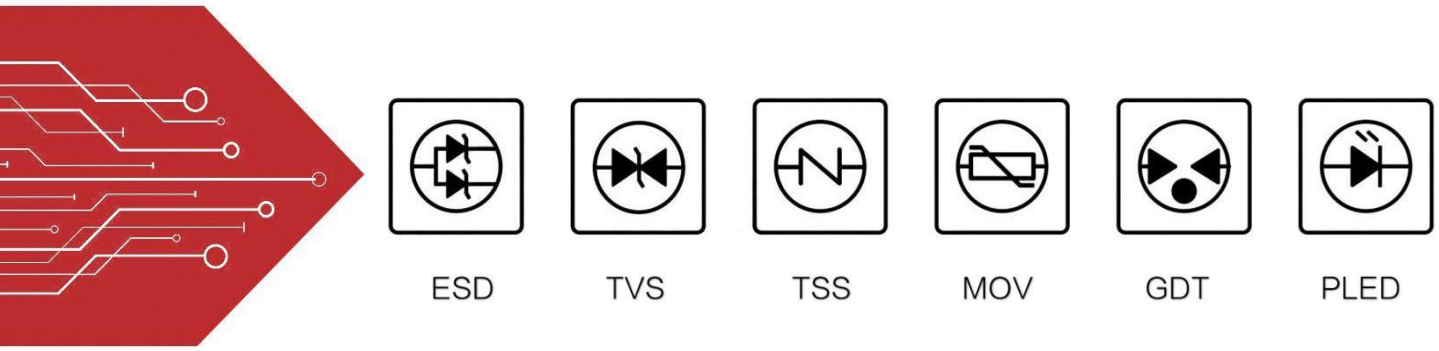
MSKSEMI
SEMICONDUCTOR




# Product data sheet

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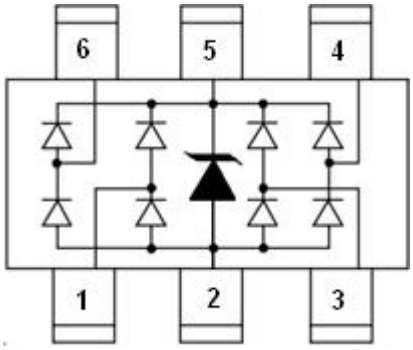
## MAIN APPLICATIONS

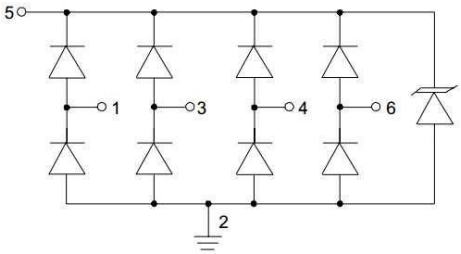
- USB 2.0&3.0 power and data line protection
- Digital video interface (DVI)
- Notebook computers
- Video graphics cards
- Monitors and flat panel displays
- 10/100/1000 ethernet
- SIM ports
- ATM interfaces



PIN Configuration

## PROTECTION SOLUTION TO MEET

- IEC61000-4-2 (ESD) ±20kV (air), ±20kV (contact)
- IEC61000-4-4 (EFT) 40A (5/50ns)
- IEC61000-4-5 (Lightning) 5A (8/20μs)
- 100 watts peak pulse power per line ($t_P$=8/20μs)
- Protects four I/O lines
- Low clamping voltage
- Low operating voltage
- Low capacitance



Circuit Diagram

## ABSOLUTE MAXIMUM RATINGS ($T_A$=25℃, RH=45%-75%, unless otherwise noted)

| Parameter | Symbol | Value | Unit |
|---|---|---|---|
| Peak pulse power dissipation on 8/20μs waveform | $P_{PP}$ | 100 | W |
| ESD per IEC 61000-4-2 (Air)<br>ESD per IEC 61000-4-2 (Contact) | $V_{ESD}$ | +/- 20<br>+/-20 | kV |
| Lead soldering temperature | $T_L$ | 260 (10 sec.) | ℃ |
| Operating junction temperature range | $T_J$ | -55 to +125 | ℃ |
| Storage temperature range | $T_{STG}$ | -55 to +150 | ℃ |

## ELECTRICAL CHARACTERISTICS ($T_A$=25℃)

| Parameter | Symbol | Conditions | Min | Typ | Max | Unit |
|---|---|---|---|---|---|---|
| Reverse working voltage | $V_{RWM}$ | | | | 5.0 | V |
| Reverse breakdown voltage | $V_{BR}$ | $I_T$=1mA | 6.0 | | | V |
| Reverse leakage current | $I_R$ | $V_{RWM}$=5V | | | 1 | μA |
| Forward voltage | $V_F$ | $I_T$=10mA | | 0.8 | 1.0 | V |
| Clamping voltage (I/O pin to Ground) | $V_C$ | $I_{PP}$=1A, $t_P$=8/20μs | | 9.5 | 11 | V |
| | $V_C$ | $I_{PP}$=5A, $t_P$=8/20μs | | 12.5 | 15 | |
| Junction capacitance | $C_J$ | $V_{RWM}$=0V, f=1MHz<br>Any I/O pin to Ground | | 0.65 | 0.8 | pF |
| | | $V_{RWM}$=0V, f=1MHz<br>Between I/O pins | | 0.3 | 0.5 | |

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## Electrical Parameter

| Symbol | Parameter |
|---|---|
| $I_{PP}$ | Maximum Reverse Peak Pulse Current |
| $V_C$ | Clamping Voltage @ $I_{PP}$ |
| $V_{RWM}$ | Working Peak Reverse Voltage |
| $I_R$ | Maximum Reverse Leakage Current @ $V_{RWM}$ |
| $I_T$ | Test Current |
| $V_{BR}$ | Breakdown Voltage @ $I_T$ |

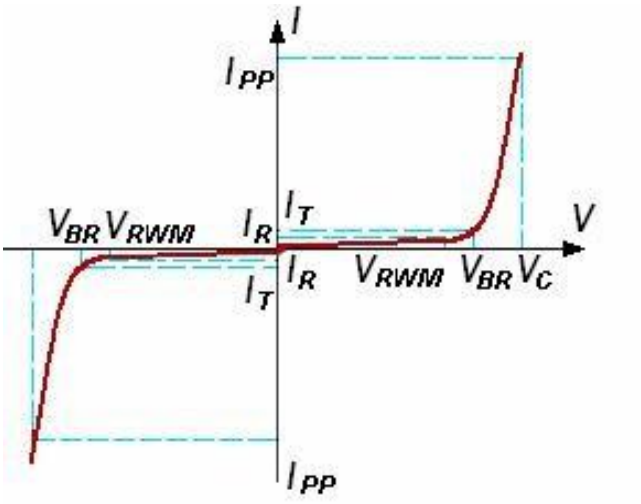



***FIG1: Pulse Waveform***

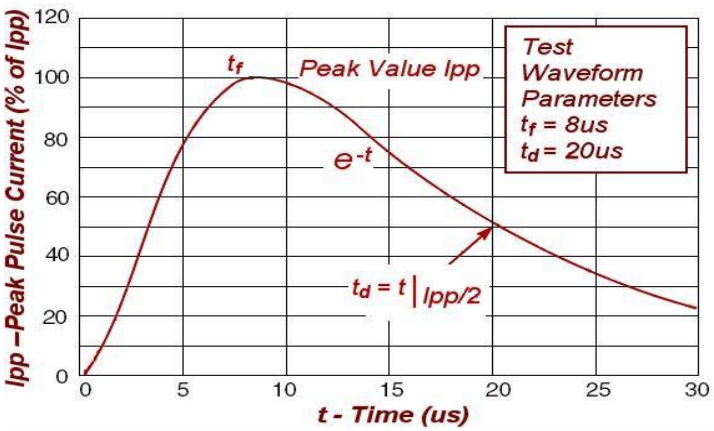
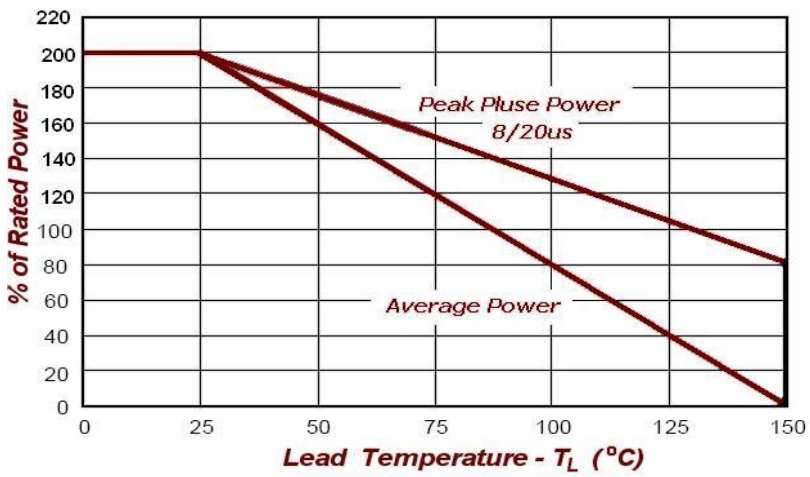



***FIG2:Power Derating***





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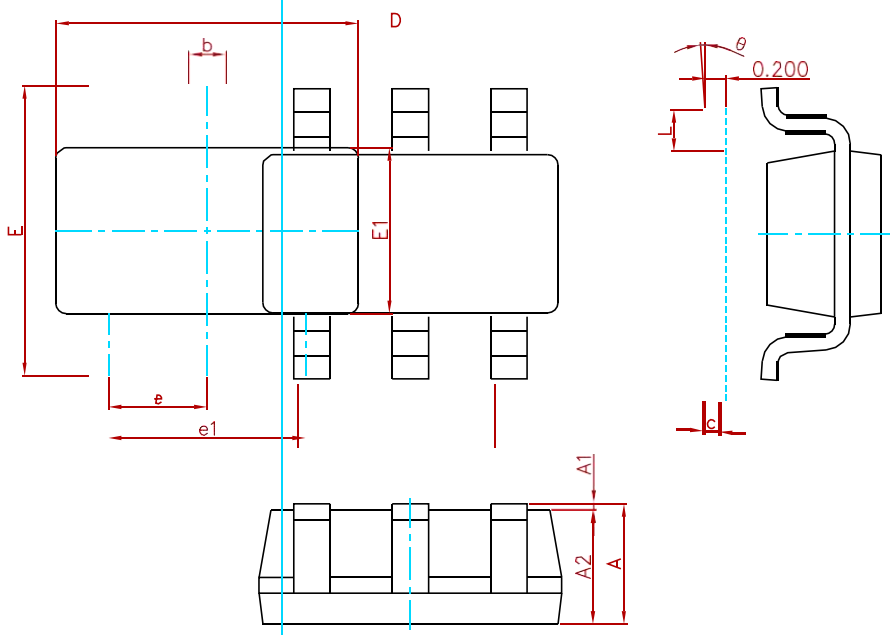
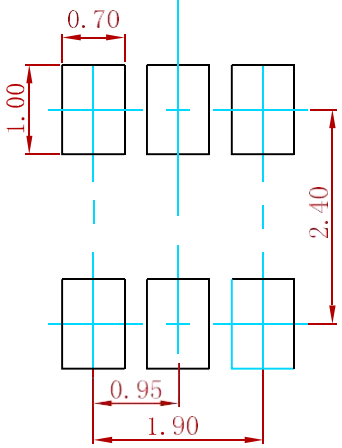
## PACKAGE MECHANICAL DATA




| Symbol | Dimensions In Millimeters | | Dimensions In Inches | |
|---|---|---|---|---|
| | Min. | Max. | Min. | Max. |
| A | 1.050 | 1.250 | 0.041 | 0.049 |
| A1 | 0.000 | 0.100 | 0.000 | 0.004 |
| A2 | 1.050 | 1.150 | 0.041 | 0.045 |
| b | 0.300 | 0.500 | 0.012 | 0.020 |
| c | 0.100 | 0.200 | 0.004 | 0.008 |
| D | 2.820 | 3.020 | 0.111 | 0.119 |
| E1 | 1.500 | 1.700 | 0.059 | 0.067 |
| E | 2.650 | 2.950 | 0.104 | 0.116 |
| e | 0.950(BSC) | | 0.037(BSC) | |
| e1 | 1.800 | 2.000 | 0.071 | 0.079 |
| L | 0.300 | 0.600 | 0.012 | 0.024 |
| θ | 0° | 8° | 0° | 8° |

## Suggested Pad Layout




Note:
1.Controlling dimension:in millimeters.
2.General tolerance:± 0.05mm.
3.The pad layout is for reference purposes only.

## REEL SPECIFICATION

| P/N | PKG | QTY |
|---|---|---|
| AZC199-04S-MS | SOT-23-6 | 3000 |

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