



# THE DATASHEET OF SMBJ5385B-TP



**Features**

- Low Profile Package for Surface Mounting(Flat Handling Surface for Accurate Placement)
- Zener Voltage 5.1V to 200V
- Available on Tape and Reel(See E1A Std RS-481)
- Halogen Free. "Green" Device (Note 1)
- Moisture Sensitivity Level 1
- Epoxy Meets UL 94 V-0 Flammability Rating
- Lead Free Finish/RoHS Compliant (Note 2) ("P" Suffix Designates Compliant. See Ordering Information)

**Maximum Ratings**

- Operating Junction Temperature Range: -55°C to +150°C
- Storage Temperature Range: -55°C to +150°C
- Thermal Resistance: 15°C/W Junction to Lead
- Thermal Resistance: 90°C/W Junction to Ambient(Note3)

| Parameter                      | Symbol     | Rating | Conditions  |
|--------------------------------|------------|--------|-------------|
| Steady State Power Dissipation | $P_{(AV)}$ | 5.0W   | Note 4      |
| Maximum Forward Voltage        | $V_F$      | 1.2V   | $I_F=1.0mA$ |

Note:

- 1.Halogen free "Green"products are defined as those which contain <900ppm bromine, <900ppm chlorine (<1500ppm total Br + Cl) and <1000ppm antimony compounds.
- 2.High Temperature Solder Exemption Applied, See EU Directive Annex 7a.
- 3.Ambient Temperature at 15°C =  $T_A$  at Mounting Plane. Derate Linearly Above 15°C to Zero Power at 150°C
- 4.Lead Temperature at 75°C =  $T_L$  at Mounting Plane. Derate Linearly Above 75°C to Zero Power at 150°C

**Device Marking:**



For Example: 339B for SMBJ5339B  
369B for SMBJ5369B

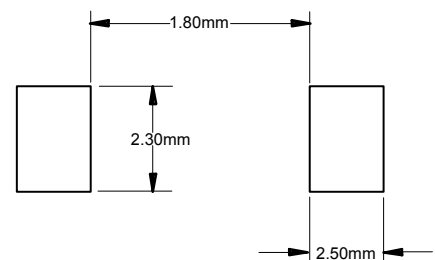
**5.0 Watt Surface Mount Silicon Zener Diodes 5.1V to 200V**

**SMB (DO-214AA) (LEAD FRAME)**



| DIM | INCHES |       | MM   |      | NOTE |
|-----|--------|-------|------|------|------|
|     | MIN    | MAX   | MIN  | MAX  |      |
| A   | 0.079  | 0.103 | 2.00 | 2.62 |      |
| B   | 0.075  | 0.087 | 1.91 | 2.21 |      |
| C   | 0.002  | 0.008 | 0.05 | 0.20 |      |
| D   | 0.006  | 0.012 | 0.15 | 0.31 |      |
| E   | 0.030  | 0.060 | 0.76 | 1.52 |      |
| F   | 0.065  | 0.091 | 1.65 | 2.32 |      |
| G   | 0.200  | 0.220 | 5.08 | 5.59 |      |
| H   | 0.160  | 0.191 | 4.06 | 4.85 |      |
| J   | 0.130  | 0.155 | 3.30 | 3.94 |      |

**SUGGESTED SOLDER PAD LAYOUT**



**Electrical Characteristics @ 25°C Unless Otherwise Specified**

| MCC Part Number | Regulator Voltage | Test Current | Maximum Dynamic Impedance | Maximum Reverse Current | Test Voltage | Maximum Regulator Current | Maximum Dynamic Knee Impedance | Maximum Surge Current | Maximum Voltage Regulation |
|-----------------|-------------------|--------------|---------------------------|-------------------------|--------------|---------------------------|--------------------------------|-----------------------|----------------------------|
|                 | $V_Z$             | $I_Z$        | $Z_{ZT}$                  | $I_R$                   | $V_R$        | $I_{ZM}$                  | $Z_{Zk} @ 1.0mA$               | $I_{ZSM}$             |                            |
|                 | V                 | mA           | $\Omega$                  | $\mu A$                 | V            | mA                        | $\Omega$                       | A                     |                            |
| SMBJ5338B       | 5.1               | 240          | 1.5                       | 1                       | 1            | 930                       | 400                            | 14.4                  | 0.39                       |
| SMBJ5339B       | 5.6               | 220          | 1                         | 1                       | 2            | 865                       | 400                            | 13.4                  | 0.25                       |
| SMBJ5340B       | 6                 | 200          | 1                         | 1                       | 3            | 790                       | 300                            | 12.7                  | 0.19                       |
| SMBJ5341B       | 6.2               | 200          | 1                         | 1                       | 3            | 765                       | 200                            | 12.4                  | 0.1                        |
| SMBJ5342B       | 6.8               | 175          | 1                         | 10                      | 5.2          | 700                       | 200                            | 11.5                  | 0.15                       |
| SMBJ5343B       | 7.5               | 175          | 1.5                       | 10                      | 5.7          | 630                       | 200                            | 10.7                  | 0.15                       |
| SMBJ5344B       | 8.2               | 150          | 1.5                       | 10                      | 6.2          | 580                       | 200                            | 10                    | 0.2                        |
| SMBJ5345B       | 8.7               | 150          | 2                         | 10                      | 6.6          | 545                       | 200                            | 9.5                   | 0.2                        |
| SMBJ5346B       | 9.1               | 150          | 2                         | 7.5                     | 6.9          | 520                       | 150                            | 9.2                   | 0.22                       |
| SMBJ5347B       | 10                | 125          | 2                         | 5                       | 7.6          | 475                       | 125                            | 8.6                   | 0.22                       |
| SMBJ5348B       | 11                | 125          | 2.5                       | 5                       | 8.4          | 430                       | 125                            | 8                     | 0.25                       |
| SMBJ5349B       | 12                | 100          | 2.5                       | 2                       | 9.1          | 395                       | 125                            | 7.5                   | 0.25                       |
| SMBJ5350B       | 13                | 100          | 2.5                       | 1                       | 9.9          | 365                       | 100                            | 7                     | 0.25                       |
| SMBJ5351B       | 14                | 100          | 2.5                       | 1                       | 10.6         | 340                       | 75                             | 6.7                   | 0.25                       |
| SMBJ5352B       | 15                | 75           | 2.5                       | 1                       | 11.5         | 315                       | 75                             | 6.3                   | 0.25                       |
| SMBJ5353B       | 16                | 75           | 2.5                       | 1                       | 12.2         | 295                       | 75                             | 6                     | 0.3                        |
| SMBJ5354B       | 17                | 70           | 2.5                       | 0.5                     | 12.9         | 280                       | 75                             | 5.8                   | 0.35                       |
| SMBJ5355B       | 18                | 65           | 2.5                       | 0.5                     | 13.7         | 264                       | 75                             | 5.5                   | 0.4                        |
| SMBJ5356B       | 19                | 65           | 3                         | 0.5                     | 14.4         | 250                       | 75                             | 5.3                   | 0.4                        |
| SMBJ5357B       | 20                | 65           | 3                         | 0.5                     | 15.2         | 237                       | 75                             | 5.1                   | 0.4                        |
| SMBJ5358B       | 22                | 50           | 3.5                       | 0.5                     | 16.7         | 216                       | 75                             | 4.7                   | 0.45                       |
| SMBJ5359B       | 24                | 50           | 3.5                       | 0.5                     | 18.2         | 198                       | 100                            | 4.4                   | 0.55                       |
| SMBJ5360B       | 25                | 50           | 4                         | 0.5                     | 19           | 190                       | 110                            | 4.3                   | 0.55                       |
| SMBJ5361B       | 27                | 50           | 5                         | 0.5                     | 20.6         | 176                       | 120                            | 4.1                   | 0.6                        |
| SMBJ5362B       | 28                | 50           | 6                         | 0.5                     | 21.2         | 170                       | 130                            | 3.9                   | 0.6                        |
| SMBJ5363B       | 30                | 40           | 8                         | 0.5                     | 22.8         | 158                       | 140                            | 3.7                   | 0.6                        |
| SMBJ5364B       | 33                | 40           | 10                        | 0.5                     | 25.1         | 144                       | 150                            | 3.5                   | 0.6                        |
| SMBJ5365B       | 36                | 30           | 11                        | 0.5                     | 27.4         | 132                       | 160                            | 3.3                   | 0.65                       |
| SMBJ5366B       | 39                | 30           | 14                        | 0.5                     | 29.7         | 122                       | 170                            | 3.1                   | 0.65                       |
| SMBJ5367B       | 43                | 30           | 20                        | 0.5                     | 32.7         | 110                       | 190                            | 2.8                   | 0.7                        |
| SMBJ5368B       | 47                | 25           | 25                        | 0.5                     | 35.8         | 100                       | 210                            | 2.7                   | 0.8                        |
| SMBJ5369B       | 51                | 25           | 27                        | 0.5                     | 38.8         | 93                        | 230                            | 2.5                   | 0.9                        |
| SMBJ5370B       | 56                | 20           | 35                        | 0.5                     | 42.6         | 86                        | 280                            | 2.3                   | 1                          |
| SMBJ5371B       | 60                | 20           | 40                        | 0.5                     | 45.5         | 79                        | 350                            | 2.2                   | 1.2                        |
| SMBJ5372B       | 62                | 20           | 42                        | 0.5                     | 47.1         | 76                        | 400                            | 2.1                   | 1.35                       |
| SMBJ5373B       | 68                | 20           | 44                        | 0.5                     | 51.7         | 70                        | 500                            | 2                     | 1.5                        |
| SMBJ5374B       | 75                | 20           | 45                        | 0.5                     | 56           | 63                        | 620                            | 1.9                   | 1.6                        |
| SMBJ5375B       | 82                | 15           | 65                        | 0.5                     | 62.2         | 58                        | 720                            | 1.8                   | 1.8                        |
| SMBJ5376B       | 87                | 15           | 75                        | 0.5                     | 66           | 54.5                      | 760                            | 1.7                   | 2                          |
| SMBJ5377B       | 91                | 15           | 75                        | 0.5                     | 69.2         | 52.5                      | 760                            | 1.6                   | 2.2                        |
| SMBJ5378B       | 100               | 12           | 90                        | 0.5                     | 76           | 47.5                      | 800                            | 1.5                   | 2.3                        |
| SMBJ5379B       | 110               | 12           | 125                       | 0.5                     | 83.6         | 43                        | 1000                           | 1.4                   | 2.5                        |
| SMBJ5380B       | 120               | 10           | 170                       | 0.5                     | 91.2         | 39.5                      | 1150                           | 1.3                   | 2.5                        |
| SMBJ5381B       | 130               | 10           | 190                       | 0.5                     | 98.8         | 36.6                      | 1250                           | 1.2                   | 2.5                        |
| SMBJ5382B       | 140               | 8.0          | 230                       | 0.5                     | 106          | 34                        | 1500                           | 1.2                   | 2.5                        |
| SMBJ5383B       | 150               | 8.0          | 330                       | 0.5                     | 114          | 31.6                      | 1500                           | 1.1                   | 3                          |
| SMBJ5384B       | 160               | 8.0          | 350                       | 0.5                     | 122          | 29.4                      | 1650                           | 1.1                   | 3                          |
| SMBJ5385B       | 170               | 8.0          | 380                       | 0.5                     | 129          | 28                        | 1750                           | 1.0                   | 3                          |
| SMBJ5386B       | 180               | 5.0          | 430                       | 0.5                     | 137          | 26.4                      | 1750                           | 1.0                   | 4                          |
| SMBJ5387B       | 190               | 5.0          | 450                       | 0.5                     | 144          | 25                        | 1850                           | 0.9                   | 5                          |
| SMBJ5388B       | 200               | 5.0          | 480                       | 0.5                     | 152          | 23.6                      | 1850                           | 0.9                   | 5                          |

**Remarks:**

1. Devices Listed Have a  $\pm 5\%$  Tolerance on Nominal  $V_Z$ . Suffix C Denotes a  $+2\%$
2. Nominal Zener Voltage ( $V_Z$ ) is Tested With a 40 +/-10 Milliseconds Pulse Current at 25°C to Avoid Self-heat Affection.
3. The Zener Impedance ( $Z_{ZT}$  or  $Z_{ZK}$ ) is Derived from The 60Hz AC Voltage, Which Results When an AC Current Having a rms value Equal to 10% of the DC Zener Current ( $I_{ZT}$  or  $I_{ZK}$ ) Respectively.
4. The Maximum Reverse(Leakage) Current is Specified for Devices With  $\pm 20\%$  and  $\pm 10\%$  Voltage Tolerances on Nominal  $V_Z$  in Another Column.
5. The Maximum Zener Current( $I_{ZM}$ ) Shown is for  $\pm 5\%$  Tolerance Devices.  $I_{ZM}$  for  $\pm 10\%$  and  $\pm 20\%$  Devices Can be Calculated Using the Formula:

$$I_{ZM} = \frac{P}{V_{ZM}}$$

Where " $V_{ZM}$ " is  $V_Z$  at The High End of The Voltage Tolerance Specified and "P" is The Rated Power of The Device.

6. The Surge Current ( $I_{ZM}$ ) is Specified As The Maximum Peak of a Nonrecurring Sine Wave of 8.3 Milliseconds Duration.
7. Voltage Regulation ( $\Delta V_Z$ ) is The Difference Between The Voltage Measured at 10% and 50% ( $I_{ZM}$ ).

**Curve Characteristics**

Fig. 1 - Power Derating Curve



Fig. 2 - Typical Zener Breakdown Characteristics



Fig. H - Typical Zener Breakdown Characteristics



Fig. 4 - Typical Zener Breakdown Characteristics



Fig. 5 - Maximum Surge Current VS Nominal Vz



Fig. 6 - Non-Repetitive Peak Pulse Power



## Ordering Information

| Device         | Packing              |
|----------------|----------------------|
| Part Number-TP | Tape&Reel:3Kpcs/Reel |

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