

EC35A 35mm Size Ring Type

A low-profile unit with 4.5mm height and good operation feel



Typical Specifications



| Items | Specifications |
|-----------------------------|----------------|
| Rating | 10mA 5V DC |
| Operating life | 50,000 cycles |
| Operating temperature range | -40°C to +85°C |

Product Line

| Actuator length (mm) | Detent torque (mN·m) | Number of detent | Number of pulse | Minimum order unit (pcs.) | | Product No. | Drawing No. |
|----------------------|----------------------|------------------|-----------------|---------------------------|--------|---------------------|-------------|
| | | | | Japan | Export | | |
| 20 | 18±7 | 30 | 15 | 420 | 840 | EC35A1520402 | 1 |
| 20 | 22±8 | 18 | 9 | | | EC35A0930401 | 2 |
| 25 | 30±15 | 30 | 15 | 350 | 700 | EC35A1550502 | 3 |

Packing Specifications

Tray

| Actuator length (mm) | Number of packages (pcs.) | | Export package measurements (mm) |
|----------------------|---------------------------|------------------------|----------------------------------|
| | 1 case /Japan | 1 case /export packing | |
| 20 | 420 | 840 | 540×360×380 |
| 25 | 350 | 700 | |

Dimensions

Unit:mm

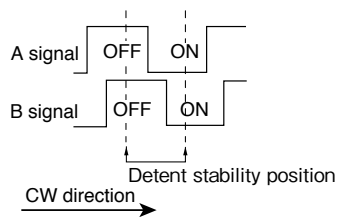
| No. | Photo | Style | PC board mounting hole dimensions (Viewed from mounting side) |
|-----|---|-------|---|
| 1 | EC35A1520402 Actuator length 20mm | | <p>Shaded area: Wiring prohibited area</p> |
| 2 | EC35A0930401 Actuator length 20mm | | <p>Shaded area: Wiring prohibited area</p> |

■ Dimensions

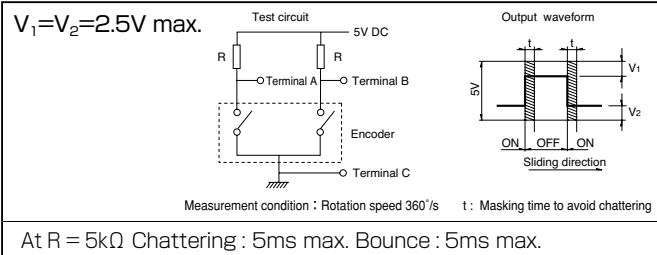
Unit:mm
















[illegible]

Output Wave



■ Sliding Noise



| Type | | Ring type | | | | |
|---------------------------------------|---|---|--|---|---|---|
| | | 28mm size | | 35mm size | | |
| Series | | EC28A | EC28C | EC35A | EC35AH | EC35CH |
| Photo | |  |  |  |  |  |
| Output | | Incremental (Two phase A and B) | | | Incremental (Three phase A, B and C) | |
| Shaft types | | Ring type | | | | |
| Number of pulse / Number of detent | | 15/30 18/18 | 15/30 | 9/18 15/30 | 6×ABC/18 10×ABC/30 | 6×ABC/18 |
| Dimensions (mm) | W | 28 | | 35 | | 35.2 |
| | D | 29 | 29.5 | | | 36 |
| | H | 4 | | 4.5 | | |
| Operating temperature range | | −40℃ to +85℃ | −40℃ to +90℃ | −40℃ to +85℃ | | −40℃ to +90℃ |
| Operating life | | 50,000 cycles | | | | |
| Automotive use | |  |  |  |  |  |
| Life cycle (availability) | |  |  |  |  |  |
| Electrical performance | Rating | 10mA 5V DC | | | | |
| | Max./min. operating current (Resistive load) | 10mA /1mA | | | | |
| | Insulation resistance | 100MΩ min. 250V DC | | | | |
| | Voltage proof | 300V AC for 1minute or 360V AC for 2s | 300V AC for 1minute or 360V AC for 1s | 300V AC for 1minute or 360V AC for 2s | | 300V AC for 1minute or 360V AC for 1s |
| Mechanical performance | Detent torque | 7±5mN·m 12±7mN·m 20±10mN·m | 22±11mN·m (Initial) 16±7mN·m (After reflow) 30±15mN·m(Initial) 20±10mN·m (After reflow) | 18±7mN·m 22±8mN·m 30±15mN·m | 12±5mN·m 18±7mN·m 30±15mN·m | 30±15mN·m (Initial) 20±10mN·m (After reflow) |
| | Push-pull strength | 100N | | | | |
| Shaft configuration | | Ring type | | | | |
| Terminal type | | Insertion | | | | |
| Switch Specifications | Switch type | — | — | — | — | — |
| | Contact arrangement | — | — | — | — | — |
| | Travel (mm) | — | — | — | — | — |
| | Operating force (N) | — | — | — | — | — |
| | Switch ON position | — | — | — | — | — |
| | Rotational torque | — | — | — | — | — |
| | Rating | — | — | — | — | — |
| | Contact resistance | — | — | — | — | — |
| | Operating life | — | — | — | — | — |
| Page | | 288 | | 290 | 292 | |

| | |
|-------------------------------|-----|
| Encoders Soldering Conditions | 299 |
| Encoders Cautions | 300 |

Note

● Indicates applicability to all products in the series.

Reference for Manual Soldering

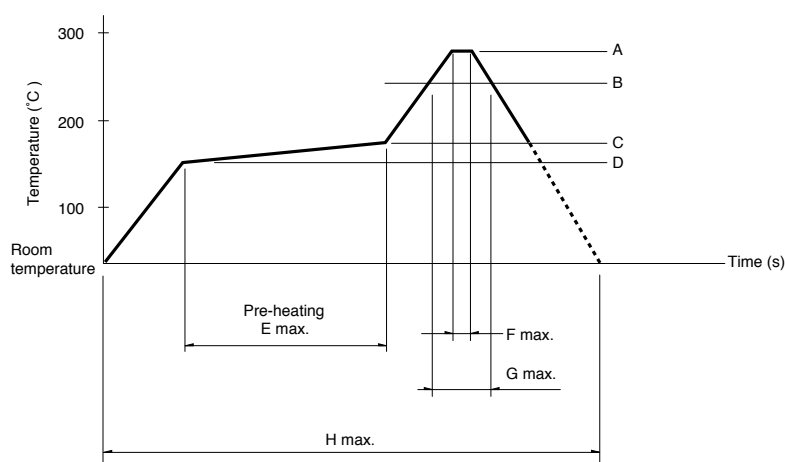
| Series | Tip temperature | Soldering time | No. of solders |
|---|-----------------|--------------------------------|----------------|
| EC05E, EC09E, EC10E, EC111, EC11B, EC11E, EC11G, EC11K, EC11M, EC11N, EC12D, EC12E, EC18A, EC21A, EC28A, EC35A, EC35AH, EC40A, EC45A, EC50A, EC60B, EM11B, EC21C, EC28C, EC35CH | 350°C max. | 3s max. | 1 time |
| EC11J | 350±10°C | 3 ⁺¹ ₀ s | 2 times |

Reference for Dip Soldering

| Series | Preheating | | Dip soldering | | No. of solders |
|--|-------------------------------|--------------|-----------------------|----------------|----------------|
| | Soldering surface temperature | Heating time | Soldering temperature | Soldering time | |
| EC09E, EC11B, EC111, EC11E, EC11G, EC11K, EC11M, EC11N, EC18A, EC21A, EC28A, EC35A, EC35AH, EC50A, EC60B | 100°C max. | 2 min. max. | 260±5°C | 5±1s | 2 times max. |
| EM11B | 100°C max. | 1 min. max. | 260°C max. | 3s max. | 2 times max. |
| EC10E, EC12D, EC12E | 100°C max. | 1 min. max. | 260±5°C | 3±1s | 2 times max. |
| EC40A | 110°C max. | 1 min. max. | 260°C max. | 10s max. | 1 time |
| EC45A | 100°C max. | 2 min. max. | 260°C max. | 5s max. | 2 times max. |

Example of Reflow Soldering Condition

Temperature profile



| Series | A | B | C | D | E | F | G | H | No. of reflows |
|---------------|----------------|------------|-------|-------|-------------|----|------------|-------------|----------------|
| EC11J | 260°C | 230°C | 180°C | 150°C | 2 min. max. | 3s | 40s | 4 min. max. | 2 times max. |
| EC05E | 250°C min. | 230°C min. | 180°C | 150°C | 60s to 120s | — | 30s to 40s | — | 2 times max. |
| EC21C | 230°C to 245°C | 220°C | 200°C | 150°C | 60s to 120s | — | 25s to 60s | 300s max. | 1 time max. |
| EC28C, EC35CH | 260°C | 230°C | 180°C | 150°C | 2 min. min. | 3s | 40s | 230s max. | 1 time max. |

Notes

- When using an infrared reflow oven, solder may sometimes not be applied. Be sure to use a hot air reflow oven or a type that uses infrared rays in combination with hot air.
- The temperatures given above are the maximum temperatures at the terminals of the encoder when employing a hot air reflow method. The temperature of the PC board and the surface temperature of the encoder may vary greatly depending on the PC board material, its size and thickness. Ensure that the surface temperature of the encoder does not rise to 250°C or greater.
- Conditions vary to some extent depending on the type of reflow bath used. Be sure to give due consideration to this prior to use.

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