## High –speed double diode

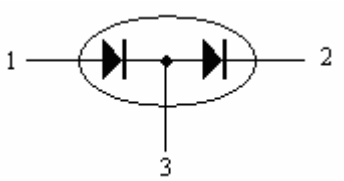
# CMBD7000N3

## Description

The CMBD7000N3 consists of two high-speed switching diodes connected in series, fabricated in planar technology, and encapsulated in the small SOT-23 plastic SMD package.

## Equivalent Circuit

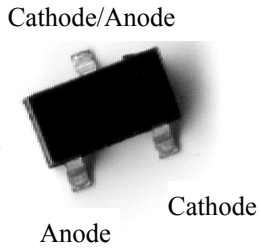
CMBD7000N3




1：Anode
2：Cathode
3：Cathode/Anode

## Outline

SOT-23




## Absolute Maximum Ratings @$T_A$=25℃

| Parameters | Symbol | Min | Max | Unit |
|---|---|---|---|---|
| Reverse voltage | $V_R$ | - | 100 | V |
| Forward current | $I_F$ | - | 200 | mA |
| Peak forward surge current | $I_{FRM}$ | | 500 | mA |
| Power dissipation (Note 1)<br>Derate above 25℃ | $P_D$ | | 225<br>1.8 | mW<br>mW/°C |
| Power dissipation (Note 2)<br>Derate above 25℃ | $P_D$ | | 300<br>2.4 | mW<br>mW/°C |
| Junction Temperature | $T_j$ | -55 | 150 | °C |
| Storage Temperature | $T_{stg}$ | -55 | +150 | °C |

Note 1: Device mounted on an FR-5 PCB with area 1.0×0.75×0.062 in.
2 : Device mounted on an Alumina board with area 0.4×0.3×0.024 in .

## Electrical Characteristics @ Tj=25℃ unless otherwise specified

| Parameters | Symbol | Conditions | Min | Typ. | Max | Unit |
|---|---|---|---|---|---|---|
| Reverse breakdown voltage | $V_{(BR)}$ | $I_{(BR)}$=100μA | 100 | - | - | V |
| Forward voltage | $V_F$ | $I_F$=1mA<br>$I_F$=10mA<br>$I_F$=100mA | 0.55<br>0.67<br>0.75 | - | 0.7<br>0.82<br>1.1 | V<br>V<br>V |
| Reverse current | $I_R$ | $V_R$=50V<br>$V_R$=100V<br>$V_R$=50V, Tj=125℃ | - | - | 1.0<br>3.0<br>100 | μA<br>μA<br>μA |
| Diode capacitance | Cd | $V_R$=0V, f=1MHz | - | - | 1.5 | pF |
| Reverse recovery time | trr | when switched from $I_F$=10mA to $I_R$=10mA, $R_L$=100Ω, measured at $I_R$=1mA | - | - | 4 | ns |

## Thermal Characteristics

| Symbol | Parameter | Conditions | Value | Unit |
|---|---|---|---|---|
| Rth,j-a | thermal resistance from junction to ambient | Note 1 | 556 | ℃/W |
| Rth, j-a | thermal resistance from junction to ambient | Note 2 | 417 | ℃/W |

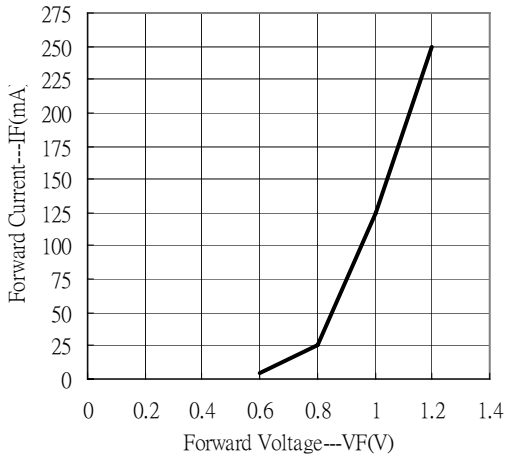
Note 1: Device mounted on an FR-5 PCB with area 1.0×0.75×0.062 in .
2 : Device mounted on an Alumina board with area 0.4×0.3×0.024 in .

## Ordering Information

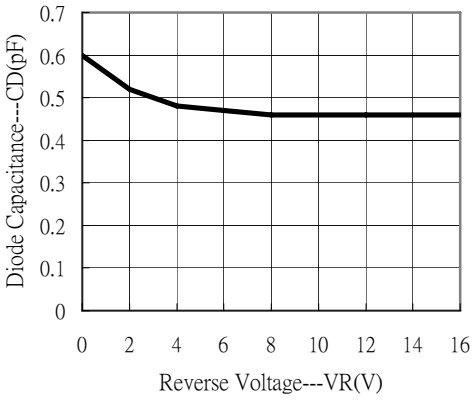
| Device | Package | Shipping | Marking |
|---|---|---|---|
| CMBD7000N3 | SOT-23<br>(Pb-free) | 3000 pcs / Tape & Reel | A7 |

## Characteristic Curves(applicable to each diode)

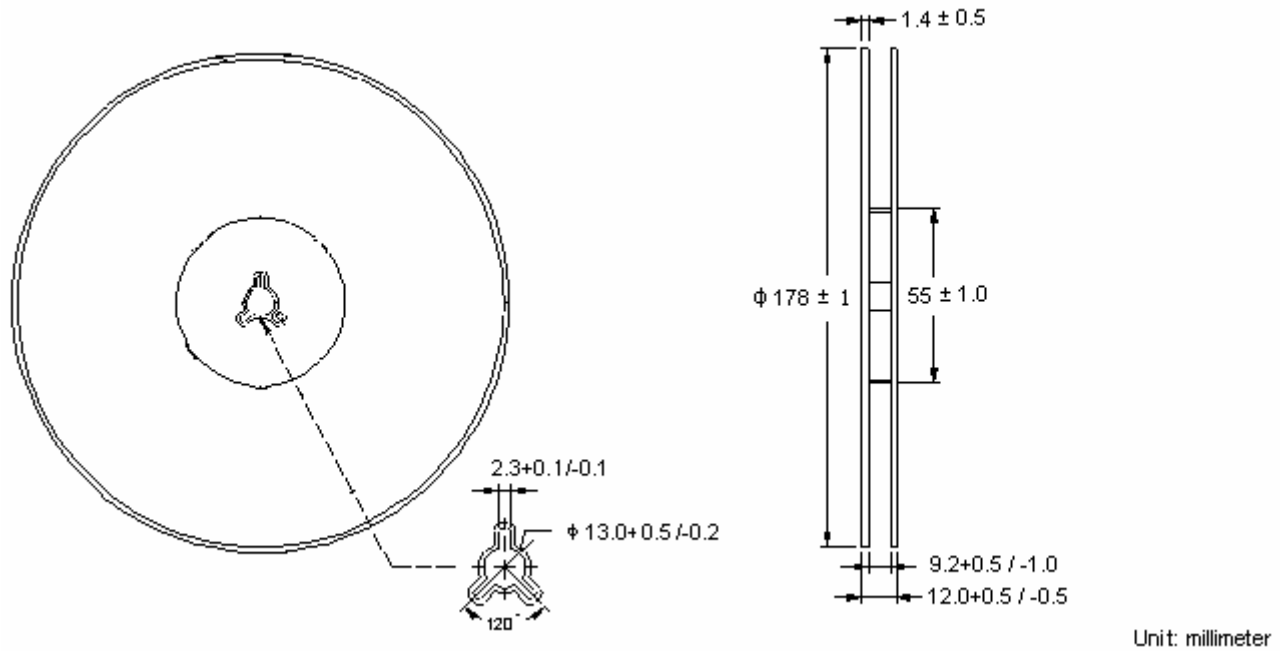
Forward Current vs Forward Voltage



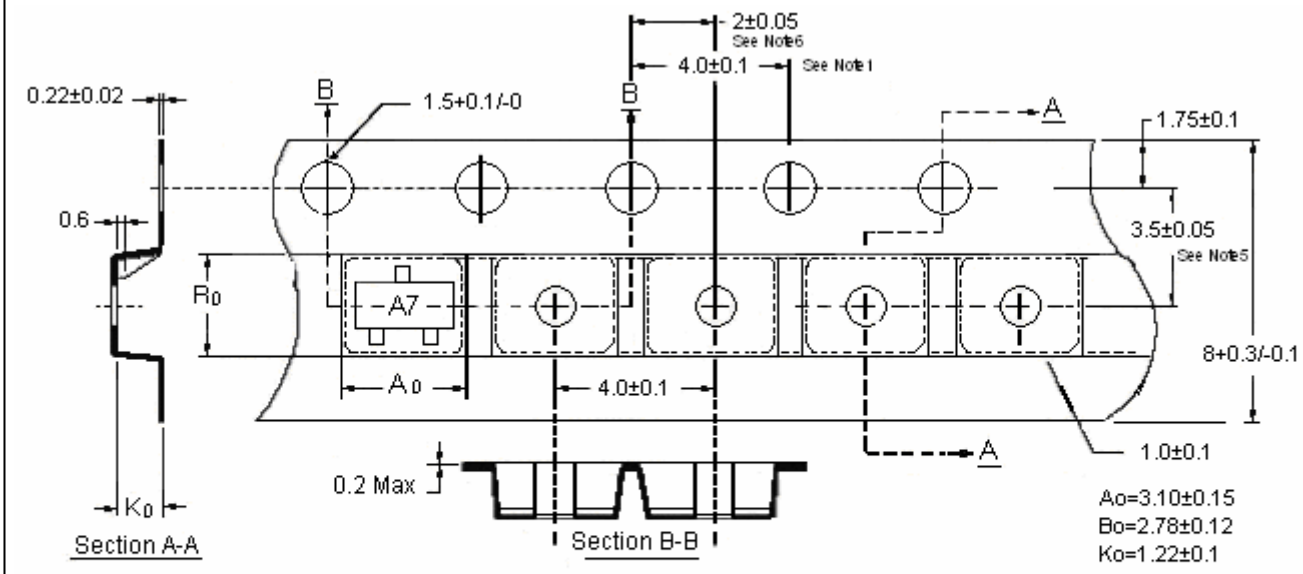

Diode Capacitance vs Reverse Voltage



## Reel Dimension




## Carrier Tape Dimension



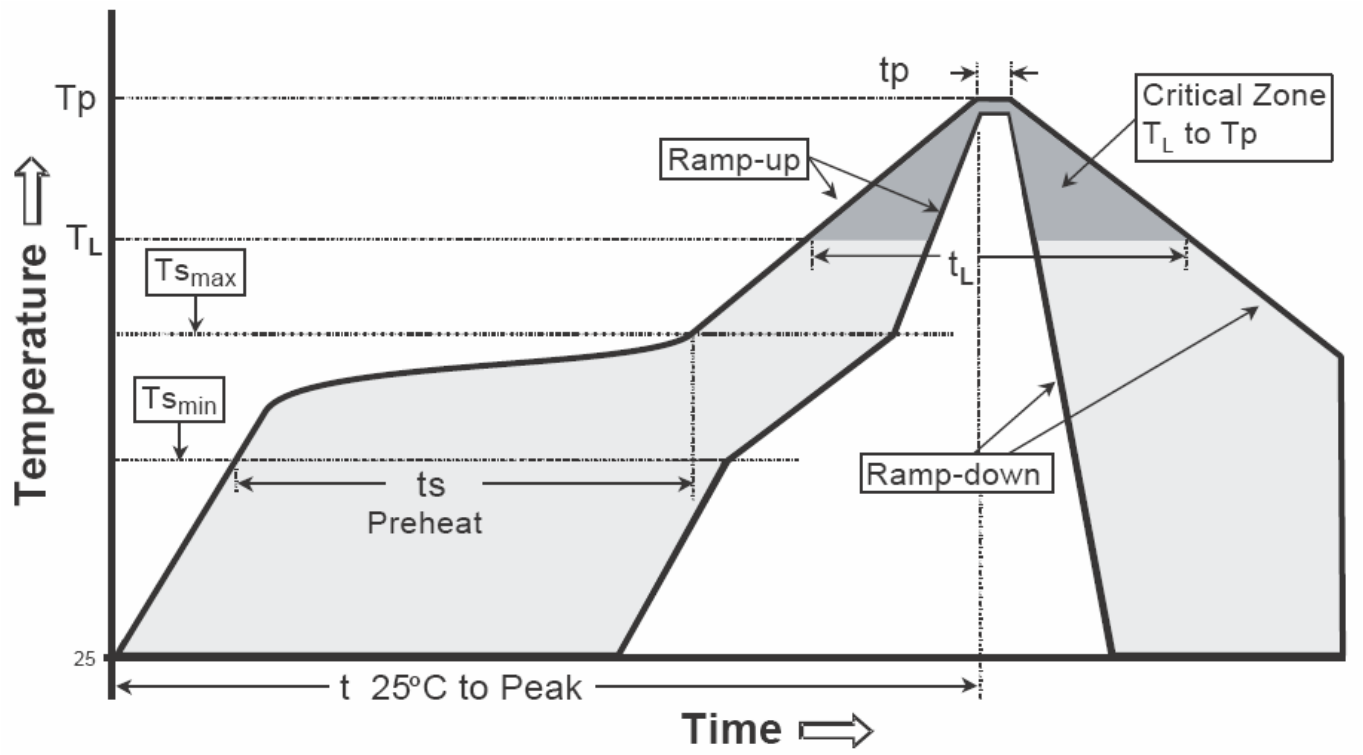

Notes:
1. 10 sprocket hole pitch cumulative tolerance ±0.2.
2. Camber not to exceed 1mm in 100mm.
3. Material : conductive Black Polystyrene.
4. Ao & Bo measured on a plane 0.3mm above the bottom of the pocket.
5. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier.
6. Pocket position relative to sprocket hole measured as true position of pocket, not pocket hole.

Unit : millimeter

## Recommended wave soldering condition

| Product | Peak Temperature | Soldering Time |
|---|---|---|
| Pb-free devices | 260 +0/-5 °C | 5 +1/-1 seconds |

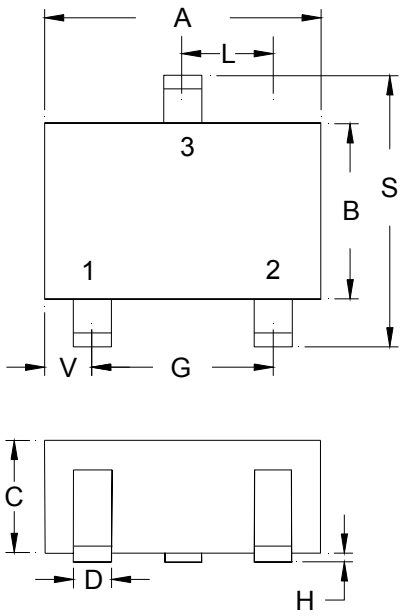
## Recommended temperature profile for IR reflow



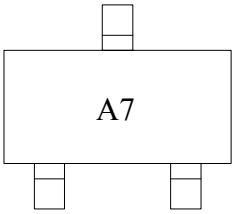

| Profile feature | Sn-Pb eutectic Assembly | Pb-free Assembly |
|---|---|---|
| Average ramp-up rate (Tsmax to Tp) | 3°C/second max. | 3°C/second max. |
| Preheat<br>−Temperature Min(Ts min)<br>−Temperature Max(Ts max)<br>−Time(ts min to ts max) | <br>100°C<br>150°C<br>60-120 seconds | <br>150°C<br>200°C<br>60-180 seconds |
| Time maintained above:<br>−Temperature (TL)<br>− Time (tL) | <br>183°C<br>60-150 seconds | <br>217°C<br>60-150 seconds |
| Peak Temperature(TP) | 240 +0/-5 °C | 260 +0/-5 °C |
| Time within 5°C of actual peak temperature(tp) | 10-30 seconds | 20-40 seconds |
| Ramp down rate | 6°C/second max. | 6°C/second max. |
| Time 25 °C to peak temperature | 6 minutes max. | 8 minutes max. |

Note : All temperatures refer to topside of the package, measured on the package body surface.

## SOT-23 Dimension




Marking:




3-Lead SOT-23 Plastic
Surface Mounted Package
CYStek Package Code: N3

Style: Pin 1.Anode 2.Cathode
3.Cathode/Anode

*: Typical

| DIM | Inches | | Millimeters | | DIM | Inches | | Millimeters | |
|---|---|---|---|---|---|---|---|---|---|
| | Min. | Max. | Min. | Max. | | Min. | Max. | Min. | Max. |
| A | 0.1102 | 0.1204 | 2.80 | 3.04 | J | 0.0034 | 0.0070 | 0.085 | 0.177 |
| B | 0.0472 | 0.0630 | 1.20 | 1.60 | K | 0.0128 | 0.0266 | 0.32 | 0.67 |
| C | 0.0335 | 0.0512 | 0.89 | 1.30 | L | 0.0335 | 0.0453 | 0.85 | 1.15 |
| D | 0.0118 | 0.0197 | 0.30 | 0.50 | S | 0.0830 | 0.1083 | 2.10 | 2.75 |
| G | 0.0669 | 0.0910 | 1.70 | 2.30 | V | 0.0098 | 0.0256 | 0.25 | 0.65 |
| H | 0.0005 | 0.0040 | 0.013 | 0.10 | | | | | |

Notes: 1.Controlling dimension: millimeters.
2.Maximum lead thickness includes lead finish thickness, and minimum lead thickness is the minimum thickness of base material.
3.If there is any question with packing specification or packing method, please contact your local CYStek sales office.

Material:

- Lead: Pure tin plated.
- Mold Compound: Epoxy resin family, flammability solid burning class: UL94V-0.