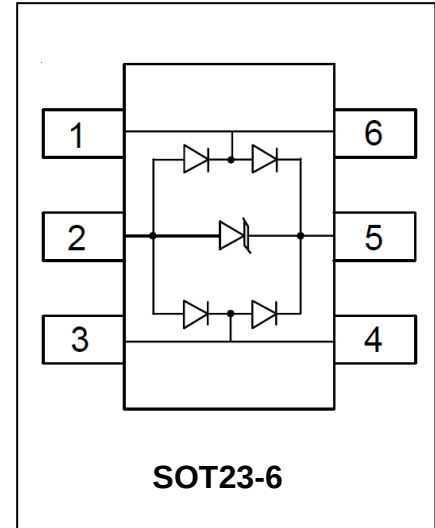


## Features

- ◆ 150 Watts peak pulse power ( $t_p = 8/20\mu s$ )
- ◆ Transient protection for high speed data lines to IEC 61000-4-2 (ESD)  $\pm 15kV$  (air),  $\pm 8kV$  (contact)  
IEC 61000-4-4 (EFT) 40A (5/50ns)
- ◆ Working voltages : 5V
- ◆ Protects four I/O lines
- ◆ Low capacitance ( $<1pF$ ) for high-speed interfaces
- ◆ Low operating and clamping voltages
- ◆ Solid-state silicon avalanche technology



## Applications

- ◆ Notebooks, Desktops, Servers and Video Graphics Cards
- ◆ USB Power & Data Line Protection
- ◆ Monitors and Flat Panel Displays
- ◆ I<sup>2</sup>C Bus Protection
- ◆ Portable Instrumentation
- ◆ Set Top Box

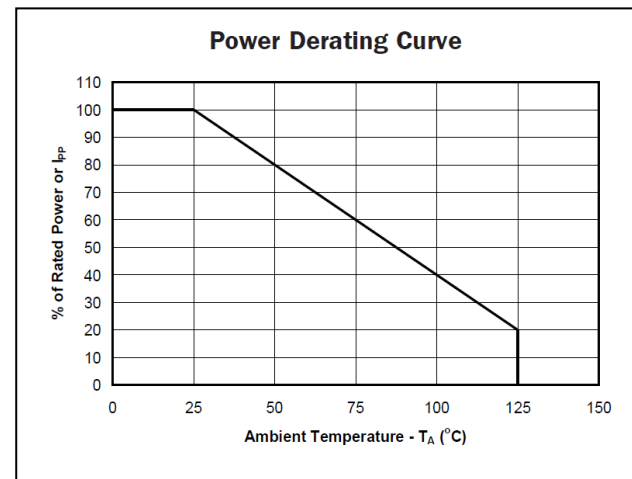
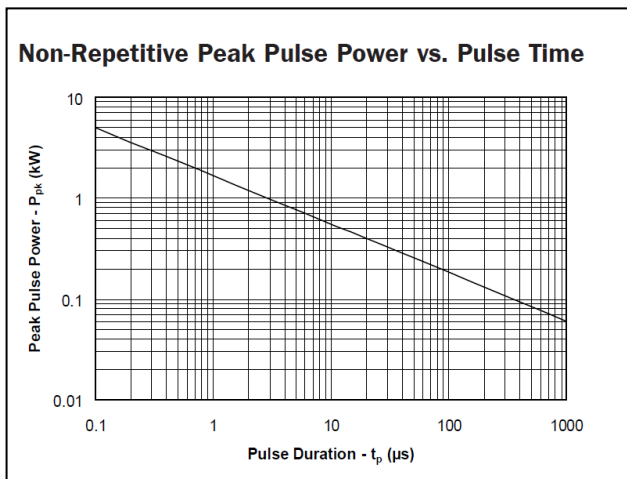
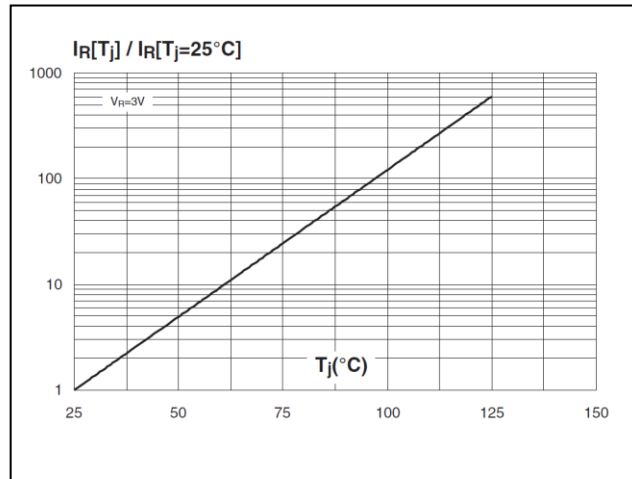
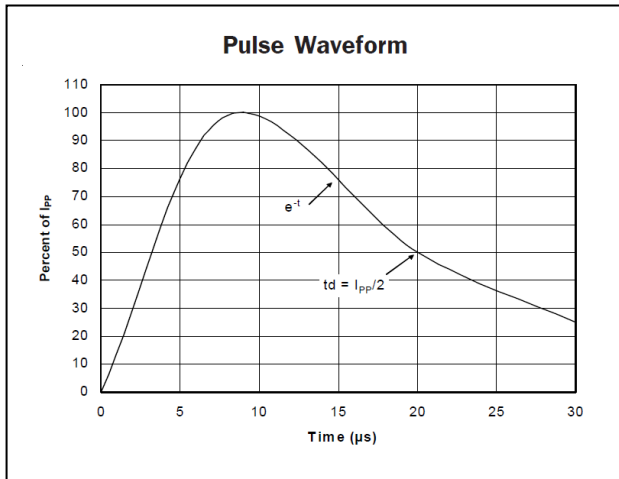
## Maximum Rating @ $T_a=25^\circ C$ unless otherwise specified

| Symbol    | Parameter                              | Ratings     | Units      |
|-----------|----------------------------------------|-------------|------------|
| $P_{PK}$  | Peak Pulse Power ( $t_p = 8/20\mu s$ ) | 150         | Watts      |
| $T_L$     | Lead Soldering Temperature             | 260(10sec.) | $^\circ C$ |
| $T_J$     | Operating Temperature                  | -55 to +125 | $^\circ C$ |
| $T_{STG}$ | Storage Temperature                    | -55 to +150 | $^\circ C$ |

Electrical Characteristics@ Ta=25°C unless otherwise

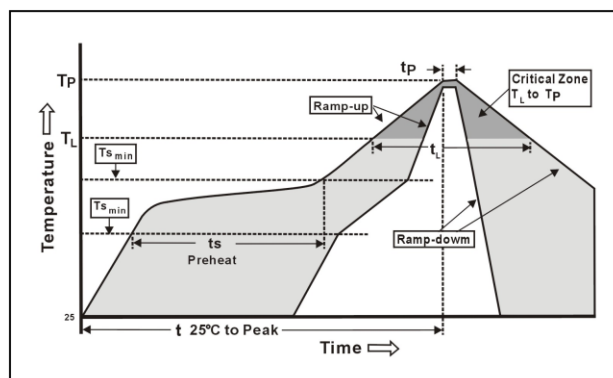
| Symbol    | Parameter                 | Conditions                                                   | Min. | Typ. | Max. | Units   |
|-----------|---------------------------|--------------------------------------------------------------|------|------|------|---------|
| $V_{RWM}$ | Reverse Working Voltage   | Any I/O to Ground                                            |      |      | 5.0  | V       |
| $V_{BR}$  | Reverse Breakdown Voltage | $I_T = 1mA$ ,<br>Any I/O to Ground                           | 6.0  |      |      | V       |
| $I_R$     | Reverse Leakage Current   | $V_{RWM} = 5V$ ,<br>Any I/O to Ground                        |      |      | 1    | $\mu A$ |
| $V_C$     | Clamping Voltage          | $I_{PP} = 1A$ , $t_p = 8/20\mu s$ ,<br>any I/O pin to Ground |      |      | 9.8  | V       |
|           |                           | $I_{PP} = 3A$ , $t_p = 8/20\mu s$ ,<br>any I/O pin to Ground |      |      | 15   | V       |
| $C_J$     | Junction Capacitance      | $V_R = 0V$ , $f = 1MHz$ ,<br>between I/O pins                |      | 0.5  | 0.8  | pF      |
|           |                           | $V_R = 0V$ , $f = 1MHz$ ,<br>any I/O pin to Ground           |      | 0.8  | 1    | pF      |

Typical Characteristics@ Ta=25°C unless otherwise specified



## Soldering Parameters

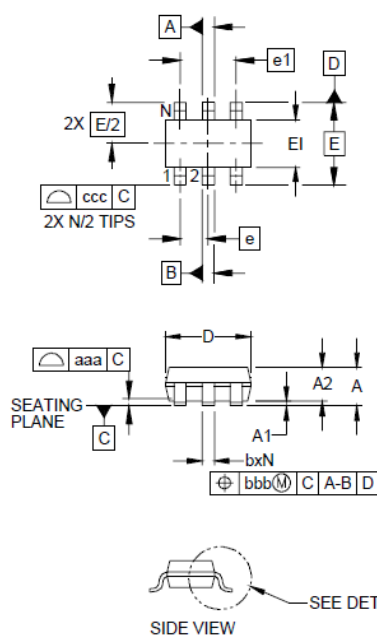
| Reflow Condition                                       |                                    | Fb – Free assembly      |
|--------------------------------------------------------|------------------------------------|-------------------------|
| Pre Heat                                               | - Temperature Min ( $T_{s(Min)}$ ) | 150°C                   |
|                                                        | - Temperature Max ( $T_{s(Max)}$ ) | 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          |
| $T_{s(Max)}$ 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                   |



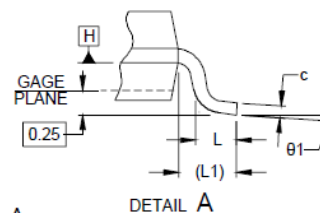
## Package Outline

Plastic surface mounted package

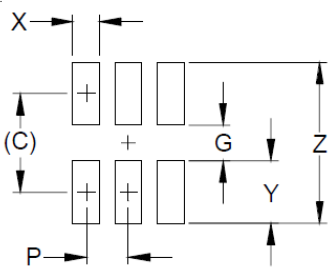
SOT23-6



| DIM        | INCHES   |        |      | MILLIMETERS |        |      |
|------------|----------|--------|------|-------------|--------|------|
|            | MIN      | NOM    | MAX  | MIN         | NOM    | MAX  |
| A          | .035     | -      | .057 | 0.90        | -      | 1.45 |
| A1         | .000     | -      | .006 | 0.00        | -      | 0.15 |
| A2         | .035     | .045   | .051 | .90         | 1.15   | 1.30 |
| b          | .010     | -      | .020 | 0.25        | -      | 0.50 |
| c          | .003     | -      | .009 | 0.08        | -      | 0.22 |
| D          | .110     | .114   | .122 | 2.80        | 2.90   | 3.10 |
| E          | .060     | .063   | .069 | 1.50        | 1.60   | 1.75 |
| E1         | .110 BSC |        |      | 2.80 BSC    |        |      |
| e          | .037 BSC |        |      | 0.95 BSC    |        |      |
| e1         | .075 BSC |        |      | 1.90 BSC    |        |      |
| L          | .012     | .018   | .024 | 0.30        | 0.45   | 0.60 |
| L1         |          | (.024) |      |             | (0.60) |      |
| N          | 6        |        |      | 6           |        |      |
| $\theta_1$ | 0°       | -      | 10°  | 0°          | -      | 10°  |
| aaa        | .004     |        |      | 0.10        |        |      |
| bbb        | .008     |        |      | 0.20        |        |      |
| ccc        | .008     |        |      | 0.20        |        |      |



Soldering Footprint



| DIMENSIONS |        |             |
|------------|--------|-------------|
| DIM        | INCHES | MILLIMETERS |
| C          | (.098) | (2.50)      |
| G          | .055   | 1.40        |
| P          | .037   | 0.95        |
| X          | .024   | 0.60        |
| Y          | .043   | 1.10        |
| Z          | .141   | 3.60        |

Package And Marking Information

|        |         |           |           |
|--------|---------|-----------|-----------|
| Device | Package | Shipping  | Reel Size |
| ZX05-2 | SOT23-6 | 3000/Reel | 7 inch    |