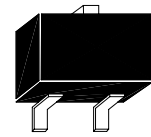


**Zener Diode Series**

# ZD52XXBN3



SOT-23

**Thermal Characteristics**

| Characteristics   | Symbol   | Max         | Unit        |
|---|----------|-------------|-------------|
| Total Device Dissipation FR-5 Board<br>TA=25°C, Derate above 25°C         | PD       | 225<br>1.8  | mW<br>mW/°C |
| Total Device Dissipation<br>Alumina Substrate**TA=25°C, Derate above 25°C | PD       | 300<br>2.4  | mW<br>mW/°C |
| Thermal Resistance Junction to Ambient                                    | RθJA     | 417         | °C/W        |
| Junction and Storage Temperature  | Tj, Tstg | -55 to +150 | °C          |

\*FR-5 - 1.0×0.75×0.062 in. \*\*Alumina - 0.4×0.3×0.024 in. 99.5% alumina.

**Electrical Characteristic** (VF=0.9V Max @IF=10mA for all types.)

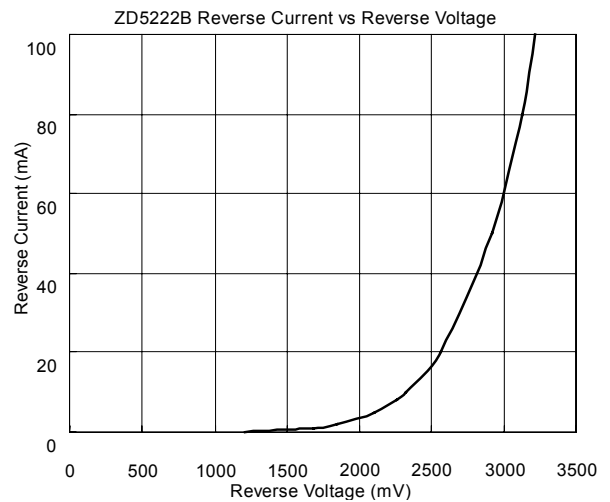
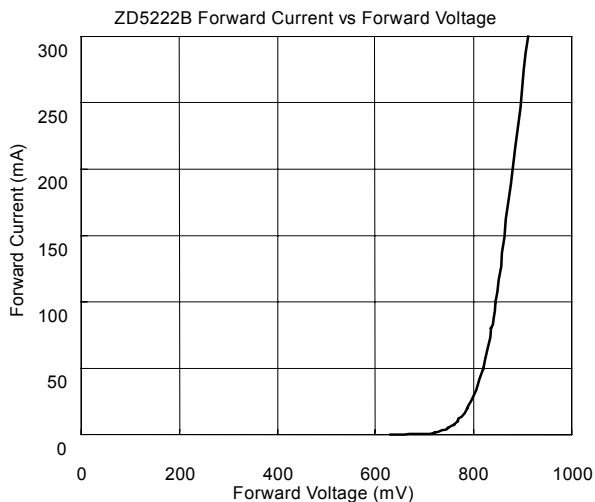
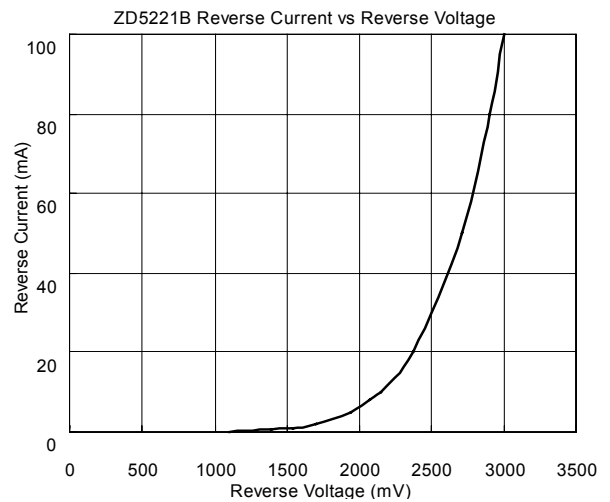
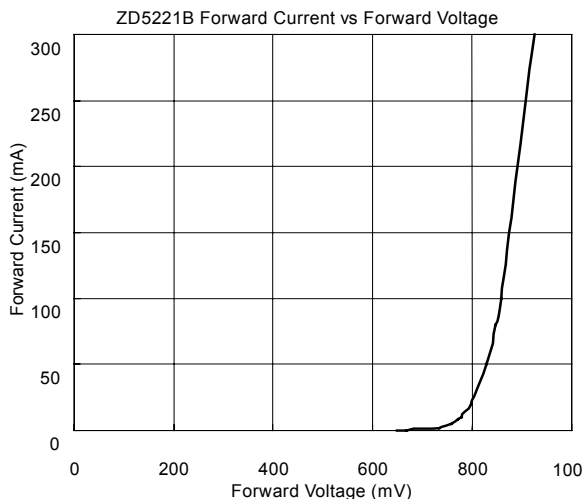
| Device  | Marking Code | Test Current<br>IZT(mA) | Zener Voltage<br>VZ(V) | Zzk<br>IZ=0.25mA<br>(Ω,Max) | Zzt<br>IZ=IZT<br>(Ω,Max) | Max. Reverse Current |        |
|---------|--------------|-------------------------|------------------------|-----------------------------|--------------------------|----------------------|--------|
|         |              |                         |                        |                             |                          | IR(uA)               | @VR(V) |
| ZD5221B | 18A          | 20                      | 2.4 ±5%                | 1200                        | 30                       | 100                  | 1.0    |
| ZD5222B | 18B          | 20                      | 2.5 ±5%                | 1250                        | 30                       | 100                  | 1.0    |
| ZD5223B | 18C          | 20                      | 2.7 ±5%                | 1300                        | 30                       | 75                   | 1.0    |
| ZD5225B | 18E          | 20                      | 3.0 ±5%                | 1600                        | 29                       | 50                   | 1.0    |
| ZD5226B | 8A           | 20                      | 3.3 ±5%                | 1600                        | 28                       | 25                   | 1.0    |
| ZD5227B | 8B           | 20                      | 3.6 ±5%                | 1700                        | 24                       | 15                   | 1.0    |
| ZD5228B | 8C           | 20                      | 3.9 ±5%                | 1900                        | 23                       | 10                   | 1.0    |
| ZD5229B | 8D           | 20                      | 4.3 ±5%                | 2000                        | 22                       | 5.0                  | 1.0    |
| ZD5230B | 8E           | 20                      | 4.7 ±5%                | 1900                        | 19                       | 5.0                  | 2.0    |
| ZD5231B | 8F           | 20                      | 5.1 ±5%                | 1600                        | 17                       | 5.0                  | 2.0    |
| ZD5232B | 8G           | 20                      | 5.6 ±5%                | 1600                        | 11                       | 5.0                  | 3.0    |
| ZD5233B | 8H           | 20                      | 6.0 ±5%                | 1600                        | 7.0                      | 5.0                  | 3.5    |
| ZD5234B | 8J           | 20                      | 6.2 ±5%                | 1000                        | 7.0                      | 5.0                  | 4.0    |
| ZD5235B | 8K           | 20                      | 6.8 ±5%                | 750                         | 5.0                      | 3.0                  | 5.0    |
| ZD5236B | 8L           | 20                      | 7.5 ±5%                | 500                         | 6.0                      | 3.0                  | 6.0    |
| ZD5237B | 8M           | 20                      | 8.2 ±5%                | 500                         | 8.0                      | 3.0                  | 6.5    |
| ZD5238B | 8N           | 20                      | 8.7 ±5%                | 600                         | 8.0                      | 3.0                  | 6.5    |
| ZD5239B | 8P           | 20                      | 9.1 ±5%                | 600                         | 10                       | 3.0                  | 7.0    |
| ZD5240B | KF5          | 20                      | 10 ±5%                 | 600                         | 17                       | 3.0                  | 8.0    |
| ZD5241B | 8R           | 20                      | 11 ±5%                 | 600                         | 22                       | 2.0                  | 8.4    |
| ZD5242B | 8S           | 20                      | 12 ±5%                 | 600                         | 30                       | 1.0                  | 9.1    |
| ZD5243B | 8T           | 9.5                     | 13 ±5%                 | 600                         | 13                       | 0.5                  | 9.9    |
| ZD5244B | 8U           | 9.0                     | 14 ±5%                 | 600                         | 15                       | 0.1                  | 10     |

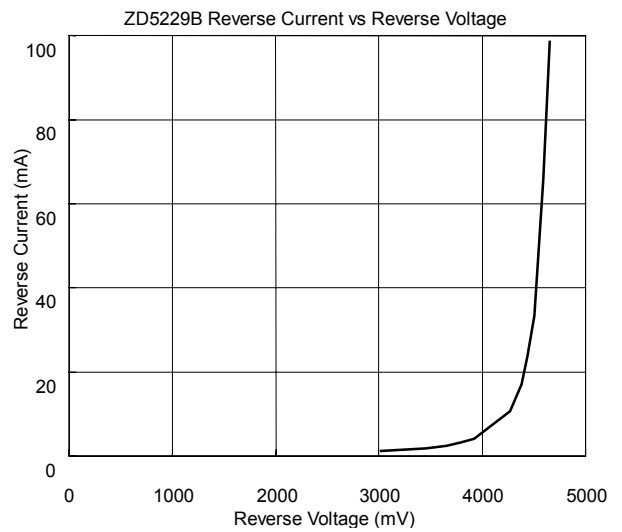
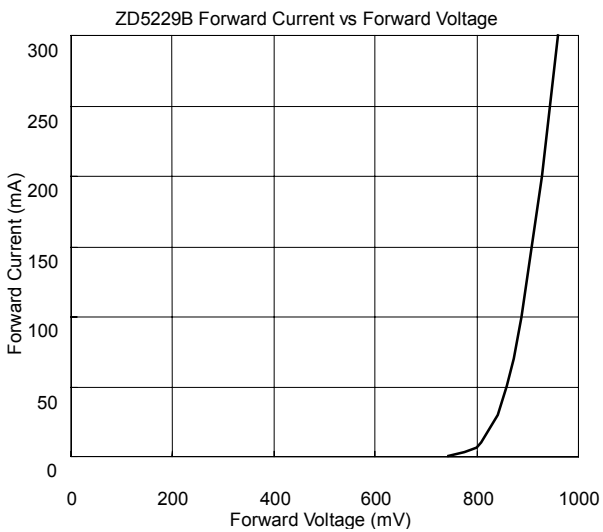
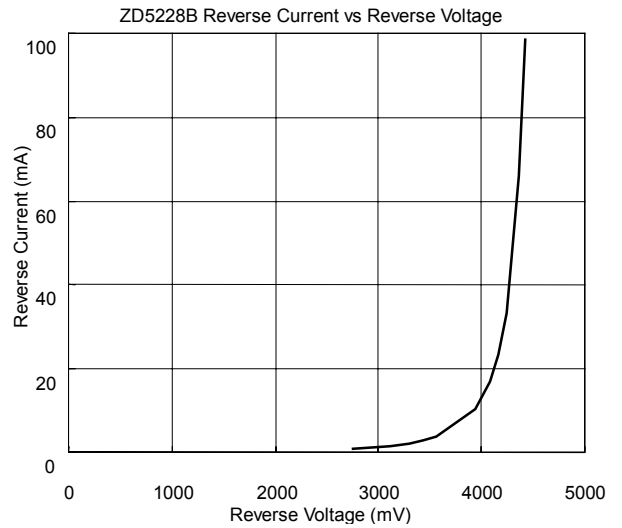
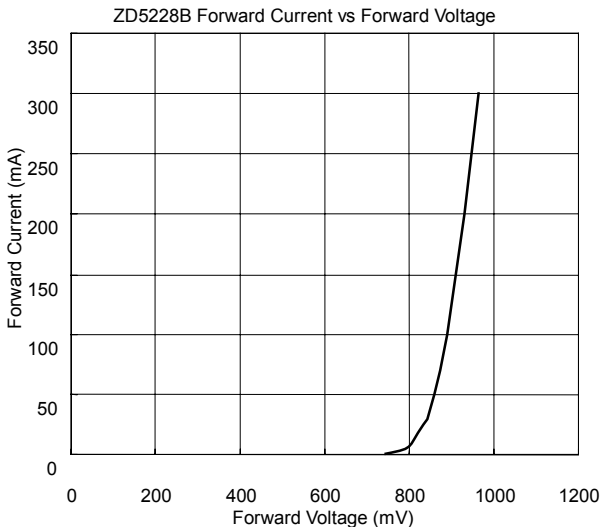
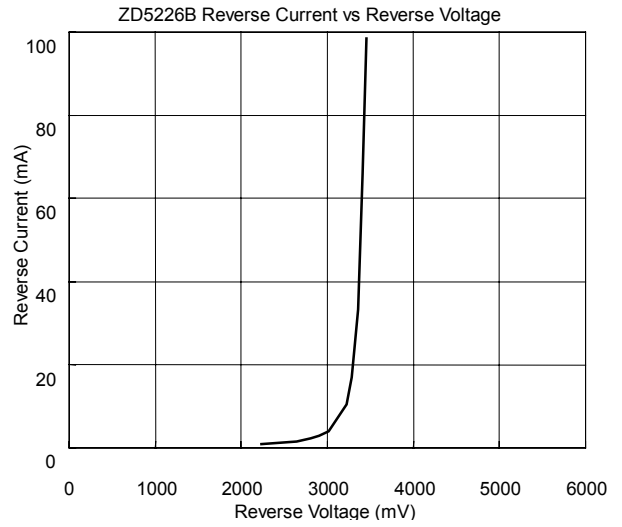
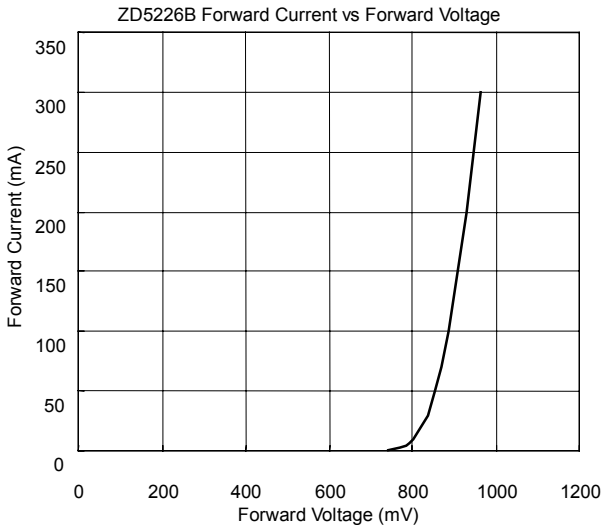


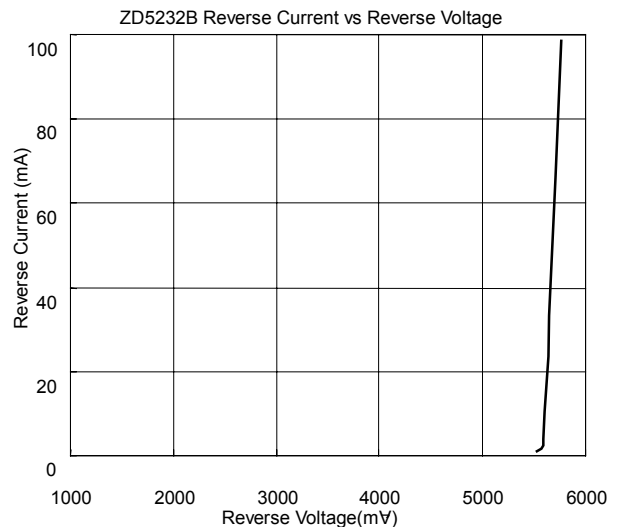
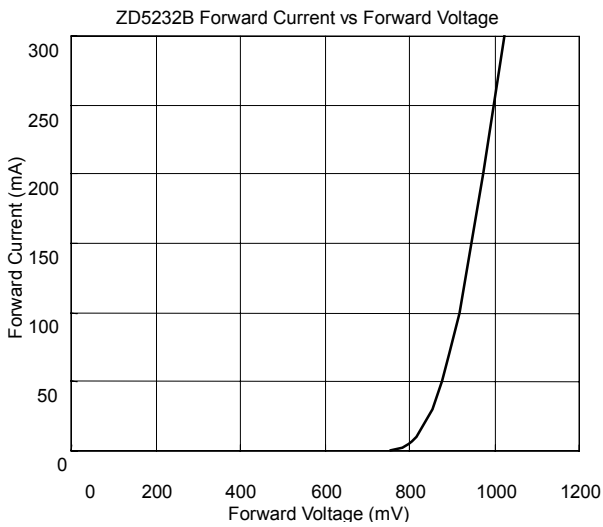
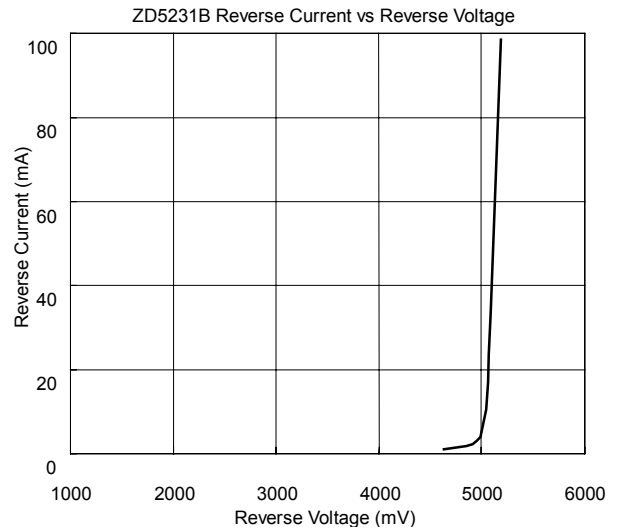
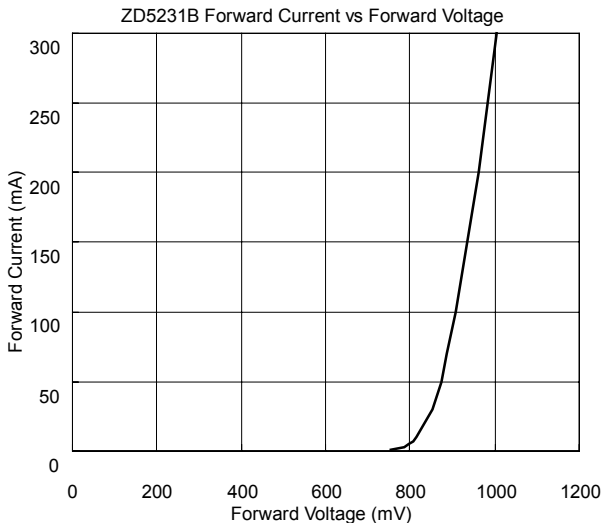
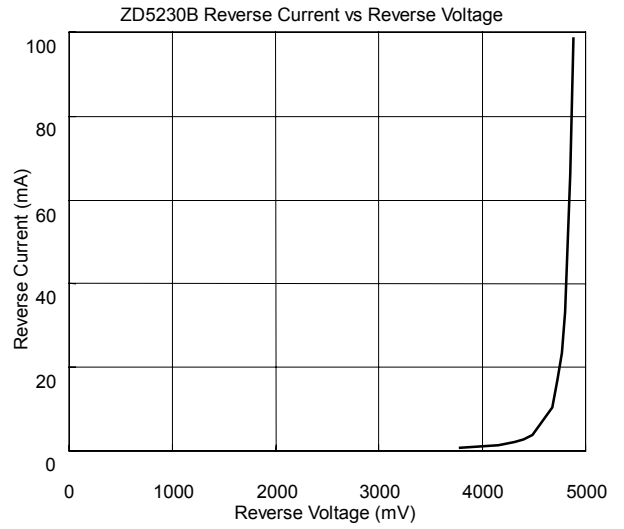
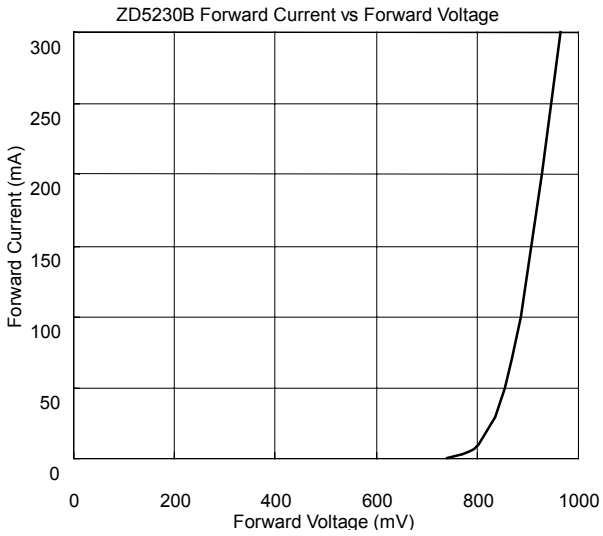
**Electrical Characteristic(Cont.)**

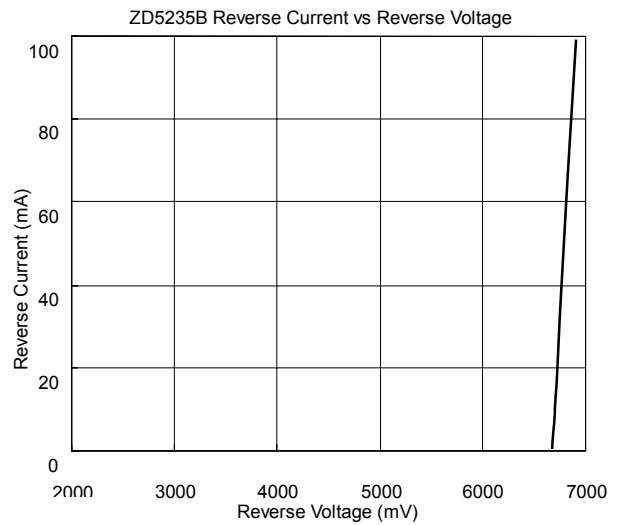
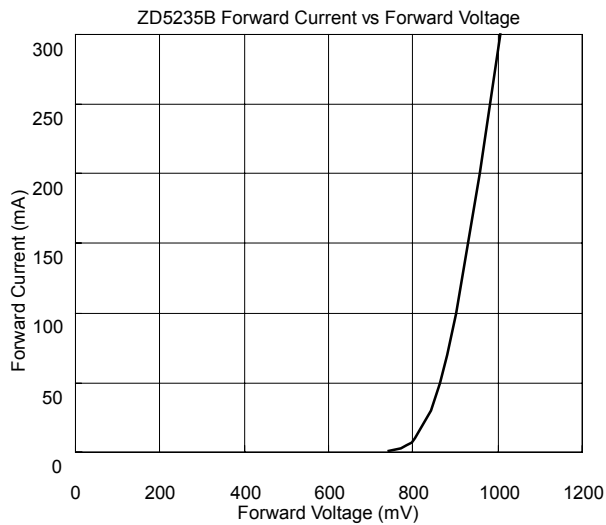
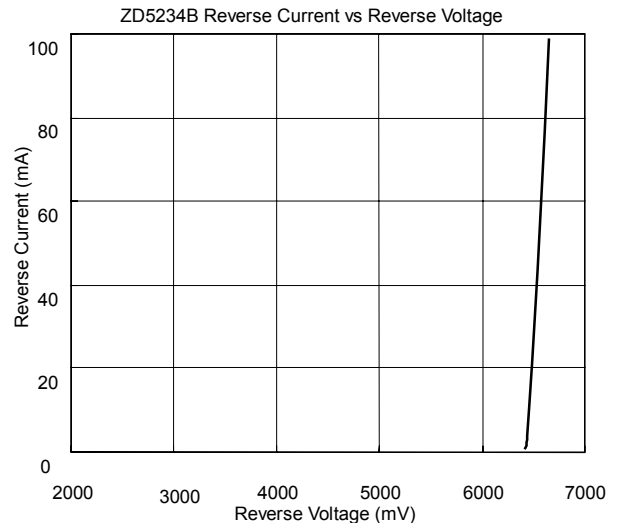
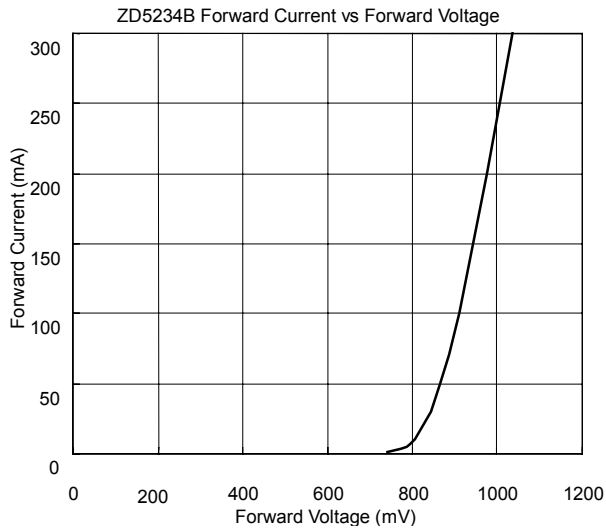
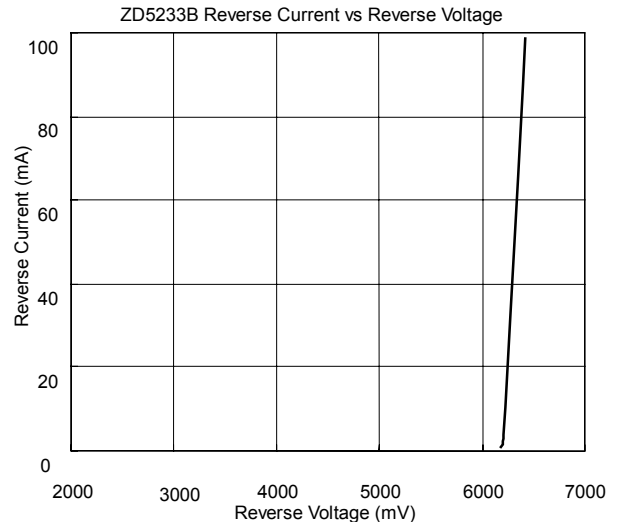
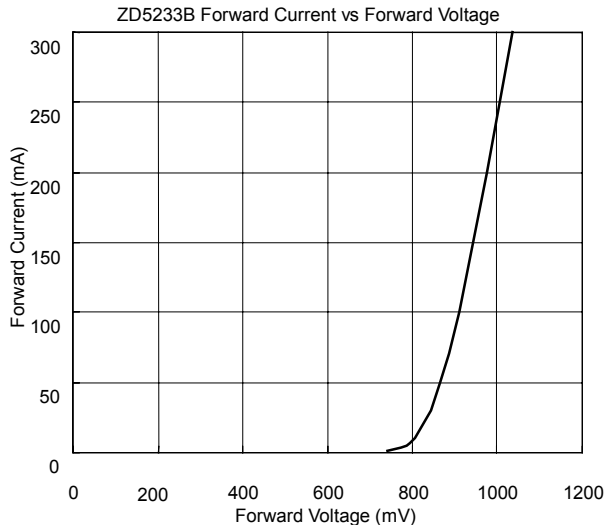
|         |     |     |        |     |    |     |    |
|---------|-----|-----|--------|-----|----|-----|----|
| ZD5245B | 8V  | 8.5 | 15 ±5% | 600 | 16 | 0.1 | 11 |
| ZD5246B | 8W  | 7.8 | 16 ±5% | 600 | 17 | 0.1 | 12 |
| ZD5247B | 8X  | 7.4 | 17 ±5% | 600 | 19 | 0.1 | 13 |
| ZD5248B | 8Y  | 7.0 | 18 ±5% | 600 | 21 | 0.1 | 14 |
| ZD5249B | 8Z  | 6.6 | 19 ±5% | 600 | 23 | 0.1 | 14 |
| ZD5250B | 81A | 6.2 | 20 ±5% | 600 | 25 | 0.1 | 15 |
| ZD5251B | 81B | 5.6 | 22 ±5% | 600 | 29 | 0.1 | 17 |
| ZD5252B | 81C | 5.2 | 24 ±5% | 600 | 33 | 0.1 | 18 |
| ZD5253B | 81D | 5.0 | 25 ±5% | 600 | 35 | 0.1 | 19 |
| ZD5254B | 81E | 4.6 | 27 ±5% | 600 | 41 | 0.1 | 21 |
| ZD5255B | 81F | 4.5 | 28 ±5% | 600 | 44 | 0.1 | 21 |
| ZD5256B | 81G | 4.2 | 30 ±5% | 600 | 49 | 0.1 | 23 |
| ZD5257B | 81H | 3.8 | 33 ±5% | 700 | 58 | 0.1 | 25 |
| ZD5258B | 81J | 3.4 | 36 ±5% | 700 | 70 | 0.1 | 27 |

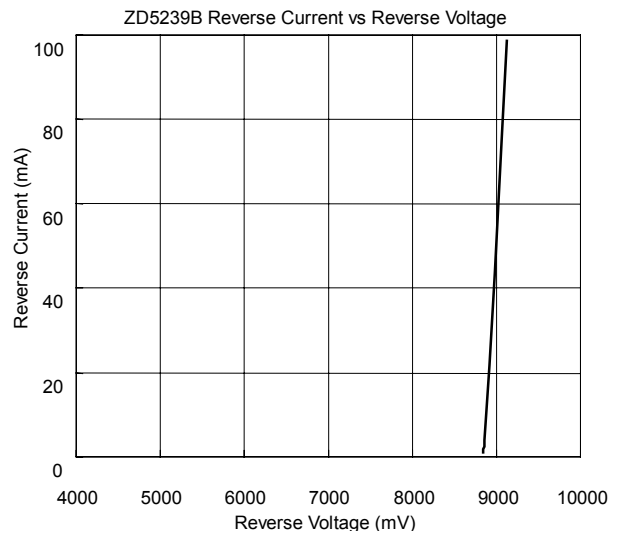
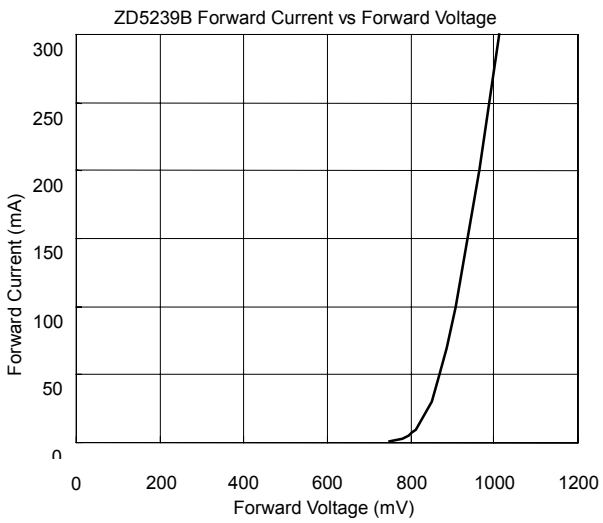
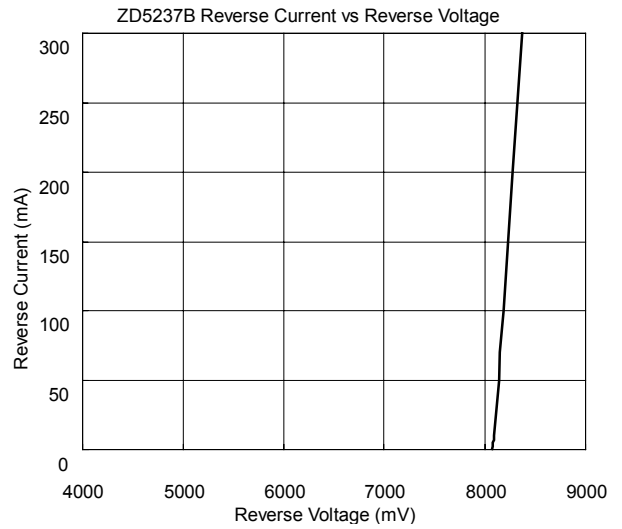
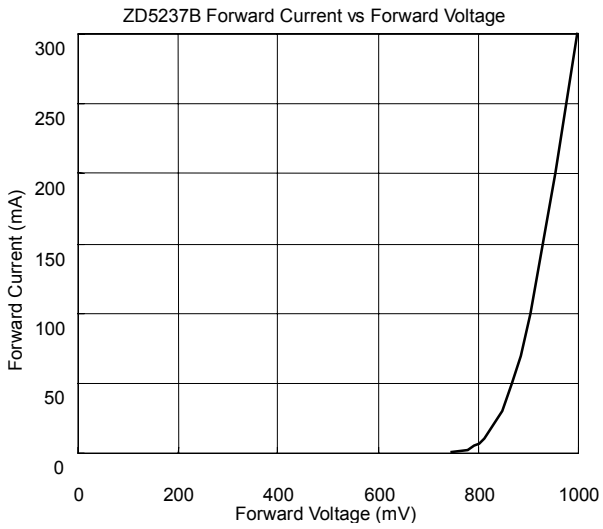
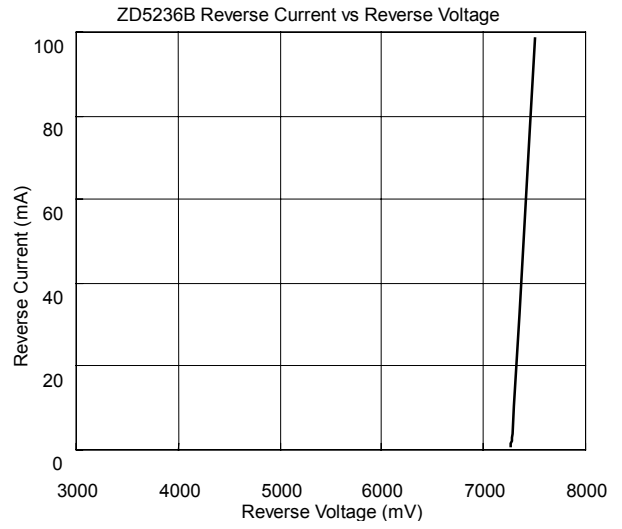
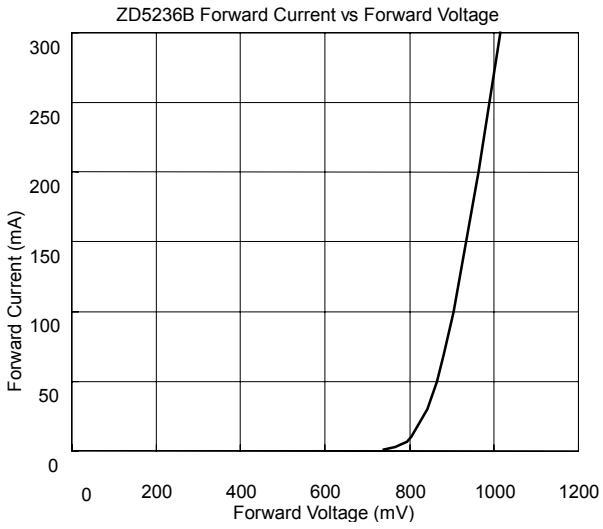
**Characteristic Curves**

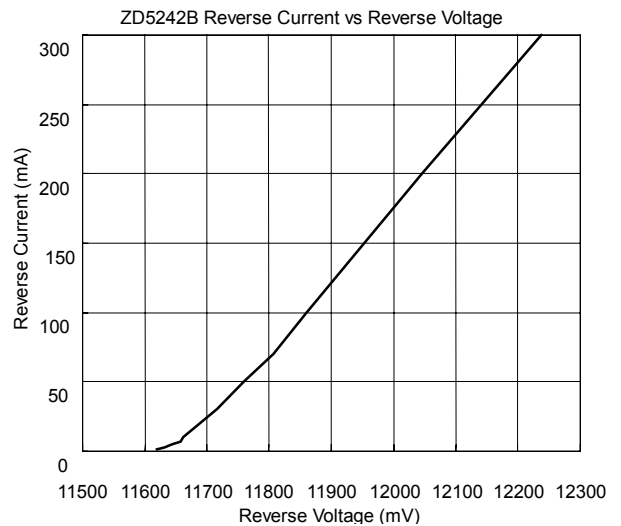
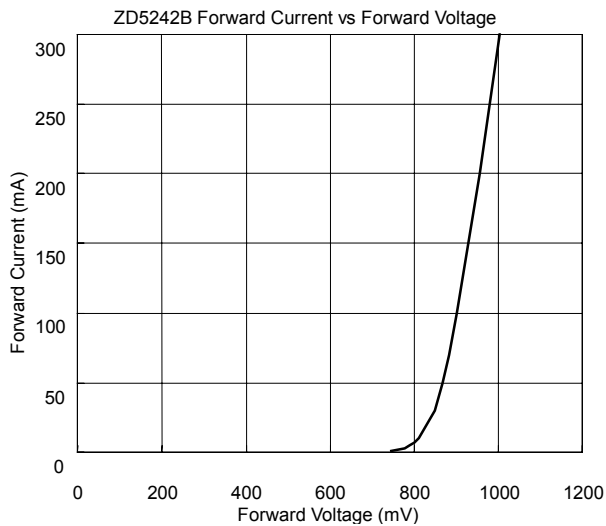
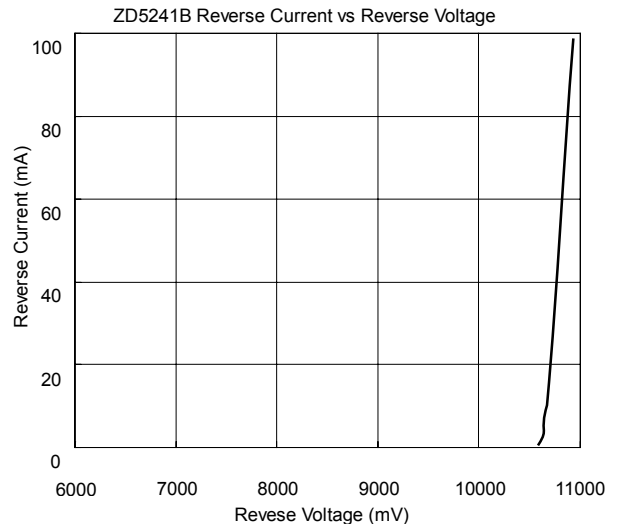
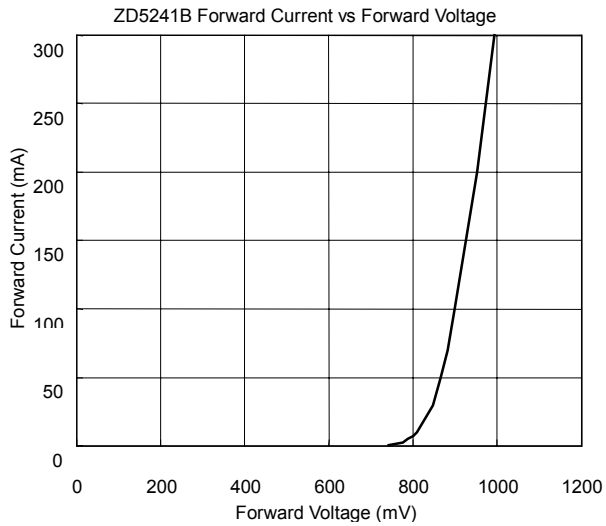
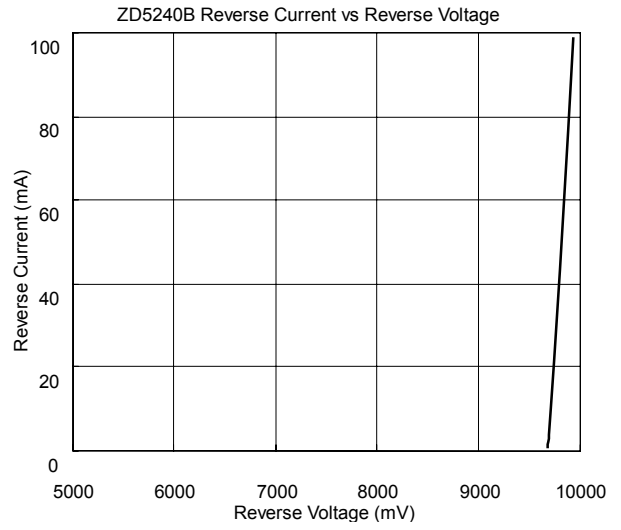
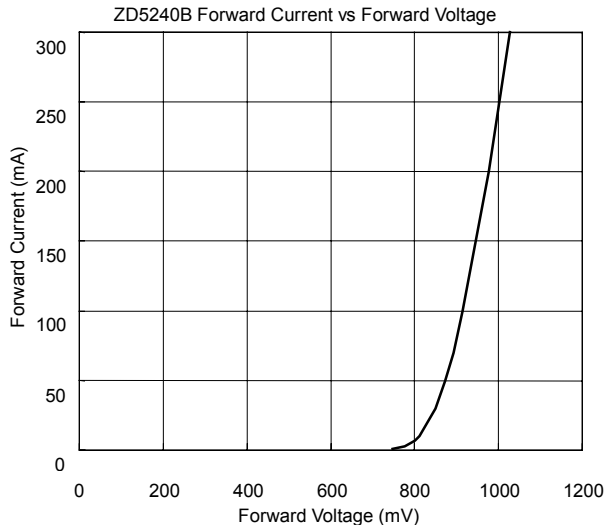


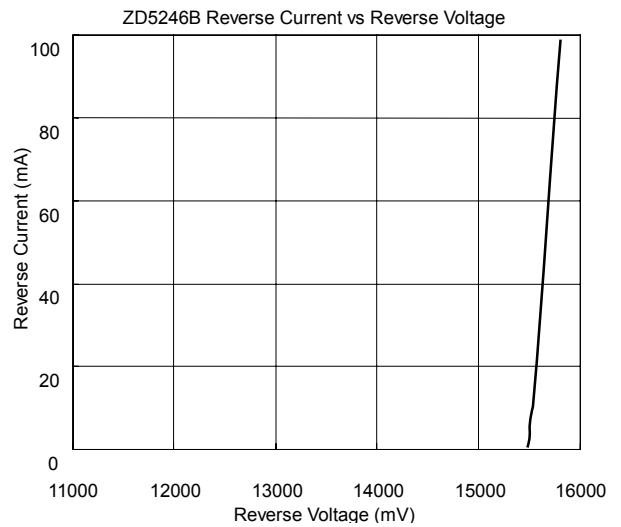
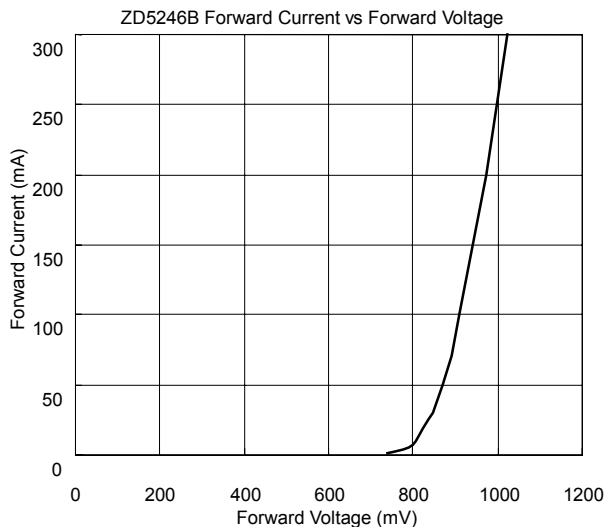
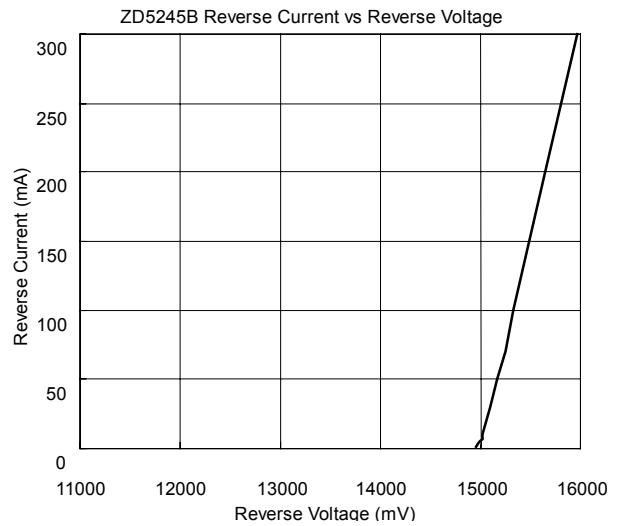
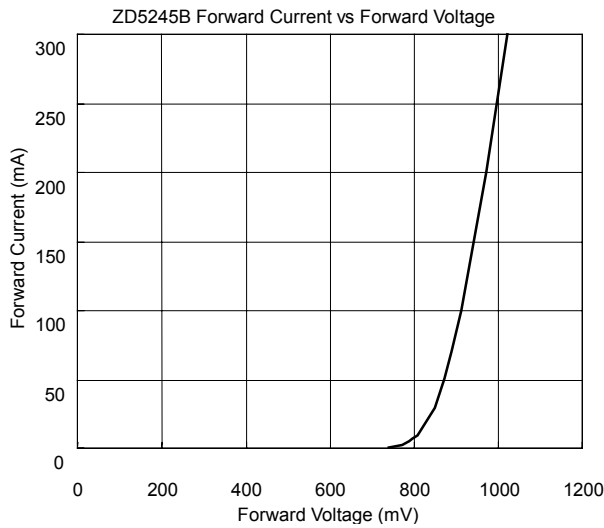
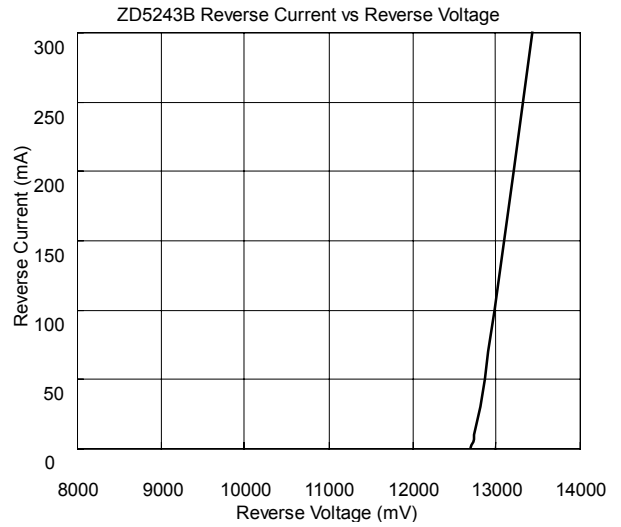
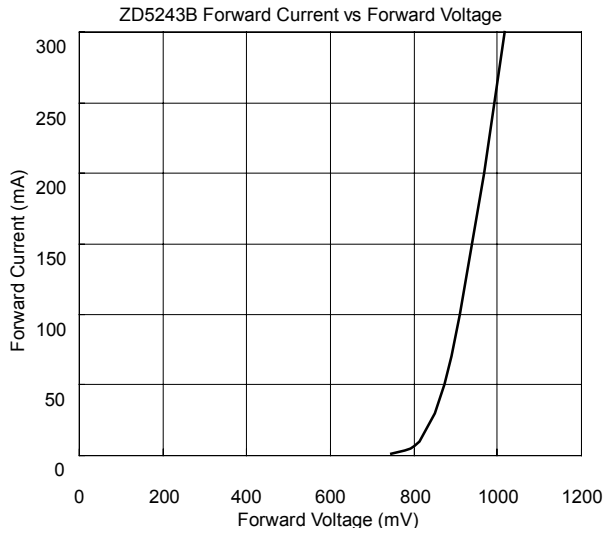




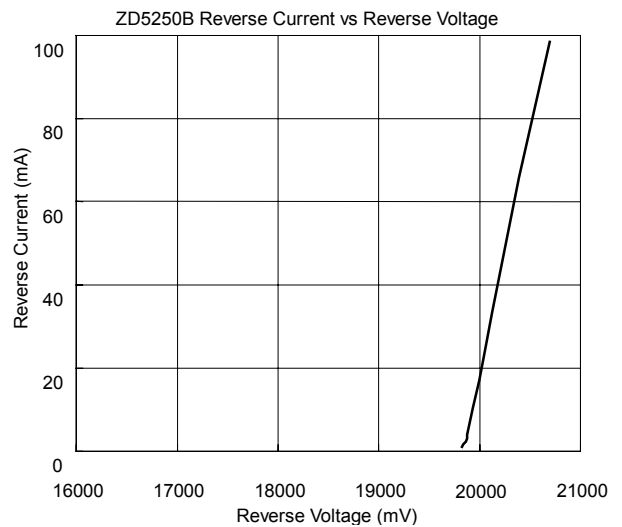
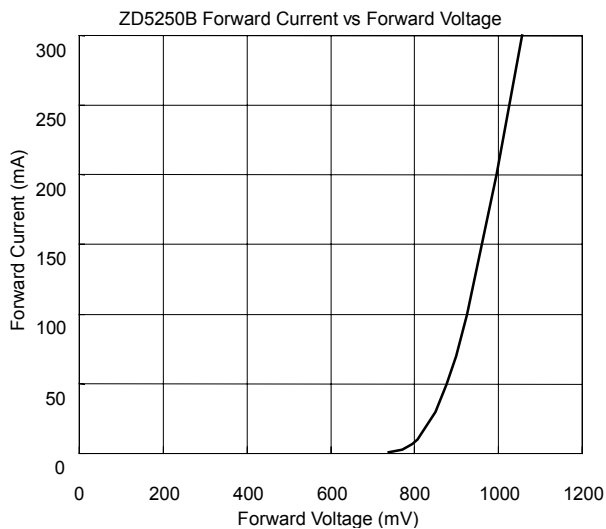
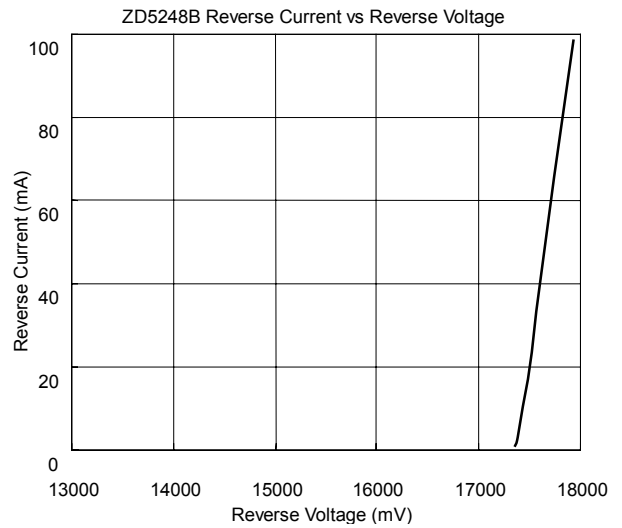
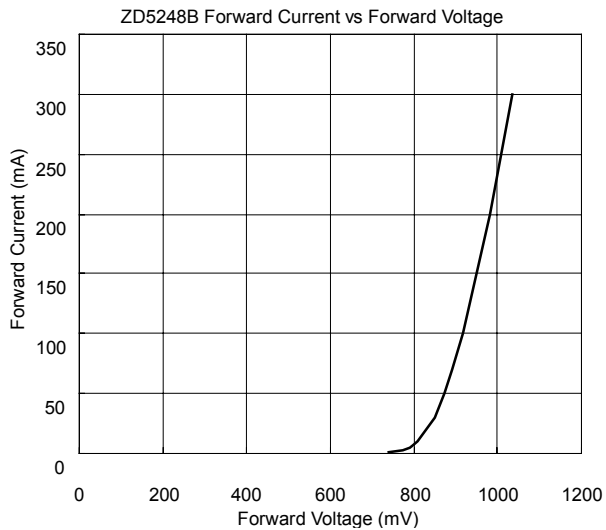
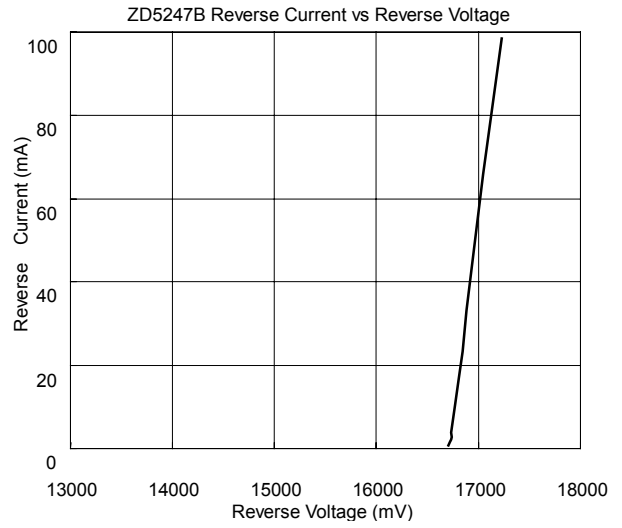
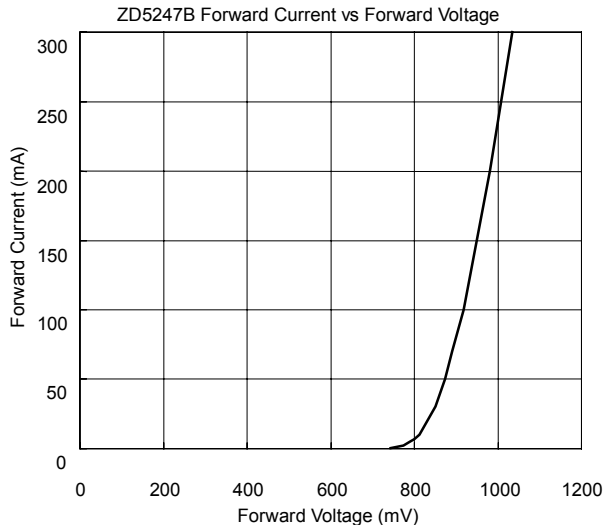


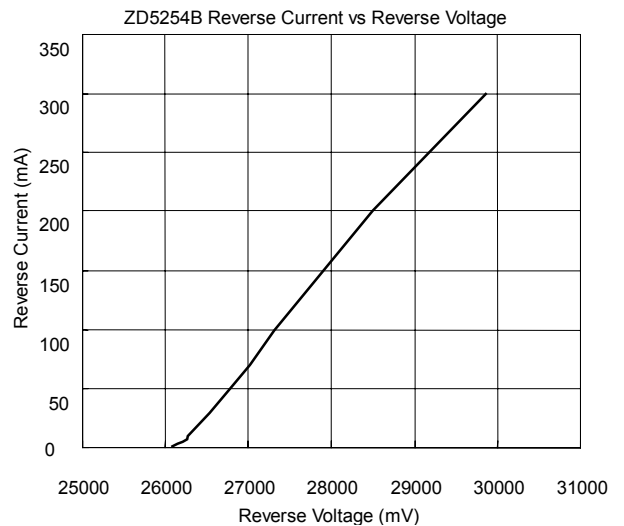
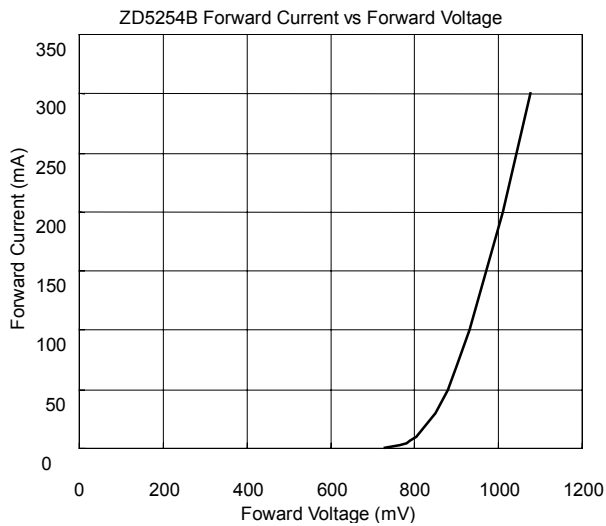
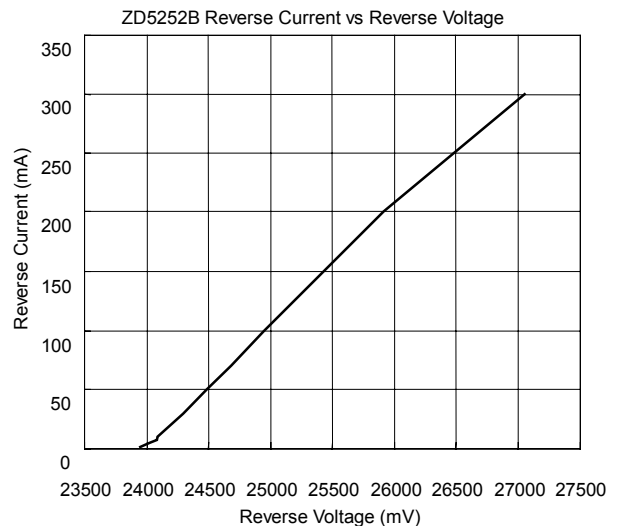
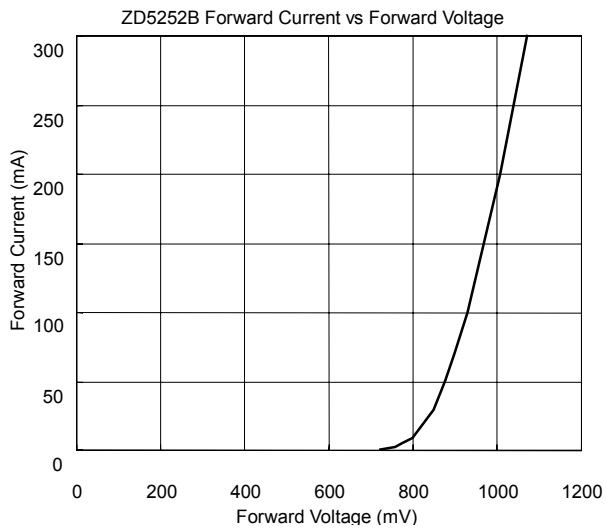
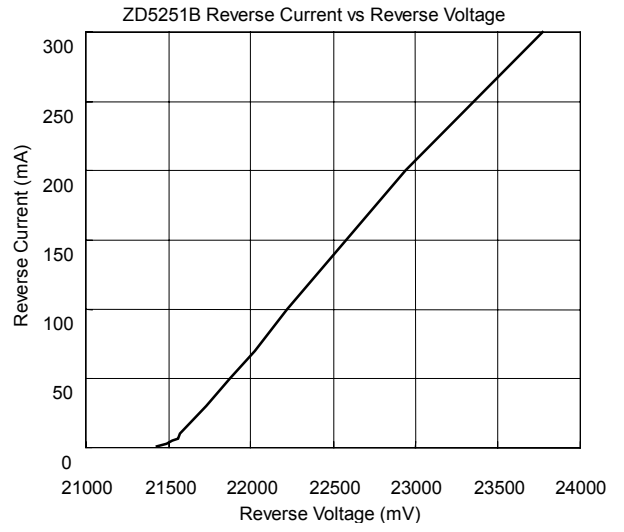
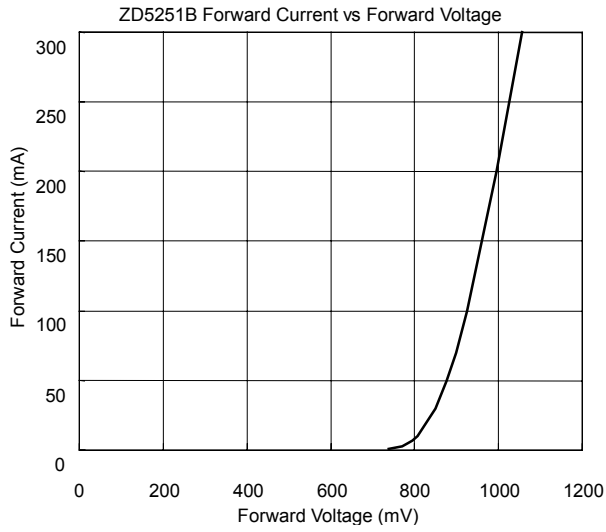


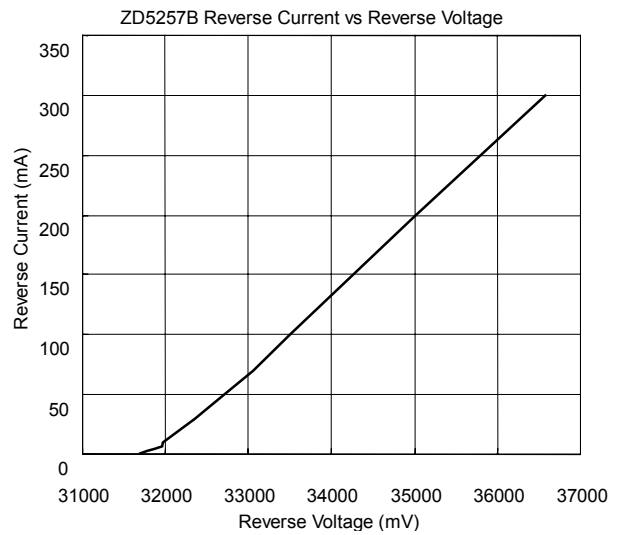
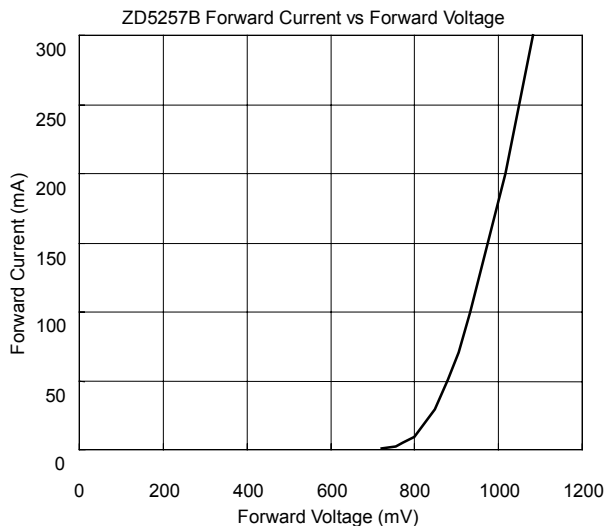
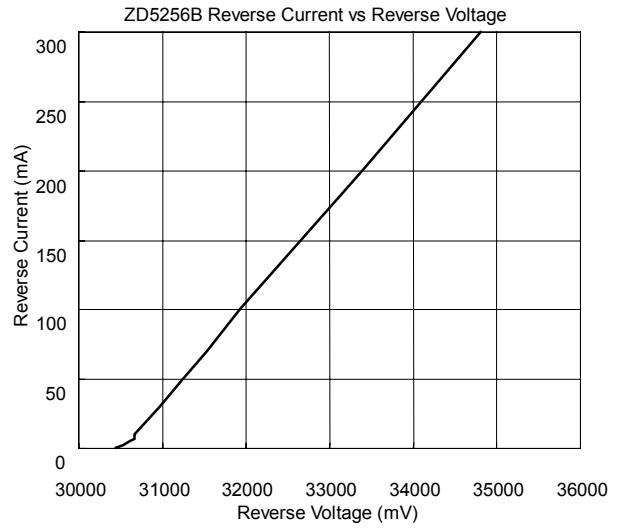
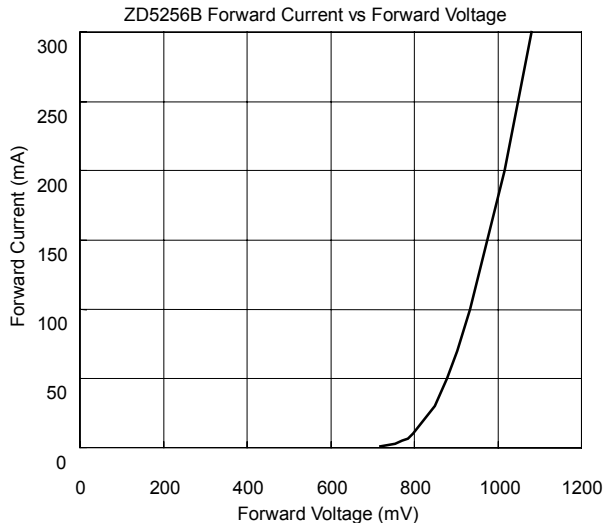




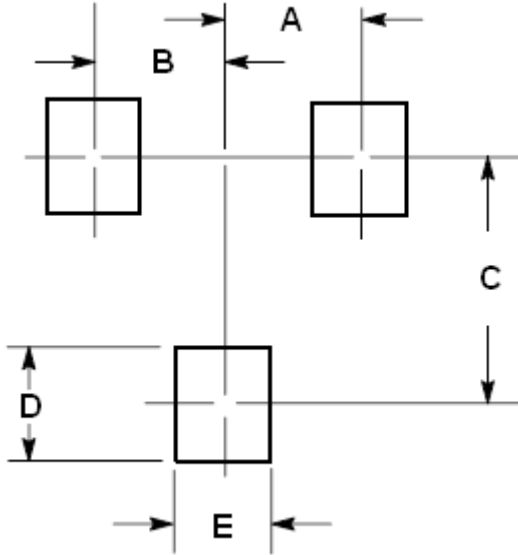








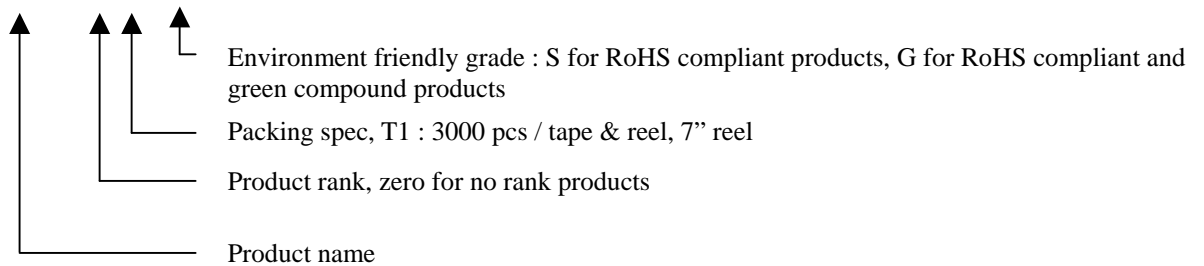
**Recommended Footprint**



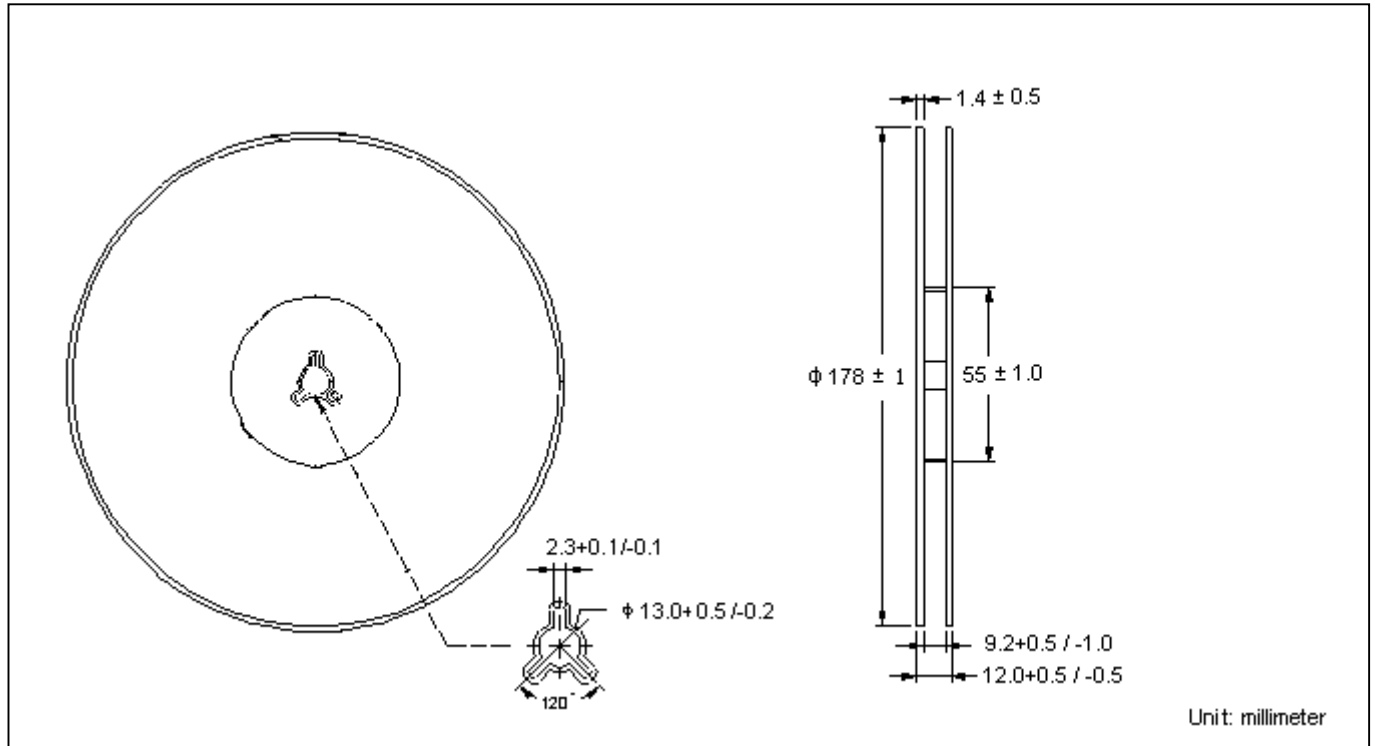
| DIM | Inches | Millimeters |
|-----|--------|-------------|
|     | Typ    | Typ         |
| A   | 0.039  | 1.0         |
| B   | 0.039  | 1.0         |
| C   | 0.079  | 2.0         |
| D   | 0.035  | 0.9         |
| E   | 0.031  | 0.8         |

**Ordering Information**

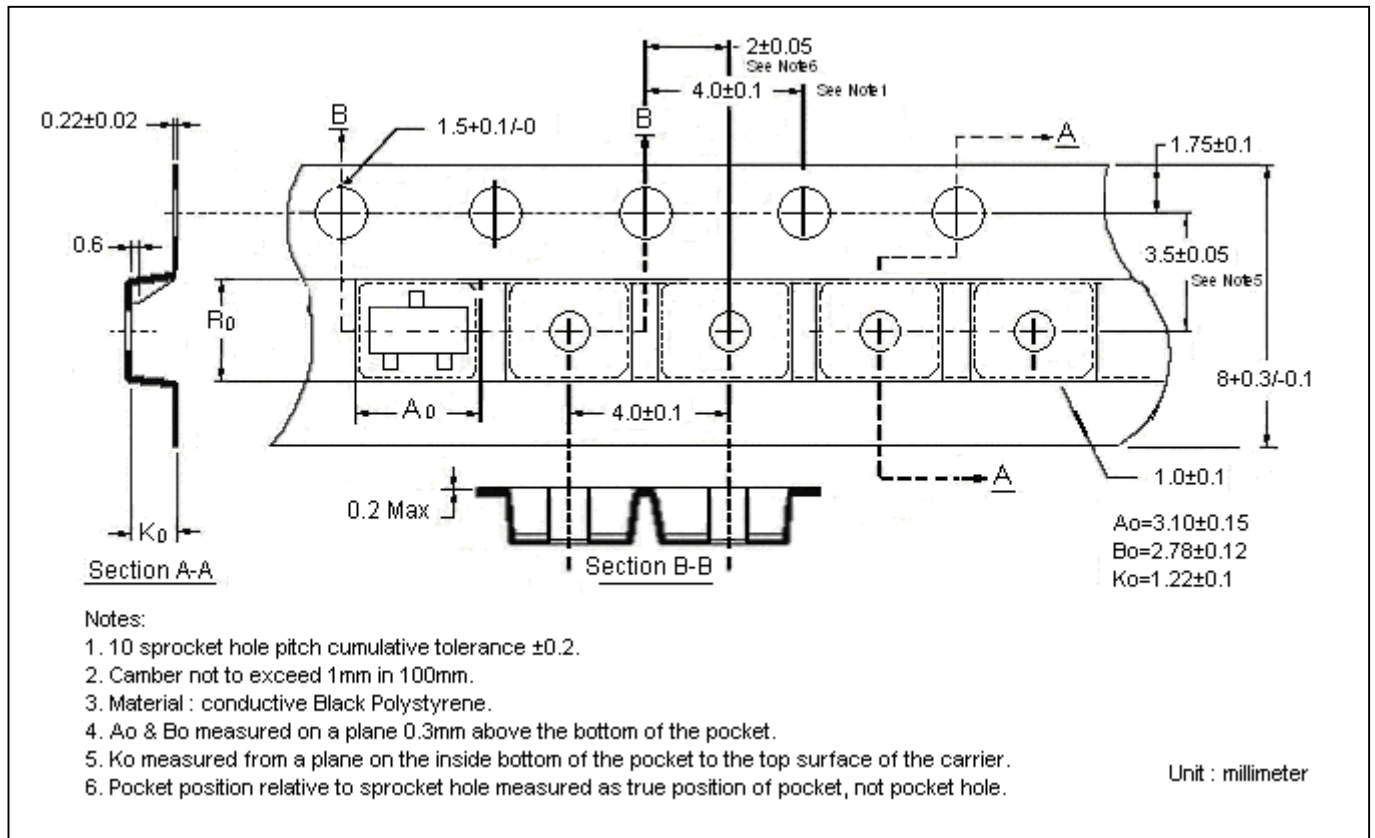
| Device           | Package   | Shipping               |
|------------------|---|------------------------|
| ZD52XXBN3-0-T1-G | SOT-23<br>(Pb-free lead plating and halogen-free package) | 3000 pcs / Tape & Reel |



**Reel Dimension**



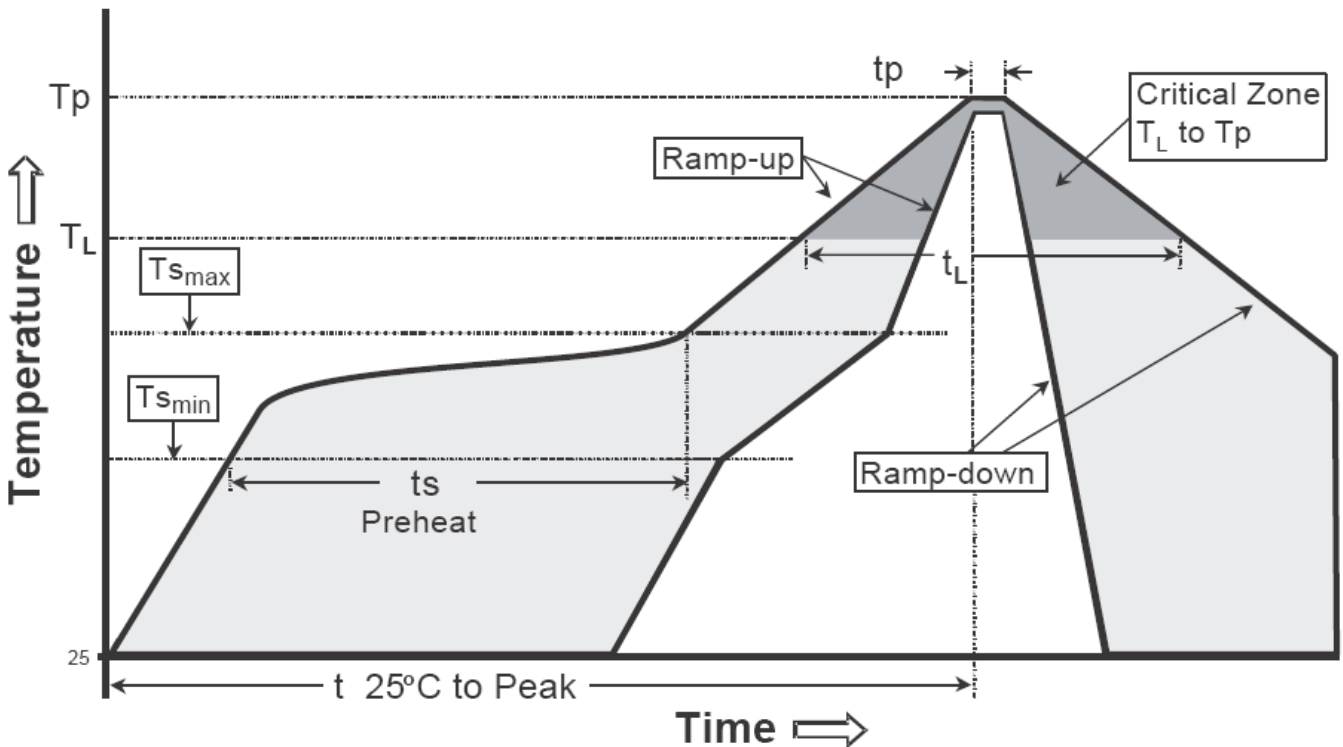
**Carrier Tape Dimension**



**Recommended wave soldering condition**

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

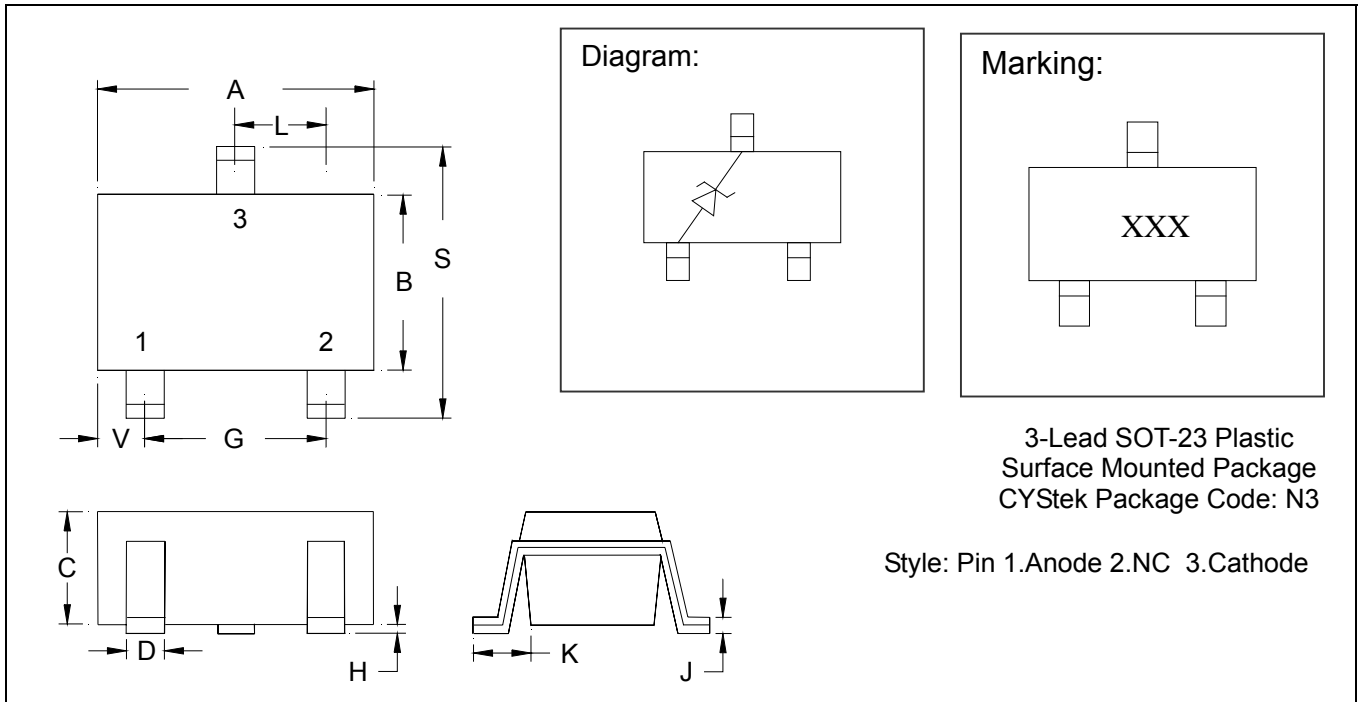
**Recommended temperature profile for IR reflow**



| 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  |                         |                  |
| -Temperature Min(Ts min)                       | 100°C                   | 150°C            |
| -Temperature Max(Ts max)                       | 150°C                   | 200°C            |
| -Time(ts min to ts max)                        | 60-120 seconds          | 60-180 seconds   |
| Time maintained above:                         |                         |                  |
| -Temperature (TL)                              | 183°C                   | 217°C            |
| - Time (tL)                                    | 60-150 seconds          | 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**



\*: 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.

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