

AEDR-8300 Encoder

Design Handling and Tooling Considerations



Application Note 5247

Handling and Usage

Pre-Bake Requirements

The optical grade materials used in the AEDR-8300 Encoder can absorb moisture directly out of the air. However, moisture absorption prior to reflow soldering is of serious concern. If moisture is absorbed by the device prior to reflow soldering, entrapped moisture turns to super-heated steam during the reflow solder process. The pressure of this steam can lead to catastrophic failure.

AEDR-8300 Encoder series are classified as class 3 for the moisture sensitive classification based on JEDEC standard J-STD-020A. Maximum exposure conditions are 30°C, 60% relative humidity. Bake (60°C, 48 hours) parts, which are exposed for a period greater than 168 hours. It is advisable to bake the device for 48 hours at 60°C prior to IR reflow if the device is left in an uncontrolled environment with moisture level more than 30% relative humidity during the 168 hours duration upon removing the device from the moisture barrier bag for use.

For tape and reel option, remove tape from reel and bake parts in TAPE form. Store unopened bags at temperature less than 40°C and relative humidity levels less than 90%. Devices that are removed from the moisture barrier bag should be placed in a container with a relative humidity of less than 10%. The bag humidity is monitored by a Humidity Indicator Card (HIC) that is placed inside the moisture barrier bag.

Do not use these parts if the HIC indicates the humidity is greater than 10% (at the initial opening of the bag). Return the bag and the contents to Avago Technologies. Upon soldering of the AEDR-8300

Encoder series to the pc board, Avago Technologies would strongly recommend no cleaning of the pc board and the encoder. Therefore, Avago Technologies recommends using a no clean flux in the soldering process.

IR Reflow Soldering

The AEDR-8300 Encoder is IR reflow solderable. The AEDR-8300 Encoder data sheet shows the recommended IR soldering profile. This profile meets the specifications of the Electronic Industries Association of Japan (EIAJ).

Current Limiting Resistor

AEDR-8300 Encoder does not have an integrated resistor to limit the current to the LED light source. This resistor must be provided by the user. The recommended value is 220Ω (±10%) and should be placed in series between the 5 V supply and pin 3 of the device (V_{LED}). This will result in an LED current of approximately 15 mA.

Exposure to High Intensity Light Sources

Exposure of the AEDR-8300 Encoder to a high intensity light source can damage the photodiodes on the detector IC. Such light sources include photographic flashes and spot lights. Normal fluorescent and incandescent lighting will not cause any damage to the device.

Pick and Place Tool Recommendation

The recommended dimensions of the pick and place tool are:

Parameter	Min.	Max.	Unit	Note
L	4.28	5.12	mm	Tolerance ± 0.1 mm
W	2.98	3.96		

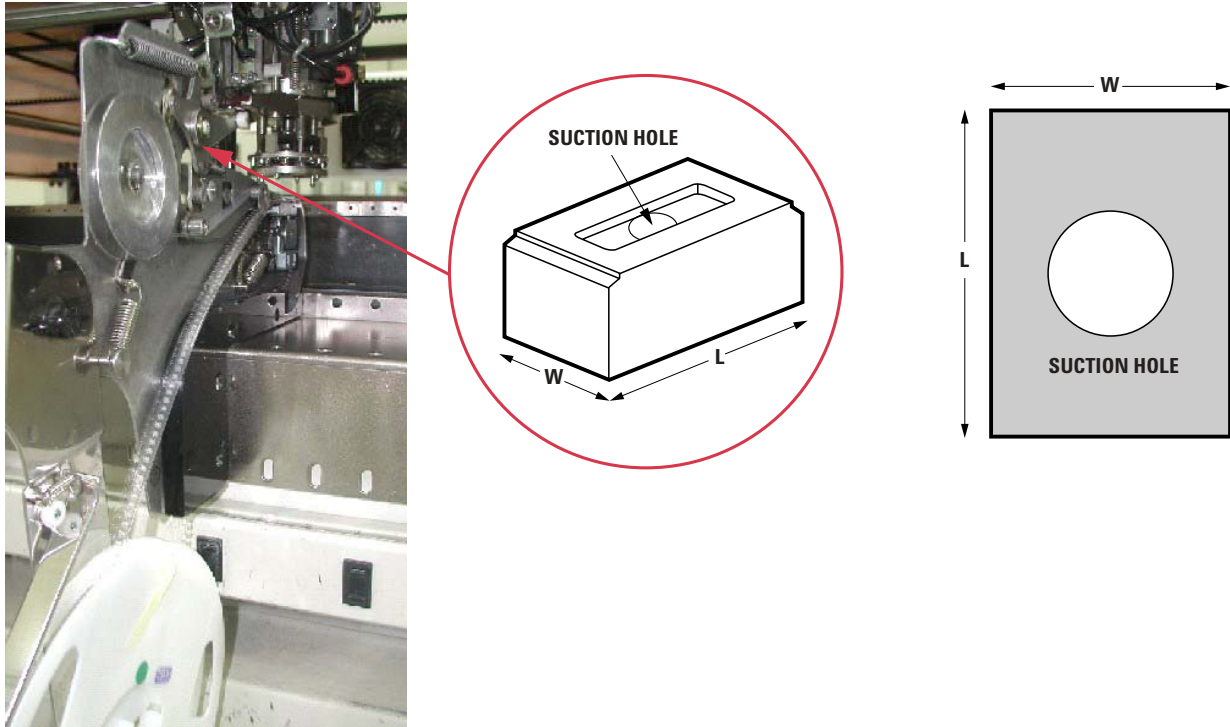


Figure 1. Recommended pick and place tool dimensions.

Tape and Reel Packaging

The orientation of the encoder is placed such that the chamfer marking on the encoder, which indicates the location of pin 6, is nearer to the edge of the tape without reference holes. This is illustrated in the following diagrams.

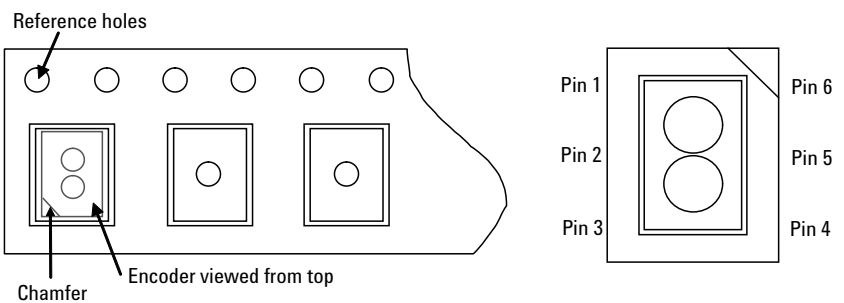


Figure 2. Orientation of encoder in tape and reel packaging.

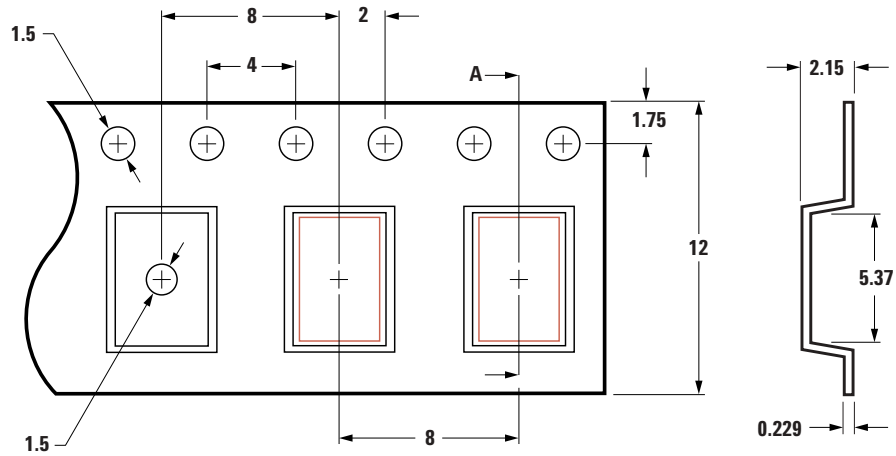


Figure 3. Tape Measurement

Note: All measurement in millimeter (mm).

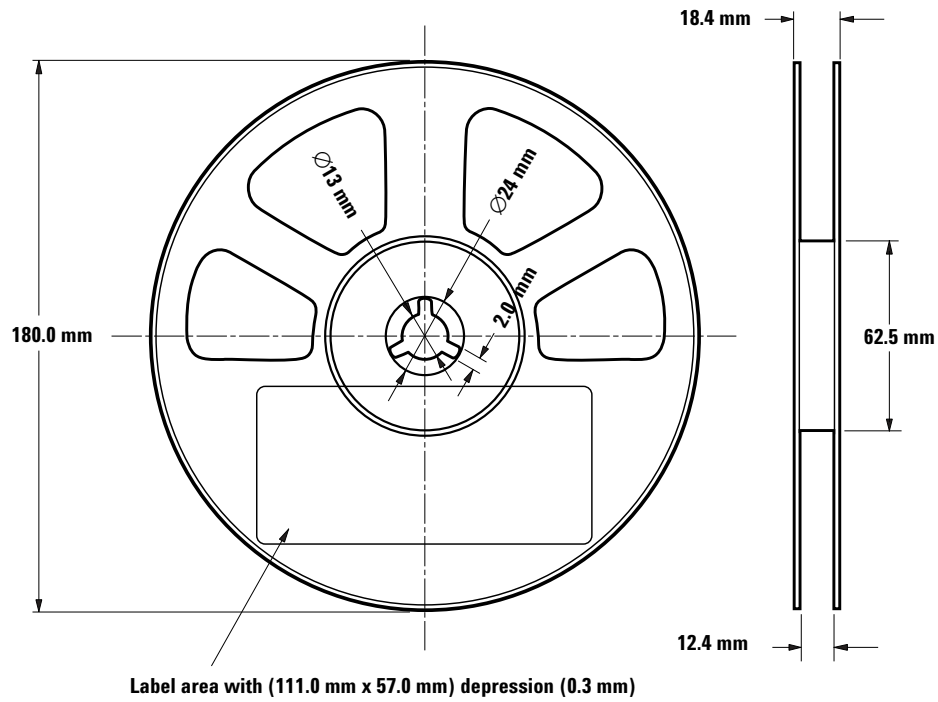


Figure 4 Reel Measurement

Note: All measurement in millimeter (mm).

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AV01-0281EN - June 27, 2006

