

## Microsemi Corp.

The diode experts

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## 1.5KCD6.8 thru 1.5KCD200A, CD5908 and CD6267 thru CD6303A Transient Suppressor CELLULAR DIE PACKAGE

### APPLICATION

This TAZ\* series has a peak pulse power rating of 1500 watts for one millisecond. It can protect integrated circuits, hybrids, CMOS, MOS and other voltage sensitive components that are used in a broad range of applications including: telecommunications, power supplies, computers, automotive, industrial and medical equipment. TAZ\* devices have become very important as a consequence of their high surge capability, extremely fast response time and low clamping voltage.

The cellular die (CD) package is ideal for use in hybrid applications and for solder mounting. The cellular design in hybrids assures ample bonding with immediate heat sinking to provide the required transient peak pulse power of 1500 watts.

### FEATURES

- ✓ Economical
- ✓ 1500 Watts peak pulse power dissipation
- ✓ Stand-Off voltages from 5.0V to 171V
- ✓ Uses thermally passivated die design
- ✓ Additional silicone protective coating over die for rugged environments
- ✓ Stringent process norm screening
- ✓ Low leakage current at rated stand-off voltage
- ✓ Exposed metal surfaces are readily solderable
- ✓ 100% lot traceability
- ✓ Manufactured in the U.S.A.
- ✓ Meets JEDEC IN6267 - IN6303A electrically equivalent specifications
- ✓ Available in bipolar configuration
- ✓ Additional transient suppressor ratings and sizes are available as well as zener, rectifier and reference diode configurations. Consult factory for special requirements.

### MAXIMUM RATINGS

1500 Watts of Peak Pulse Power Dissipation at 25°C\*\*

clamping (0 Volts to BV Min.):

unidirectional  $< 1 \times 10^{-12}$  seconds;

bidirectional  $< 5 \times 10^{-9}$  seconds;

Operating and Storage Temperature: -65°C to +175°C

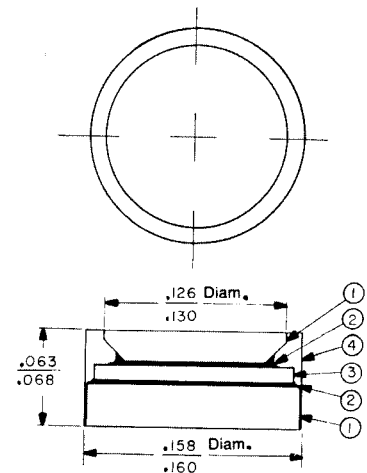
Forward Surge Rating: 200 Amps, 1/120 second at 25°C

Steady State Power Dissipation is heat sink dependent.

\*Transient Absorption Zener

\*\*Wire contact or tab geometry for interconnects should be selected with adequate cross-sectional size to prevent fusing relative to peak pulse current rating (Ipp).

### PACKAGE DIMENSIONS



| Item Number | Description                           |
|-------------|---------------------------------------|
| 1.....      | Nickel and Silver Plated Copper Discs |
| 2.....      | Solder Bond                           |
| 3.....      | Silicon Die                           |
| 4.....      | Conformal coating                     |

Illustration Represents Unipolar Only

### MECHANICAL CHARACTERISTICS

**Case:** Nickel and Silver plated copper discs with conformal coating.

**Finish:** Both external surfaces are corrosion resistant, readily solderable.

**Polarity:** Large contact side is cathode

**Mounting Position:** Any

# 1.5KCD6.8 thru 1.5KCD200A, CD5908 and CD6267 thru CD6303A CELLULAR DIE PACKAGE

## ELECTRICAL CHARACTERISTICS @ 25°C

| Industry<br>Type<br>Number | JEDEC<br>Type<br>Number<br>Elect. Equiv. | Rated<br>Stand-Off<br>Voltage<br>V <sub>WM</sub> | Breakdown<br>Voltage<br>V <sub>(BR)</sub><br>VOLTS |        | Maximum<br>Clamping<br>Voltage<br>@ I <sub>PP</sub><br>(1 mSEC)<br>V <sub>C</sub><br>VOLTS | Maximum<br>Reverse<br>Leakage<br>@ V <sub>WM</sub><br>μA | Rated<br>Maximum<br>Peak Pulse<br>Current<br>I <sub>PP</sub><br>A | Maximum<br>Temperature<br>Coefficient<br>α <sub>VZ</sub><br>%/°C |
|----------------------------|------------------------------------------|--------------------------------------------------|----------------------------------------------------|--------|--------------------------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------------|------------------------------------------------------------------|
|                            |                                          |                                                  | MIN                                                | MAX    |                                                                                            |                                                          |                                                                   |                                                                  |
| 1.5KCD5.8A                 | CD5908                                   | 5.00                                             | 6.0                                                | 7.48   | 1                                                                                          | 7.6                                                      | 300                                                               | 0.57                                                             |
| 1.5KCD7.5                  | CD5908                                   | 5.90                                             | 6.85                                               | 7.14   | 10                                                                                         | 10.5                                                     | 1000                                                              | 0.57                                                             |
| 1.5KCD10A                  | CD5908                                   | 8.00                                             | 8.15                                               | 8.15   | 10                                                                                         | 11.7                                                     | 500                                                               | 0.61                                                             |
| 1.5KCD15A                  | CD5908                                   | 8.40                                             | 7.13                                               | 7.88   | 10                                                                                         | 11.3                                                     | 500                                                               | 0.61                                                             |
| 1.5KCD2.2                  | CD6269                                   | 6.63                                             | 7.38                                               | 9.02   | 10                                                                                         | 12.5                                                     | 200                                                               | 0.65                                                             |
| 1.5KCD2.2A                 | CD6269A                                  | 7.02                                             | 7.78                                               | 8.61   | 10                                                                                         | 12.1                                                     | 200                                                               | 0.65                                                             |
| 1.5KCD2.4                  | CD6270                                   | 7.37                                             | 8.18                                               | 10.00  | 10                                                                                         | 13.8                                                     | 50                                                                | 0.68                                                             |
| 1.5KCD2.4A                 | CD6270A                                  | 7.78                                             | 8.65                                               | 9.55   | 1                                                                                          | 13.4                                                     | 50                                                                | 0.68                                                             |
| 1.5KCD10A                  | CD6271                                   | 8.10                                             | 9.00                                               | 11.00  | 1                                                                                          | 15.0                                                     | 10                                                                | 0.73                                                             |
| 1.5KCD10A                  | CD6271A                                  | 8.55                                             | 9.50                                               | 10.50  | 1                                                                                          | 14.5                                                     | 10                                                                | 0.73                                                             |
| 1.5KCD11                   | CD6272                                   | 8.92                                             | 9.90                                               | 12.10  | 1                                                                                          | 15.2                                                     | 5                                                                 | 0.75                                                             |
| 1.5KCD11A                  | CD6272A                                  | 9.40                                             | 10.50                                              | 11.60  | 1                                                                                          | 15.6                                                     | 5                                                                 | 0.75                                                             |
| 1.5KCD12                   | CD6273                                   | 9.72                                             | 10.80                                              | 13.20  | 1                                                                                          | 17.3                                                     | 5                                                                 | 0.78                                                             |
| 1.5KCD12A                  | CD6273A                                  | 10.20                                            | 11.40                                              | 12.60  | 1                                                                                          | 16.7                                                     | 5                                                                 | 0.78                                                             |
| 1.5KCD13                   | CD6274                                   | 10.50                                            | 11.70                                              | 14.30  | 1                                                                                          | 19.0                                                     | 1                                                                 | 0.81                                                             |
| 1.5KCD13A                  | CD6274A                                  | 11.10                                            | 12.40                                              | 13.70  | 1                                                                                          | 18.2                                                     | 5                                                                 | 0.81                                                             |
| 1.5KCD15                   | CD6275                                   | 12.10                                            | 13.50                                              | 16.50  | 1                                                                                          | 22.0                                                     | 5                                                                 | 0.84                                                             |
| 1.5KCD15A                  | CD6275A                                  | 12.90                                            | 14.40                                              | 17.40  | 1                                                                                          | 23.5                                                     | 5                                                                 | 0.86                                                             |
| 1.5KCD16A                  | CD6276                                   | 13.00                                            | 15.20                                              | 18.60  | 1                                                                                          | 27.0                                                     | 5                                                                 | 0.86                                                             |
| 1.5KCD18                   | CD6277                                   | 14.50                                            | 16.50                                              | 20.50  | 1                                                                                          | 26.5                                                     | 5                                                                 | 0.88                                                             |
| 1.5KCD18A                  | CD6277A                                  | 15.30                                            | 17.10                                              | 20.90  | 1                                                                                          | 25.2                                                     | 5                                                                 | 0.88                                                             |
| 1.5KCD20A                  | CD6278                                   | 16.70                                            | 18.00                                              | 22.00  | 1                                                                                          | 29.1                                                     | 5                                                                 | 0.90                                                             |
| 1.5KCD20A                  | CD6278A                                  | 17.10                                            | 18.00                                              | 21.00  | 1                                                                                          | 27.7                                                     | 5                                                                 | 0.90                                                             |
| 1.5KCD22                   | CD6279                                   | 17.80                                            | 19.60                                              | 24.20  | 1                                                                                          | 31.9                                                     | 5                                                                 | 0.92                                                             |
| 1.5KCD22A                  | CD6279A                                  | 18.80                                            | 20.90                                              | 23.10  | 1                                                                                          | 30.7                                                     | 5                                                                 | 0.94                                                             |
| 1.5KCD24                   | CD6280                                   | 19.40                                            | 21.90                                              | 26.40  | 1                                                                                          | 34.9                                                     | 5                                                                 | 0.94                                                             |
| 1.5KCD24A                  | CD6280A                                  | 20.50                                            | 22.80                                              | 25.20  | 1                                                                                          | 33.2                                                     | 5                                                                 | 0.94                                                             |
| 1.5KCD27                   | CD6281                                   | 21.80                                            | 24.30                                              | 29.70  | 1                                                                                          | 39.1                                                     | 5                                                                 | 0.96                                                             |
| 1.5KCD27A                  | CD6281A                                  | 23.10                                            | 25.10                                              | 28.40  | 1                                                                                          | 37.5                                                     | 5                                                                 | 0.96                                                             |
| 1.5KCD30                   | CD6282                                   | 24.30                                            | 27.00                                              | 33.00  | 1                                                                                          | 43.5                                                     | 5                                                                 | 0.98                                                             |
| 1.5KCD30A                  | CD6282A                                  | 25.60                                            | 28.00                                              | 31.50  | 1                                                                                          | 41.6                                                     | 5                                                                 | 0.98                                                             |
| 1.5KCD33                   | CD6283                                   | 26.80                                            | 29.70                                              | 36.30  | 1                                                                                          | 47.7                                                     | 5                                                                 | 0.99                                                             |
| 1.5KCD33A                  | CD6283A                                  | 28.20                                            | 31.40                                              | 34.70  | 1                                                                                          | 45.7                                                     | 5                                                                 | 0.99                                                             |
| 1.5KCD36                   | CD6284                                   | 29.10                                            | 32.40                                              | 39.60  | 1                                                                                          | 52.0                                                     | 5                                                                 | 0.99                                                             |
| 1.5KCD36A                  | CD6284A                                  | 30.80                                            | 34.20                                              | 37.80  | 1                                                                                          | 49.9                                                     | 5                                                                 | 0.99                                                             |
| 1.5KCD39                   | CD6285                                   | 31.80                                            | 35.30                                              | 42.90  | 1                                                                                          | 56.4                                                     | 5                                                                 | 1.00                                                             |
| 1.5KCD39A                  | CD6285A                                  | 33.30                                            | 37.10                                              | 41.00  | 1                                                                                          | 53.9                                                     | 5                                                                 | 1.00                                                             |
| 1.5KCD42                   | CD6286                                   | 34.80                                            | 38.70                                              | 47.30  | 1                                                                                          | 61.3                                                     | 5                                                                 | 1.01                                                             |
| 1.5KCD43A                  | CD6286A                                  | 36.80                                            | 40.90                                              | 45.20  | 1                                                                                          | 59.3                                                     | 5                                                                 | 1.01                                                             |
| 1.5KCD47                   | CD6287                                   | 38.10                                            | 42.30                                              | 51.70  | 1                                                                                          | 67.8                                                     | 5                                                                 | 1.01                                                             |
| 1.5KCD47A                  | CD6287A                                  | 40.20                                            | 44.70                                              | 49.40  | 1                                                                                          | 64.8                                                     | 5                                                                 | 1.02                                                             |
| 1.5KCD51                   | CD6288                                   | 41.30                                            | 45.80                                              | 56.10  | 1                                                                                          | 73.5                                                     | 5                                                                 | 1.04                                                             |
| 1.5KCD51A                  | CD6288A                                  | 43.80                                            | 48.50                                              | 53.60  | 1                                                                                          | 70.1                                                     | 5                                                                 | 1.04                                                             |
| 1.5KCD58                   | CD6289                                   | 45.40                                            | 50.40                                              | 61.60  | 1                                                                                          | 80.5                                                     | 5                                                                 | 1.03                                                             |
| 1.5KCD58A                  | CD6289A                                  | 47.80                                            | 53.20                                              | 58.60  | 1                                                                                          | 77.0                                                     | 5                                                                 | 1.03                                                             |
| 1.5KCD62                   | CD6290                                   | 50.20                                            | 55.60                                              | 68.20  | 1                                                                                          | 89.0                                                     | 5                                                                 | 1.04                                                             |
| 1.5KCD62A                  | CD6290A                                  | 53.00                                            | 58.90                                              | 65.10  | 1                                                                                          | 85.1                                                     | 5                                                                 | 1.04                                                             |
| 1.5KCD68                   | CD6291                                   | 55.10                                            | 61.20                                              | 74.80  | 1                                                                                          | 98.0                                                     | 5                                                                 | 1.04                                                             |
| 1.5KCD68A                  | CD6291A                                  | 58.10                                            | 64.60                                              | 71.40  | 1                                                                                          | 92.0                                                     | 5                                                                 | 1.04                                                             |
| 1.5KCD75                   | CD6292                                   | 60.70                                            | 67.50                                              | 82.00  | 1                                                                                          | 108.0                                                    | 5                                                                 | 1.05                                                             |
| 1.5KCD75A                  | CD6292A                                  | 64.10                                            | 71.30                                              | 78.60  | 1                                                                                          | 103.0                                                    | 5                                                                 | 1.05                                                             |
| 1.5KCD82                   | CD6293                                   | 66.40                                            | 73.80                                              | 90.20  | 1                                                                                          | 118.0                                                    | 5                                                                 | 1.05                                                             |
| 1.5KCD82A                  | CD6293A                                  | 70.10                                            | 77.80                                              | 86.10  | 1                                                                                          | 113.0                                                    | 5                                                                 | 1.05                                                             |
| 1.5KCD91                   | CD6294                                   | 73.70                                            | 81.90                                              | 100.00 | 1                                                                                          | 131.0                                                    | 5                                                                 | 1.06                                                             |
| 1.5KCD91A                  | CD6294A                                  | 77.80                                            | 86.50                                              | 95.50  | 1                                                                                          | 125.0                                                    | 5                                                                 | 1.06                                                             |
| 1.5KCD100                  | CD6295                                   | 81.00                                            | 90.30                                              | 110.00 | 1                                                                                          | 144.0                                                    | 5                                                                 | 1.06                                                             |
| 1.5KCD100A                 | CD6295A                                  | 85.50                                            | 95.00                                              | 105.00 | 1                                                                                          | 137.0                                                    | 5                                                                 | 1.06                                                             |
| 1.5KCD110                  | CD6296                                   | 86.70                                            | 96.80                                              | 121.00 | 1                                                                                          | 158.0                                                    | 5                                                                 | 1.07                                                             |
| 1.5KCD110A                 | CD6296A                                  | 94.00                                            | 105.00                                             | 118.00 | 1                                                                                          | 152.0                                                    | 5                                                                 | 1.07                                                             |
| 1.5KCD120                  | CD6297                                   | 97.20                                            | 108.00                                             | 132.00 | 1                                                                                          | 173.0                                                    | 5                                                                 | 1.07                                                             |
| 1.5KCD120A                 | CD6297A                                  | 102.00                                           | 114.00                                             | 126.00 | 1                                                                                          | 165.0                                                    | 5                                                                 | 1.07                                                             |
| 1.5KCD130                  | CD6298                                   | 105.00                                           | 117.00                                             | 143.00 | 1                                                                                          | 197.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD130A                 | CD6298A                                  | 111.00                                           | 124.00                                             | 137.00 | 1                                                                                          | 179.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD150                  | CD6299                                   | 121.00                                           | 135.00                                             | 165.00 | 1                                                                                          | 215.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD150A                 | CD6299A                                  | 128.00                                           | 143.00                                             | 154.00 | 1                                                                                          | 207.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD160                  | CD6300                                   | 130.00                                           | 144.00                                             | 178.00 | 1                                                                                          | 230.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD160A                 | CD6300A                                  | 136.00                                           | 152.00                                             | 169.00 | 1                                                                                          | 219.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD170                  | CD6301                                   | 136.00                                           | 153.00                                             | 187.00 | 1                                                                                          | 244.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD170A                 | CD6301A                                  | 145.00                                           | 162.00                                             | 179.00 | 1                                                                                          | 234.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD180                  | CD6302                                   | 146.00                                           | 162.00                                             | 198.00 | 1                                                                                          | 258.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD180A                 | CD6302A                                  | 154.00                                           | 171.00                                             | 189.00 | 1                                                                                          | 248.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD200                  | CD6303                                   | 162.00                                           | 180.00                                             | 220.00 | 1                                                                                          | 287.0                                                    | 5                                                                 | 1.08                                                             |
| 1.5KCD200A                 | CD6303A                                  | 171.00                                           | 190.00                                             | 210.00 | 1                                                                                          | 274.0                                                    | 5                                                                 | 1.08                                                             |

V<sub>f</sub> at 100 amps peak. 8.3 ms sine wave equals 3.5 volts maximum. For bidirectional part number add C or CA as suffix (ie: 1.5KCD33C or 1.5KCD33CA; or CD6283C or CD6283CA).

Note that for bidirectional types having V<sub>WM</sub> of 8 volts and under, the I<sub>D</sub> leakage current is doubled.

### SYMBOLS AND ABBREVIATIONS

V<sub>WM</sub> = RATED STAND-OFF VOLTAGE

I<sub>PP</sub> = PEAK PULSE CURRENT

V<sub>C</sub> (MAX) = MAXIMUM CLAMPING VOLTAGE

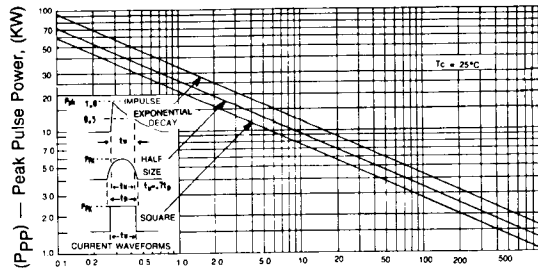
V<sub>(BR)</sub> = BREAKDOWN VOLTAGE

I<sub>T</sub> = TEST CURRENT

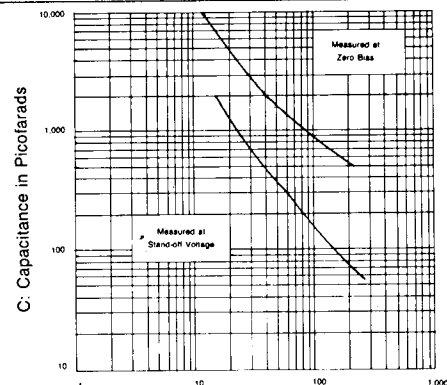
I<sub>D</sub> = REVERSE LEAKAGE

**NOTE 1** Normal selection criteria for TAZ\* devices is by rated stand-off voltage (V<sub>WM</sub>) and should be equal or greater than DC or continuous peak operating voltage.

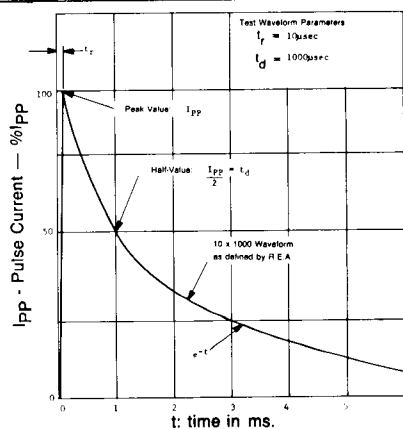
**NOTE 2** TAZ\* devices are tested to maximum peak pulse current (I<sub>PP</sub>) with clamping voltage monitored. This surge capability is one of the most significant electrical characteristics of the device and should be considered as part of customer quality inspections.



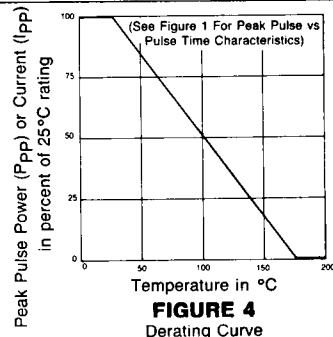
**FIGURE 1**  
Peak Pulse Power vs Pulse Time



**FIGURE 2**  
Typical Capacitance vs Breakdown Voltage



**FIGURE 3**  
Pulse Wave Form



**FIGURE 4**  
Derating Curve