

# 15 KW TRANSIENT SUPPRESSION MODULES

## 15KS17 THRU 15KS280A

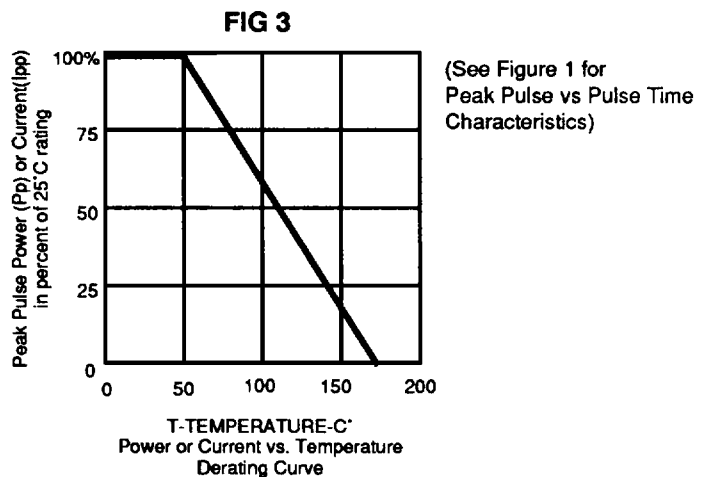
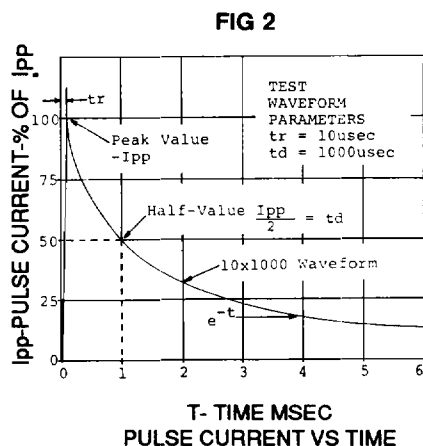
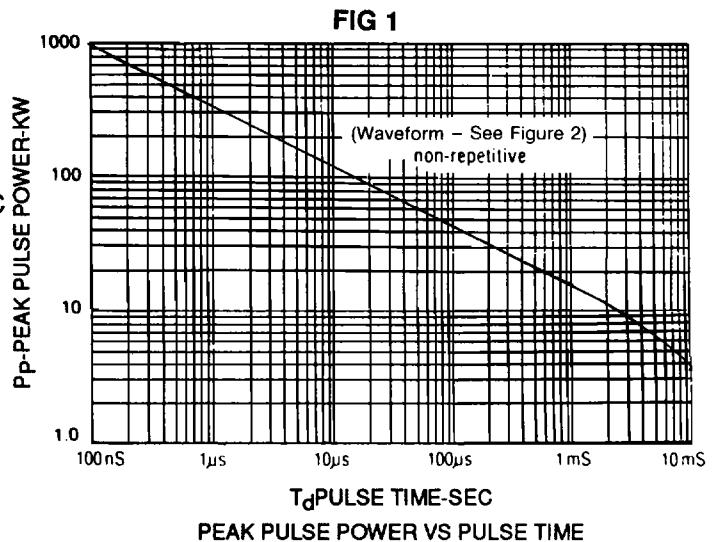
### 15000 Watts (Peak - 1msec) 17 thru 280 volts

The Semicon 15KS series of transient suppressor diodes are designed to protect electronic equipment from failure due to voltage transients. In addition they are intended to perform as voltage clamps under sustained over voltage stress until slower forms of conventional fusing open the circuit. Their initial failure mode under sustained avalanche current overload is short circuit. Their avalanche characteristics coupled with special internal design for rapid junction cooling under pulse power stress makes them most useful in airborne, telephone and other equipments where large transients are frequent.

The inherent fast response of these devices and broad choice of stand-off voltage ratings enables the designer to protect a wide range of both active and passive circuit components which may be damaged by voltage transients.

### MAXIMUM RATINGS:

- 15,000 watts of Peak Pulse Power @ 1ms dissipation at 25°C
- $t_{\text{clamping}}$  (0 volts to BV min): Less than  $1 \times 10^{-12}$
- Operating and Storage temperature: -55°C to + 150°C
- Steady State power dissipation: 7.0 watts @  $T_A = 25^\circ\text{C}$
- Repetition rate (duty cycle): .05%
- Peak Power (Fig. 1)
- Pulse Wave Form (Fig. 2)
- Power Derating (Fig. 3)



# ELECTRICAL CHARACTERISTICS at 25°C

| SEMICON<br>PART<br>NUMBER | REVERSE<br>STAND -OFF<br>VOLTAGE<br><br>V <sub>R</sub><br>VOLTS | (Note1)<br>BREAKDOWN<br>VOLTAGE<br>@<br><br>BV<br>VOLTS |    | MAXIMUM<br>CLAMPING<br>VOLTAGE<br>@ I <sub>pp</sub><br>(1mSEC)<br>V <sub>c</sub><br>VOLTS | MAXIMUM<br>REVERSE<br>LEAKAGE<br>@ V <sub>R</sub><br>I <sub>RT</sub><br>μA | MAXIMUM<br>PEAK PULSE<br>CURRENT<br>I <sub>PP</sub><br>A | MAXIMUM<br>TEMPERATURE<br>COEFFICIENT<br>OF BV<br><br>Mv/°C |
|---------------------------|-----------------------------------------------------------------|---------------------------------------------------------|----|-------------------------------------------------------------------------------------------|----------------------------------------------------------------------------|----------------------------------------------------------|-------------------------------------------------------------|
|                           |                                                                 | I <sub>T</sub><br>mA                                    |    |                                                                                           |                                                                            |                                                          |                                                             |
| 15KS17                    | 17                                                              | 18.9 - 23.1                                             | 50 | 32.3                                                                                      | 5000                                                                       | 464                                                      | 19                                                          |
| 15KS17A                   | 17                                                              | 18.9 - 20.9                                             | 50 | 29.3                                                                                      | 5000                                                                       | 512                                                      | 17                                                          |
| 15KS18                    | 18                                                              | 20.0 - 24.4                                             | 50 | 34.2                                                                                      | 5000                                                                       | 439                                                      | 20                                                          |
| 15KS18A                   | 18                                                              | 20.0 - 22.1                                             | 50 | 30.9                                                                                      | 5000                                                                       | 485                                                      | 18                                                          |
| 15KS20                    | 20                                                              | 22.2 - 27.1                                             | 20 | 37.9                                                                                      | 1500                                                                       | 396                                                      | 24                                                          |
| 15KS20A                   | 20                                                              | 22.2 - 24.5                                             | 20 | 34.3                                                                                      | 1500                                                                       | 437                                                      | 21                                                          |
| 15KS22                    | 22                                                              | 24.4 - 29.8                                             | 10 | 41.1                                                                                      | 500                                                                        | 365                                                      | 27                                                          |
| 15KS22A                   | 22                                                              | 24.4 - 26.9                                             | 10 | 37.1                                                                                      | 500                                                                        | 404                                                      | 24                                                          |
| 15KS24                    | 24                                                              | 26.7 - 32.6                                             | 5  | 45.0                                                                                      | 150                                                                        | 333                                                      | 30                                                          |
| 15KS24A                   | 24                                                              | 26.7 - 29.5                                             | 5  | 40.7                                                                                      | 150                                                                        | 369                                                      | 27                                                          |
| 15KS26                    | 26                                                              | 28.9 - 35.3                                             | 5  | 48.7                                                                                      | 50                                                                         | 308                                                      | 32                                                          |
| 15KS26A                   | 26                                                              | 28.9 - 31.9                                             | 5  | 44.0                                                                                      | 50                                                                         | 341                                                      | 29                                                          |
| 15KS28                    | 28                                                              | 31.1 - 38.0                                             | 5  | 52.4                                                                                      | 25                                                                         | 286                                                      | 35                                                          |
| 15KS28A                   | 28                                                              | 31.1 - 34.4                                             | 5  | 47.5                                                                                      | 25                                                                         | 316                                                      | 31                                                          |
| 15KS30                    | 30                                                              | 33.3 - 40.7                                             | 5  | 56.2                                                                                      | 15                                                                         | 267                                                      | 27                                                          |
| 15KS30A                   | 30                                                              | 33.3 - 36.8                                             | 5  | 50.7                                                                                      | 15                                                                         | 296                                                      | 34                                                          |
| 15KS33                    | 33                                                              | 36.7 - 44.9                                             | 5  | 60.6                                                                                      | 10                                                                         | 248                                                      | 42                                                          |
| 15KS33A                   | 33                                                              | 36.7 - 40.6                                             | 5  | 54.8                                                                                      | 10                                                                         | 274                                                      | 38                                                          |
| 15KS36                    | 36                                                              | 40.0 - 48.9                                             | 5  | 66.0                                                                                      | 10                                                                         | 227                                                      | 46                                                          |
| 15KS36A                   | 36                                                              | 40.0 - 44.2                                             | 5  | 59.7                                                                                      | 10                                                                         | 251                                                      | 41                                                          |
| 15KS40                    | 40                                                              | 44.4 - 54.3                                             | 5  | 72.8                                                                                      | 10                                                                         | 206                                                      | 51                                                          |
| 15KS40A                   | 40                                                              | 44.4 - 49.1                                             | 5  | 65.8                                                                                      | 10                                                                         | 228                                                      | 46                                                          |
| 15KS43                    | 43                                                              | 47.8 - 58.4                                             | 5  | 77.1                                                                                      | 10                                                                         | 195                                                      | 55                                                          |
| 15KS43A                   | 43                                                              | 47.8 - 52.8                                             | 5  | 69.7                                                                                      | 10                                                                         | 215                                                      | 50                                                          |
| 15KS45                    | 45                                                              | 50.0 - 61.1                                             | 5  | 80.7                                                                                      | 10                                                                         | 186                                                      | 57                                                          |
| 15KS45A                   | 45                                                              | 50.0 - 55.3                                             | 5  | 73.0                                                                                      | 10                                                                         | 205                                                      | 52                                                          |
| 15KS48                    | 48                                                              | 53.3 - 65.1                                             | 5  | 85.9                                                                                      | 10                                                                         | 175                                                      | 62                                                          |
| 15KS48A                   | 48                                                              | 53.3 - 58.9                                             | 5  | 77.7                                                                                      | 10                                                                         | 193                                                      | 56                                                          |
| 15KS51                    | 51                                                              | 56.7 - 69.3                                             | 5  | 91.5                                                                                      | 10                                                                         | 164                                                      | 66                                                          |
| 15KS51A                   | 51                                                              | 56.7 - 62.7                                             | 5  | 82.8                                                                                      | 10                                                                         | 181                                                      | 60                                                          |
| 15KS54                    | 54                                                              | 60.0 - 73.3                                             | 5  | 96.8                                                                                      | 10                                                                         | 155                                                      | 70                                                          |
| 15KS54A                   | 54                                                              | 60.0 - 66.3                                             | 5  | 87.5                                                                                      | 10                                                                         | 171                                                      | 63                                                          |
| 15KS58                    | 58                                                              | 64.4 - 78.7                                             | 5  | 104.0                                                                                     | 10                                                                         | 144                                                      | 76                                                          |
| 15KS58A                   | 58                                                              | 64.4 - 71.2                                             | 5  | 94.0                                                                                      | 10                                                                         | 160                                                      | 68                                                          |
| 15KS60                    | 60                                                              | 66.7 - 81.5                                             | 5  | 107.0                                                                                     | 10                                                                         | 140                                                      | 78                                                          |
| 15KS60A                   | 60                                                              | 66.7 - 73.7                                             | 5  | 97.3                                                                                      | 10                                                                         | 154                                                      | 71                                                          |
| 15KS64                    | 64                                                              | 71.1 - 86.9                                             | 5  | 115                                                                                       | 10                                                                         | 130                                                      | 84                                                          |
| 15KS64A                   | 64                                                              | 71.1 - 78.6                                             | 5  | 104                                                                                       | 10                                                                         | 144                                                      | 76                                                          |
| 15KS70                    | 70                                                              | 77.8 - 95.1                                             | 5  | 126                                                                                       | 10                                                                         | 119                                                      | 92                                                          |
| 15KS70A                   | 70                                                              | 77.8 - 86.0                                             | 5  | 114                                                                                       | 10                                                                         | 132                                                      | 83                                                          |
| 15KS75                    | 75                                                              | 83.3 - 102.0                                            | 5  | 135                                                                                       | 10                                                                         | 111                                                      | 100                                                         |
| 15KS75A                   | 75                                                              | 83.3 - 92.1                                             | 5  | 122                                                                                       | 10                                                                         | 123                                                      | 89                                                          |
| 15KS78                    | 78                                                              | 86.7 - 106.0                                            | 5  | 140                                                                                       | 10                                                                         | 107                                                      | 104                                                         |
| 15KS78A                   | 78                                                              | 86.7 - 95.8                                             | 5  | 126                                                                                       | 10                                                                         | 119                                                      | 93                                                          |
| 15KS85                    | 85                                                              | 94.4 - 115                                              | 5  | 152                                                                                       | 10                                                                         | 99                                                       | 113                                                         |
| 15KS85A                   | 85                                                              | 94.4 - 104                                              | 5  | 137                                                                                       | 10                                                                         | 109                                                      | 102                                                         |
| 15KS90                    | 90                                                              | 100.0 - 122                                             | 5  | 160                                                                                       | 10                                                                         | 94                                                       | 120                                                         |
| 15KS90A                   | 90                                                              | 100.0 - 111                                             | 5  | 146                                                                                       | 10                                                                         | 103                                                      | 109                                                         |
| 15KS100                   | 100                                                             | 111 - 136                                               | 5  | 179                                                                                       | 10                                                                         | 84                                                       | 134                                                         |
| 15KS100A                  | 100                                                             | 111 - 123                                               | 5  | 162                                                                                       | 10                                                                         | 93                                                       | 121                                                         |
| 15KS110                   | 110                                                             | 122 - 149                                               | 5  | 196                                                                                       | 10                                                                         | 77                                                       | 147                                                         |
| 15KS110A                  | 110                                                             | 122 - 135                                               | 5  | 178                                                                                       | 10                                                                         | 84                                                       | 133                                                         |
| 15KS120                   | 120                                                             | 133 - 163                                               | 5  | 214                                                                                       | 10                                                                         | 70                                                       | 161                                                         |
| 15KS120A                  | 120                                                             | 133 - 147                                               | 5  | 193                                                                                       | 10                                                                         | 78                                                       | 145                                                         |
| 15KS130                   | 130                                                             | 144 - 176                                               | 5  | 231                                                                                       | 10                                                                         | 65                                                       | 174                                                         |
| 15KS130A                  | 130                                                             | 144 - 159                                               | 5  | 209                                                                                       | 10                                                                         | 72                                                       | 157                                                         |
| 15KS150                   | 150                                                             | 167 - 204                                               | 5  | 268                                                                                       | 10                                                                         | 56                                                       | 202                                                         |
| 15KS150A                  | 150                                                             | 167 - 185                                               | 5  | 243                                                                                       | 10                                                                         | 62                                                       | 183                                                         |
| 15KS160                   | 160                                                             | 178 - 218                                               | 5  | 287                                                                                       | 10                                                                         | 52                                                       | 216                                                         |
| 15KS160A                  | 160                                                             | 178 - 197                                               | 5  | 259                                                                                       | 10                                                                         | 58                                                       | 195                                                         |
| 15KS170                   | 170                                                             | 189 - 231                                               | 5  | 304                                                                                       | 10                                                                         | 49                                                       | 229                                                         |
| 15KS170A                  | 170                                                             | 189 - 209                                               | 5  | 275                                                                                       | 10                                                                         | 55                                                       | 207                                                         |
| 15KS180                   | 180                                                             | 200 - 244                                               | 5  | 321                                                                                       | 10                                                                         | 47                                                       | 242                                                         |
| 15KS180A                  | 180                                                             | 200 - 221                                               | 5  | 291                                                                                       | 10                                                                         | 52                                                       | 219                                                         |
| 15KS200                   | 200                                                             | 222 - 271                                               | 5  | 356                                                                                       | 10                                                                         | 42                                                       | 269                                                         |
| 15KS200A                  | 200                                                             | 222 - 245                                               | 5  | 322                                                                                       | 10                                                                         | 47                                                       | 243                                                         |
| 15KS220                   | 220                                                             | 245 - 299                                               | 5  | 393                                                                                       | 10                                                                         | 38                                                       | 297                                                         |
| 15KS220A                  | 220                                                             | 245 - 271                                               | 5  | 356                                                                                       | 10                                                                         | 42                                                       | 269                                                         |
| 15KS240                   | 240                                                             | 267 - 326                                               | 5  | 428                                                                                       | 10                                                                         | 35                                                       | 324                                                         |
| 15KS240A                  | 240                                                             | 267 - 295                                               | 5  | 388                                                                                       | 10                                                                         | 39                                                       | 293                                                         |
| 15KS260                   | 260                                                             | 289 - 353                                               | 5  | 464                                                                                       | 10                                                                         | 32                                                       | 352                                                         |
| 15KS260A                  | 260                                                             | 289 - 319                                               | 5  | 419                                                                                       | 10                                                                         | 36                                                       | 317                                                         |
| 15KS280                   | 280                                                             | 311 - 380                                               | 5  | 500                                                                                       | 10                                                                         | 30                                                       | 378                                                         |
| 15KS280A                  | 280                                                             | 311 - 344                                               | 5  | 452                                                                                       | 10                                                                         | 33                                                       | 342                                                         |

V<sub>f</sub> = 7.5 V @ 200A, 8.3 msec/ 1/2 sine wave

Note 1: 15KS Series is normally selected according to the reverse "Stand Off Voltage" (V<sub>R</sub>) which should be equal to or greater than the DC or continuous peak operating voltage level.