

## OPERATING CHARACTERISTICS

### TIMING

Operate Time:  
2.0 ms max.

Release Time:  
1MA: 2.0 ms max.  
1MAD/1MADD: 4.0 ms max.  
(suppression diode,  
suppression/steering diodes)  
1MAT: 4.0 ms max.  
(transistor driven)

### CONTACT BOUNCE

1.5 ms max

### DIELECTRIC WITHSTANDING VOLTAGE

Between Open Contacts:  
500 Vrms 60 Hz

Between Adjacent Contacts:  
500 Vrms 60 Hz

Between Contacts & Coil:  
500 Vrms 60 Hz

### INSULATION RESISTANCE

10,000 megohms @ 500 Vdc  
1,000 megohms @ 500 Vdc  
(coil to case @ +125°C)

## ENVIRONMENTAL CHARACTERISTICS

### TEMPERATURE RANGE

-65°C to +125°C

### WEIGHT

0.08 oz. (2.27 grms)  
0.19 oz. (2.52 grms) with spreader  
pad attached

### VIBRATION RESISTANCE

30 G's, 10 to 3,000 Hz

### SHOCK RESISTANCE

75 G's, 6 ± 1 ms max.

### QPL APPROVAL

MIL-R-39016/7 (J1MA)  
MIL-R-39016/23 (J1MAD)  
MIL-R-39016/24 (J1MADD)  
MIL-R-28776/5 (J1MAT)

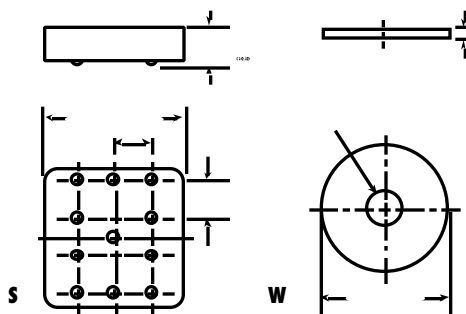
## SEMICONDUCTOR CHARACTERISTICS

### DIODE

100 Vdc peak inverse voltage (PIV)  
1.0 Vdc max. transient voltage

### TRANSISTOR

0.3 Vdc min. base turn off voltage  
6.0 Vdc min. emitter-base  
breakdown voltage (BV<sub>EB0</sub>) @ 25°C  
80.0 Vdc min. collector-base  
breakdown voltage (BV<sub>CB0</sub>) @ 25°C  
& I<sub>C</sub>=100 mA



SPREADER & MOUNTING PADS

## COIL DATA

| NOM. COIL VOLTAGE (Vdc) | COIL RESISTANCE IN OHMS ±10% @ 25°C (Note 1) | COIL CIRCUIT CURRENT mA (MAX.) (Note 1&2) | COIL CIRCUIT CURRENT mA (MIN.) (Note 1&2) | PICKUP VOLTAGE Vdc (MAX.) @ 25°C (Note 2) | BASE TURN ON CURRENT mA (MAX.) @ 25°C | PICKUP VOLTAGE Vdc (MAX.) @ 125°C (Note 2) | BASE TURN ON CURRENT mA (MAX.) @ 125°C | DROP-OUT VOLTAGE Vdc (MIN.) @ 25°C (Note 2) | DROP-OUT VOLTAGE Vdc (MIN.) @ -65°C (Note 2) | NOM. COIL POWER (mW) @ 25°C | MAX. COIL VOLTAGE | COIL DESIG. |
|-------------------------|----------------------------------------------|-------------------------------------------|-------------------------------------------|-------------------------------------------|---------------------------------------|--------------------------------------------|----------------------------------------|---------------------------------------------|----------------------------------------------|-----------------------------|-------------------|-------------|
| <b>1MA/1MAD</b>         |                                              |                                           |                                           |                                           |                                       |                                            |                                        |                                             |                                              |                             |                   |             |
| 5.0                     | 63                                           | n/a                                       | n/a                                       | 2.8                                       | n/a                                   | 3.7                                        | n/a                                    | 0.23                                        | 0.15                                         | 397                         | 6.0               | 5           |
| 6.0                     | 125                                          | n/a                                       | n/a                                       | 3.5                                       | n/a                                   | 4.5                                        | n/a                                    | 0.28                                        | 0.18                                         | 288                         | 8.0               | 6           |
| 9.0                     | 280                                          | n/a                                       | n/a                                       | 5.3                                       | n/a                                   | 6.8                                        | n/a                                    | 0.54                                        | 0.35                                         | 289                         | 12.0              | 9           |
| 12.0                    | 500                                          | n/a                                       | n/a                                       | 7.0                                       | n/a                                   | 9.0                                        | n/a                                    | 0.63                                        | 0.40                                         | 288                         | 16.0              | 12          |
| 18.0                    | 1,130                                        | n/a                                       | n/a                                       | 10.5                                      | n/a                                   | 13.5                                       | n/a                                    | 0.91                                        | 0.58                                         | 287                         | 24.0              | 18          |
| 26.5                    | 2,000                                        | n/a                                       | n/a                                       | 14.2                                      | n/a                                   | 18.0                                       | n/a                                    | 1.37                                        | 0.89                                         | 351                         | 32.0              | 26          |
| <b>1MADD</b>            |                                              |                                           |                                           |                                           |                                       |                                            |                                        |                                             |                                              |                             |                   |             |
| 5.0                     | 50                                           | 100.0                                     | 72.7                                      | 3.5                                       | n/a                                   | 4.5                                        | n/a                                    | 0.23                                        | 0.15                                         | 500                         | 6.0               | 5           |
| 6.0                     | 98                                           | 62.4                                      | 46.3                                      | 4.1                                       | n/a                                   | 5.5                                        | n/a                                    | 0.28                                        | 0.18                                         | 367                         | 8.0               | 6           |
| 9.0                     | 280                                          | 33.7                                      | 25.9                                      | 6.3                                       | n/a                                   | 7.8                                        | n/a                                    | 0.54                                        | 0.35                                         | 289                         | 12.0              | 9           |
| 12.0                    | 500                                          | 25.6                                      | 20.0                                      | 8.0                                       | n/a                                   | 10.0                                       | n/a                                    | 0.63                                        | 0.40                                         | 288                         | 16.0              | 12          |
| 18.0                    | 1,130                                        | 17.2                                      | 13.6                                      | 11.6                                      | n/a                                   | 14.5                                       | n/a                                    | 0.91                                        | 0.58                                         | 287                         | 24.0              | 18          |
| 26.5                    | 2,000                                        | 14.4                                      | 11.5                                      | 15.4                                      | n/a                                   | 19.0                                       | n/a                                    | 1.37                                        | 0.89                                         | 351                         | 32.0              | 26          |
| <b>1MAT</b>             |                                              |                                           |                                           |                                           |                                       |                                            |                                        |                                             |                                              |                             |                   |             |
| 5.0                     | 63                                           | 89.6                                      | 66.6                                      | 3.0                                       | 0.60                                  | 3.9                                        | 2.38                                   | 0.24                                        | 0.15                                         | 397                         | 5.8               | 5           |
| 6.0                     | 125                                          | 55.5                                      | 42.0                                      | 3.8                                       | 0.42                                  | 5.2                                        | 1.60                                   | 0.31                                        | 0.18                                         | 288                         | 8.0               | 6           |
| 9.0                     | 280                                          | 38.1                                      | 28.0                                      | 5.6                                       | 0.27                                  | 7.8                                        | 1.07                                   | 0.47                                        | 0.35                                         | 289                         | 12.0              | 9           |
| 12.0                    | 500                                          | 28.1                                      | 20.9                                      | 7.2                                       | 0.21                                  | 10.0                                       | 0.80                                   | 0.62                                        | 0.40                                         | 288                         | 16.0              | 12          |
| 18.0                    | 1,130                                        | 18.8                                      | 13.8                                      | 10.7                                      | 0.12                                  | 14.5                                       | 0.53                                   | 0.94                                        | 0.58                                         | 287                         | 24.0              | 18          |
| 26.5                    | 2,000                                        | 15.5                                      | 11.5                                      | 14.4                                      | 0.10                                  | 19.0                                       | 0.40                                   | 1.25                                        | 0.89                                         | 351                         | 32.0              | 26          |

Note 1: Coil resistance not directly measurable. Coil current should be within limits shown when tested at nominal voltage at 25°C for 5 seconds max.

Note 2: Set base current at 3 mA to 15 mA during measurements.