

**PART NUMBER:** NSA series**DESCRIPTION:** incremental shaft type encoder**ELECTRICAL SPECIFICATIONS**

|                            |                                      |
|----------------------------|--------------------------------------|
| output waveform            | sine wave                            |
| output signals             | A, B, Z phase, inverse A, B, Z phase |
| frequency response         | ≤10 KHz                              |
| output signal amplitude    | 150 mVp-p or more                    |
| output amplitude variation | 40% max                              |
| output resolution (ppr)    | 50,60,90,100,125                     |
| LED current                | IF = 26 mA max                       |

**MECHANICAL SPECIFICATIONS**

|                         |   |
|-------------------------|---|
| max shaft load, radial: | 1.96N   |
| axial:                  | 1.96N   |
| starting torque         | 4.9 x 10 <sup>-4</sup> N·m max                    |
| moment of inertia       | 1x10 <sup>-8</sup> kg·m <sup>2</sup>              |
| max rotational speed    | 6000 RPM  |
| shock resistance        | 294 m/s <sup>2</sup> , 11 ms, 3 times each on XYZ |
| vibration proof         | 10 ~ 50 Hz, double amplitude 1.5mm                |
| weight                  | 8g max  |

**ENVIRONMENTAL SPECIFICATIONS**

|                      |                            |
|----------------------|----------------------------|
| operating temp       | 0° to +50° C               |
| storage temp         | -20° to +80° C             |
| humidity             | RH 85% max, non-collecting |
| degree of protection | IP50                       |

**ELECTRONIC ELEMENTS**

|                             |                             |
|-----------------------------|-----------------------------|
| LED light emitting diode    |                             |
| current flow                | IF, 60 mA max               |
| reverse voltage             | VR, 4 V max                 |
| derating (25 ~ 70° C)       | -1.73 m W/ ° C              |
| PTr photo transistor        |                             |
| collector-emitter voltage   | V <sub>CE0</sub> , 20 V max |
| emitter-collector voltage   | V <sub>ECO</sub> , 5 V max  |
| collector current           | I <sub>c</sub> , 20 mA      |
| collector power dissipation | P <sub>c</sub> , 75 mW      |
| derating (25 ~ 70° C)       | -1.0 m W/ ° C               |

**ORDERING INSTRUCTIONS**

NSA-XXX-XT

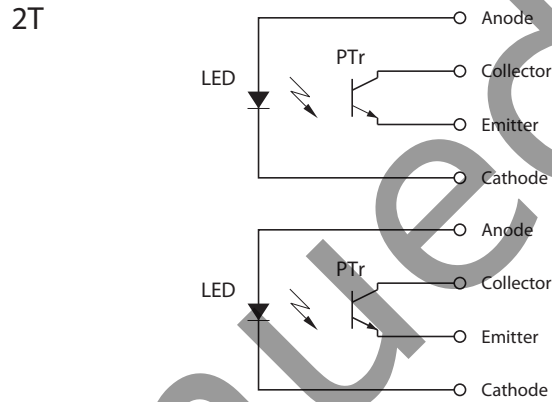
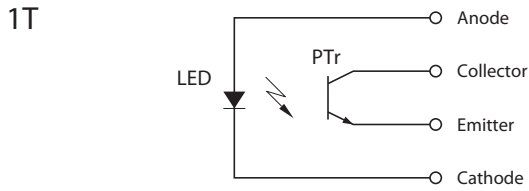
Resolution:  
 50 = 50PPR  
 60 = 60PPR  
 90 = 90PPR  
 100 = 100PPR  
 125 = 125PPR

Signals:  
 1 = 1Single  
 2 = AB90° Phase difference

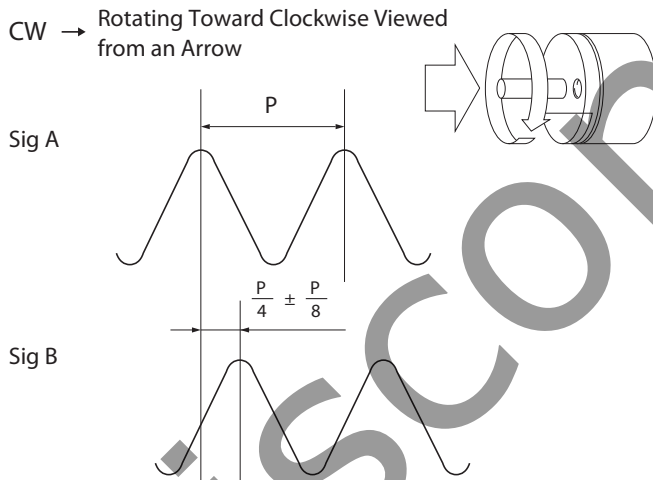
**PART NUMBER:** NSA series

**DESCRIPTION:** incremental shaft type encoder

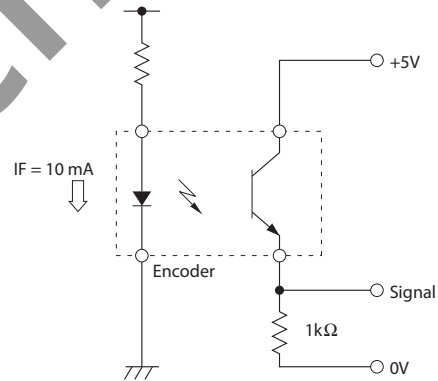
### CIRCUIT CONNECTIONS



### OUTPUT WAVEFORM



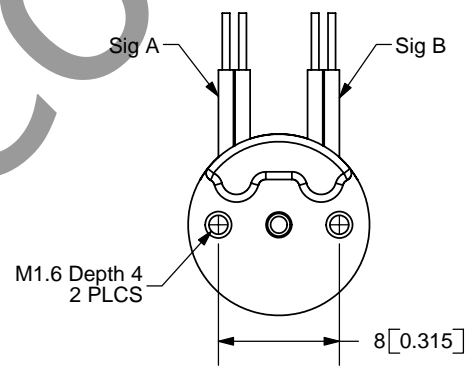
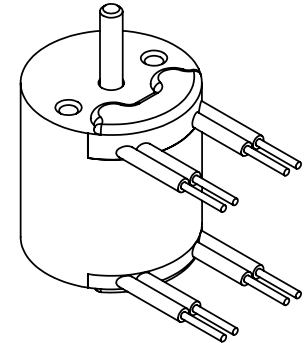
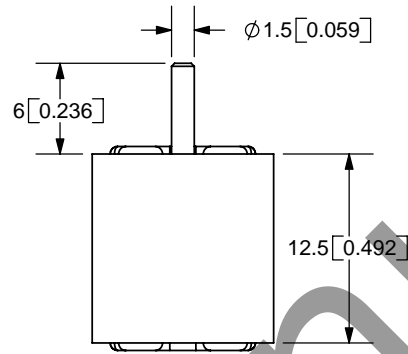
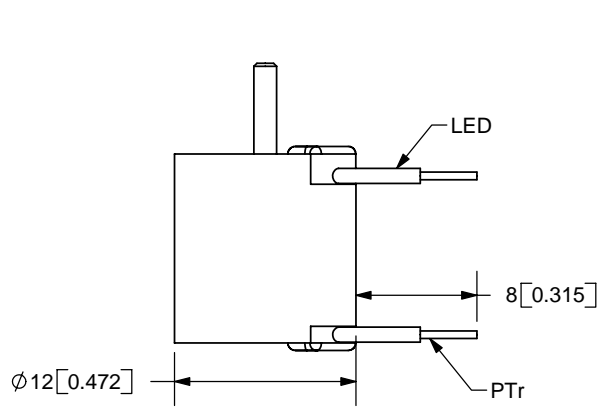
### TEST CIRCUIT



### ELECTRICAL CONNECTIONS

| Color of Lead Wire | Description |
|--------------------|-------------|
| Red                | Anode       |
| Black              | Cathode     |
| Blue               | Collector   |
| White              | Emitter     |

|      |             |          |
|------|-------------|----------|
| REV. | DESCRIPTION | DATE     |
| A    | NEW DRAWING | 9/5/2007 |



TOLERANCE:  
±0.3mm UNLESS OTHERWISE  
SPECIFIED



20050 SW 112th Ave.  
Tualatin, OR 97062  
Phone: 503-612-2300  
800-275-4899  
Fax: 503-612-2383  
Website: www.cui.com

|                            |              |                    |
|----------------------------|--------------|--------------------|
| TITLE: Incremental Encoder |              | REV: A             |
| PART NO. NSA               |              | UNITS: MM [INCHES] |
| DRAWN BY: JMS              | APPROVED BY: | SCALE: 2:1         |

|             |       |         |           |         |   |   |   |   |
|-------------|-------|---------|-----------|---------|---|---|---|---|
| Cable Color | Red   | Black   | Blue      | White   | - | - | - | - |
| Output Type | Anode | Cathode | Collector | Emitter | - | - | - | - |
| Cable Color | -     | -       | -         | -       | - | - | - | - |
| Output Type | -     | -       | -         | -       | - | - | - | - |

PC FILE NAME:  
NSA

COPYRIGHT 2007  
BY CUI INC.

Discontinued