



## HDW24M2T-B ESD Protection Diode

### Feature

- Bi-directional ESD protection of two lines
- 420Watts peak pulse power ( $t_p = 8/20\mu s$ )
- Working voltage: 24V
- Junction Capacitance: 28pF(Typ)
- Low clamping voltage
- Low leakage current
- AEC-Q101 qualified
- IEC 61000-4-2  $\pm 30kV$  contact  $\pm 30kV$  air
- IEC 61000-4-5 (Lightning) 9A (8/20 $\mu s$ )
- IEC61000-4-4 (EFT) 40A (5/50ns)

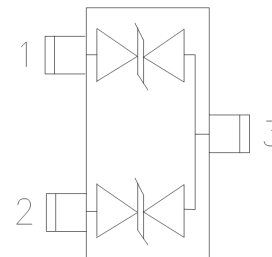
### Application

- CAN bus protection
- Automotive applications
- Control & Monitoring Systems
- Portable Electronics
- Servers, Notebook, and Desktop PC
- Wireless Bus Protection

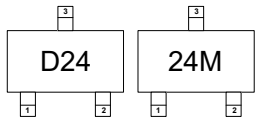
### Mechanical Data

- Package: SOT-23
- Molding compound flammability rating: UL 94V-0
- RoHS/WEEE Compliant

### Schematic & PIN Configuration



### Ordering Information

| Part Number | Package | Marking                                                                             | Packing          | Reel Size |
|-------------|---------|-------------------------------------------------------------------------------------|------------------|-----------|
| HDW24M2T-B  | SOT-23  |  | 3000 Tape & Reel | 7 inches  |



### Absolute Maximum Rating ( $T_A=25^{\circ}\text{C}$ unless otherwise Specified)

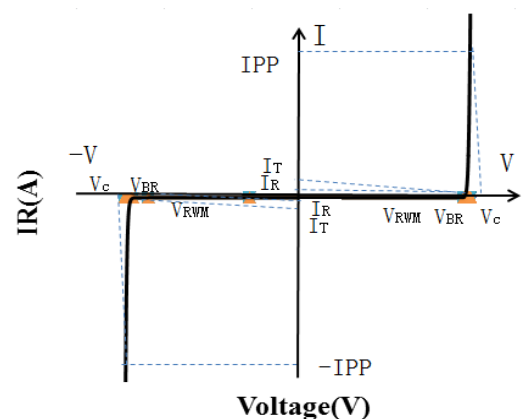
| Parameter                                                      | Symbol    | Value                | Unit               |
|----------------------------------------------------------------|-----------|----------------------|--------------------|
| Peak Pulse Power (8/20 $\mu\text{s}$ )                         | $P_{pk}$  | 420                  | W                  |
| Peak Pulse Current (8/20 $\mu\text{s}$ )                       | $I_{PP}$  | 9                    | A                  |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$ | $\pm 30$<br>$\pm 30$ | kV                 |
| Operating Temperature Range                                    | $T_J$     | -55 to +125          | $^{\circ}\text{C}$ |
| Storage Temperature Range                                      | $T_{stg}$ | -55 to +150          | $^{\circ}\text{C}$ |

### Electrical Characteristics ( $T_A=25^{\circ}\text{C}$ unless otherwise Specified)

| Parameter               | Symbol    | Test Condition                                    | Min | Typ  | Max  | Unit          |
|-------------------------|-----------|---------------------------------------------------|-----|------|------|---------------|
| Reverse Working Voltage | $V_{RWM}$ |                                                   |     |      | 24   | V             |
| Breakdown Voltage       | $V_{BR}$  | $I_T = 1\text{mA}$                                | 26  | 28.5 | 30.5 | V             |
| Reverse Leakage Current | $I_R$     | $V_{RWM} = 24\text{V}$                            |     |      | 0.5  | $\mu\text{A}$ |
| Clamping Voltage        | $V_C$     | $I_{PP} = 1\text{A}$ (8 x 20 $\mu\text{s}$ pulse) |     | 31   | 35   | V             |
| Clamping Voltage        | $V_C$     | $I_{PP} = 9\text{A}$ (8 x 20 $\mu\text{s}$ pulse) |     | 35   | 40   | V             |
| Junction Capacitance    | $C_J$     | $V_R = 0\text{V}$ , $f = 1\text{MHz}$             |     | 28   | 45   | pF            |

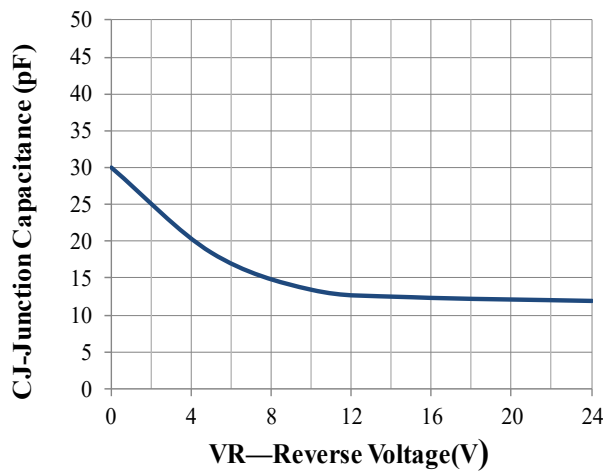
### Electrical Parameters

| Symbol   | Parameter                          |
|----------|------------------------------------|
| $I_T$    | Test Current                       |
| $I_{PP}$ | Maximum Reverse Peak Pulse Current |
| $V_C$    | Clamping Voltage @ $I_C$           |

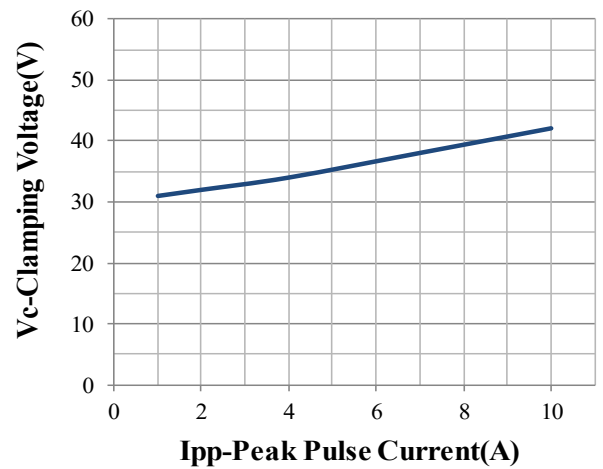




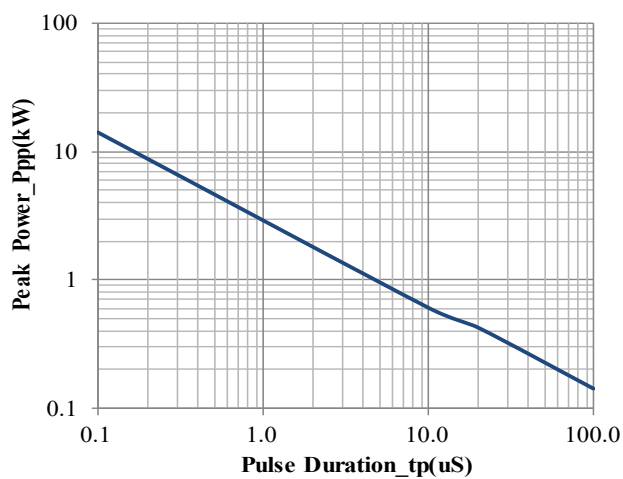
## Typical Characteristics



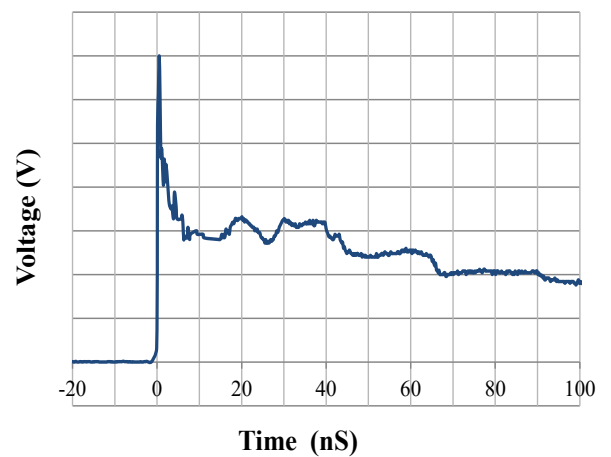
Junction Capacitance vs. Reverse Voltage



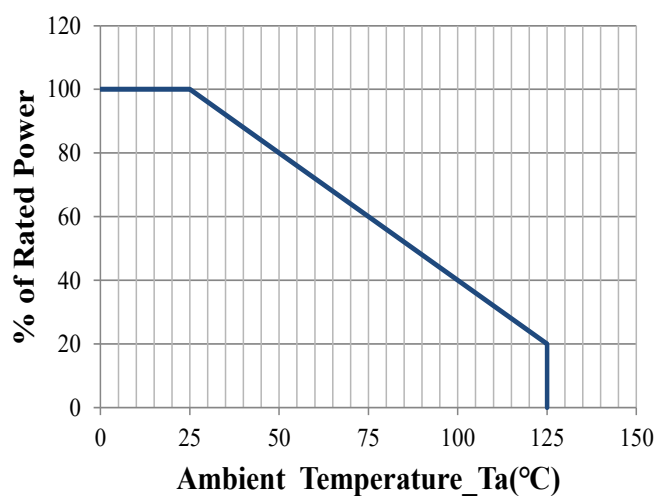
Clamping Voltage vs. Peak Pulse Current



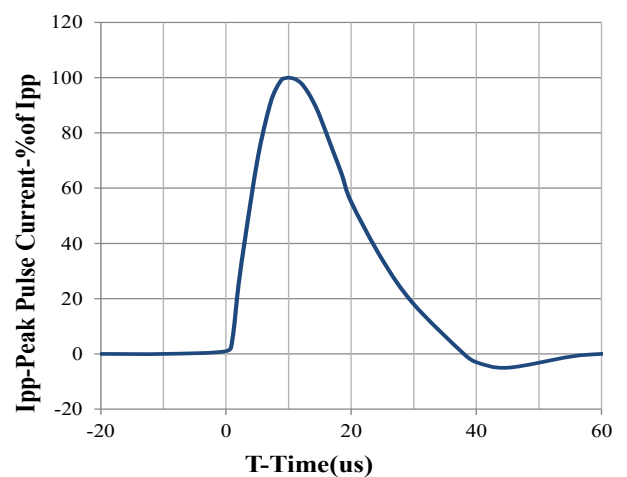
Peak Pulse Power vs. Pulse Time



IEC61000-4-2 Pulse Waveform



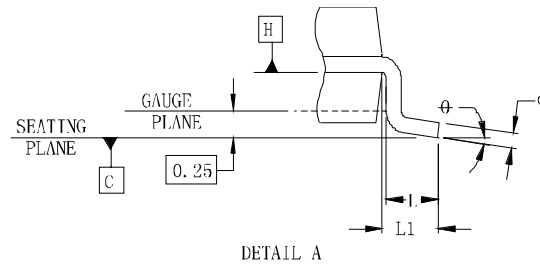
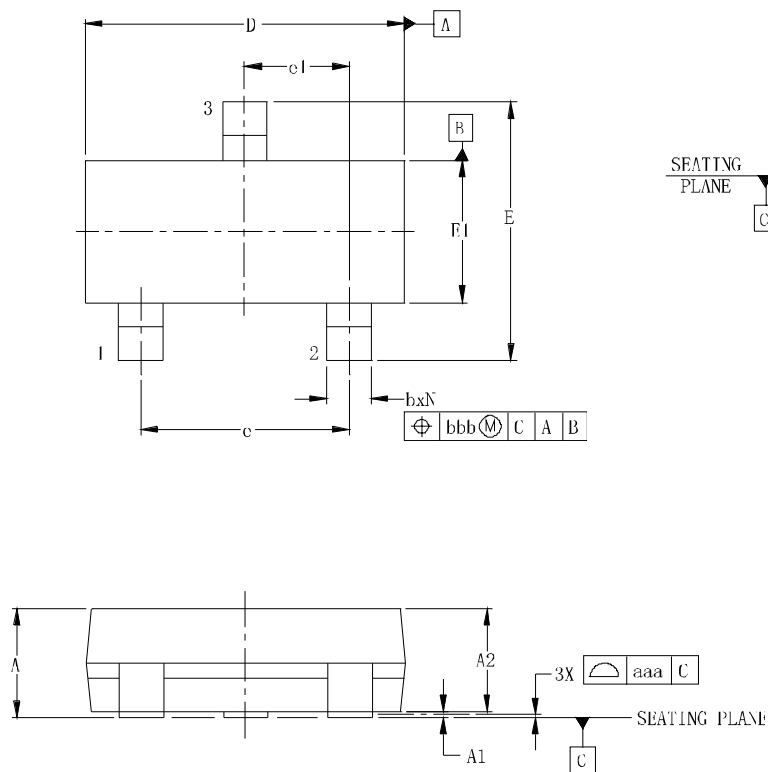
Power Derating Curve



8 X 20us Pulse Waveform

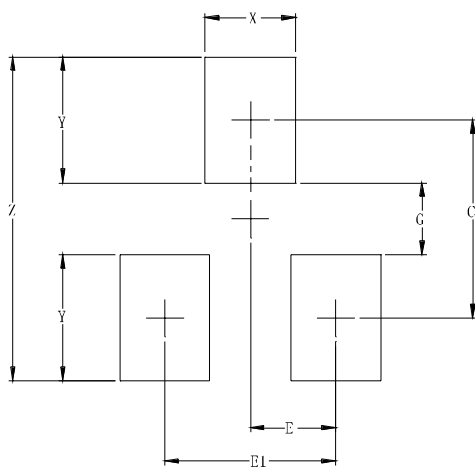


## SOT-23 Package Outline Drawing



| DIM      | DIMENSIONS |      |      |             |      |      |
|----------|------------|------|------|-------------|------|------|
|          | INCHES     |      |      | MILLIMETERS |      |      |
|          | MTN        | NOM  | MAX  | MTN         | NOM  | MAX  |
| A        | .035       | —    | .044 | 0.89        | —    | 1.12 |
| A1       | .000       | —    | .004 | 0.01        | —    | 0.10 |
| A2       | .035       | .037 | .040 | 0.88        | 0.95 | 1.02 |
| b        | .012       | —    | .020 | 0.30        | —    | 0.51 |
| c        | .003       | —    | .007 | 0.08        | —    | 0.18 |
| D        | .110       | .114 | .120 | 2.80        | 2.90 | 3.04 |
| E        | .082       | .093 | .104 | 2.10        | 2.37 | 2.64 |
| E1       | .047       | .051 | .055 | 1.20        | 1.30 | 1.40 |
| e        | .075       |      |      | 1.90 BSC    |      |      |
| e1       | .037       |      |      | 0.95 BSC    |      |      |
| L        | .015       | .020 | .024 | 0.40        | 0.50 | 0.60 |
| L1       | .022       |      |      | (0.55)      |      |      |
| N        | 3          |      |      | 3           |      |      |
| $\theta$ | 0°         | —    | 8°   | 0°          | —    | 8°   |
| aaa      | .004       |      |      | 0.10        |      |      |
| bbb      | .008       |      |      | 0.20        |      |      |

## SOT-23 Package Outline Drawing



| DIMENSIONS |        |             |
|------------|--------|-------------|
| DIM        | INCHES | MILLIMETERS |
| C          | .087   | 2.20        |
| E          | .037   | 0.95        |
| E1         | .075   | 1.90        |
| G          | .031   | 0.80        |
| X          | .039   | 1.00        |
| Y          | .055   | 1.40        |
| Z          | .141   | 3.60        |