

# HERMETIC AXIAL LEAD RECTIFIERS

## ULTRAFAST RECOVERY DEVICES (25 nsec $\leq$ $t_{rr}$ $\leq$ 70 nsec)

| TYPE NUMBER  | PEAK INVERSE VOLTAGE  | MAX. AVG. DC OUTPUT CURRENT                        |  | MAXIMUM REVERSE CURRENT @ PIV                      |   | MAX. PEAK FORWARD VOLTAGE (PULSED)                                   |   | PEAK 1 CYCLE SURGE CURRENT                                  | MAXIMUM REVERSE RECOVERY TIME                           | THERM. RESIS. $R_{\theta JL}$ d=.375" <sup>②</sup> | PACKAGE STYLE |
|--|---|--|--|--|---|--|---|---|---|--|---------------|
|  |   | Amps   |  | $\mu$ Amps   |   | V  | A   |   |   |  |               |
|  |   | Volts  | 55°C   | 100°C  | 25°C  | 100°C  | Amps  |   |   |  |               |
| SRS160HE<br>SRS180HE<br>SRS1100HE  | 600<br>800<br>1000  | .75<br>.75<br>.75                                  | .60<br>.60<br>.60                                  | 5.0<br>5.0<br>5.0                                  | 50<br>50<br>50  | 1.70<br>1.70<br>1.70   | .75<br>.75<br>.75                             | 20<br>20<br>20  | 70<br>70<br>70  | 38<br>38<br>38                                     | 105           |
| 1N6620 **<br>1N6621 **<br>1N6622 **<br>1N6623 **<br>1N6624 **<br>1N6625 **<br>SRS1120HE                  | 200<br>400<br>600<br>800<br>900<br>1000<br>1200             | ⑥<br>2.0<br>2.0<br>2.0<br>1.5<br>1.5<br>1.5<br>1.5 | ⑦<br>1.2<br>1.2<br>1.2<br>1.0<br>1.0<br>1.0<br>1.0 | 0.5<br>0.5<br>0.5<br>0.5<br>0.5<br>1.0<br>1.0      | ⑤<br>150<br>150<br>150<br>150<br>200<br>200                       | 1.60<br>1.60<br>1.60<br>1.80<br>1.80<br>1.95<br>2.10                 | 2.0<br>2.0<br>2.0<br>1.5<br>1.5<br>1.5<br>1.5 | 20<br>20<br>20<br>20<br>20<br>15<br>15                      | ①<br>30<br>30<br>30<br>50<br>60<br>60                   | 38<br>38<br>38<br>38<br>38<br>38<br>38             | 106           |
| 1N5802 **<br>1N5804 **<br>1N5806 **<br>SRS120HE  | 50<br>100<br>150<br>200                                     | ③<br>2.5<br>2.5<br>2.5<br>2.5                      | ⑧<br>1.0<br>1.0<br>1.0<br>1.0                      | 1.0<br>1.0<br>1.0<br>1.0                           | 50<br>50<br>50<br>50  | .875<br>.875<br>.875<br>.975   | 1.0<br>1.0<br>1.0<br>1.0                      | 35<br>35<br>35<br>35  | ⑨<br>25<br>25<br>25<br>25                               | 36<br>36<br>36<br>36                               | 106           |
| 1N5807 **<br>1N5809 **<br>1N5811 **<br>SRS320HE  | 50<br>100<br>150<br>200                                     | ③<br>6.0<br>6.0<br>6.0<br>6.0                      | ⑧<br>3.0<br>3.0<br>3.0<br>3.0                      | 5.0<br>5.0<br>5.0<br>5.0                           | 150<br>150<br>150<br>150  | .975<br>.975<br>.975<br>1.10   | 6.0<br>6.0<br>6.0<br>6.0                      | 125<br>125<br>125<br>125                                    | ④<br>30<br>30<br>30<br>30                               | 22<br>22<br>22<br>22                               | 304           |
| 1N6626 **<br>1N6627 **<br>1N6628 **<br>1N6629 **<br>1N6630 **<br>1N6631 **<br>SRS3120HE                  | 200<br>400<br>600<br>800<br>900<br>1000<br>1200             | ③<br>4.0<br>4.0<br>4.0<br>3.0<br>3.0<br>2.0<br>2.0 | ⑦<br>2.0<br>2.0<br>2.0<br>1.4<br>1.4<br>1.4<br>1.4 | 2.0<br>2.0<br>2.0<br>2.0<br>2.0<br>4.0<br>4.0      | ⑤<br>500<br>500<br>500<br>500<br>600<br>600                       | 1.50<br>1.50<br>1.50<br>1.70<br>1.70<br>1.95<br>2.10                 | 4.0<br>4.0<br>4.0<br>3.0<br>3.0<br>2.0<br>2.0 | 75<br>75<br>75<br>75<br>75<br>60<br>60                      | ①<br>30<br>30<br>30<br>50<br>50<br>60<br>60             | 22<br>22<br>22<br>22<br>22<br>22<br>22             | 306           |
| SRS65HE<br>SRS610HE<br>SRS615HE<br>SRS620HE<br>SRS640HE<br>SRS660HE<br>SRS680HE<br>SRS690HE<br>SRS6100HE | 50<br>100<br>150<br>200<br>400<br>600<br>800<br>900<br>1000 | 6<br>6<br>6<br>6<br>6<br>6<br>6<br>6<br>6          | 3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3          | 10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10 | ⑤<br>1000<br>1000<br>1000<br>1000<br>1000<br>1500<br>1500<br>2000 | 0.95<br>0.95<br>0.95<br>1.20<br>1.20<br>1.20<br>1.60<br>1.60<br>1.70 | 6<br>6<br>6<br>6<br>6<br>6<br>6<br>6<br>6     | 125<br>125<br>125<br>125<br>125<br>125<br>125<br>125<br>125 | ①<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70 | 20<br>20<br>20<br>20<br>20<br>20<br>20<br>20<br>20 | 601           |

\* available at JAN/JANTX levels      \*\* available at JAN/JANTX/JANTXV levels

Notes: - All ratings are at  $T_A = 25^\circ\text{C}$  unless otherwise specified.

- Maximum operating and storage temperature range  $-65^\circ\text{C}$  to  $+175^\circ\text{C}$ .

• Lead material - copper • Finish - hot solder dipped

① Reverse recovery time conditions:  $I_R = 0.5\text{A}$ ,  $I_F = 1.0\text{A}$ ,  $I_{rr} = 0.25\text{A}$ .

② d = distance on lead from rectifier body at which temperature is measured.

③ Output current rating at  $T_L = 75^\circ\text{C}$ ,  $L = .375"$ .

④ Reverse recovery time conditions:  $I_R = I_F = 1.0\text{A}$ ,  $I_{rr} = 0.1\text{A}$

⑤ Rating at  $T_J = 150^\circ\text{C}$ .

⑥ Output current rating at  $T_L = 55^\circ\text{C}$ ,  $L = 0.375"$ .

⑦  $T_A = 25^\circ\text{C}$ , no heatsink.

⑧  $T_A = 55^\circ\text{C}$ .

⑨ Reverse recovery time conditions:  $I_R = I_F = 0.5\text{A}$ ,  $I_{rr} = 0.5\text{A}$

# HERMETIC SURFACE MOUNT RECTIFIERS - MELFs

## ULTRAFAST RECOVERY (25 nsec $\leq$ $t_{rr}$ $\leq$ 70 nsec)

| TYPE NUMBER  | PEAK INVERSE VOLTAGE                                       |   | MAX. AVG. DC OUTPUT CURRENT<br>①            | MAXIMUM REVERSE CURRENT @ PIV                      |   | MAX. PEAK FORWARD VOLTAGE (PULSED)                                   | PEAK 1 CYCLE SURGE CURRENT                    | MAXIMUM REVERSE RECOVERY TIME                               | THERM. RESIS. $R_{\theta JEC}$<br>③                     | PACKAG E STYLE  |        |
|--|--|---|---|--|---|--|---|---|---|---|--------|
|  | Volt s   | 55°C  | Amps  |  | V   | A  | Amps  | nsec  | °C/W  |   |        |
|  |  |   | 100°C                                       | 25°C   |   |  |   |   |   |   | 100°C  |
| SSM160HE<br>SSM180HE<br>SSM1100HE  | 600<br>800<br>100  | .75<br>.75<br>.75                           | .60<br>.60<br>.60                           | 5.0<br>5.0<br>5.0                                  | 50<br>50<br>50  | 1.70<br>1.70<br>1.70   | .75<br>.75<br>.75                             | 20<br>20<br>20  | ②<br>70<br>70<br>70                                     | 10<br>10<br>10  | MELF-1 |
| 1N6620U **<br>1N6621U **<br>1N6622U **<br>1N6623U **<br>1N6624U **<br>1N6625U **<br>SSM1120HE            | 200<br>400<br>600<br>800<br>900<br>100<br>0                | ⑦<br>2.0<br>2.0<br>2.0<br>1.5<br>1.5<br>1.5 | ⑤<br>1.2<br>1.2<br>1.2<br>1.0<br>1.0<br>1.0 | 0.5<br>0.5<br>0.5<br>0.5<br>0.5<br>1.0<br>1.0      | ④<br>150<br>150<br>150<br>150<br>150<br>200<br>200                | 1.60<br>1.60<br>1.60<br>1.80<br>1.80<br>1.95<br>2.10                 | 2.0<br>2.0<br>2.0<br>1.5<br>1.5<br>1.5<br>1.5 | 20<br>20<br>20<br>20<br>20<br>15<br>15                      | ②<br>30<br>30<br>30<br>50<br>60<br>60                   | 20<br>20<br>20<br>20<br>20<br>20<br>20                      |        |
| 1N5802US **<br>1N5804US **<br>1N5806US **<br>SSM120HE  | 50<br>100<br>150<br>200                                    | ⑩<br>2.5<br>2.5<br>2.5                      | ⑦<br>1.0<br>1.0<br>1.0                      | 1.0<br>1.0<br>1.0<br>1.0                           | 50<br>50<br>50<br>50  | .875<br>.875<br>.875<br>.975   | 1.0<br>1.0<br>1.0<br>1.0                      | 35<br>35<br>35<br>35  | ⑨<br>25<br>25<br>25                                     | 20<br>20<br>20<br>20  | MELF-A |
| 1N5807US **<br>1N5809US **<br>1N5811US **<br>SSM320HE  | 50<br>100<br>150<br>200                                    | ⑩<br>6.0<br>6.0<br>6.0                      | ⑦<br>8.0<br>8.0<br>8.0                      | 5.0<br>5.0<br>5.0<br>5.0                           | 150<br>150<br>150<br>150  | .975<br>.975<br>.975<br>1.10   | 6.0<br>6.0<br>6.0<br>6.0                      | 125<br>125<br>125<br>125                                    | ⑧<br>30<br>30<br>30                                     | 10<br>10<br>10<br>10  |        |
| 1N6626U **<br>1N6627U **<br>1N6628U **<br>1N6629U **<br>1N6630U **<br>1N6631U **<br>SSM3120HE            | 200<br>400<br>600<br>800<br>900<br>100<br>0                | ⑩<br>4.0<br>4.0<br>4.0<br>3.0<br>3.0<br>2.0 | ⑤<br>2.0<br>2.0<br>2.0<br>1.4<br>1.4<br>1.4 | 2.0<br>2.0<br>2.0<br>2.0<br>2.0<br>4.0<br>4.0      | 500<br>500<br>500<br>500<br>500<br>600<br>600                     | 1.50<br>1.50<br>1.50<br>1.70<br>1.70<br>1.95<br>2.10                 | 4.0<br>4.0<br>4.0<br>3.0<br>3.0<br>2.0<br>2.0 | 75<br>75<br>75<br>75<br>75<br>60<br>60                      | ②<br>30<br>30<br>30<br>50<br>50<br>60<br>60             | 11<br>11<br>11<br>11<br>11<br>11<br>11                      | MELF-B |
| SSM65HE<br>SSM610HE<br>SSM615HE<br>SSM620HE<br>SSM640HE<br>SSM660HE<br>SSM680HE<br>SSM690HE<br>SSM6100HE | 50<br>100<br>150<br>200<br>400<br>600<br>800<br>900<br>100 | 6<br>6<br>6<br>6<br>6<br>6<br>6<br>6<br>6   | 3<br>3<br>3<br>3<br>3<br>3<br>3<br>3<br>3   | 10<br>10<br>10<br>10<br>10<br>10<br>10<br>10<br>10 | ⑥<br>1000<br>1000<br>1000<br>1000<br>1000<br>1500<br>1500<br>2000 | 0.95<br>0.95<br>0.95<br>1.20<br>1.20<br>1.20<br>1.60<br>1.60<br>1.70 | 6<br>6<br>6<br>6<br>6<br>6<br>6<br>6<br>6     | 125<br>125<br>125<br>125<br>125<br>125<br>125<br>125<br>125 | ②<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70<br>70 | 8.0<br>8.0<br>8.0<br>8.0<br>8.0<br>8.0<br>8.0<br>8.0<br>8.0 | MELF-E |

\* available at JAN/JANTX levels \*\* available at JAN/JANTX/JANTXV levels

**Notes:**

- All ratings are at  $T_A = 25^\circ\text{C}$  unless otherwise specified.

- Maximum operating and storage temperature range  $-65^\circ\text{C}$  to  $+175^\circ\text{C}$

①  $T_{EC}$  = Endcap temperature. Endcaps have to be heat sunk sufficiently to remove

dissipated power in order to achieve this rated current

②  $t_{rr}$  conditions;  $I_f = 0.5\text{A}$ ,  $I_r = 1.0\text{A}$ ,  $I_{rr} = 0.25\text{A}$

③ Maximum thermal resistance, junction to endcaps

④ Rating at  $T_J = 150^\circ\text{C}$

⑤  $T_A = 25^\circ\text{C}$

⑥  $T_{EC} = 110^\circ\text{C}$

⑦  $T_A = 55^\circ\text{C}$

⑧ Reverse recovery time conditions:







$I_f = I_r = 1.0\text{A}$ ,  $I_{rr} = 0.1\text{A}$  di/dt = 100A/ $\mu\text{sec}$  minimum

⑨ Reverse recovery time conditions:  $I_f = I_r = 0.5\text{A}$ ,  $I_{rr} = 0.5\text{A}$

⑩ Output current rating at  $T_L = 75^\circ\text{C}$ ,  $L = .375"$ .

## HERMETIC POWER ULTRAFAST RECTIFIERS

## SURFACE MOUNT, SINGLE

| TYPE NUMBER | PEAK INVERSE VOLTAGE | MAXIMUM DC OUTPUT CURRENT<br>$T_C = 100^\circ\text{C}$<br>① | MAXIMUM REVERSE CURRENT @ PIV |     | MAX. PEAK FORWARD VOLTAGE (PULSED) |     |       |     | MAXIMUM REVERSE RECOVERY TIME<br>② | MAXIMUM THERMAL RESISTANCE<br>$R_{\theta JC}$<br>③ | PACKAGE STYLE   |
|-------------|----------------------|---|-------------------------------|-----|------------------------------------|-----|-------|-----|------------------------------------|--|---|
|             |                      |   | 25°C 125°C                    |     | 25°                                |     | 125°C |     |                                    |  |   |
|             |                      |   | μA                            | mA  | V                                  | A   | V     | A   |                                    |  |   |
| SHD3163     | 200                  | 8.0   | 25                            | 1.0 | .975                               | 8.0 | .875  | 8.0 | 30                                 | 1.3  |    |
| SHD3166     | 200                  | 25  | 25                            | 1.0 | .975                               | 25  | .875  | 25  | 35                                 | 0.6  |   |
| SHD3164     | 400                  | 8.0   | 25                            | 1.0 | 1.20                               | 8.0 | 1.10  | 8.0 | 45                                 | 1.3  |   |
| SHD3165     | 600                  | 8.0   | 25                            | 1.0 | 1.30                               | 8.0 | 1.20  | 8.0 | 60                                 | 1.3  |   |
| SHD3163A    | 200                  | 8.0   | 25                            | 1.0 | .975                               | 8.0 | .875  | 8.0 | 30                                 | 1.3  |    |
| SHD3166A    | 200                  | 25  | 25                            | 1.0 | .975                               | 25  | .875  | 25  | 35                                 | 0.6  |   |
| SHD3164A    | 400                  | 8.0   | 25                            | 1.0 | 1.20                               | 8.0 | 1.10  | 8.0 | 45                                 | 1.3  |   |
| SHD3165A    | 600                  | 8.0   | 25                            | 1.0 | 1.30                               | 8.0 | 1.20  | 8.0 | 60                                 | 1.3  |   |
| SHD3163B    | 200                  | 8.0   | 25                            | 1.0 | .975                               | 8.0 | .875  | 8.0 | 30                                 | 1.3  |    |
| SHD3166B    | 200                  | 25  | 25                            | 1.0 | .975                               | 25  | .875  | 25  | 35                                 | 0.6  |   |
| SHD3164B    | 400                  | 8.0   | 25                            | 1.0 | 1.20                               | 8.0 | 1.10  | 8.0 | 45                                 | 1.3  |   |
| SHD3165B    | 600                  | 8.0   | 25                            | 1.0 | 1.30                               | 8.0 | 1.20  | 8.0 | 60                                 | 1.3  |   |
| SHD3155     | 200                  | 40  | 100                           | 2.0 | .975                               | 40  | .875  | 40  | 35                                 | 0.5  |  |
| SHD3153     | 400                  | 30  | 25                            | 1.0 | 1.25                               | 30  | 1.15  | 30  | 50                                 | .45  |   |
| SHD3156     | 400                  | 70  | 100                           | 2.0 | 1.20                               | 70  | 1.10  | 70  | 60                                 | .30  |   |
| SHD3154     | 600                  | 30  | 25                            | 1.0 | 1.40                               | 30  | 1.20  | 30  | 70                                 | .45  |   |
| SHD3157     | 600                  | 70  | 100                           | 2.0 | 1.30                               | 70  | 1.20  | 70  | 75                                 | .30  |   |
| SHD3155A    | 200                  | 40  | 100                           | 2.0 | .975                               | 40  | .875  | 40  | 35                                 | 0.5  |  |
| SHD3153A    | 400                  | 30  | 25                            | 1.0 | 1.25                               | 30  | 1.15  | 30  | 50                                 | .45  |   |
| SHD3156A    | 400                  | 70  | 100                           | 2.0 | 1.20                               | 70  | 1.10  | 70  | 60                                 | .30  |   |
| SHD3154A    | 600                  | 30  | 25                            | 1.0 | 1.40                               | 30  | 1.20  | 30  | 70                                 | .45  |   |
| SHD3157A    | 600                  | 70  | 100                           | 2.0 | 1.30                               | 70  | 1.20  | 70  | 75                                 | .30  |   |
| SHD3155B    | 200                  | 40  | 100                           | 2.0 | .975                               | 40  | .875  | 40  | 35                                 | 0.5  |  |
| SHD3153B    | 400                  | 30  | 25                            | 1.0 | 1.25                               | 30  | 1.15  | 30  | 50                                 | .45  |   |
| SHD3156B    | 400                  | 70  | 100                           | 2.0 | 1.20                               | 70  | 1.10  | 70  | 60                                 | .30  |   |
| SHD3154B    | 600                  | 30  | 25                            | 1.0 | 1.40                               | 30  | 1.20  | 30  | 70                                 | .45  |   |
| SHD3157B    | 600                  | 70  | 100                           | 2.0 | 1.30                               | 70  | 1.20  | 70  | 75                                 | .30  |   |

## Notes:

-Maximum operating and storage temperature range  $-55^\circ\text{C}$  to  $+175^\circ\text{C}$ .

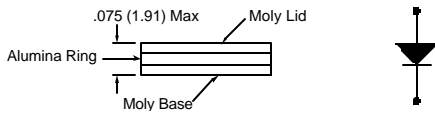
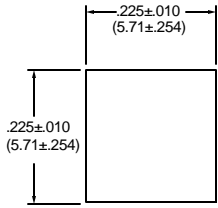
-All ratings are at  $T_C = 25^\circ\text{C}$  unless otherwise specified.

① Maximum dc output current with cathode side of package maintained at  $100^\circ\text{C}$ .

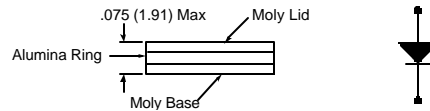
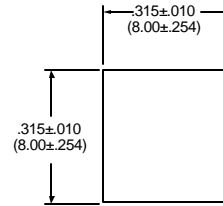
②  $t_{rr}$  conditions;  $I_f = 0.5\text{A}$ ,  $I_r = 1.0\text{A}$ ,  $I_{rr} = 0.25\text{A}$ .

③ Maximum thermal resistance junction to mounting surface (cathode).

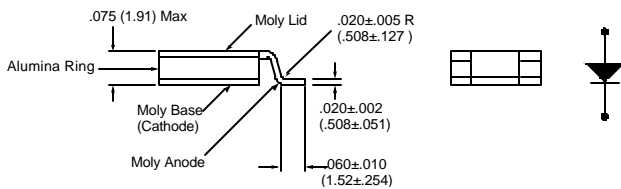
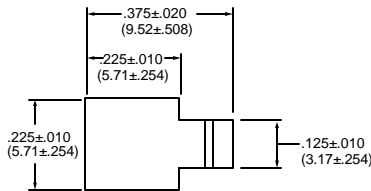
Most devices are available in other Voltage and/or current ratings. Please contact the factory or a Sensitron Sales Representative for details.



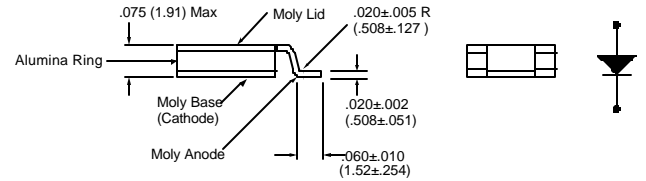
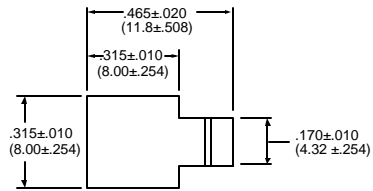
**SHD-1**



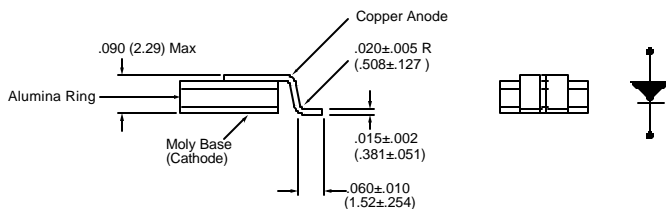
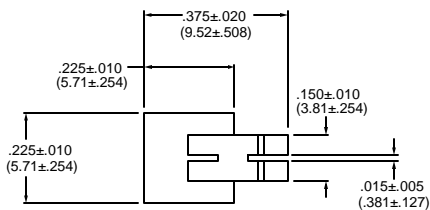
**SHD-2**



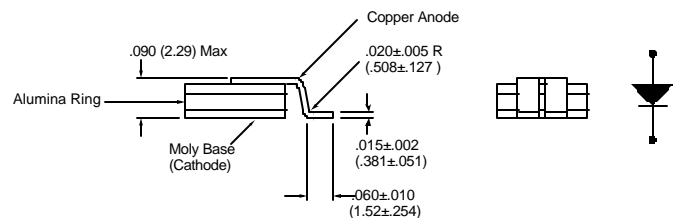
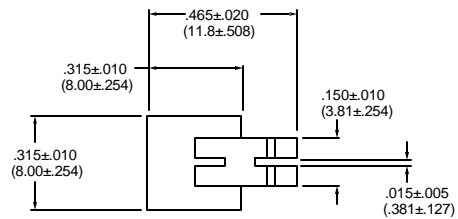
**SHD-1A**



**SHD-2A**



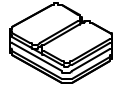
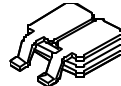


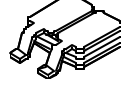

**SHD-1B**



**SHD-2B**

**HERMETIC POWER ULTRAFAST RECTIFIERS**

**SURFACE MOUNT, DUAL COMMON CATHODE**

| TYPE NUMBER | PEAK INVERSE VOLTAGE | MAXIMUM DC OUTPUT CURRENT<br>T <sub>C</sub> = 100°C<br>① | MAXIMUM REVERSE CURRENT @ PIV |      | MAX. PEAK FORWARD VOLTAGE (PULSED) PER LEG |     |       |     | MAXIMUM REVERSE RECOVERY TIME<br>② | MAXIMUM THERMAL RESISTANCE<br>R <sub>θJC</sub><br>③ | PACKAGE STYLE   |
|-------------|----------------------|--|-------------------------------|------|--|-----|-------|-----|------------------------------------|---|---|
|             |                      |  | 25°C 125°C                    |      | 25°C                                       |     | 125°C |     |                                    |   |   |
|             |                      |  | Volts                         | Amps | μA   | mA  | V     | A   |                                    |   |   |
| SHD3173P    | 200                  | 16   | 25                            | 1.0  | .975                                       | 8.0 | .875  | 8.0 | 30                                 | 1.4   |    |
| SHD3174P    | 400                  | 16   | 25                            | 1.0  | 1.20                                       | 8.0 | 1.10  | 8.0 | 45                                 | 1.4   |   |
| SHD3175P    | 600                  | 16   | 25                            | 1.0  | 1.30                                       | 8.0 | 1.20  | 8.0 | 60                                 | 1.4   |   |
| SHD3173PA   | 200                  | 16   | 25                            | 1.0  | .975                                       | 8.0 | .875  | 8.0 | 30                                 | 1.4   |    |
| SHD3174PA   | 400                  | 16   | 25                            | 1.0  | 1.20                                       | 8.0 | 1.10  | 8.0 | 45                                 | 1.4   |   |
| SHD3175PA   | 600                  | 16   | 25                            | 1.0  | 1.30                                       | 8.0 | 1.20  | 8.0 | 60                                 | 1.4   |   |
| SHD3173PB   | 200                  | 16   | 25                            | 1.0  | .975                                       | 8.0 | .875  | 8.0 | 30                                 | 1.4   |    |
| SHD3174PB   | 400                  | 16   | 25                            | 1.0  | 1.20                                       | 8.0 | 1.10  | 8.0 | 45                                 | 1.4   |   |
| SHD3175PB   | 600                  | 16   | 25                            | 1.0  | 1.30                                       | 8.0 | 1.20  | 8.0 | 60                                 | 1.4   |   |
| SHD3184P    | 200                  | 80   | 100                           | 2.0  | .975                                       | 40  | .875  | 40  | 35                                 | 0.5   |   |
| SHD3185P    | 400                  | 100  | 100                           | 2.0  | 1.20                                       | 70  | 1.10  | 70  | 60                                 | .35   |   |
| SHD3186P    | 600                  | 100  | 100                           | 2.0  | 1.30                                       | 70  | 1.20  | 70  | 75                                 | .35   |   |
| SHD3184PA   | 200                  | 80   | 100                           | 2.0  | .975                                       | 40  | .875  | 40  | 35                                 | 0.5   |  |
| SHD3185PA   | 400                  | 100  | 100                           | 2.0  | 1.20                                       | 70  | 1.10  | 70  | 60                                 | .35   |   |
| SHD3186PA   | 600                  | 100  | 100                           | 2.0  | 1.30                                       | 70  | 1.20  | 70  | 75                                 | .35   |   |
| SHD3184PB   | 200                  | 80   | 100                           | 2.0  | .975                                       | 40  | .875  | 40  | 35                                 | 0.5   |  |
| SHD3185PB   | 400                  | 100  | 100                           | 2.0  | 1.20                                       | 70  | 1.10  | 70  | 60                                 | .35   |   |
| SHD3186PB   | 600                  | 100  | 100                           | 2.0  | 1.30                                       | 70  | 1.20  | 70  | 75                                 | .35   |   |

**Notes:**

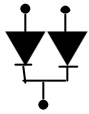
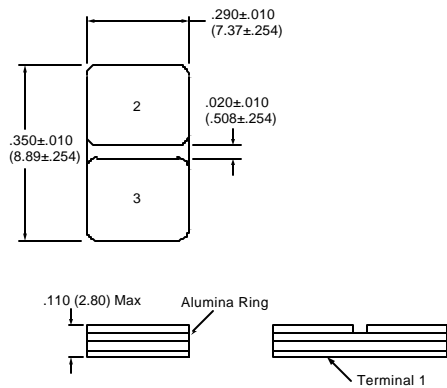
- All ratings are at T<sub>C</sub> = 25°C unless otherwise specified.
- Maximum operating and storage temperature range -55°C to +175°C.
- ① Maximum dc output current with cathode surface maintained at T<sub>C</sub> = 100°C.
- ② t<sub>rr</sub> conditions; I<sub>f</sub> = 0.5A, I<sub>r</sub> = 1.0A, I<sub>rr</sub> = 0.25A.
- ③ Maximum thermal resistance junction to mounting surface (cathode) per leg.

Most devices are available in other Voltage and/or current ratings. Please contact the factory or a Sensitron Sales Representative for details.

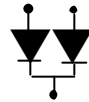
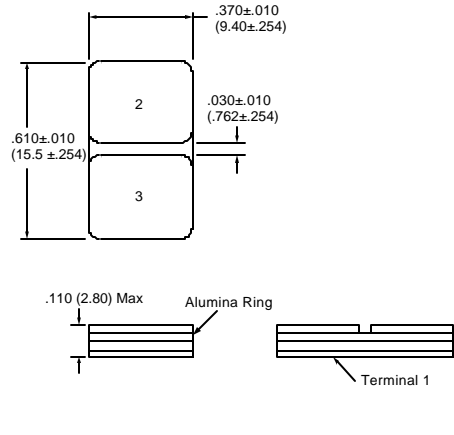
**PINOUTS**

| DEVICE TYPE                                  | PIN 1          | PIN 2 | PIN 3 |
|--|----------------|-------|-------|
| DUAL RECTIFIER/COMMON CATHODE (P)            | COMMON CATHODE | ANODE | ANODE |
| SHD-4, SHD-4A, SHD-4B, SHD-5, SHD-5A, SHD-5B |                |       |       |

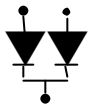
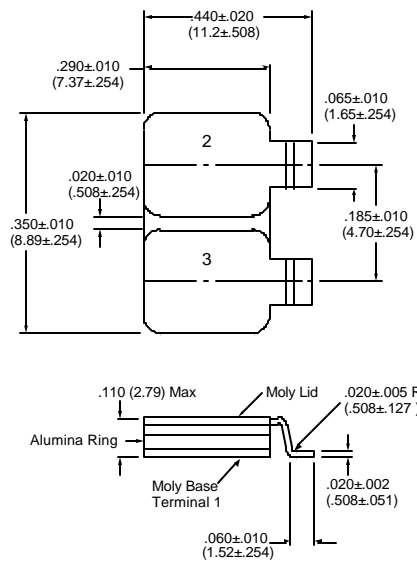
**SHD-4**



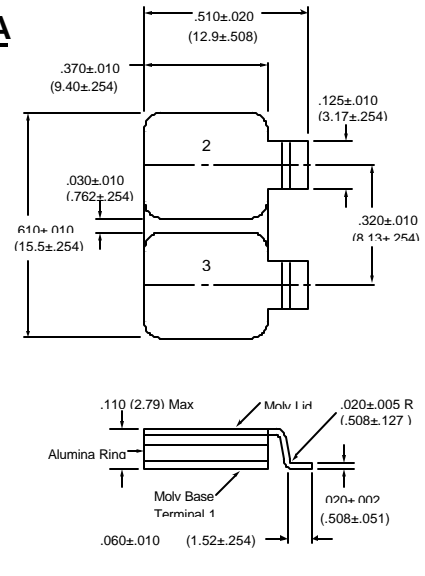
**SHD-5**



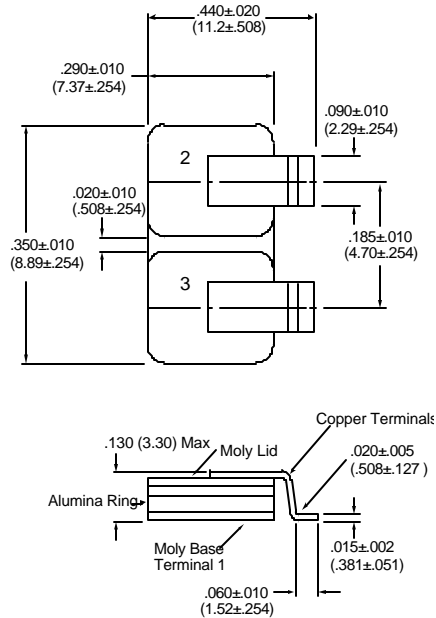
**SHD-4A**



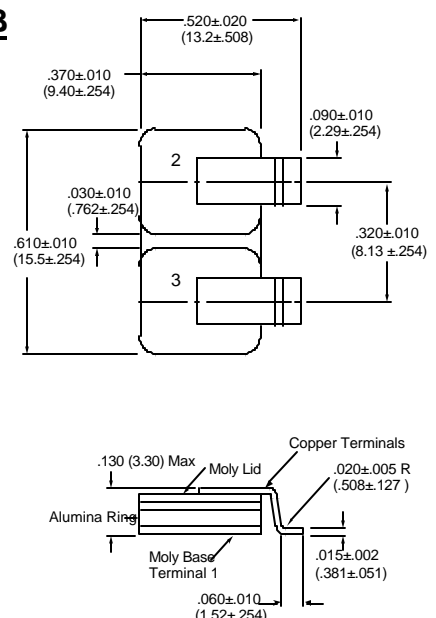
**SHD-5A**






**SHD-4B**



**SHD-5B**






**HERMETIC ULTRAFAST RECOVERY RECTIFIERS****SINGLE, (TO-254, TO-257, TO-258)**

| TYPE NUMBER | PEAK INVERSE VOLTAGE | MAXIMUM AVERAGE DC OUTPUT CURRENT<br>$T_C = 100^\circ\text{C}$ | PEAK 1 CYCLE SURGE CURRENT<br>① | MAXIMUM PEAK FORWARD VOLTAGE (PULSED) |    |       |    | MAXIMUM REVERSE CURRENT @ PIV |                    | MAXIMUM REVERSE RECOVERY TIME<br>② | MAXIMUM THERMAL RESIS.<br>$R_{\theta JC}$ | PKG. STYLE  |
|-------------|----------------------|--|---------------------------------|---------------------------------------|----|-------|----|-------------------------------|--------------------|------------------------------------|---|---|
|             |                      |  |                                 | 25°C                                  |    | 125°C |    | 25°C                          | 125°C              |                                    |   |   |
|             |                      |  |                                 | V                                     | A  | V     | A  | $\mu\text{A}$                 | mA                 |                                    |   |   |
| Volts       | Amps                 | Amps   |                                 |                                       |    |       |    | nsec                          | $^\circ\text{C/W}$ |                                    |   |   |
| SHD3262     | 200                  | 16   | 150                             | 1.1                                   | 16 | 1.0   | 16 | 25                            | 1.0                | 30                                 | 1.5                                       | <br>TO-257 |
| SHD3263     | 400                  | 16   | 150                             | 1.45                                  | 16 | 1.35  | 16 | 25                            | 1.0                | 45                                 | 1.5                                       |   |
| SHD3264     | 600                  | 16   | 150                             | 1.6                                   | 16 | 1.5   | 16 | 25                            | 2.0                | 25                                 | 1.5                                       |   |
| SHD3251     | 200                  | 16   | 150                             | 1.2                                   | 30 | 1.1   | 30 | 25                            | 1.0                | 35                                 | 0.9                                       | <br>TO-254 |
| SHD3245     | 200                  | 40   | 200                             | 1.0                                   | 40 | 0.9   | 40 | 100                           | 2.0                | 50                                 | 0.45                                      | <br>TO-258 |
| SHD3242     | 400                  | 40   | 200                             | 1.2                                   | 40 | 1.1   | 40 | 100                           | 2.0                | 60                                 | 0.45                                      |   |
| SHD3243     | 600                  | 40   | 200                             | 1.4                                   | 40 | 1.3   | 40 | 100                           | 8.0                | 30                                 | 0.6                                       |   |

**(Hermetic Ultrafast Rectifiers, Continued on Next Page)**

## HERMETIC ULTRAFAST RECOVERY RECTIFIERS (Continued)

## DUAL, (TO-254, TO-257, TO-258)

| TYPE NUMBER<br>③ | PEAK INVERSE VOLTAGE | MAXIMUM AVERAGE DC OUTPUT CURRENT<br>$T_C = 100^\circ\text{C}$ | PEAK 1 CYCLE SURGE CURRENT | MAXIMUM PEAK FORWARD VOLTAGE (PULSED) PER LEG |    |       |               | MAXIMUM REVERSE CURRENT @ PIV |       | MAXIMUM REVERSE RECOVERY TIME<br>② | MAXIMUM THERMAL RESIS. PER LEG<br>$R_{\theta JC}$ | PKG. STYLE  |
|------------------|----------------------|--|----------------------------|---|----|-------|---------------|-------------------------------|-------|------------------------------------|---|---|
|                  |                      |  |                            | 25°C  |    | 125°C |               | 25°C                          | 125°C |                                    |   |   |
|                  |                      |  |                            | V   | A  | V     | A             | $\mu\text{A}$                 | mA    |                                    |   |   |
| Volts            | Amps                 | Amps   | V                          | A   | V  | A     | $\mu\text{A}$ | mA                            | nsec  | $^\circ\text{C/W}$                 |   |   |
| SHD3262P         | 200                  | 16   | 150                        | 1.1   | 16 | 1.0   | 16            | 25                            | 1.0   | 30                                 | 1.5   |    |
| SHD3262N         | 200                  | 16   | 150                        | 1.15  | 16 | 1.05  | 16            | 25                            | 1.0   | 30                                 | 1.5   |   |
| SHD3262D         | 200                  | 16   | 150                        | 1.15  | 16 | 1.05  | 16            | 25                            | 1.0   | 30                                 | 1.5   |   |
| SHD3263P         | 400                  | 16   | 150                        | 1.45  | 16 | 1.35  | 16            | 25                            | 1.0   | 45                                 | 1.5   |   |
| SHD3263N         | 400                  | 16   | 150                        | 1.50  | 16 | 1.40  | 16            | 25                            | 1.0   | 45                                 | 1.5   |   |
| SHD3263D         | 400                  | 16   | 150                        | 1.50  | 16 | 1.40  | 16            | 25                            | 1.0   | 45                                 | 1.5   |   |
| SHD3264P         | 600                  | 16   | 150                        | 1.6   | 16 | 1.5   | 16            | 25                            | 2.0   | 25                                 | 1.5   |   |
| SHD3264N         | 600                  | 16   | 150                        | 1.65  | 16 | 1.55  | 16            | 25                            | 2.0   | 25                                 | 1.5   |   |
| SHD3264D         | 600                  | 16   | 150                        | 1.65  | 16 | 1.55  | 16            | 25                            | 2.0   | 25                                 | 1.5   |   |
| *1N6657          | 100                  | 40   | 300                        | 1.0   | 10 | 0.83  | 10            | 10                            | 1.0   | 35                                 | 2.3   |    |
| *1N6657R         | 100                  | 40   | 300                        | 1.0   | 10 | 0.83  | 10            | 10                            | 1.0   | 35                                 | 2.3   |   |
| *1N6658          | 150                  | 40   | 300                        | 1.0   | 10 | 0.83  | 10            | 10                            | 1.0   | 35                                 | 2.3   |   |
| *1N6658R         | 150                  | 40   | 300                        | 1.0   | 10 | 0.83  | 10            | 10                            | 1.0   | 35                                 | 2.3   |   |
| *1N6659          | 200                  | 30   | 300                        | 1.0   | 10 | 0.83  | 10            | 10                            | 1.0   | 35                                 | 2.3   |   |
| *1N6659R         | 200                  | 30   | 300                        | 1.0   | 10 | 0.83  | 10            | 10                            | 1.0   | 35                                 | 2.3   |   |
| *1N6672          | 300                  | 15   | 150                        | 1.35  | 10 | -     | -             | ④ ⑤<br>50                     | 5.0   | 35                                 | 2.0   |   |
| *1N6672R         | 300                  | 15   | 150                        | 1.35  | 10 | -     | -             | 50                            | 5.0   | 35                                 | 2.0   |   |
| *1N6673          | 400                  | 15   | 150                        | 1.35  | 10 | -     | -             | 50                            | 5.0   | 35                                 | 2.0   |   |
| *1N6673R         | 400                  | 15   | 150                        | 1.35  | 10 | -     | -             | 50                            | 5.0   | 35                                 | 2.0   |   |
| *1N6674          | 500                  | 15   | 150                        | 1.35  | 10 | -     | -             | 50                            | 5.0   | 35                                 | 2.0   |   |
| *1N6674R         | 500                  | 15   | 150                        | 1.35  | 10 | -     | -             | 50                            | 5.0   | 35                                 | 2.0   |   |
| SHD3251P         | 200                  | 30   | 200                        | 1.2   | 30 | 1.1   | 30            | 25                            | 1.0   | 35                                 | 0.9   |   |
| SHD3251N         | 200                  | 30   | 200                        | 1.27  | 30 | 1.17  | 30            | 25                            | 1.0   | 35                                 | 0.9   |   |
| SHD3251D         | 200                  | 30   | 200                        | 1.27  | 30 | 1.17  | 30            | 25                            | 1.0   | 35                                 | 0.9   |   |
| SHD3245P         | 200                  | 40   | 200                        | 1.0   | 40 | 0.9   | 40            | 100                           | 2.0   | 50                                 | 0.45  |  |
| SHD3245N         | 200                  | 40   | 200                        | 1.07  | 40 | 0.97  | 40            | 100                           | 2.0   | 50                                 | 0.45  |   |
| SHD3245D         | 200                  | 40   | 200                        | 1.07  | 40 | 0.97  | 40            | 100                           | 2.0   | 50                                 | 0.45  |   |
| SHD3243P         | 600                  | 40   | 200                        | 1.4   | 40 | 1.3   | 40            | 100                           | 8.0   | 30                                 | 0.6   |   |
| SHD3243N         | 600                  | 40   | 200                        | 1.47  | 40 | 1.37  | 40            | 100                           | 8.0   | 30                                 | 0.6   |   |
| SHD3243D         | 600                  | 40   | 200                        | 1.47  | 40 | 1.37  | 40            | 100                           | 8.0   | 30                                 | 0.6   |   |

## Notes:

-All ratings are at  $T_C = 25^\circ\text{C}$  unless otherwise specified.

-Maximum operating temperature range:

-65°C to +175°C; for 600V devices -65° to +150°C; -65 to +200°C for 1N6657 to 1N6659R & 1N6672 to 1N6674R.

①  $t_p = 8.3$  msec.

②  $t_{rr}$  conditions;  $I_f = 0.5\text{A}$ ,  $I_r = 1.0\text{A}$ ,  $I_{rr} = 0.25\text{A}$ .

③ Suffix P denotes common cathode version, N or R denotes common anode and D denotes the doubler version.

④  $T_C = +100^\circ\text{C}$ .

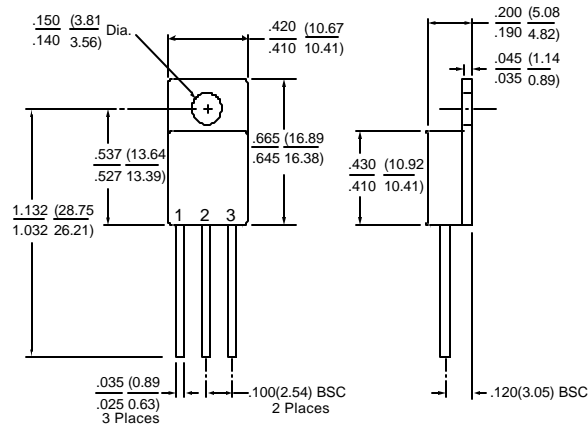
⑤ Tested at 80% of PIV.

\* MIL-PRF-19500 QPL Product.

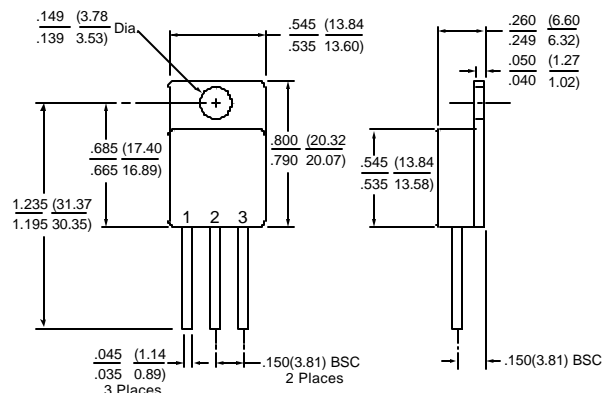
Most devices are available in other Voltage and/or current ratings. Please contact the factory or a Sensitron Sales Representative for details.



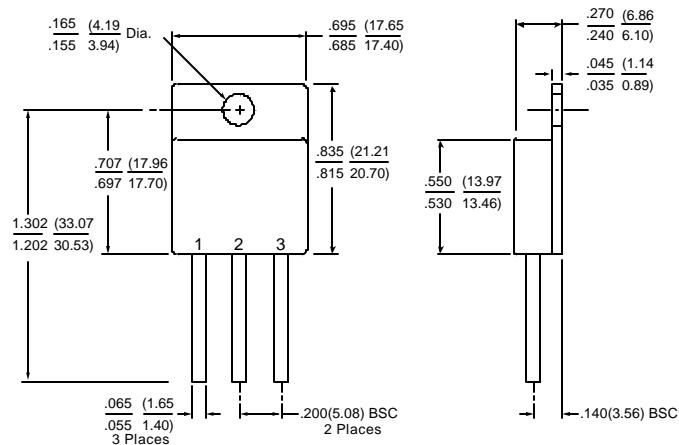
**TO - 257**



**TO - 254**



**TO - 258**



**PINOUTS - TO-257, TO-254, TO-258**

| DEVICE TYPE                       | PIN 1     | PIN 2          | PIN 3     |
|-----------------------------------|-----------|----------------|-----------|
| SINGLE RECTIFIER                  | CATHODE   | ANODE          | ANODE     |
| DUAL RECTIFIER/COMMON CATHODE (P) | ANODE 1   | COMMON CATHODE | ANODE 2   |
| DUAL RECTIFIER/COMMON ANODE (N)   | CATHODE 1 | COMMON ANODE   | CATHODE 2 |
| DUAL RECTIFIER/DOUBLER (D)        | ANODE     | ANODE/CATHODE  | CATHODE   |

TECHNICAL DATA  
 DATA SHEET 655, REV. -

## FREE WHEELING SWITCH

### MAJOR PRODUCT CHARACTERISTICS

|                 |                   |
|-----------------|-------------------|
| $I_{F(AV)}$     | 8 A               |
| $V_{RRM}$       | 600 V (in series) |
| $T_j$ (max)     | 150 °C            |
| $V_F$ (max)     | 2.6 V             |
| $I_{RM}$ (typ.) | 4 A               |

### FEATURES AND BENEFITS:

- Especially suited as boost diode in continuous mode power factor correctors and hard switching conditions.
- Designed for high di/dt operation.
- Ultra-fast recovery current to compete with  $G_A A_S$  devices. Size diminution of mosfet and heatsinks allowed.
- Internal ceramic insulated package allows flexible heatsinking on common or separate heatsink.
- Matched diodes for typical pfc application without voltage balance network.
- **INSULATED VERSION:**  
 Insulated voltage = 2500  $V_{(RMS)}$   
 Capacitance = 7 pF

### DESCRIPTION:

The Free Wheeling Switch is an ultra high performance diode composed of two 300V dice in series. The Free Wheeling Switch family drastically cuts losses in the associated MOSFET when run at high diF/dt.

### ABSOLUTE RATINGS (limiting values for both diodes in series)

| Symbol       | Parameter                              | Value     | Unit |
|--------------|--|-----------|------|
| $V_{RRM}$    | Repetitive peak reverse voltage        | 600       | V    |
| $I_{F(RMS)}$ | RMS forward current                    | 14        | A    |
| $I_{FSM}$    | Surge non repetitive forward current   | 80        | A    |
| $T_{stg}$    | Storage temperature range              | -65 + 150 | °C   |
| $T_j$        | Maximum operating junction temperature | +150      | °C   |

**TECHNICAL DATA**  
**DATA SHEET 655, REV. -**
**THERMAL AND POWER DATA**

| Symbol        | Parameter                                    | Test Conditions                                       | Value | Unit |
|---------------|--|---|-------|------|
| $R_{th(j-c)}$ | Junction to case thermal resistance          | Per Diode   | 5.0   | °C/W |
| $R_{th(c)}$   |  | Coupling  | 0.2   |      |
| $R_{th(j-c)}$ | Junction to case thermal resistance          | Total   | 2.6   |      |
| $P_1$         | Conduction power dissipation for both diodes | $I_{F(AV)} = 8A$ $\delta = 0.5$<br>$T_C = 80^\circ C$ | 27    | W    |

**STATIC ELECTRICAL CHARACTERISTICS (for both diodes)**

| Symbol     | Parameter               | Test Conditions | Min.                | Typ. | Max. | Unit |         |
|------------|-------------------------|-----------------|---------------------|------|------|------|---------|
| $I_R^*$    | Reverse leakage current | $V_R = V_{RRM}$ | $T_J = 25^\circ C$  | -    | -    | 10   | $\mu A$ |
|            |                         |                 | $T_J = 125^\circ C$ | -    | 15   | 100  |         |
| $V_F^{**}$ | Forward voltage drop    | $I_F = 8A$      | $T_J = 25^\circ C$  | -    | -    | 3.6  | V       |
|            |                         |                 | $T_J = 125^\circ C$ | -    | 2.1  | 2.6  |         |

Pulse test: \*  $t_p = 5$  ms,  $\delta < 2\%$

\*\*  $t_p = 380$   $\mu s$ ,  $\delta < 2\%$

To evaluate the maximum conduction losses use the following equation:

$$P = 1.8 \times I_{F(AV)} + 0.1 I_{F(RMS)}^2$$

**RECOVERY CHARACTERISTICS**

| Symbol       | Test Conditions                               | Min.                | Typ. | Max. | Unit |    |
|--------------|---|---------------------|------|------|------|----|
| $t_{rr}$     | $I_F = 0.5A$ $I_{rr} = 0.25A$ $I_R = 1A$      | $T_J = 25^\circ C$  | -    | 13   | -    | ns |
|              | $I_F = 1A$ $di_F/dt = -50A/\mu s$ $V_R = 30V$ |                     | -    | -    | 30   |    |
| $I_{RM}$     | $V_R = 400V$ $I_F = 8A$ $di_F = -200 A/\mu s$ | $T_J = 125^\circ C$ | -    | 4.0  | 5.5  | A  |
| $S_{factor}$ |   |                     | -    | 0.4  | -    |    |

**TURN-ON SWITCHING CHARACTERISTICS**

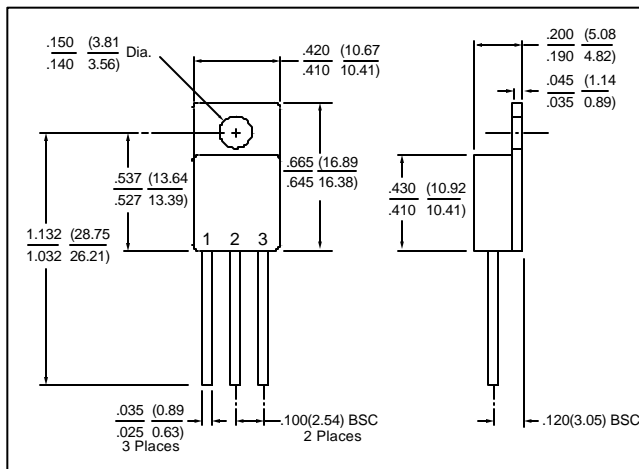
| Symbol   | Test Conditions   | Min.               | Typ. | Max. | Unit |    |
|----------|---|--------------------|------|------|------|----|
| $t_{tr}$ | $I_F = 8A$ $di_F/dt = 100A/\mu s$ ,<br>Measured at $1.1 \times V_F$ max | $T_J = 25^\circ C$ | -    | -    | 200  | ns |
| $V_{FP}$ | $I_F = 8A$ $di_F/dt = 100A/\mu s$                                       | $T_J = 25^\circ C$ | -    | -    | 7.0  | V  |

**APPLICATION DATA:**

The Free Wheeling Switch is especially designed to provide the lowest overall power losses in any "Free Wheel Mode" application considering both diode and companion transistor, thus optimizing overall performance in the end application.

**TECHNICAL DATA**  
**DATA SHEET 655, REV. -**

**Mechanical Dimensions: In Inches / mm**



**TO-257**

**PINOUT TABLE**

| TYPE  | PIN 1 | PIN 2         | PIN 3   |
|---|-------|---------------|---------|
| FREE WHEELING SWITCH<br>IN A TO-257 PACKAGE | ANODE | ANODE/CATHODE | CATHODE |

**SCHEMATIC**

