

## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

Brightking's LES08A3.3L05 component is surge rated diode array designed to protect high speed data line interfaces. It has been specifically designed to protect sensitive components which are connected to data and transmission lines from overvoltage caused by electrostatic discharge (ESD), electrical fast transients (EFT), and lightning. The unique design of this device incorporates surge rated, low capacitance steering diodes and TVS diodes in a single package. During transient conditions, the steering diodes direct the transient either the position side of the power supply or to the ground.

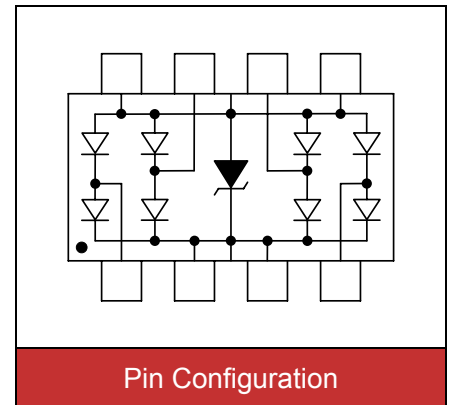


Contact : ±8kV  
Air : ±15kV



### Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- SOIC-08 surface mount package
- Protects four I/O lines
- Peak power dissipation of 500W under 8/20μs waveform
- Working voltage: 3.3V
- Low leakage current
- Low capacitance and clamping voltage
- Solid-state silicon avalanche technology
- Lead Free/RoHS compliant
- Solder reflow temperature: Pure Tin-Sn, 260~270°C
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: B RA3.3-4



### Applications

- Ethernet 10/100/ base T
- Firewire & USB protection
- Set Top Box (STB) protection
- Video card (DVI) protection
- T1/E1 secondary IC side protection
- T3/E3 secondary IC side protection
- HDSL secondary IC side protection
- IC bus protection
- Micro-controller line protection

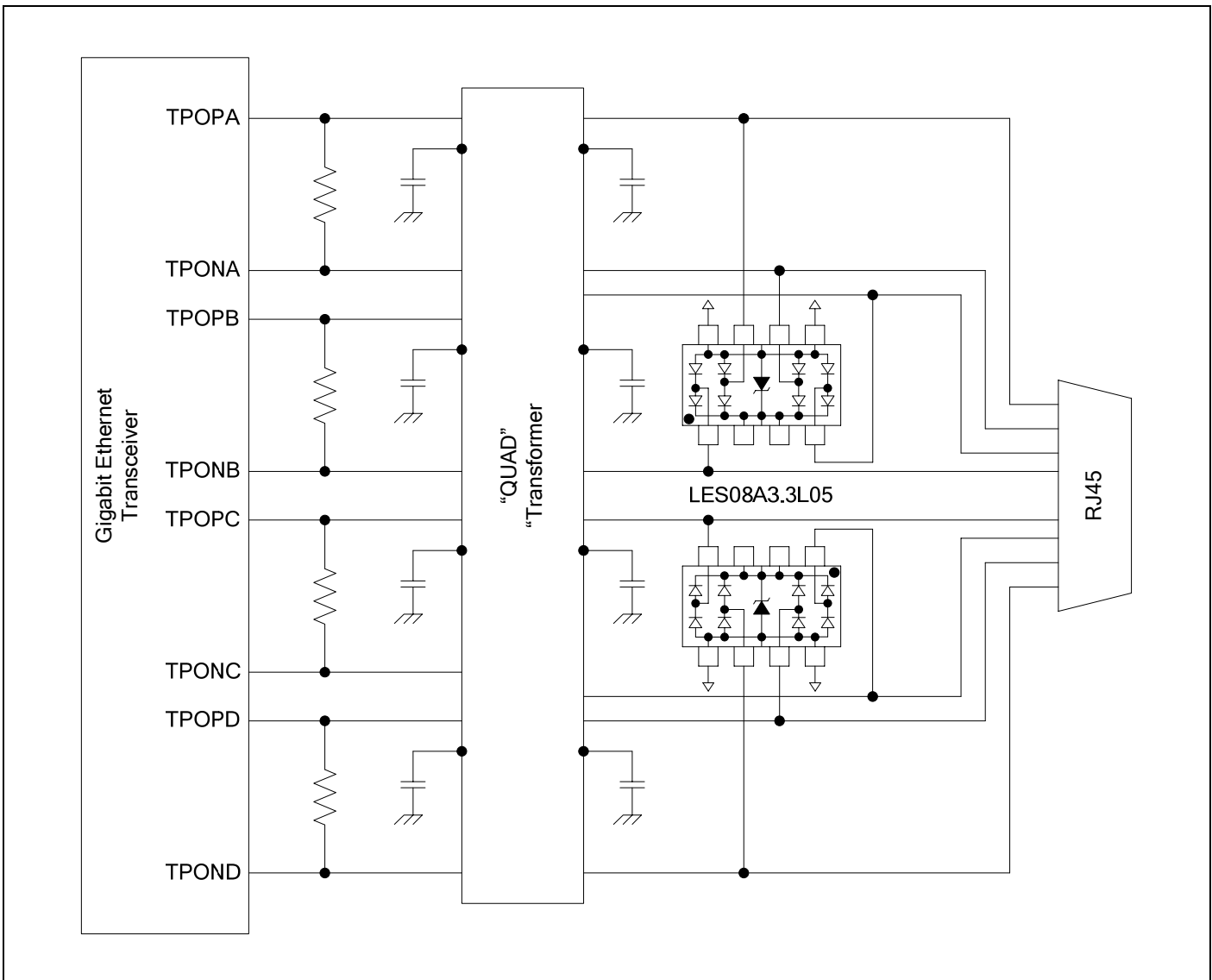
### Maximum Ratings

| Rating                                | Symbol                            | Value    | Unit |
|---------------------------------------|-----------------------------------|----------|------|
| Peak pulse power (tp=8/20μs waveform) | P <sub>PP</sub>                   | 500      | W    |
| ESD voltage (Contact discharge)       | V <sub>ESD</sub>                  | ±8       | kV   |
| ESD voltage (Air discharge)           |                                   | ±15      |      |
| Storage & operating temperature range | T <sub>STG</sub> , T <sub>J</sub> | -55~+150 | °C   |

Electrical Characteristics ( $T_J=25^{\circ}\text{C}$ )

| Parameter                                  | Symbol    | Condition   | Min. | Typ. | Max. | Unit          |
|--|-----------|---|------|------|------|---------------|
| Reverse stand-off voltage                  | $V_{RWM}$ |   |      |      | 3.3  | V             |
| Reverse breakdown voltage                  | $V_{BR}$  | $I_{BR}=1\text{mA}$                               | 4    |      |      | V             |
| Reverse leakage current                    | $I_R$     | $V_R=3.3\text{V}$<br>Each I/O pin                 |      |      | 40   | $\mu\text{A}$ |
| Clamping voltage ( $t_p=8/20\mu\text{s}$ ) | $V_C$     | $I_{PP}=1\text{A}$                                |      |      | 8.5  | V             |
| Clamping voltage ( $t_p=8/20\mu\text{s}$ ) | $V_C$     | $I_{PP}=10\text{A}$                               |      |      | 10.9 | V             |
| Off state junction capacitance             | $C_J$     | 0Vdc, $f=1\text{MHz}$<br>Between I/O pins and GND |      |      | 15   | pF            |

Applications Information



Typical Characteristics Curves

Figure 1. Power Derating Curve

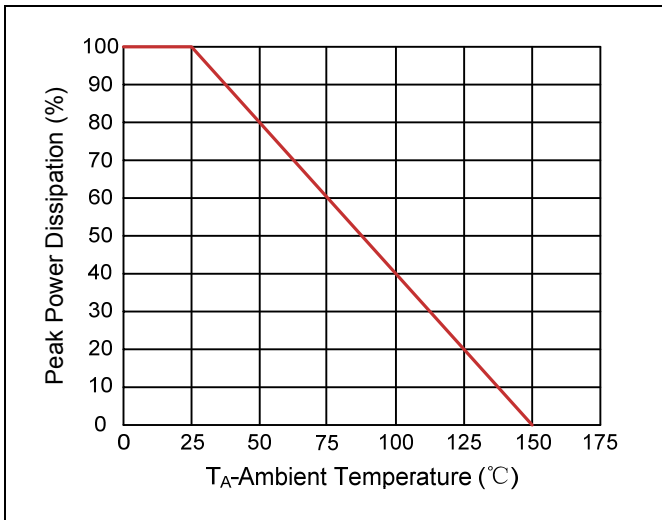


Figure 2. Pulse Waveforms

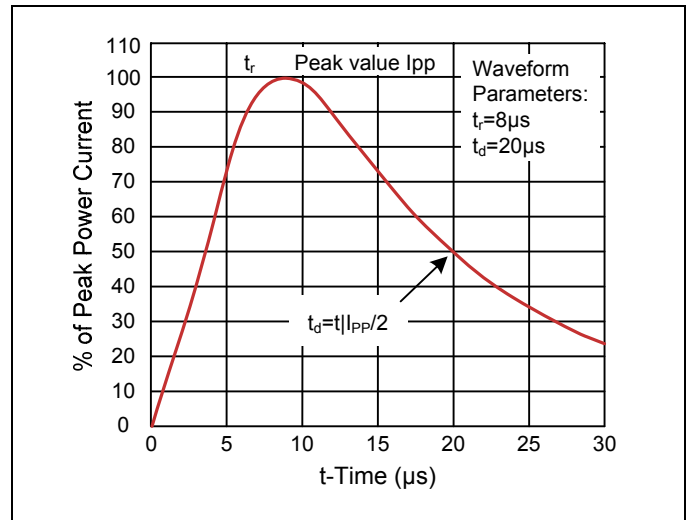


Figure 3. Non-Repetitive Peak Pulse vs. Pulse Time

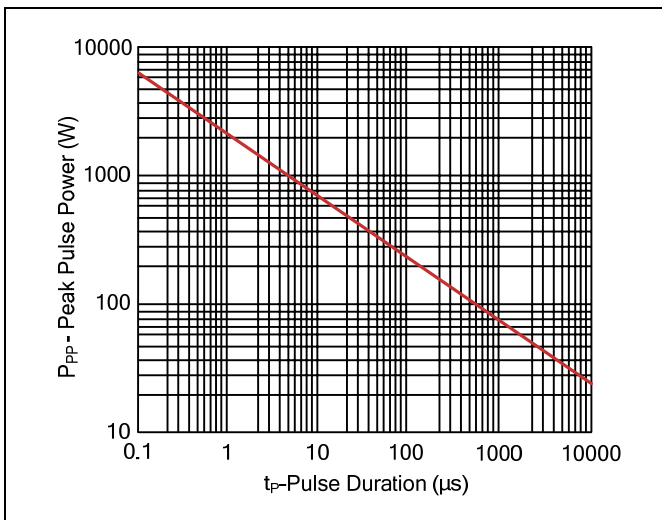
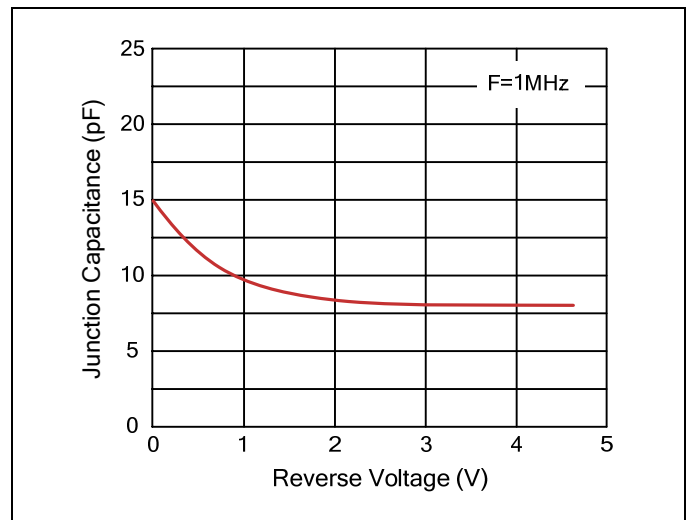
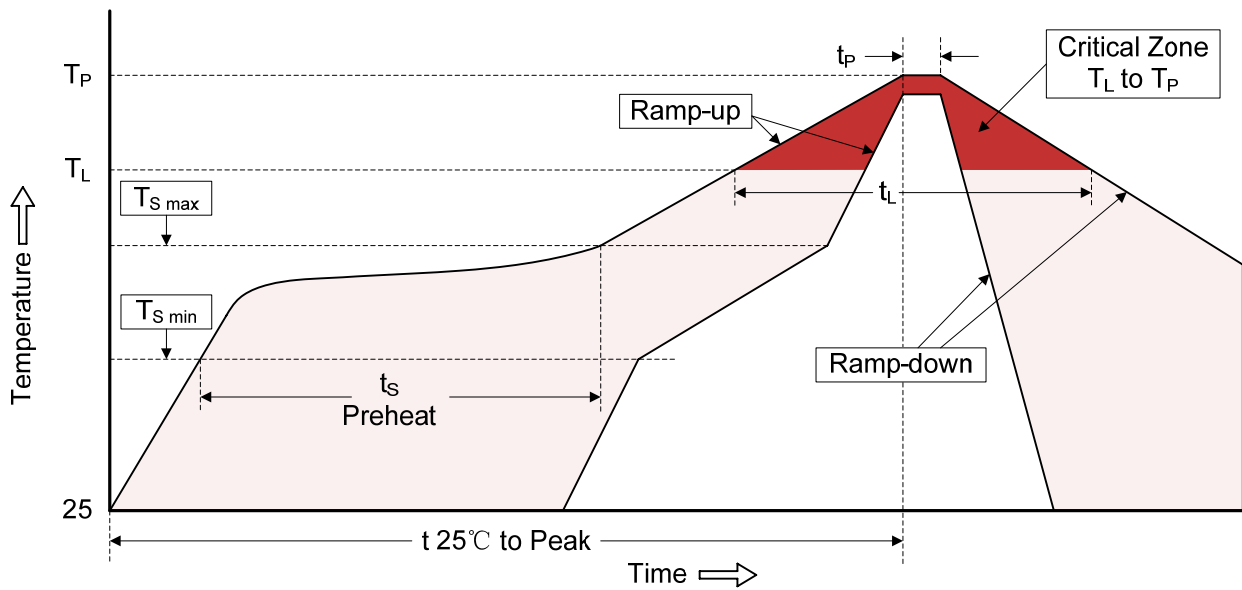


Figure 4. Capacitance vs. Reverse Voltage



Recommended Soldering Conditions

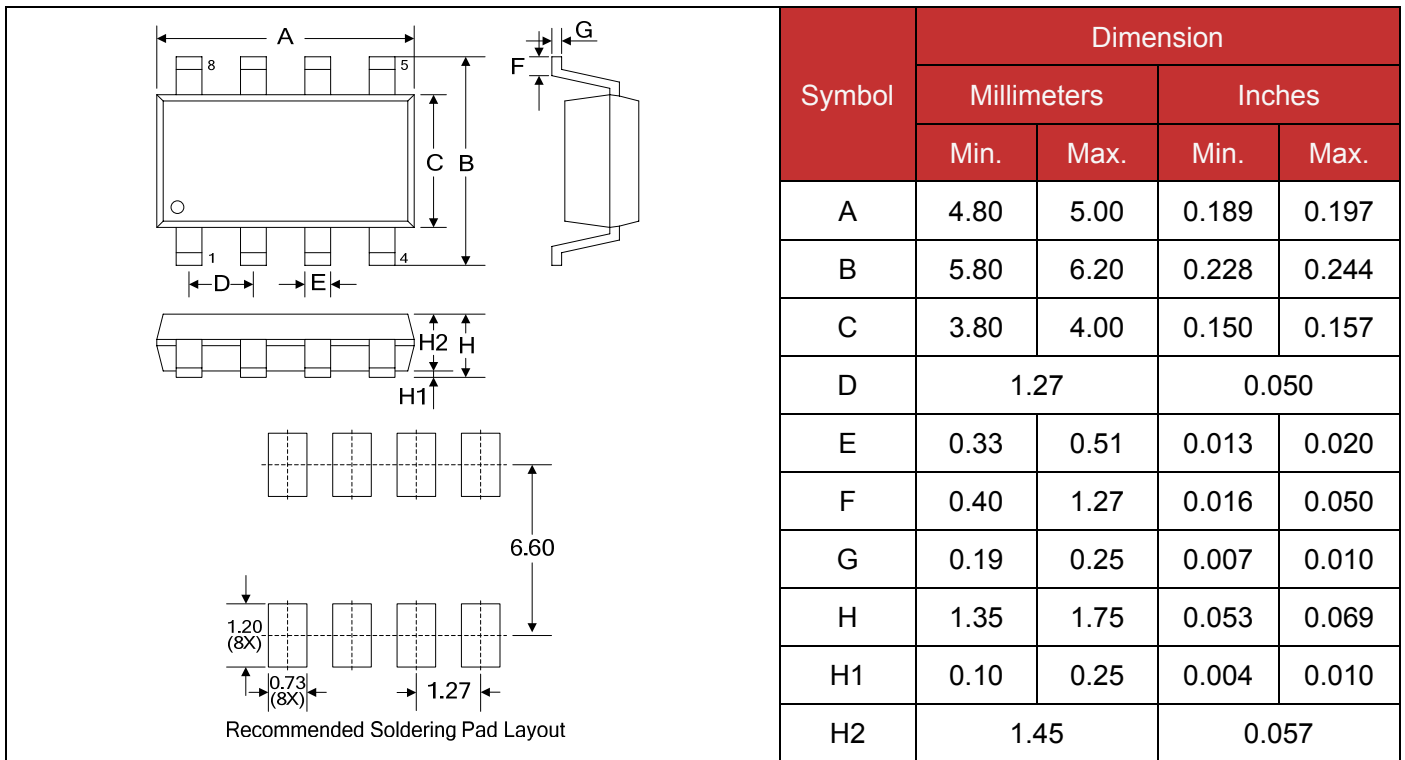
Reflow Soldering



Recommended Conditions

| Profile Feature   | Pb-Free Assembly                 |
|---|----------------------------------|
| Average ramp-up rate ( $T_L$ to $T_P$ )   | 3°C/second max.                  |
| Preheat<br>-Temperature Min ( $T_{S\ min}$ )<br>-Temperature Max ( $T_{S\ max}$ )<br>-Time (min to max) ( $t_s$ ) | 150°C<br>200°C<br>60-180 seconds |
| $T_{S\ max}$ to $T_L$<br>-Ramp-up Rate  | 3°C/second max.                  |
| Time maintained above:<br>-Temperature ( $T_L$ )<br>-Time ( $t_L$ )   | 217°C<br>60-150 seconds          |
| Peak Temperature ( $T_P$ )  | 260°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   | 8 minutes max.                   |

Dimensions (SOIC-08)



Packaging

