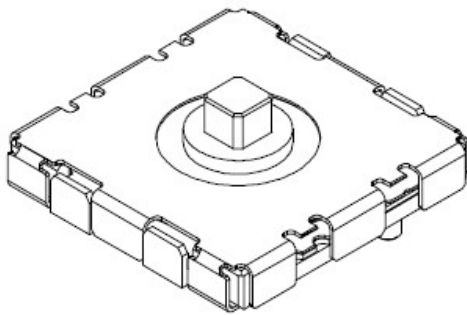


# EasyPoint™ N40P106 Navigation Module

## 1 General Description

EasyPoint™ N40P106 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 I<sup>2</sup>C output. A mechanical push button (dome switch) can be added to provide a "select" function.

Figure 1. N40P106-xxxxx-H



## 2 Key Features

- Lateral magnet movement radius up to 1.0mm
- Low profile
- Push button feature
- SMD mounting

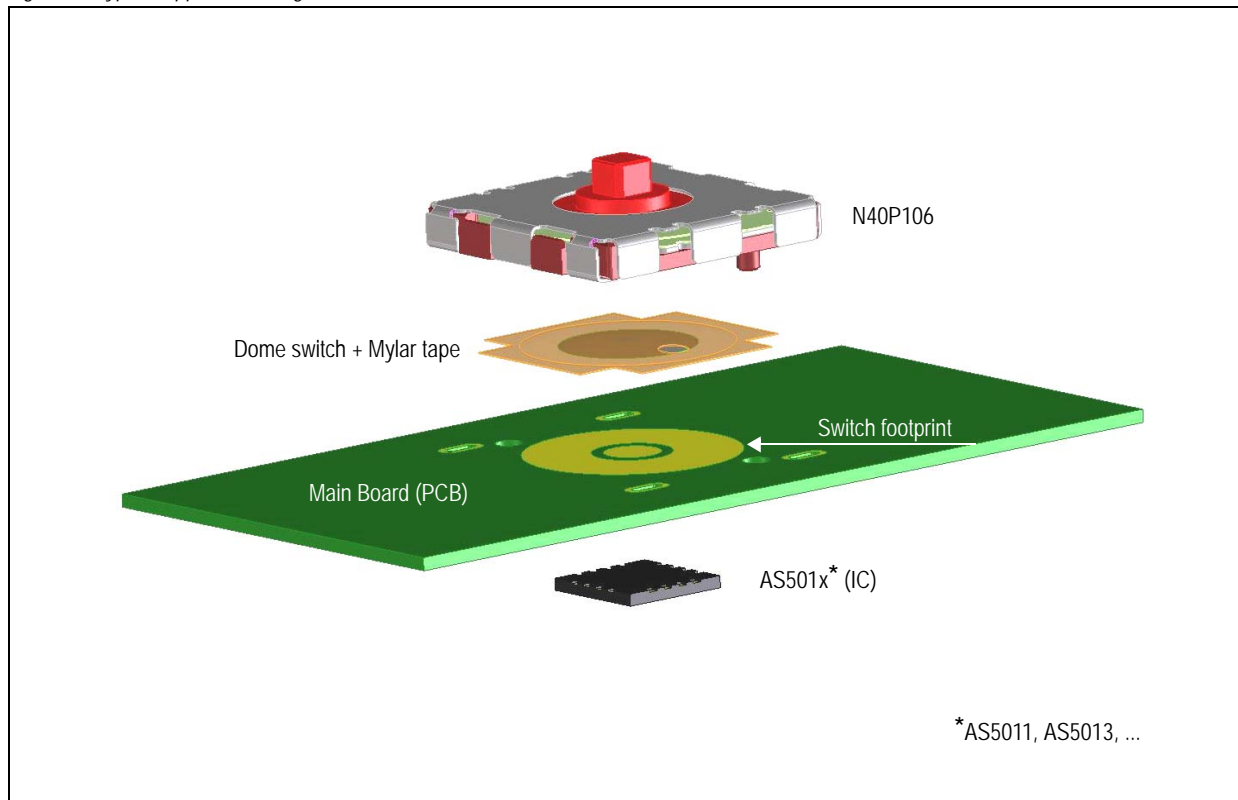
## 3 Applications

The EasyPoint™ N40P106 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	LCP
Housing material	LCP and PA46
Shell material	Stainless Steel or Copper alloy
Travel (XY operation)	±1.0mm (±10%)
Travel (Z push operation)	0.22mm (±0.05mm)
Directional operating force (XY direction)	N40P106-000X1-H: 0.35N (±0.10N) N40P106-000X2-H: 0.55N (±0.15N)
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 kgf
Over force	1.5kgf, > 100k cycles

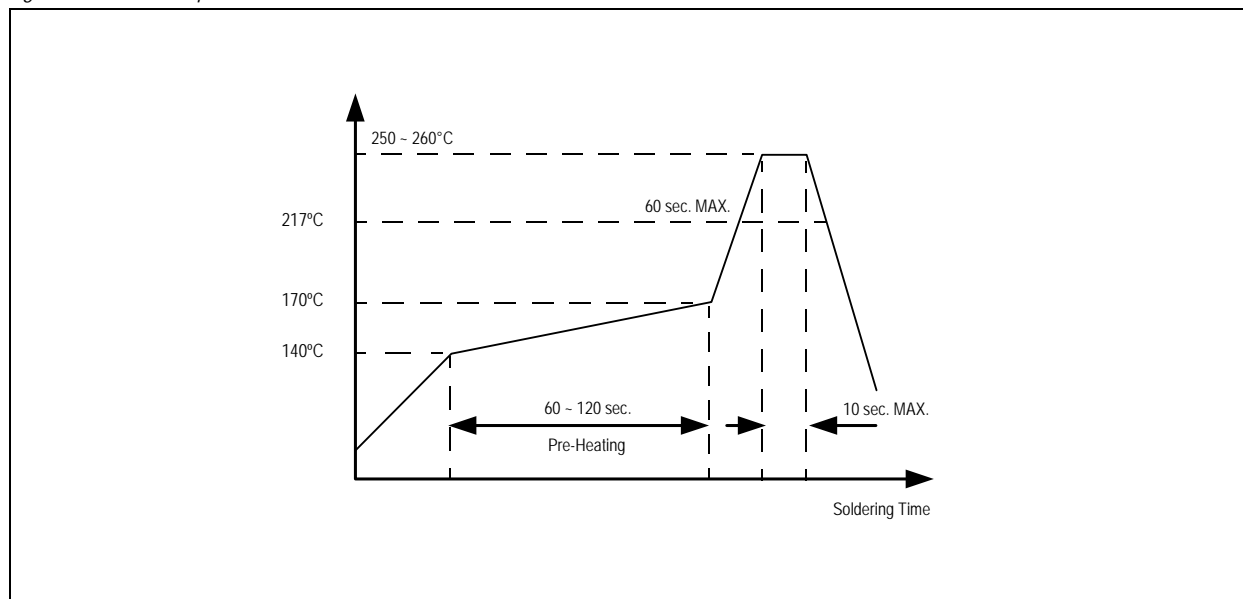
### 5.2 Environmental Specifications

Table 2. Environmental Specifications

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

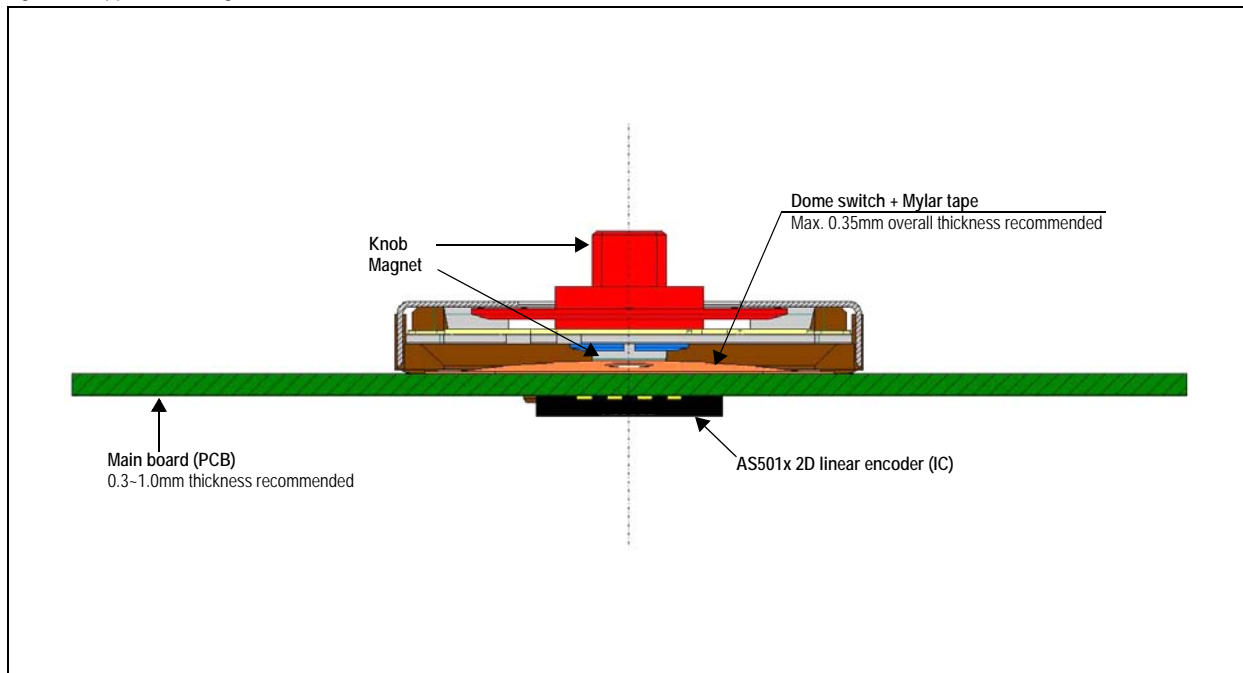
### 5.3 Recommended Reflow Temperature Profile

Figure 3. Reflow Temperature Profile



## 6 Application Using the AS501x 2D Linear Encoder

Figure 4. Application Diagram



For further information, please refer to the N40P112 EasyPoint 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. N40P106 Dimensions (mm ±0.15)

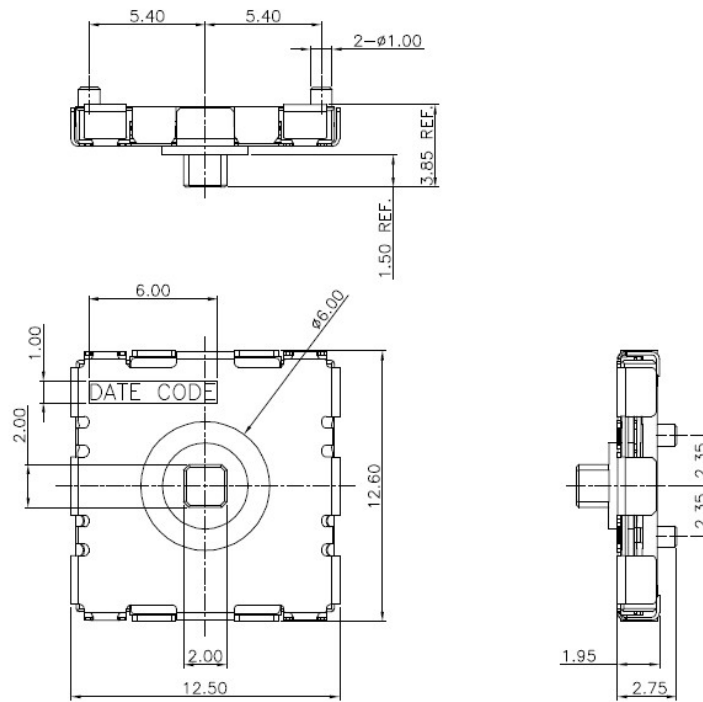


Figure 6. Recommended PCB Layout (Dimensions in mm ±0.05)

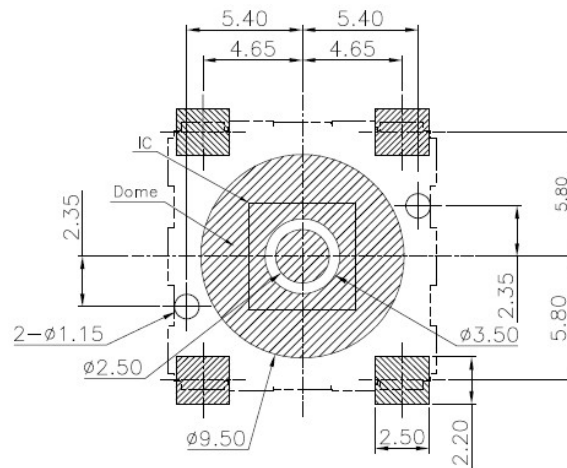
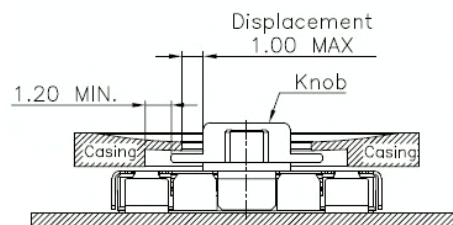


Figure 7. Recommended on Casing Design



## Revision History

Revision	Date	Owner	Description
1.0	30 Apr, 2010		Initial Release

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

## 8 Ordering Information

The devices are available as the standard products shown in [Table 3](#).

*Table 3. Ordering Information*

Ordering Code	Description	Delivery Form	Package
N40P106-00001-H	0.35N ( $\pm 0.10$ N) force	Tubes	
N40P106-00011-H	0.35N ( $\pm 0.10$ N) force	Tape & Reel	
N40P106-00002-H	0.55N ( $\pm 0.15$ N) force	Tubes	
N40P106-00012-H	0.55N ( $\pm 0.15$ N) force	Tape & Reel	

**Note:** All products are RoHS compliant and austriamicrosystems green.  
Buy our products or get free samples online at ICdirect: <http://www.austriamicrosystems.com/ICdirect>

Technical Support is found at <http://www.austriamicrosystems.com/Technical-Support>

For further information and requests, please contact us <mailto:sales@austriamicrosystems.com>  
or find your local distributor at <http://www.austriamicrosystems.com/distributor>

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## Contact Information

### Headquarters

austriamicrosystems AG  
Tobelbaderstrasse 30  
A-8141 Unterpremstaetten, Austria

Tel: +43 (0) 3136 500 0  
Fax: +43 (0) 3136 525 01

For Sales Offices, Distributors and Representatives, please visit:

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