

## Electrostatic Discharged Protection Devices (ESD) Data Sheet

### Description

Brightking's LES16C24L08 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 low capacitance array configuration allows the user to protect eight high-speed data or I/O lines. The high surge capability makes the series suitable for telecommunication systems operating in harsh transient environments.

The low inductance construction minimizes voltage overshoot during high current surges.

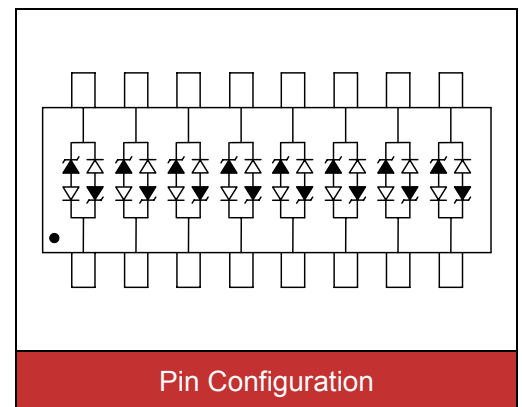


Contact : ±8kV  
Air : ±15kV



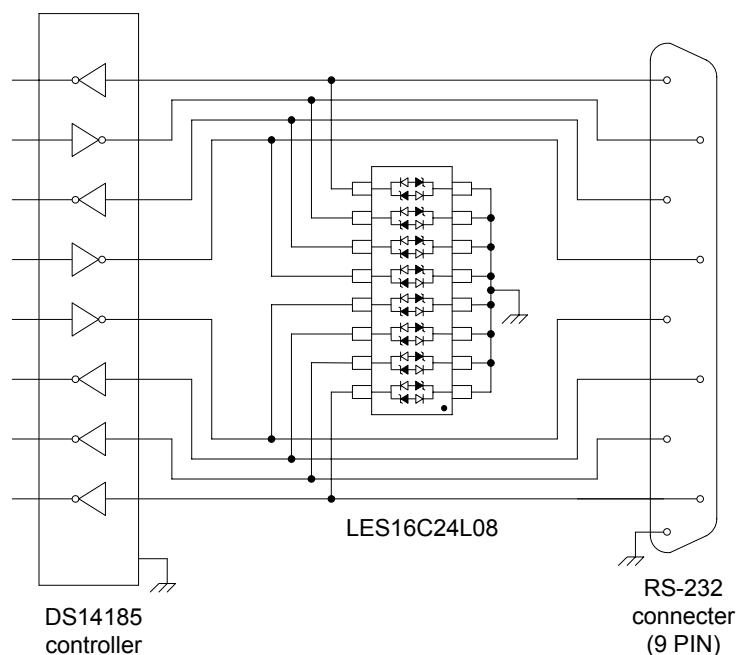
### Features

- IEC61000-4-2 ESD 15KV Air, 8KV contact compliance
- SOIC-16 surface mount package
- Protects eight I/O lines
- Peak power dissipation of 500W under 8/20μs waveform
- Working voltage: 24V
- 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 LC24C-8 or LCDA24C-8



### Applications

- Wireless communication circuit
- WAN equipment
  - CSU/DSU
  - Multiplexers
  - Routers
  - ISP equipment
- RS-232 (V.28)
- RS-422 (V.11, X.21)
- Ethernet-10/100 base T
- Low-voltage ASICs



**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<sub>J</sub>=25°C)**

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V <sub>RWM</sub>				24	V
Reverse breakdown voltage	V <sub>BR</sub>	I <sub>BR</sub> =1mA	26.7			V
Reverse leakage current	I <sub>R</sub>	V <sub>R</sub> =24V Each I/O pin			1	μA
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =1A			40	V
Clamping voltage (tp=8/20μs)	V <sub>C</sub>	I <sub>PP</sub> =9A			57	V
Off state junction capacitance	C <sub>J</sub>	0Vdc, f=1MHz Between I/O pins and GND		6		pF

Typical Characteristics Curves

Figure 1. Power Derating Curve

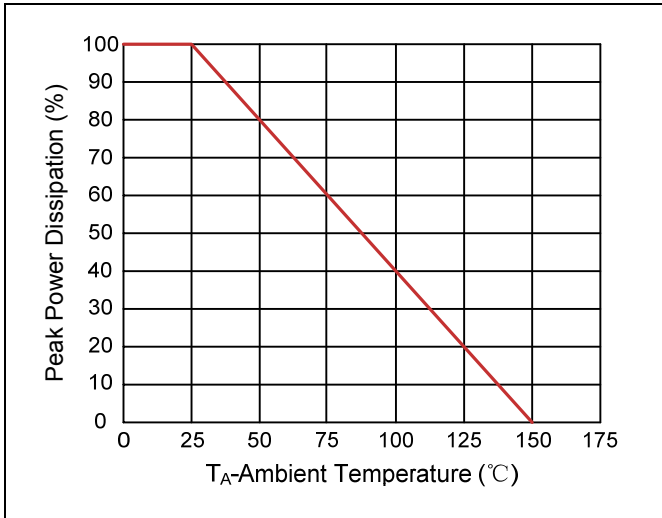


Figure 2. Pulse Waveforms

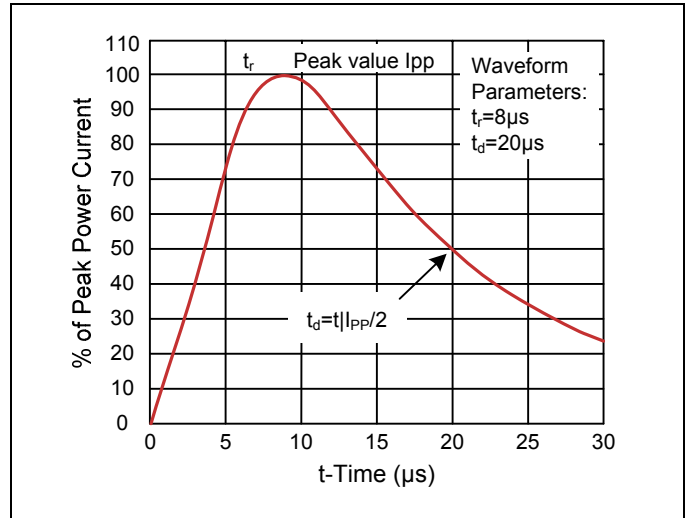


Figure 3. Non-Repetitive Peak Pulse vs. Pulse Time

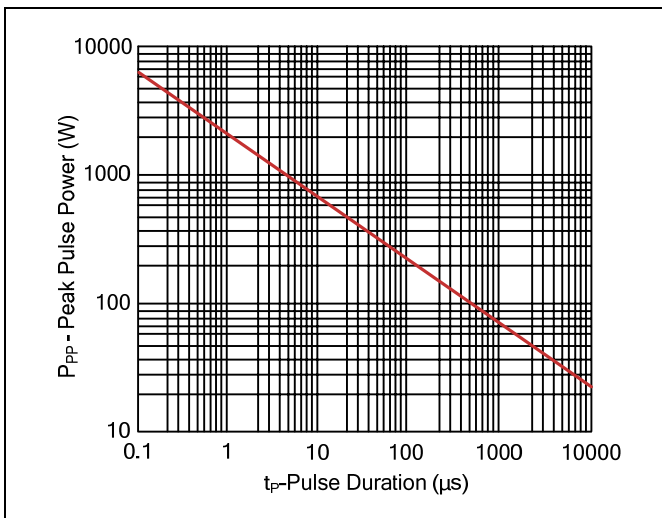
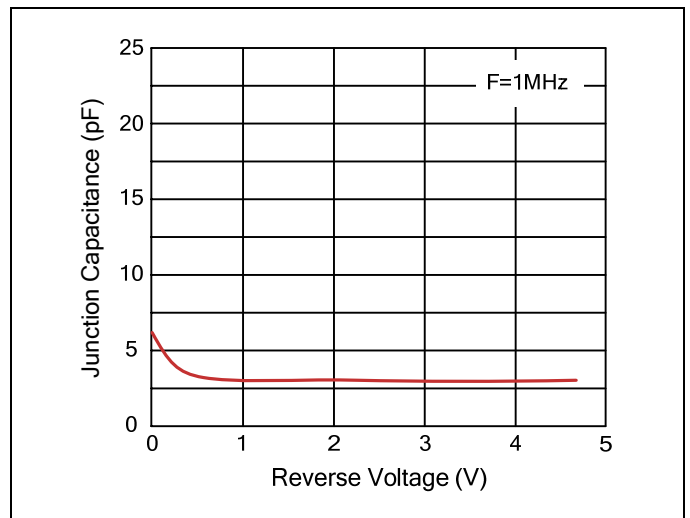
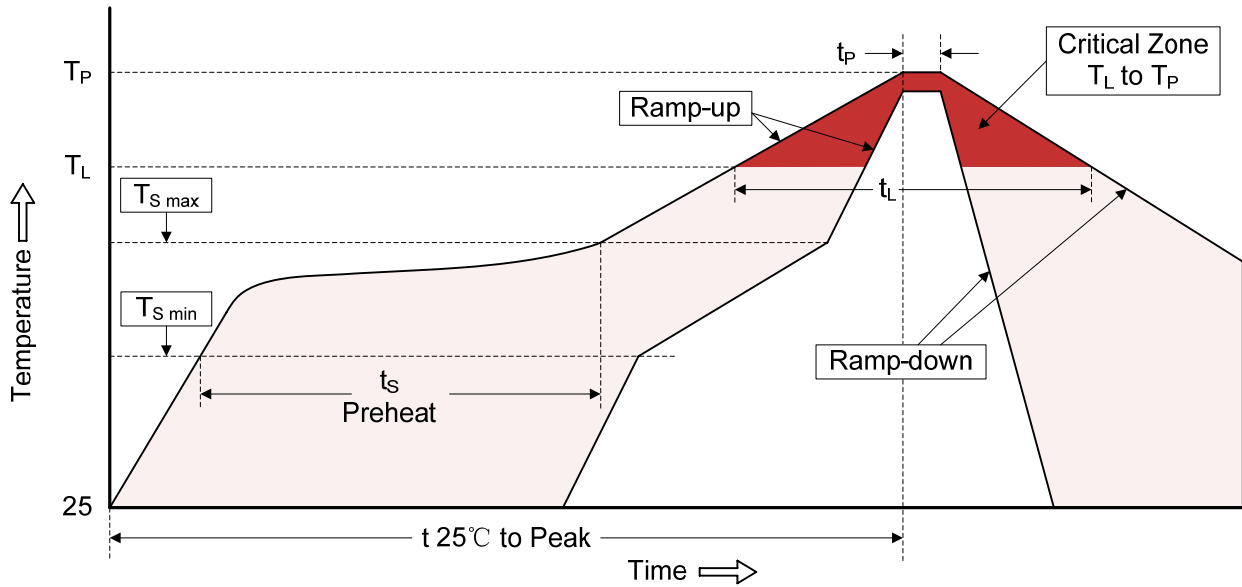


Figure 4. Capacitance vs. Reverse Voltage



**Recommended Soldering Conditions**

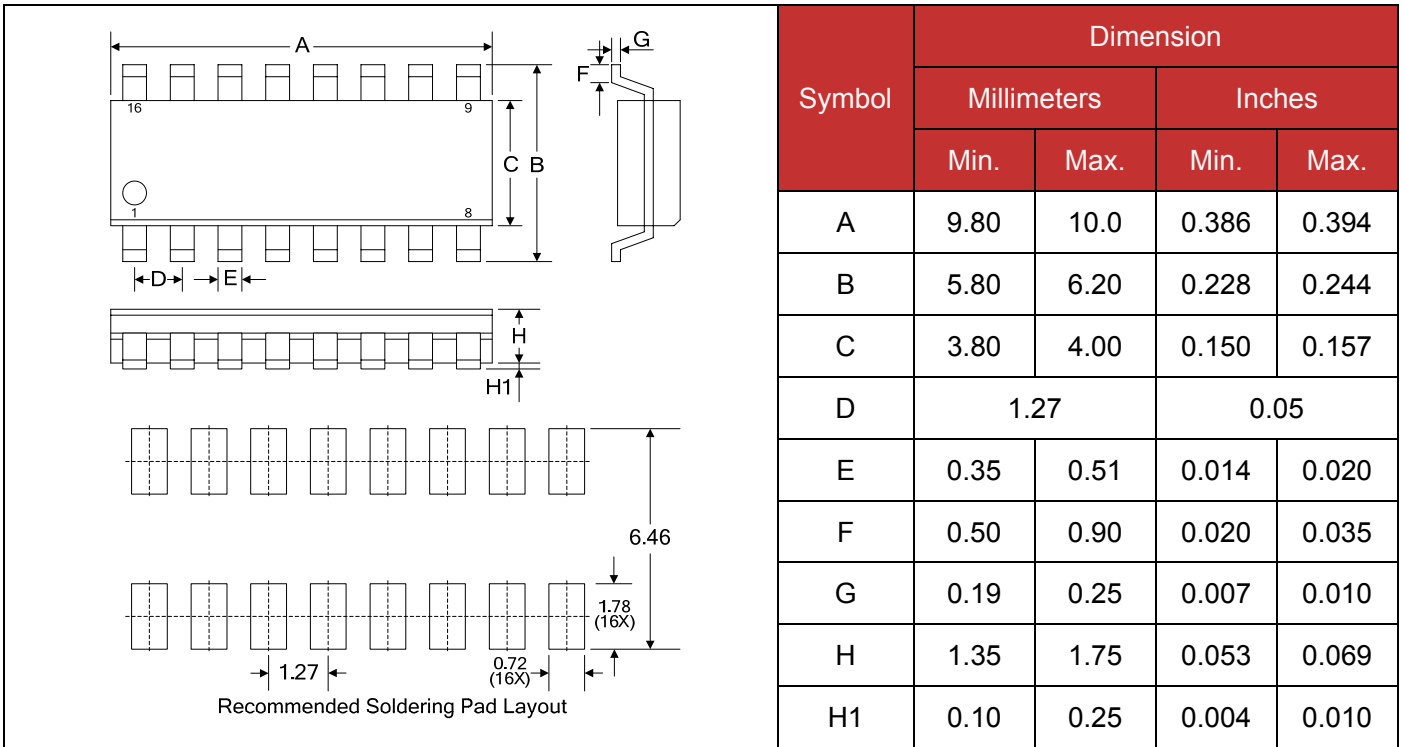
Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate ( $T_L$ to $T_P$ )	3°C/second max.
Preheat -Temperature Min ( $T_{S\ min}$ ) -Temperature Max ( $T_{S\ max}$ ) -Time (min to max) ( $t_s$ )	150°C 200°C 60-180 seconds
$T_{S\ max}$ to $T_L$ -Ramp-up Rate	3°C/second max.
Time maintained above: -Temperature ( $T_L$ ) -Time ( $t_L$ )	217°C 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-16)**



**Packaging**

