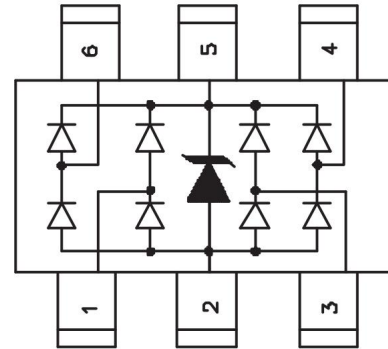


## Features

- 150 watts peak pulse power per line( $t_P=8/20\mu s$ )
- Protects four I/O lines
- Low clamping voltage
- Low operating voltage
- Low capacitance



## MAIN APPLICATIONS

- USB 2.0&3.0 power and data line protection
- Digital video interface (DVI)
- Notebook computers
- Video graphics cards
- Monitors and flat panel displays
- 10/ 100/ 1000 ethernet
- SIM ports
- ATM interfaces

## PROTECTION SOLUTION TO MEET

- IEC61000-4-2 (ESD)  $\pm 20kV$  (air),  $\pm 20kV$  (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 5A (8/20 $\mu s$ )

**ABSOLUTE MAXIMUM RATINGS** (TA=25°C , RH=45%-75%, unless otherwise noted)

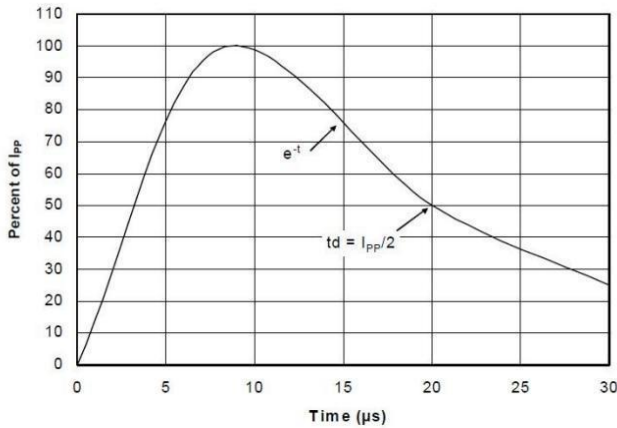
| Parameter                                                      | Symbol           | Value           | Unit |
|----------------------------------------------------------------|------------------|-----------------|------|
| Peak pulse power dissipation on 8/20μs waveform                | P <sub>PP</sub>  | 150             | W    |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | V <sub>ESD</sub> | +/- 20<br>+/-20 | kV   |
| Lead soldering temperature                                     | T <sub>L</sub>   | 260 (10 sec.)   | °C   |
| Operating junction temperature range                           | T <sub>J</sub>   | -55 to +125     | °C   |
| Storage temperature range                                      | T <sub>STG</sub> | -55 to +150     | °C   |

**ELECTRICAL CHARACTERISTICS** (TA=25°C)

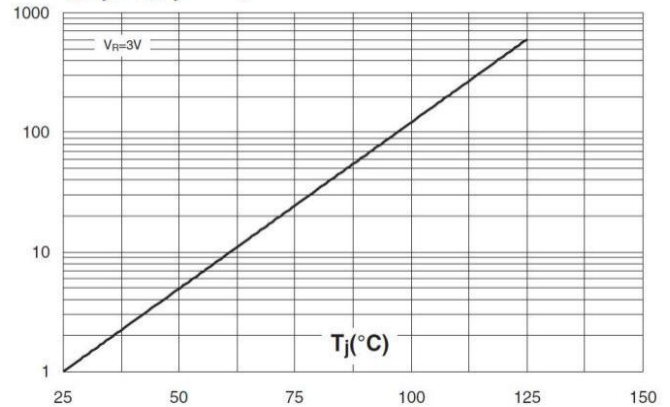
| Parameter                               | Symbol           | Conditions                                            | Min | Typ  | Max | Unit |
|-----------------------------------------|------------------|-------------------------------------------------------|-----|------|-----|------|
| Reverse working voltage                 | V <sub>RWM</sub> |                                                       |     |      | 5.0 | V    |
| Reverse breakdown voltage               | V <sub>BR</sub>  | I <sub>T</sub> =1mA                                   | 6.0 |      |     | V    |
| Reverse leakage current                 | I <sub>R</sub>   | V <sub>RWM</sub> =5V                                  |     |      | 1   | μA   |
| Forward voltage                         | V <sub>F</sub>   | I <sub>T</sub> =10mA                                  |     | 0.8  | 1.0 | V    |
| Clamping voltage<br>(I/O pin to Ground) | V <sub>C</sub>   | I <sub>PP</sub> =1A, t <sub>P</sub> =8/20μs           |     | 9.5  | 11  | V    |
|                                         | V <sub>C</sub>   | I <sub>PP</sub> =5A, t <sub>P</sub> =8/20μs           |     | 12.5 | 15  |      |
| Junction capacitance                    | C <sub>J</sub>   | V <sub>RWM</sub> =0V, f=1MHz<br>Any I/O pin to Ground |     | 0.65 | 0.8 | pF   |
|                                         |                  | V <sub>RWM</sub> =0V, f=1MHz<br>Between I/O pins      |     | 0.3  | 0.5 |      |

**Typical characteristics @Ta=25°C unless otherwise specified**

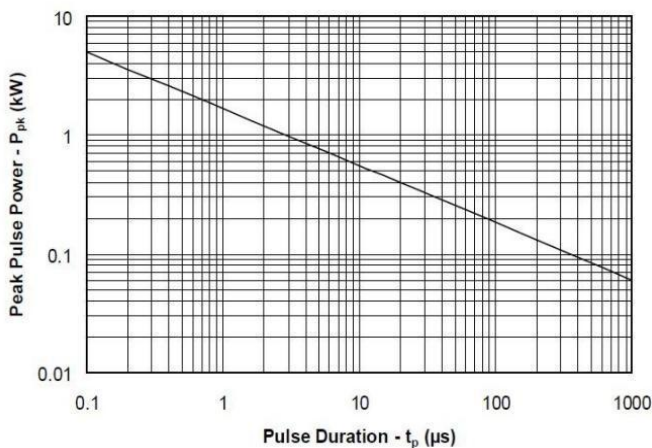
**Pulse Waveform**



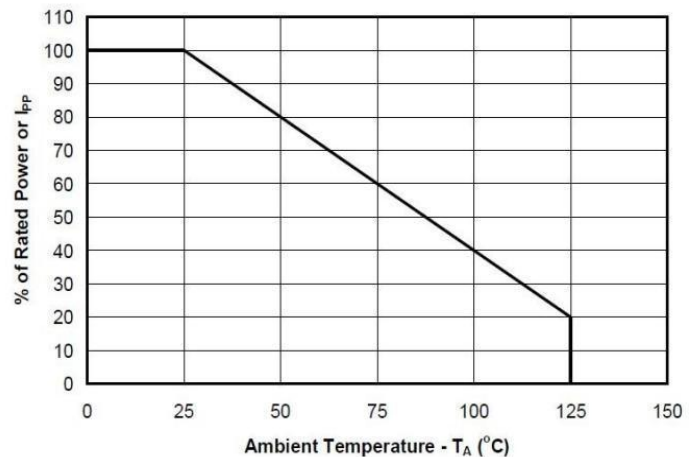
**$I_R[T_J] / I_R[T_J=25^\circ\text{C}]$**



**Non-Repetitive Peak Pulse Power vs. Pulse Time**

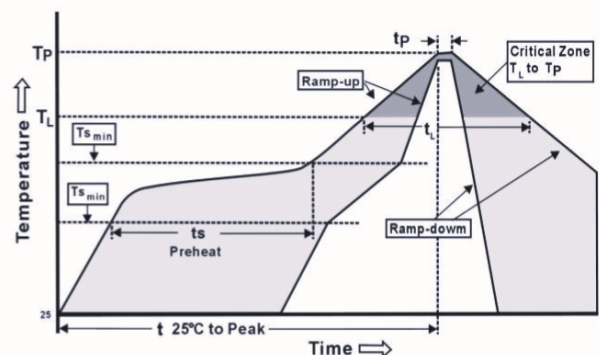


**Power Derating Curve**

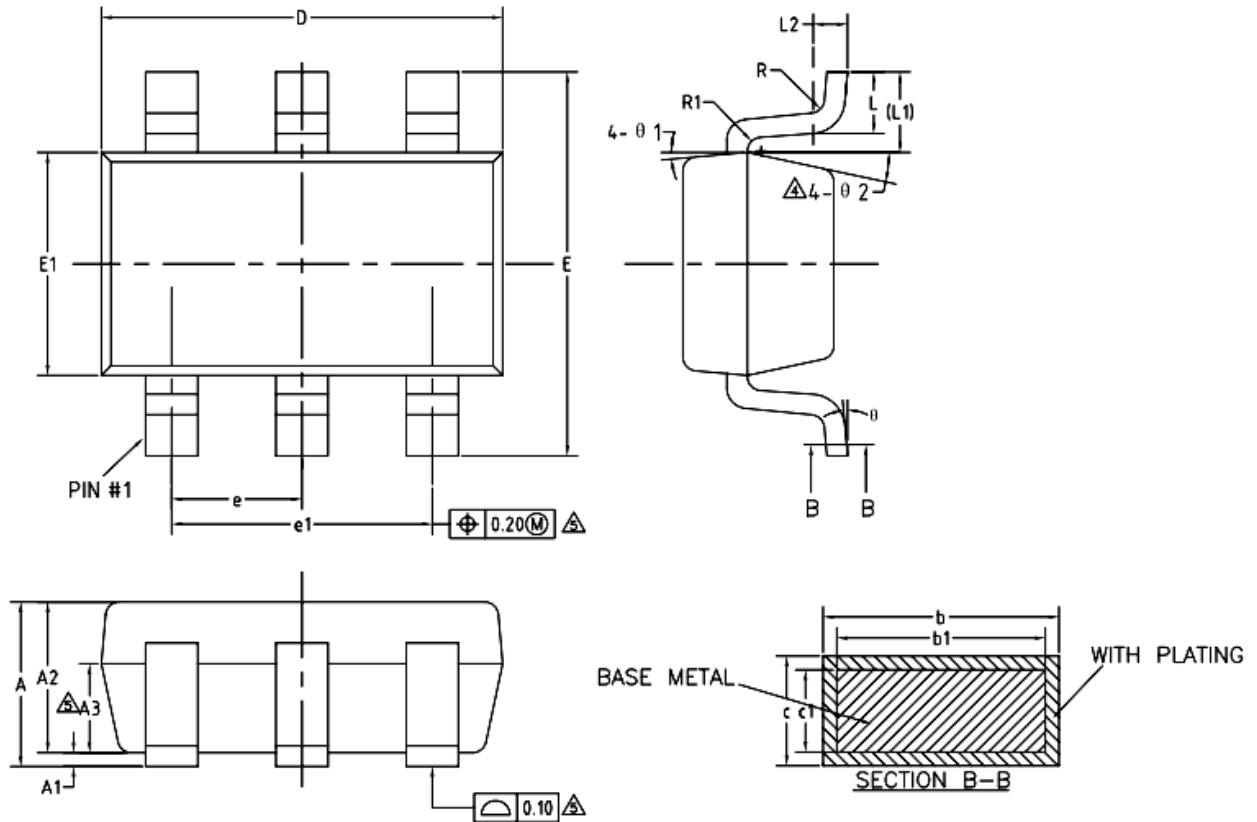


**Soldering Parameters**

| Reflow Condition                                       |                                           | Fb – Free assembly      |
|--------------------------------------------------------|-------------------------------------------|-------------------------|
| Pre Heat                                               | - Temperature Min ( $T_{s(\text{Min})}$ ) | 150°C                   |
|                                                        | - Temperature Max ( $T_{s(\text{Max})}$ ) | 200°C                   |
|                                                        | - Time (Min to max) ( $t_s$ )             | 60 – 180 secs           |
| Average ramp up rate (Liquidus) Temp ( $T_L$ ) to peak |                                           | 3°C/second Max          |
| $T_{s(\text{Max})}$ to $T_L$ - Ramp-up Rate            |                                           | 3°C/second Max          |
| Reflow                                                 | - Temperature ( $T_L$ ) (Liquidus)        | 217°C                   |
|                                                        | - Temperature ( $t_L$ )                   | 60 – 150 seconds        |
| Peak Temperature ( $T_p$ )                             |                                           | 250 <sup>+0/-5</sup> °C |
| Time within 5°C of actual peak Temperature ( $t_p$ )   |                                           | 20 – 40 seconds         |
| Ramp-down Rate                                         |                                           | 6°C/second Max          |
| Time 25°C to peak Temperature ( $T_p$ )                |                                           | 8 minutes Max.          |
| Do not exceed                                          |                                           | 260°C                   |



SOT23-6



COMMON DIMENSIONS  
(UNITS OF MEASURE=MILLIMETER)

| SYMBOL | MIN     | NOM   | MAX   |
|--------|---------|-------|-------|
| A      | —       | —     | 1.25  |
| A1     | 0       | —     | 0.15  |
| A2     | 1.00    | 1.10  | 1.20  |
| A3     | 0.60    | 0.65  | 0.70  |
| b      | 0.36    | —     | 0.50  |
| b1     | 0.36    | 0.38  | 0.45  |
| c      | 0.14    | —     | 0.20  |
| c1     | 0.14    | 0.15  | 0.16  |
| D      | 2.826   | 2.926 | 3.026 |
| E      | 2.60    | 2.80  | 3.00  |
| E1     | 1.526   | 1.626 | 1.726 |
| e      | 0.90    | 0.95  | 1.00  |
| e1     | 1.80    | 1.90  | 2.00  |
| L      | 0.35    | 0.45  | 0.60  |
| L1     | 0.59REF |       |       |
| L2     | 0.25BSC |       |       |
| R      | 0.10    | —     | —     |
| R1     | 0.10    | —     | 0.20  |
| θ      | 0°      | —     | 8°    |
| θ 1    | 3°      | 5°    | 7°    |
| θ 2    | 6°      | —     | 14°   |

## Marking



## Ordering information

| Order code     | Package | Base qty | Delivery mode |
|----------------|---------|----------|---------------|
| UMW PDWL050019 | SOT23-6 | 3000     | Tape and reel |