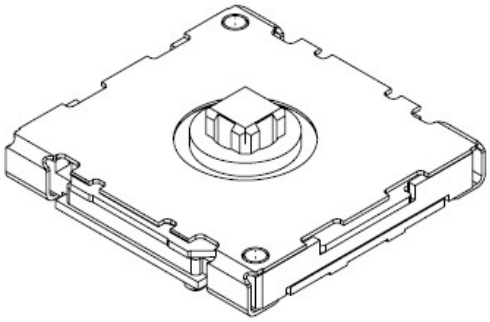
EasyPoint™ N35P103
Single Module

1 General Description

EasyPoint™ N35P103 is a miniature joystick module concept based on contact-less, magnetic movement detection. The two-dimensional linear encoder IC AS501x (e.g. AS5011, AS5013, ...) is mounted on the bottom side of the application's PCB, and monitors the movement of the magnet incorporated in 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. N35P103-xxxxx-H



2 Key Features

- Lateral magnet movement radius up to 0.5mm
- Low profile
- Integrated push button
- SMD mounting

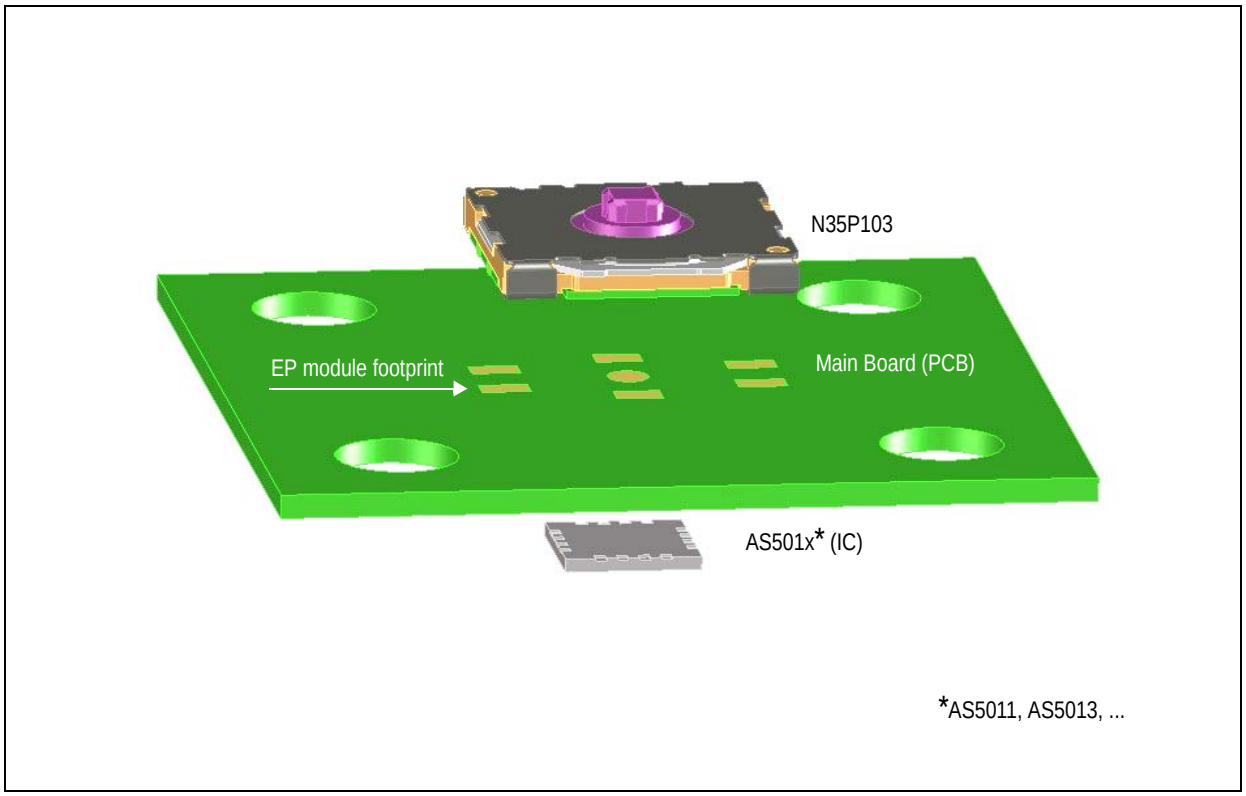
3 Applications

The EasyPoint™ N35P103 in combination with the AS501x is ideal for small factory manual input devices in battery operated equipment, such as Mobile phones, MP3 players, PDAs, GPS receivers, Gaming consoles and Analog joystick replacement.

4 Benefits

- High reliability due to magnetic non-contact sensing
- Thin size

Figure 2. Typical Application Diagram



5 Electrical Characteristics

5.1 Mechanical Specifications

Table 1. Mechanical Specifications

Parameter	Note
Number of operating shafts	Single shaft
Shaft material	PA46
Housing material	PA46
Shell material	Stainless Steel or Copper alloy
Travel (XY operation)	±0.50mm (±10%)
Travel (Z push operation)	0.20mm (±0.05mm)
Directional operating force (XY direction)	0.45N (±0.10N)
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)	> 3.0 kgf
Over force	1.5kgf, > 100k cycles

5.2 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.

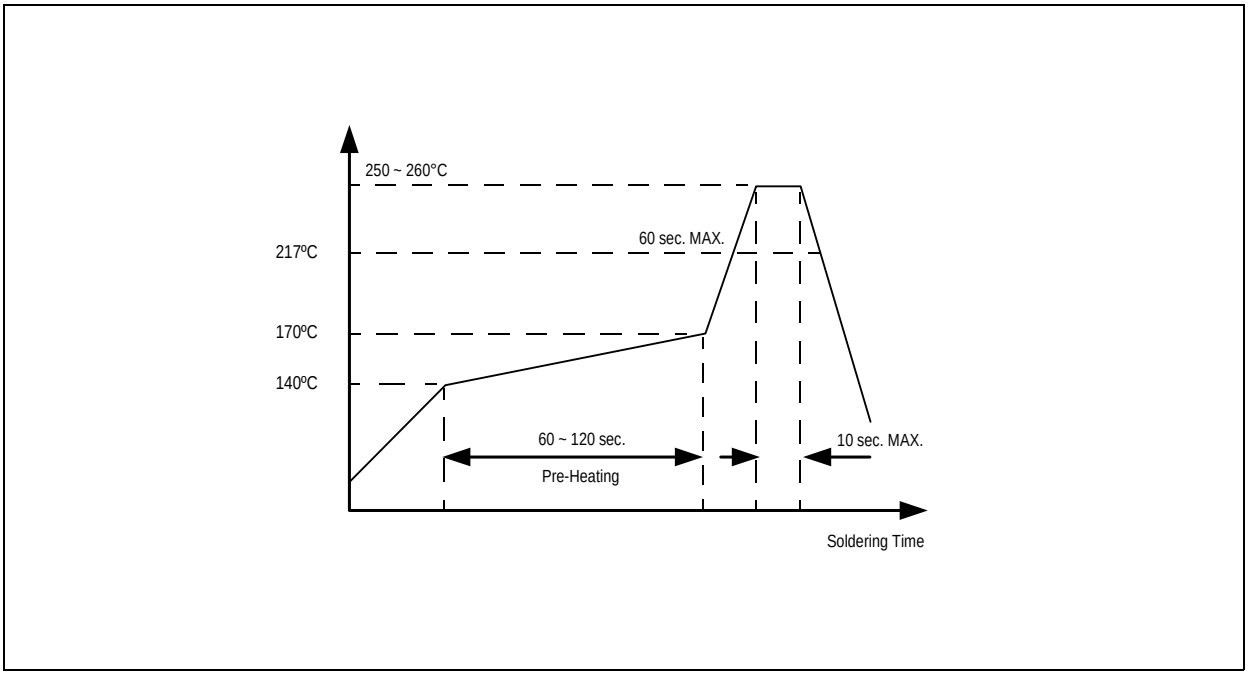
5.3 Environmental Specifications

Table 3. Environmental Specifications

Parameter	Note
Operating temperature range	-20 ~ +70ºC
Storage temperature range	-40 ~ +85ºC
Degrees of protection	IP 5X

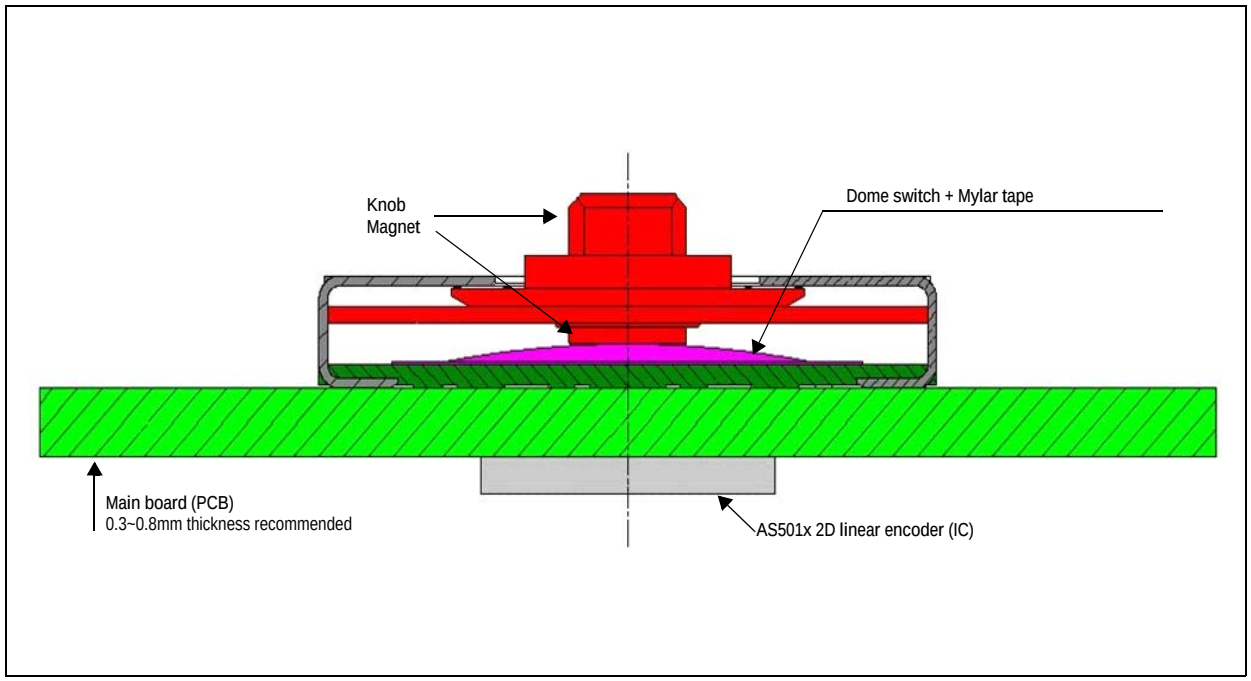
5.4 Recommended Reflow Temperature Profile

Figure 3. Reflow Temperature Profile



6 Application Using the AS501x 2D Linear Encoder

Figure 4. Application Diagram



For further information, please refer to the N35P112 module datasheet:

http://www.austriamicrosystems.com/eng/Products/Magnetic-Encoders/EasyPoint-Joystick-Encoder/EasyPoint-Joystick-Modules

For firmware programming support, please download the austriamicrosystems AS5013 encoder application note AN5013-20:

http://www.austriamicrosystems.com/eng/Products/Magnetic-Encoders/EasyPoint-Joystick-Encoder/AS5013/EasyPoint-AS5013-Downloads/EasyPoint-AS5013-Downloads

7 Package Drawings and Markings

Figure 5. N35P103 Dimensions (mm ±0.15)

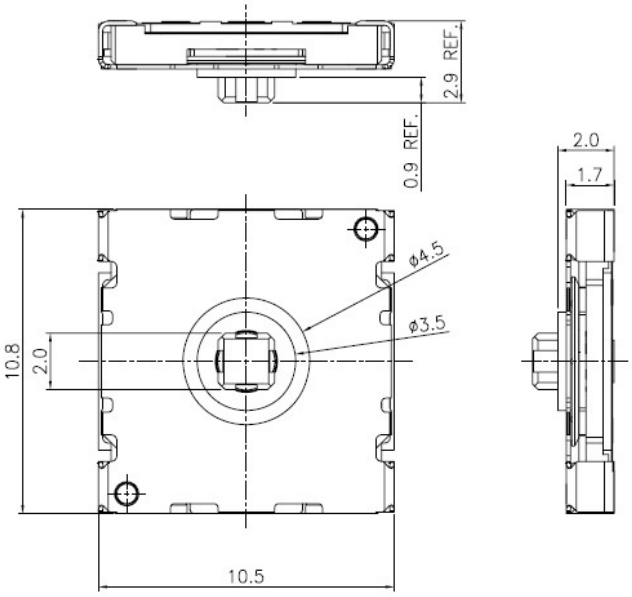


Figure 6. Recommended PCB Layout (mm ±0.05) & Circuit Diagram

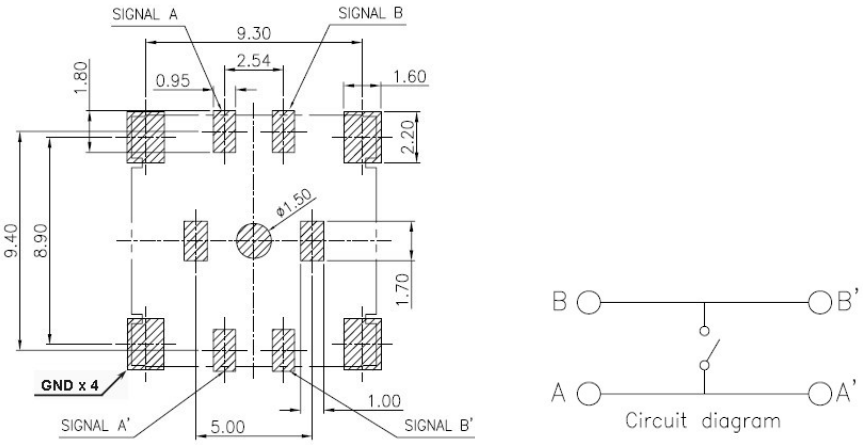
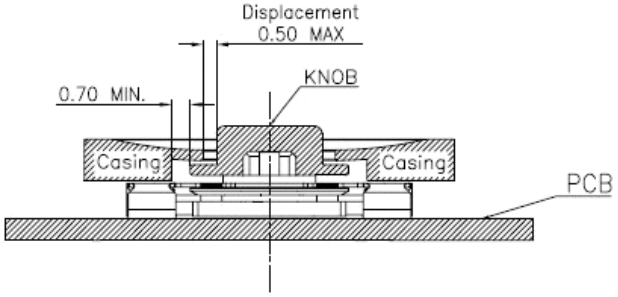


Figure 7. Recommended on Casing Design



Revision History

Revision	Date	Owner	Description
0.8	16 Jul, 2010		Initial release

Note: Typos may not be explicitly mentioned under revision history.

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