



**Microsemi Corp.**  
The diode experts

# 1N4678 thru 1N4717

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(602) 941-6300

## FEATURES

- LOW OPERATING CURRENT AT 50 $\mu$ A
- STANDARD  $\pm$ 5% VOLTAGE TOLERANCE
- GUARANTEED VOLTAGE REGULATION
- ALSO AVAILABLE IN DO-35 PACKAGE

## MAXIMUM RATINGS

Junction and Storage Temperature:  $-65^{\circ}\text{C}$  to  $+200^{\circ}\text{C}$

DC Power Dissipation: 250mW (Capable of 400mW in DO-7 package supplied)

Power Derating: 1.66mW/ $^{\circ}\text{C}$  above  $50^{\circ}\text{C}$  Ambient (2.28mW/ $^{\circ}\text{C}$  above  $25^{\circ}\text{C}$  in DO-7)

Forward Voltage @ 100mA: 1.5 Volts

## \* ELECTRICAL CHARACTERISTICS @ $25^{\circ}\text{C}$

| JEDEC TYPE NUMBER | NOMINAL ZENER VOLTAGE (NOTE 3) | ZENER TEST CURRENT | MAXIMUM VOLTAGE REGULATION (NOTE 2 & 3) | MAXIMUM REVERSE LEAKAGE CURRENT |          | MAXIMUM DC ZENER CURRENT |
|-------------------|--------------------------------|--------------------|---|---------------------------------|----------|--------------------------|
|                   | $V_Z$                          | $I_{ZT}$           | $\Delta V_Z$                            | $I_R$ @ $V_R$                   | $I_{ZM}$ |                          |
| (NOTE 1)          | VOLTS *                        | $\mu\text{A}$      | VOLTS                                   | $\mu\text{A}$                   | VOLTS    | mA                       |
| 1N4678            | 1.8                            | 50                 | 0.70                                    | 7.5                             | 1.0      | 120.0                    |
| 1N4679            | 2.0                            | 50                 | 0.70                                    | 5.0                             | 1.0      | 110.0                    |
| 1N4680            | 2.2                            | 50                 | 0.75                                    | 4.0                             | 1.0      | 100.0                    |
| 1N4681            | 2.4                            | 50                 | 0.80                                    | 2.0                             | 1.0      | 95.0                     |
| 1N4682            | 2.7                            | 50                 | 0.85                                    | 1.0                             | 1.0      | 90.0                     |
| 1N4683            | 3.0                            | 50                 | 0.90                                    | 0.8                             | 1.0      | 85.0                     |
| 1N4684            | 3.3                            | 50                 | 0.95                                    | 7.5                             | 1.5      | 80.0                     |
| 1N4685            | 3.6                            | 50                 | 0.95                                    | 7.5                             | 2.0      | 75.0                     |
| 1N4686            | 3.9                            | 50                 | 0.97                                    | 5.0                             | 2.0      | 70.0                     |
| 1N4687            | 4.3                            | 50                 | 0.99                                    | 4.0                             | 2.0      | 65.0                     |
| 1N4688            | 4.7                            | 50                 | 0.99                                    | 10.0                            | 3.0      | 60.0                     |
| 1N4689            | 5.1                            | 50                 | 0.97                                    | 10.0                            | 3.0      | 55.0                     |
| 1N4690            | 5.6                            | 50                 | 0.96                                    | 10.0                            | 4.0      | 50.0                     |
| 1N4691            | 6.2                            | 50                 | 0.95                                    | 10.0                            | 5.0      | 45.0                     |
| 1N4692            | 6.8                            | 50                 | 0.90                                    | 10.0                            | 5.1      | 35.0                     |
| 1N4693            | 7.5                            | 50                 | 0.75                                    | 10.0                            | 5.7      | 31.8                     |
| 1N4694            | 8.2                            | 50                 | 0.50                                    | 1.0                             | 6.2      | 29.0                     |
| 1N4695            | 8.7                            | 50                 | 0.10                                    | 1.0                             | 6.6      | 27.4                     |
| 1N4696            | 9.1                            | 50                 | 0.08                                    | 1.0                             | 6.9      | 26.2                     |
| 1N4697            | 10.0                           | 50                 | 0.10                                    | 1.0                             | 7.6      | 24.8                     |
| 1N4698            | 11.0                           | 50                 | 0.11                                    | 0.05                            | 8.4      | 21.6                     |
| 1N4699            | 12.0                           | 50                 | 0.12                                    | 0.05                            | 9.1      | 20.4                     |
| 1N4700            | 13.0                           | 50                 | 0.13                                    | 0.05                            | 9.8      | 19.0                     |
| 1N4701            | 14.0                           | 50                 | 0.14                                    | 0.05                            | 10.6     | 17.5                     |
| 1N4702            | 15.0                           | 50                 | 0.15                                    | 0.05                            | 11.4     | 16.3                     |
| 1N4703            | 16.0                           | 50                 | 0.16                                    | 0.05                            | 12.1     | 15.4                     |
| 1N4704            | 17.0                           | 50                 | 0.17                                    | 0.05                            | 12.9     | 14.5                     |
| 1N4705            | 18.0                           | 50                 | 0.18                                    | 0.05                            | 13.6     | 13.2                     |
| 1N4706            | 19.0                           | 50                 | 0.19                                    | 0.05                            | 14.4     | 12.5                     |
| 1N4707            | 20.0                           | 50                 | 0.20                                    | 0.01                            | 15.2     | 11.9                     |
| 1N4708            | 22.0                           | 50                 | 0.22                                    | 0.01                            | 16.7     | 10.8                     |
| 1N4709            | 24.0                           | 50                 | 0.24                                    | 0.01                            | 18.2     | 9.9                      |
| 1N4710            | 25.0                           | 50                 | 0.25                                    | 0.01                            | 19.0     | 9.5                      |
| 1N4711            | 27.0                           | 50                 | 0.27                                    | 0.01                            | 20.4     | 8.8                      |
| 1N4712            | 28.0                           | 50                 | 0.28                                    | 0.01                            | 21.2     | 8.5                      |
| 1N4713            | 30.0                           | 50                 | 0.30                                    | 0.01                            | 22.8     | 7.9                      |
| 1N4714            | 33.0                           | 50                 | 0.33                                    | 0.01                            | 25.0     | 7.2                      |
| 1N4715            | 36.0                           | 50                 | 0.36                                    | 0.01                            | 27.3     | 6.6                      |
| 1N4716            | 39.0                           | 50                 | 0.39                                    | 0.01                            | 29.6     | 6.1                      |
| 1N4717            | 43.0                           | 50                 | 0.43                                    | 0.01                            | 32.6     | 5.5                      |

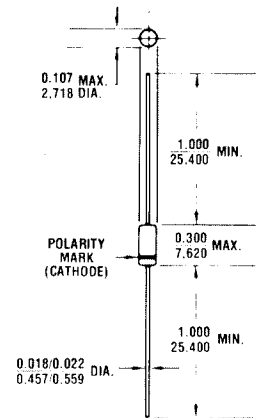
\* JEDEC Registered Data

**NOTE 1** All types as shown are  $\pm$ 5% tolerance. Also available in 2% and 1% tolerance, suffix C and D respectively.

**NOTE 2**  $\Delta V_Z$  @ 100 $\mu\text{A}$  minus  $V_Z$  @ 10 $\mu\text{A}$ .

**NOTE 3** The electrical characteristics are measured after allowing the device to stabilize for 20 seconds when mounted with 3/8" minimum lead length from the base.

## SILICON 250 mW ZENER DIODES



**FIGURE 1**  
All dimensions in INCH  
m.m.

## MECHANICAL CHARACTERISTICS

**CASE:** Hermetically sealed glass case. DO-7.

**FINISH:** All external surfaces are corrosion resistant and leads solderable.

**THERMAL RESISTANCE:** 300 $^{\circ}\text{C}/\text{W}$  (Typical) junction to lead at 0.375-inches from body.

**POLARITY:** Diode to be operated with the banded end positive with respect to the opposite end.

**WEIGHT:** 0.2 grams.

**MOUNTING POSITION:** Any.