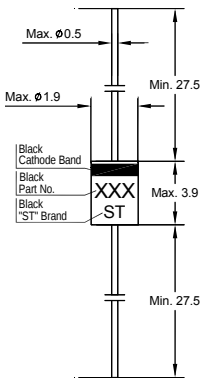


# HC Series

## Silicon Epitaxial Planar Zener Diodes



Glass Case DO-35  
Dimensions in mm

### Absolute Maximum Ratings ( $T_a = 25\text{ }^{\circ}\text{C}$ )

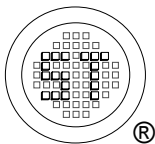
| Parameter                 | Symbol           | Value             | Unit               |
|---------------------------|------------------|-------------------|--------------------|
| Power Dissipation         | $P_{\text{tot}}$ | 500 <sup>1)</sup> | mW                 |
| Junction Temperature      | $T_j$            | 175               | $^{\circ}\text{C}$ |
| Storage Temperature Range | $T_{\text{stg}}$ | - 65 to + 175     | $^{\circ}\text{C}$ |

<sup>1)</sup> Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.

### Characteristics at $T_a = 25\text{ }^{\circ}\text{C}$

| Parameter                                   | Symbol           | Max.              | Unit |
|---------------------------------------------|------------------|-------------------|------|
| Thermal Resistance Junction to Ambient Air  | $R_{\text{thA}}$ | 0.3 <sup>1)</sup> | K/mW |
| Forward Voltage<br>at $I_F = 100\text{ mA}$ | $V_F$            | 1                 | V    |

<sup>1)</sup> Valid provided that leads are kept at ambient temperature at a distance of 8 mm from case.



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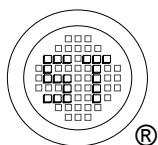


# HC Series

## Characteristics at $T_a = 25^\circ\text{C}$

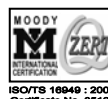
| Type   | Zener Voltage <sup>1)</sup> |          |             | Dynamic Resistance |             | Reverse Leakage Current |          |
|--------|-----------------------------|----------|-------------|--------------------|-------------|-------------------------|----------|
|        | $V_Z$                       |          | at $I_{ZT}$ | $Z_{ZT}$           | at $I_{ZT}$ | $I_R$                   | at $V_R$ |
|        | Min. (V)                    | Max. (V) | (mA)        | Max. ( $\Omega$ )  | (mA)        | Max. ( $\mu\text{A}$ )  | (V)      |
| 2V2HC  | 2.09                        | 2.41     | 20          | 120                | 20          | 120                     | 0.7      |
| 2V2HCA | 2.12                        | 2.3      | 20          | 120                | 20          | 120                     | 0.7      |
| 2V2HCB | 2.22                        | 2.41     | 20          | 120                | 20          | 120                     | 0.7      |
| 2V4HC  | 2.3                         | 2.64     | 20          | 120                | 20          | 120                     | 1        |
| 2V4HCA | 2.33                        | 2.52     | 20          | 120                | 20          | 120                     | 1        |
| 2V4HCB | 2.43                        | 2.63     | 20          | 120                | 20          | 120                     | 1        |
| 2V7HC  | 2.5                         | 2.9      | 20          | 100                | 20          | 100                     | 1        |
| 2V7HCA | 2.54                        | 2.75     | 20          | 100                | 20          | 100                     | 1        |
| 2V7HCB | 2.69                        | 2.91     | 20          | 100                | 20          | 100                     | 1        |
| 3V0HC  | 2.8                         | 3.2      | 20          | 80                 | 20          | 50                      | 1        |
| 3V0HCA | 2.85                        | 3.07     | 20          | 80                 | 20          | 50                      | 1        |
| 3V0HCB | 3.01                        | 3.22     | 20          | 80                 | 20          | 50                      | 1        |
| 3V3HC  | 3.1                         | 3.5      | 20          | 70                 | 20          | 20                      | 1        |
| 3V3HCA | 3.16                        | 3.38     | 20          | 70                 | 20          | 20                      | 1        |
| 3V3HCB | 3.32                        | 3.53     | 20          | 70                 | 20          | 20                      | 1        |
| 3V6HC  | 3.4                         | 3.8      | 20          | 60                 | 20          | 10                      | 1        |
| 3V6HCA | 3.47                        | 3.68     | 20          | 60                 | 20          | 10                      | 1        |
| 3V6HCB | 3.62                        | 3.83     | 20          | 60                 | 20          | 10                      | 1        |
| 3V9HC  | 3.7                         | 4.1      | 20          | 50                 | 20          | 5                       | 1        |
| 3V9HCA | 3.77                        | 3.98     | 20          | 50                 | 20          | 5                       | 1        |
| 3V9HCB | 3.92                        | 4.14     | 20          | 50                 | 20          | 5                       | 1        |
| 4V3HC  | 4                           | 4.5      | 20          | 40                 | 20          | 5                       | 1        |
| 4V3HCA | 4.05                        | 4.26     | 20          | 40                 | 20          | 5                       | 1        |
| 4V3HCB | 4.2                         | 4.4      | 20          | 40                 | 20          | 5                       | 1        |
| 4V3HCC | 4.34                        | 4.53     | 20          | 40                 | 20          | 5                       | 1        |
| 4V7HC  | 4.4                         | 4.9      | 20          | 25                 | 20          | 5                       | 1        |
| 4V7HCA | 4.47                        | 4.65     | 20          | 25                 | 20          | 5                       | 1        |
| 4V7HCB | 4.59                        | 4.77     | 20          | 25                 | 20          | 5                       | 1        |
| 4V7HCC | 4.71                        | 4.91     | 20          | 25                 | 20          | 5                       | 1        |
| 5V1HC  | 4.8                         | 5.4      | 20          | 20                 | 20          | 5                       | 1.5      |
| 5V1HCA | 4.85                        | 5.03     | 20          | 20                 | 20          | 5                       | 1.5      |
| 5V1HCB | 4.97                        | 5.18     | 20          | 20                 | 20          | 5                       | 1.5      |
| 5V1HCC | 5.12                        | 5.35     | 20          | 20                 | 20          | 5                       | 1.5      |
| 5V6HC  | 5.3                         | 6        | 20          | 13                 | 20          | 5                       | 2.5      |
| 5V6HCA | 5.29                        | 5.52     | 20          | 13                 | 20          | 5                       | 2.5      |
| 5V6HCB | 5.46                        | 5.7      | 20          | 13                 | 20          | 5                       | 2.5      |
| 5V6HCC | 5.64                        | 5.88     | 20          | 13                 | 20          | 5                       | 2.5      |

<sup>1)</sup> Tested with pulse  $t_p = 20$  ms.



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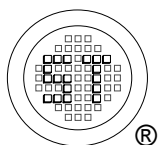
Dated : 18/07/2009

# HC Series

## Characteristics at $T_a = 25^\circ\text{C}$

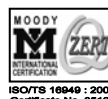
| Type   | Zener Voltage <sup>1)</sup> |          |             | Dynamic Resistance |             | Reverse Leakage Current |          |
|--------|-----------------------------|----------|-------------|--------------------|-------------|-------------------------|----------|
|        | $V_Z$                       |          | at $I_{ZT}$ | $Z_{ZT}$           | at $I_{ZT}$ | $I_R$                   | at $V_R$ |
|        | Min. (V)                    | Max. (V) | (mA)        | Max. ( $\Omega$ )  | (mA)        | Max. ( $\mu\text{A}$ )  | (V)      |
| 6V2HC  | 5.8                         | 6.6      | 20          | 10                 | 20          | 5                       | 3        |
| 6V2HCA | 5.81                        | 6.06     | 20          | 10                 | 20          | 5                       | 3        |
| 6V2HCB | 5.99                        | 6.24     | 20          | 10                 | 20          | 5                       | 3        |
| 6V2HCC | 6.16                        | 6.4      | 20          | 10                 | 20          | 5                       | 3        |
| 6V8HC  | 6.4                         | 7.2      | 20          | 8                  | 20          | 2                       | 3.5      |
| 6V8HCA | 6.32                        | 6.59     | 20          | 8                  | 20          | 2                       | 3.5      |
| 6V8HCB | 6.52                        | 6.79     | 20          | 8                  | 20          | 2                       | 3.5      |
| 6V8HCC | 6.7                         | 6.97     | 20          | 8                  | 20          | 2                       | 3.5      |
| 7V5HC  | 7                           | 7.9      | 20          | 8                  | 20          | 0.5                     | 4        |
| 7V5HCA | 6.88                        | 7.19     | 20          | 8                  | 20          | 0.5                     | 4        |
| 7V5HCB | 7.11                        | 7.41     | 20          | 8                  | 20          | 0.5                     | 4        |
| 7V5HCC | 7.33                        | 7.64     | 20          | 8                  | 20          | 0.5                     | 4        |
| 8V2HC  | 7.7                         | 8.7      | 20          | 8                  | 20          | 0.5                     | 5        |
| 8V2HCA | 7.56                        | 7.9      | 20          | 8                  | 20          | 0.5                     | 5        |
| 8V2HCB | 7.82                        | 8.15     | 20          | 8                  | 20          | 0.5                     | 5        |
| 8V2HCC | 8.07                        | 8.41     | 20          | 8                  | 20          | 0.5                     | 5        |
| 9V1HC  | 8.5                         | 9.6      | 20          | 8                  | 20          | 0.5                     | 6        |
| 9V1HCA | 8.33                        | 8.7      | 20          | 8                  | 20          | 0.5                     | 6        |
| 9V1HCB | 8.61                        | 8.99     | 20          | 8                  | 20          | 0.5                     | 6        |
| 9V1HCC | 8.89                        | 9.29     | 20          | 8                  | 20          | 0.5                     | 6        |
| 10HC   | 9.4                         | 10.9     | 20          | 8                  | 20          | 0.2                     | 7        |
| 10HCA  | 9.19                        | 9.59     | 20          | 8                  | 20          | 0.2                     | 7        |
| 10HCB  | 9.48                        | 9.9      | 20          | 8                  | 20          | 0.2                     | 7        |
| 10HCC  | 9.82                        | 10.3     | 20          | 8                  | 20          | 0.2                     | 7        |
| 11HC   | 10.4                        | 11.6     | 10          | 10                 | 10          | 0.2                     | 8        |
| 11HCA  | 10.18                       | 10.63    | 10          | 10                 | 10          | 0.2                     | 8        |
| 11HCB  | 10.5                        | 10.95    | 10          | 10                 | 10          | 0.2                     | 8        |
| 11HCC  | 10.82                       | 11.26    | 10          | 10                 | 10          | 0.2                     | 8        |
| 12HC   | 11.4                        | 12.6     | 10          | 12                 | 10          | 0.2                     | 9        |
| 12HCA  | 11.13                       | 11.63    | 10          | 12                 | 10          | 0.2                     | 9        |
| 12HCB  | 11.5                        | 11.92    | 10          | 12                 | 10          | 0.2                     | 9        |
| 12HCC  | 11.8                        | 12.3     | 10          | 12                 | 10          | 0.2                     | 9        |
| 13HC   | 12.4                        | 14.1     | 10          | 14                 | 10          | 0.2                     | 10       |
| 13HCA  | 12.18                       | 12.71    | 10          | 14                 | 10          | 0.2                     | 10       |
| 13HCB  | 12.59                       | 13.16    | 10          | 14                 | 10          | 0.2                     | 10       |
| 13HCC  | 13.03                       | 13.62    | 10          | 14                 | 10          | 0.2                     | 10       |
| 15HC   | 13.8                        | 15.6     | 10          | 16                 | 10          | 0.2                     | 11       |
| 15HCA  | 13.48                       | 14.09    | 10          | 16                 | 10          | 0.2                     | 11       |
| 15HCB  | 13.95                       | 14.56    | 10          | 16                 | 10          | 0.2                     | 11       |
| 15HCC  | 14.42                       | 15.52    | 10          | 16                 | 10          | 0.2                     | 11       |

<sup>1)</sup> Tested with pulse  $t_p = 20$  ms.



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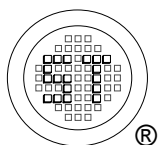
Dated : 18/07/2009

# HC Series

## Characteristics at $T_a = 25^\circ\text{C}$

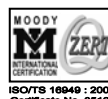
| Type  | Zener Voltage <sup>1)</sup> |          |             | Dynamic Resistance |             | Reverse Leakage Current |          |
|-------|-----------------------------|----------|-------------|--------------------|-------------|-------------------------|----------|
|       | $V_Z$                       |          | at $I_{ZT}$ | $Z_{ZT}$           | at $I_{ZT}$ | $I_R$                   | at $V_R$ |
|       | Min. (V)                    | Max. (V) | (mA)        | Max. ( $\Omega$ )  | (mA)        | Max. ( $\mu\text{A}$ )  | (V)      |
| 16HC  | 15.3                        | 17.1     | 10          | 18                 | 10          | 0.2                     | 12       |
| 16HCA | 14.87                       | 15.5     | 10          | 18                 | 10          | 0.2                     | 12       |
| 16HCB | 15.33                       | 15.96    | 10          | 18                 | 10          | 0.2                     | 12       |
| 16HCC | 15.79                       | 16.5     | 10          | 18                 | 10          | 0.2                     | 12       |
| 18HC  | 16.8                        | 19.1     | 10          | 23                 | 10          | 0.2                     | 13       |
| 18HCA | 16.34                       | 17.06    | 10          | 23                 | 10          | 0.2                     | 13       |
| 18HCB | 16.9                        | 17.67    | 10          | 23                 | 10          | 0.2                     | 13       |
| 18HCC | 17.51                       | 18.3     | 10          | 23                 | 10          | 0.2                     | 13       |
| 20HC  | 18.8                        | 21.6     | 10          | 28                 | 10          | 0.2                     | 15       |
| 20HCA | 18.11                       | 18.92    | 10          | 28                 | 10          | 0.2                     | 15       |
| 20HCB | 18.73                       | 19.57    | 10          | 28                 | 10          | 0.2                     | 15       |
| 20HCC | 19.38                       | 20.22    | 10          | 28                 | 10          | 0.2                     | 15       |
| 20HCD | 19.88                       | 20.72    | 10          | 28                 | 10          | 0.2                     | 15       |
| 22HC  | 20.8                        | 23.3     | 5           | 30                 | 5           | 0.2                     | 17       |
| 22HCA | 20.23                       | 21.08    | 5           | 30                 | 5           | 0.2                     | 17       |
| 22HCB | 20.76                       | 21.65    | 5           | 30                 | 5           | 0.2                     | 17       |
| 22HCC | 21.22                       | 22.09    | 5           | 30                 | 5           | 0.2                     | 17       |
| 22HCD | 21.68                       | 22.61    | 5           | 30                 | 5           | 0.2                     | 17       |
| 24HC  | 21.8                        | 25.6     | 5           | 35                 | 5           | 0.2                     | 19       |
| 24HCA | 22.26                       | 23.12    | 5           | 35                 | 5           | 0.2                     | 19       |
| 24HCB | 22.75                       | 23.73    | 5           | 35                 | 5           | 0.2                     | 19       |
| 24HCC | 23.29                       | 24.27    | 5           | 35                 | 5           | 0.2                     | 19       |
| 24HCD | 23.81                       | 24.81    | 5           | 35                 | 5           | 0.2                     | 19       |
| 27HC  | 25.1                        | 28.9     | 5           | 45                 | 5           | 0.2                     | 21       |
| 27HCA | 24.26                       | 25.52    | 5           | 45                 | 5           | 0.2                     | 21       |
| 27HCB | 24.97                       | 26.26    | 5           | 45                 | 5           | 0.2                     | 21       |
| 27HCC | 25.63                       | 26.95    | 5           | 45                 | 5           | 0.2                     | 21       |
| 27HCD | 26.29                       | 27.64    | 5           | 45                 | 5           | 0.2                     | 21       |
| 30HC  | 28                          | 32       | 5           | 55                 | 5           | 0.2                     | 23       |
| 30HCA | 26.99                       | 28.39    | 5           | 55                 | 5           | 0.2                     | 23       |
| 30HCB | 27.7                        | 29.13    | 5           | 55                 | 5           | 0.2                     | 23       |
| 30HCC | 28.36                       | 29.82    | 5           | 55                 | 5           | 0.2                     | 23       |
| 30HCD | 29.02                       | 30.51    | 5           | 55                 | 5           | 0.2                     | 23       |
| 33HC  | 31                          | 35       | 5           | 65                 | 5           | 0.2                     | 25       |
| 33HCA | 29.68                       | 31.22    | 5           | 65                 | 5           | 0.2                     | 25       |
| 33HCB | 30.32                       | 31.88    | 5           | 65                 | 5           | 0.2                     | 25       |
| 33HCC | 30.9                        | 32.5     | 5           | 65                 | 5           | 0.2                     | 25       |
| 33HCD | 31.49                       | 33.11    | 5           | 65                 | 5           | 0.2                     | 25       |

<sup>1)</sup> Tested with pulse  $t_p = 20$  ms.



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