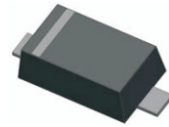


# ACZRM5221B-HF Thru ACZRM5263B-HF

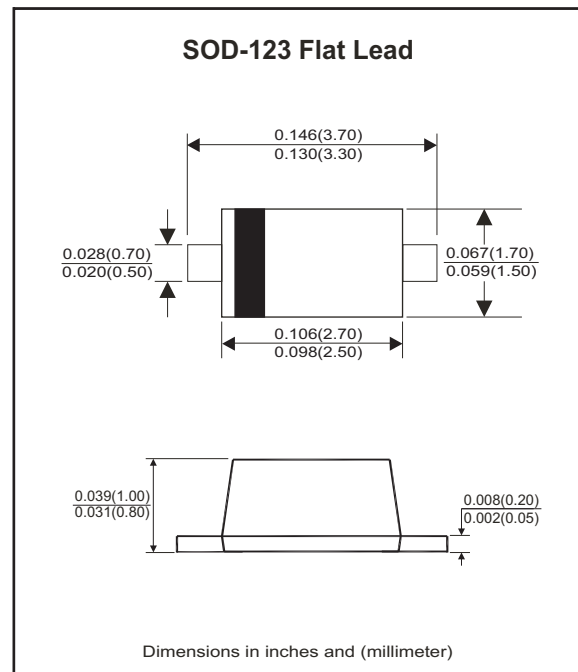
**Voltage: 2.4 to 56 Volts****Power: 500 mWatts****RoHS Device****Halogen Free**

## Features

- Surface Device Type Mounting.
- Moisture Sensitivity Level 1.
- Clip bonding construction, good thermal capability.
- Ideally suited for automated assembly processes.
- Comply with AEC-Q101.

## Mechanical data

- Case: SOD-123 Flat Lead, Molded plastic.
- Terminals: Solder Plated, solderable per MIL-STD-750, method 2026.
- Polarity: Cathode band.



## Circuit Diagram



## Maximum Ratings

 (@Ta=25°C unless otherwise specified)

| Parameter                               | Symbol           | Value       | Unit |
|-----------------------------------------|------------------|-------------|------|
| Power Dissipation                       | P <sub>D</sub>   | 500         | mW   |
| Storage Temperature Range               | T <sub>STG</sub> | -65 to +150 | °C   |
| Operating and Storage Temperature Range | T <sub>OPR</sub> | -65 to +150 | °C   |

Notes: 1. These ratings are limiting values above which the serviceability of the diode may be impaired.  
2. Company reserves the right to improve product design, functions and reliability without notice.

## Electrical Characteristics (Ta = 25°C)

| Part Number   | Vz @ IzT<br>(Volts) |     |       | ZzT @ IzT<br>(Ohm) |         | Zzk @ Izk<br>(Ohm) |         | Ir @ VR<br>(μA) |       | Marking<br>Code |
|---------------|---------------------|-----|-------|--------------------|---------|--------------------|---------|-----------------|-------|-----------------|
|               | Min                 | Nom | Max   | Max                | IzT(mA) | Max                | Izk(mA) | Max             | VR(V) |                 |
| ACZRM5221B-HF | 2.28                | 2.4 | 2.52  | 30                 | 20      | 1200               | 0.25    | 100             | 1.0   | Z2V4            |
| ACZRM5222B-HF | 2.38                | 2.5 | 2.63  | 30                 | 20      | 1250               | 0.25    | 100             | 1.0   | Z2V5            |
| ACZRM5223B-HF | 2.57                | 2.7 | 2.84  | 30                 | 20      | 1300               | 0.25    | 75              | 1.0   | Z2V7            |
| ACZRM5224B-HF | 2.66                | 2.8 | 2.94  | 30                 | 20      | 1400               | 0.25    | 75              | 1.0   | Z2V8            |
| ACZRM5225B-HF | 2.85                | 3.0 | 3.15  | 29                 | 20      | 1600               | 0.25    | 50              | 1.0   | Z3V0            |
| ACZRM5226B-HF | 3.14                | 3.3 | 3.47  | 28                 | 20      | 1600               | 0.25    | 25              | 1.0   | Z3V3            |
| ACZRM5227B-HF | 3.42                | 3.6 | 3.78  | 24                 | 20      | 1700               | 0.25    | 15              | 1.0   | Z3V6            |
| ACZRM5228B-HF | 3.71                | 3.9 | 4.10  | 23                 | 20      | 1900               | 0.25    | 10              | 1.0   | Z3V9            |
| ACZRM5229B-HF | 4.09                | 4.3 | 4.52  | 22                 | 20      | 2000               | 0.25    | 5               | 1.0   | Z4V3            |
| ACZRM5230B-HF | 4.47                | 4.7 | 4.94  | 19                 | 20      | 1900               | 0.25    | 5               | 2.0   | Z4V7            |
| ACZRM5231B-HF | 4.85                | 5.1 | 5.36  | 17                 | 20      | 1600               | 0.25    | 5               | 2.0   | Z5V1            |
| ACZRM5232B-HF | 5.32                | 5.6 | 5.88  | 11                 | 20      | 1600               | 0.25    | 5               | 3.0   | Z5V6            |
| ACZRM5233B-HF | 5.70                | 6.0 | 6.30  | 7                  | 20      | 1600               | 0.25    | 5               | 3.5   | Z6V0            |
| ACZRM5234B-HF | 5.89                | 6.2 | 6.51  | 7                  | 20      | 1000               | 0.25    | 5               | 4.0   | Z6V2            |
| ACZRM5235B-HF | 6.46                | 6.8 | 7.14  | 5                  | 20      | 750                | 0.25    | 3               | 5.0   | Z6V8            |
| ACZRM5236B-HF | 7.13                | 7.5 | 7.88  | 6                  | 20      | 500                | 0.25    | 3               | 6.0   | Z7V5            |
| ACZRM5237B-HF | 7.79                | 8.2 | 8.61  | 8                  | 20      | 500                | 0.25    | 3               | 6.5   | Z8V2            |
| ACZRM5238B-HF | 8.27                | 8.7 | 9.14  | 8                  | 20      | 600                | 0.25    | 3               | 6.5   | Z8V7            |
| ACZRM5239B-HF | 8.65                | 9.1 | 9.56  | 10                 | 20      | 600                | 0.25    | 3               | 7.0   | Z9V1            |
| ACZRM5240B-HF | 9.5                 | 10  | 10.50 | 17                 | 20      | 600                | 0.25    | 3               | 8.0   | Z10V            |
| ACZRM5241B-HF | 10.45               | 11  | 11.55 | 22                 | 20      | 600                | 0.25    | 2               | 8.4   | Z11V            |
| ACZRM5242B-HF | 11.40               | 12  | 12.60 | 30                 | 20      | 600                | 0.25    | 1               | 9.1   | Z12V            |
| ACZRM5243B-HF | 12.35               | 13  | 13.65 | 13                 | 9.5     | 600                | 0.25    | 0.5             | 9.9   | Z13V            |
| ACZRM5244B-HF | 13.30               | 14  | 14.70 | 15                 | 9.0     | 600                | 0.25    | 0.1             | 10    | Z14V            |
| ACZRM5245B-HF | 14.25               | 15  | 15.75 | 16                 | 8.5     | 600                | 0.25    | 0.1             | 11    | Z15V            |
| ACZRM5246B-HF | 15.20               | 16  | 16.80 | 17                 | 7.8     | 600                | 0.25    | 0.1             | 12    | Z16V            |
| ACZRM5247B-HF | 16.15               | 17  | 17.85 | 19                 | 7.4     | 600                | 0.25    | 0.1             | 13    | Z17V            |
| ACZRM5248B-HF | 17.10               | 18  | 18.90 | 21                 | 7.0     | 600                | 0.25    | 0.1             | 14    | Z18V            |
| ACZRM5249B-HF | 18.05               | 19  | 19.95 | 23                 | 6.6     | 600                | 0.25    | 0.1             | 14    | Z19V            |
| ACZRM5250B-HF | 19.00               | 20  | 21.00 | 25                 | 6.2     | 600                | 0.25    | 0.1             | 15    | Z20V            |

## Electrical Characteristics (Ta = 25°C)

| Part Number   | Vz @ IzT<br>(Volts) |     |       | ZzT @ IzT<br>(Ohm) |         | Zzk @ Izk<br>(Ohm) |         | Ir @ VR<br>(μA) |       | Marking<br>Code |
|---------------|---------------------|-----|-------|--------------------|---------|--------------------|---------|-----------------|-------|-----------------|
|               | Min                 | Nom | Max   | Max                | IzT(mA) | Max                | Izk(mA) | Max             | VR(V) |                 |
| ACZRM5251B-HF | 20.90               | 22  | 23.10 | 29                 | 5.6     | 600                | 0.25    | 0.1             | 17    | Z22V            |
| ACZRM5252B-HF | 22.80               | 24  | 25.20 | 33                 | 5.2     | 600                | 0.25    | 0.1             | 18    | Z24V            |
| ACZRM5253B-HF | 23.75               | 25  | 26.25 | 35                 | 5.0     | 600                | 0.25    | 0.1             | 19    | Z25V            |
| ACZRM5254B-HF | 25.65               | 27  | 28.35 | 41                 | 4.6     | 600                | 0.25    | 0.1             | 21    | Z27V            |
| ACZRM5255B-HF | 26.60               | 28  | 29.40 | 44                 | 4.5     | 600                | 0.25    | 0.1             | 21    | Z28V            |
| ACZRM5256B-HF | 28.50               | 30  | 31.50 | 49                 | 4.2     | 600                | 0.25    | 0.1             | 23    | Z30V            |
| ACZRM5257B-HF | 31.35               | 33  | 34.65 | 58                 | 3.8     | 700                | 0.25    | 0.1             | 25    | Z33V            |
| ACZRM5258B-HF | 34.20               | 36  | 37.80 | 70                 | 3.4     | 700                | 0.25    | 0.1             | 27    | Z36V            |
| ACZRM5259B-HF | 37.05               | 39  | 40.95 | 80                 | 3.2     | 800                | 0.25    | 0.1             | 30    | Z39V            |
| ACZRM5260B-HF | 40.85               | 43  | 45.15 | 93                 | 3.0     | 900                | 0.25    | 0.1             | 33    | Z43V            |
| ACZRM5261B-HF | 44.65               | 47  | 49.35 | 105                | 2.7     | 1000               | 0.25    | 0.1             | 36    | Z47V            |
| ACZRM5262B-HF | 48.45               | 51  | 53.55 | 125                | 2.5     | 1100               | 0.25    | 0.1             | 39    | Z51V            |
| ACZRM5263B-HF | 53.20               | 56  | 58.80 | 150                | 2.2     | 1300               | 0.25    | 0.1             | 43    | Z56V            |

Notes: 1. The zener voltage (Vz) is tested under pulse condition of 15mS.

The measured Vz is guaranteed to be within specification with device junction in thermal equilibrium.

2. The device numbers listed have a standard tolerance on the nominal zener voltage of ±5%.

3. The zener impedance is derived from the 60-cycle ac voltage, which results when an ac current having an rms value equal to 10% of the dc zener current (IzT or IzK) is superimposed to IzT or IzK.

4. Company reserves the right to improve product design , functions and reliability without notice.

## RATING AND CHARACTERISTIC CURVES (ACZRM5221B-HF Thru. ACZRM5263B-HF)

Fig.1 - Typical Forward Voltage

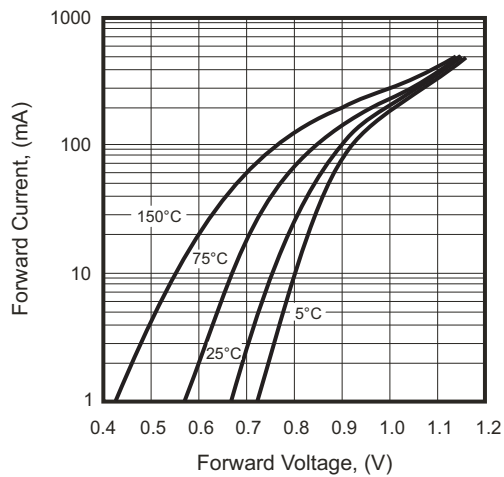


Fig.2 - Effect Of Zener Voltage On Zener Impedance

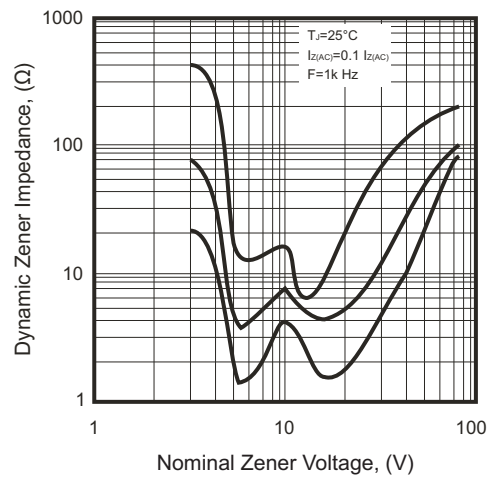


Fig.3 - Power Dissipation VS. Ambient Temp.

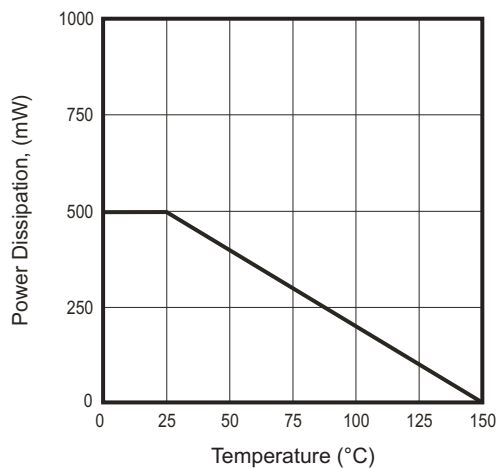
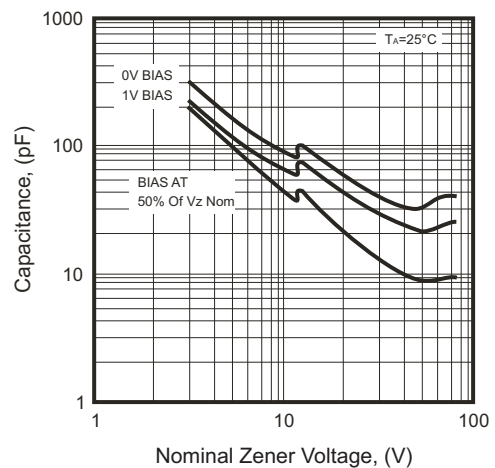


Fig.4 - Typical Capacitance



RATING AND CHARACTERISTIC CURVES (ACZRM5221B-HF Thru. ACZRM5263B-HF)

Fig.5 - Zener Breakdown Characteristics

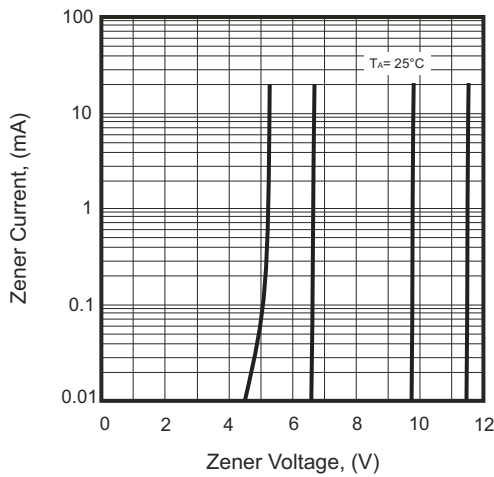


Fig.6 - Zener Breakdown Characteristics

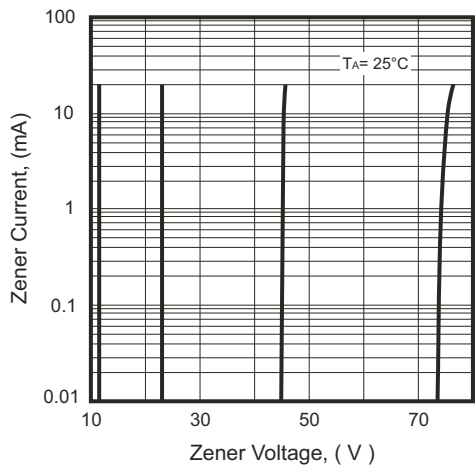
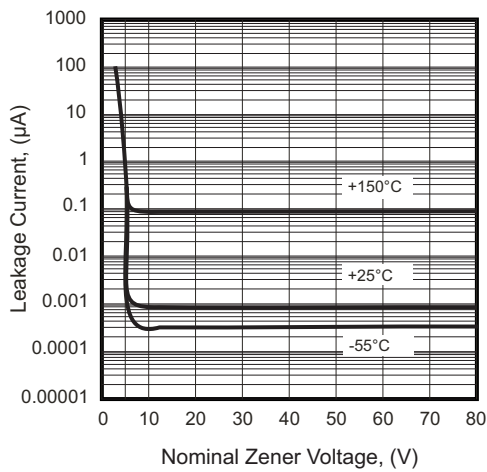
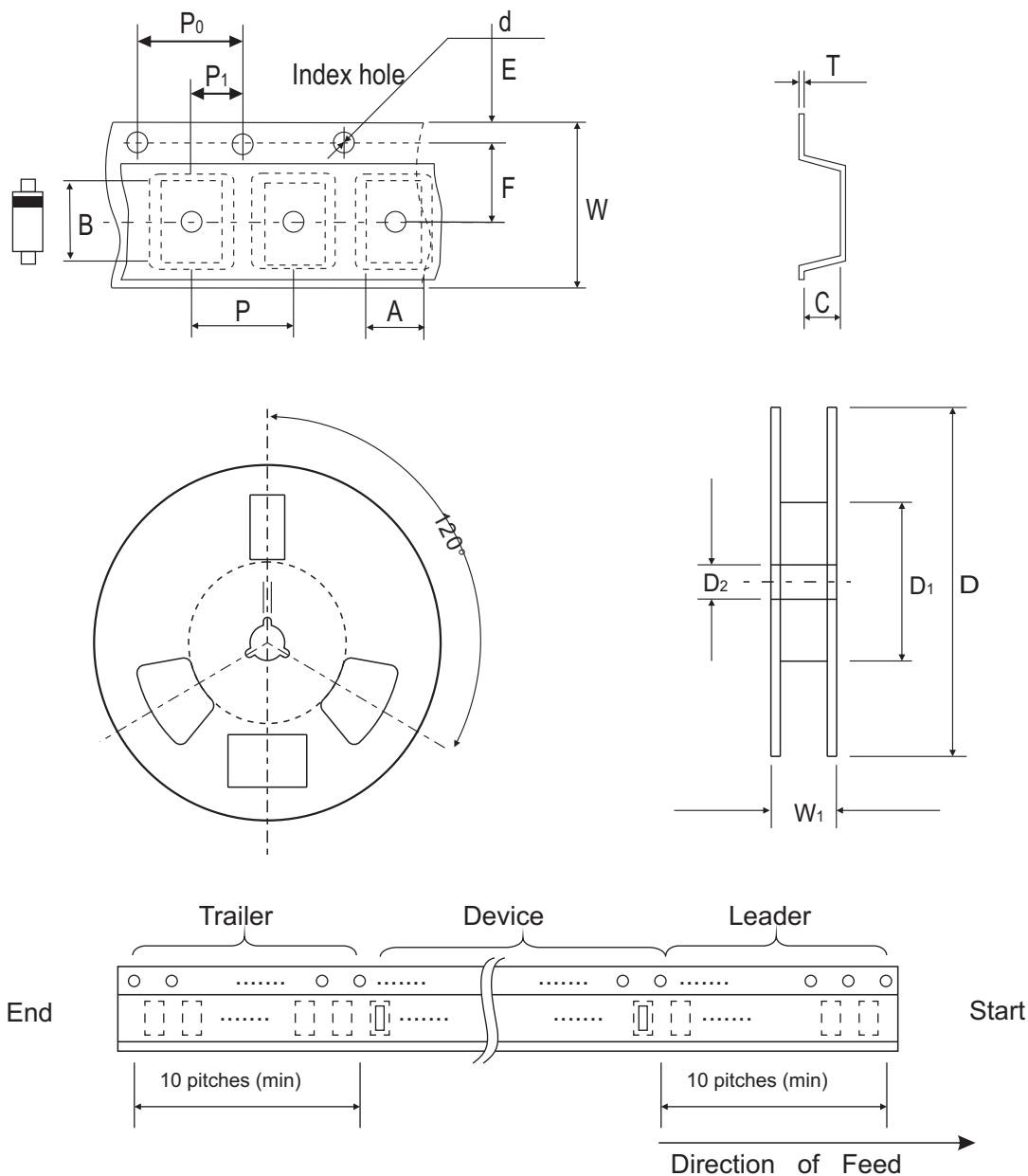


Fig.7 - Typical Leakage Current



## Reel Taping Specification



| SOD-123FL | SYMBOL | A             | B             | C             | d             | D          | D <sub>1</sub> | D <sub>2</sub> |
|-----------|--------|---------------|---------------|---------------|---------------|------------|----------------|----------------|
|           | (mm)   | 1.85 ± 0.10   | 3.94 ± 0.10   | 1.58 ± 0.10   | 1.55 ± 0.10   | 178 MAX.   | 50.0 MIN.      | 13.0 ± 0.20    |
|           | (inch) | 0.073 ± 0.004 | 0.155 ± 0.004 | 0.062 ± 0.004 | 0.061 ± 0.004 | 7.008 MAX. | 1.969 MIN.     | 0.512 ± 0.008  |

| SOD-123FL | SYMBOL | E             | F             | P             | P <sub>0</sub> | P <sub>1</sub> | T          | W             | W <sub>1</sub> |
|-----------|--------|---------------|---------------|---------------|----------------|----------------|------------|---------------|----------------|
|           | (mm)   | 1.75 ± 0.10   | 3.50 ± 0.05   | 4.00 ± 0.10   | 4.00 ± 0.10    | 2.00 ± 0.10    | 0.40 Max.  | 8.00 ± 0.30   | 14.4 MAX.      |
|           | (inch) | 0.069 ± 0.004 | 0.138 ± 0.002 | 0.157 ± 0.004 | 0.157 ± 0.004  | 0.079 ± 0.004  | 0.016 Max. | 0.315 ± 0.012 | 0.567 MAX.     |

Company reserves the right to improve product design , functions and reliability without notice.

## Marking Code

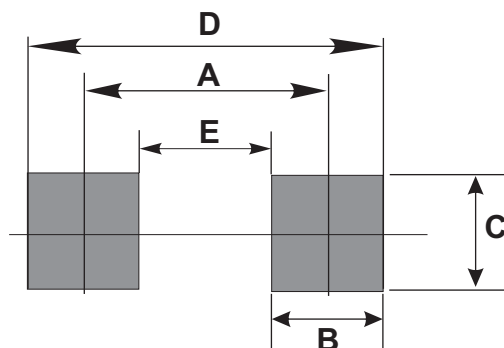
| Part Number           | Marking Code |
|-----------------------|--------------|
| ACZRM5221B ~ 5263B-HF | XXXX         |



Product type marking code (see page.2~3)

## Suggested PAD Layout

| SIZE | SOD-123FL |        |
|------|-----------|--------|
|      | (mm)      | (inch) |
| A    | 2.90      | 0.132  |
| B    | 1.10      | 0.031  |
| C    | 1.10      | 0.039  |
| D    | 4.00      | 0.163  |
| E    | 1.60      | 0.100  |



## Standard Packaging

| Case Type | REEL PACK       |                     |
|-----------|-----------------|---------------------|
|           | REEL<br>( pcs ) | Reel Size<br>(inch) |
| SOD-123FL | 3,000           | 7                   |