%)
Travel (Z push operation)	0.22mm (±0.05mm)
Directional operating force (XY direction)	0.35N (±0.10N) or 0.55N (±0.15N)
Push operating force (Z direction)	1.80N (±15%)
Vibration	10-500-10Hz 15 minutes, 12 cycles, 3 axes (total 36 cycles)
Operating life – XY direction	Each direction > 1 million cycles
Operating life – Push Z direction	> 1 million cycles
Shaft strength (XYZ direction)	> 5.0 kgf
Over force	1.5kgf, > 100k cycles

7.2 Electrical Specifications

Table 2. Electrical Specifications

Parameter	Min	Max	Unit	Note
Contact resistance		500	mΩ	Norm: EIA-364-23
Dielectric withstanding voltage	100		Vac	Norm: EIA-364-20
Insulation resistance	100		MΩ	Norm: EIA-364-21, 100Vdc
Bouncing (On/Off)		5	ms	Rate: 2 times/sec.

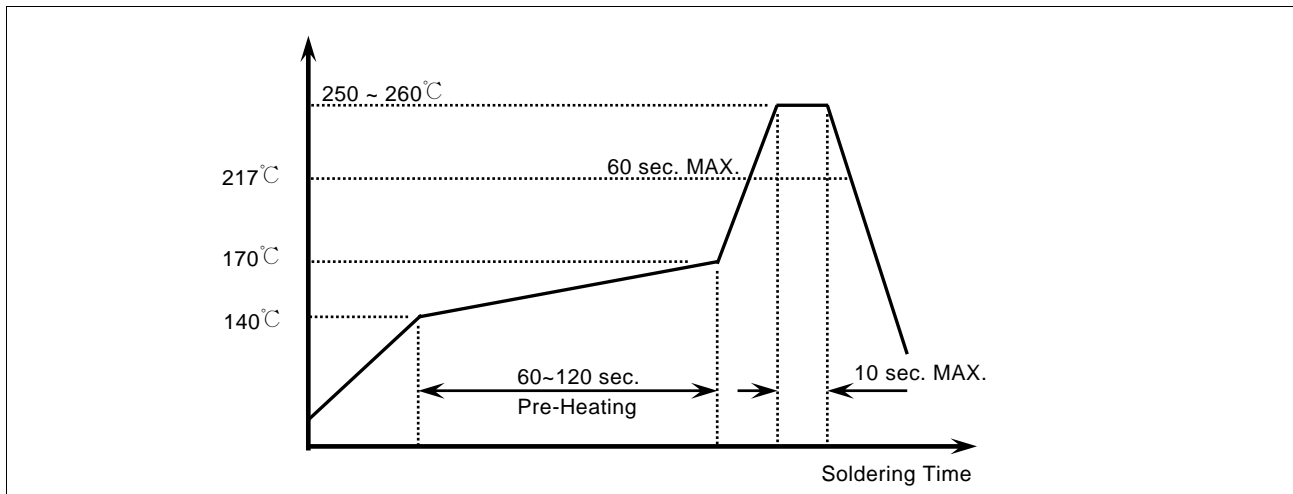
7.3 Environmental Specifications

Table 3. Environmental Specifications

Parameter	Note
Operating temperature range	-20 ~ +70°C
Storage temperature range	-40 ~ +85°C
Humidity non-condensing	5 ~ 85% RH
Degrees of protection	IP 5X

7.4 Recommended Reflow Temperature Profile

Figure 8. Recommended Reflow Temperature Profile



Note: Do not wash the module! Do not use flux cleaner or solder paste remover!

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Revision History

Table 4. Revision History

Revision	Date	Owner	Description
1.00	25-May-2011	Alfred Binder	Initial release
1.01	21-Jun-2011	Alfred Binder	Minor changes on text and format

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