

Electrostatic Discharged Protection Devices (ESD) Data Sheet

Description

Brightking's LES08A05L05 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.

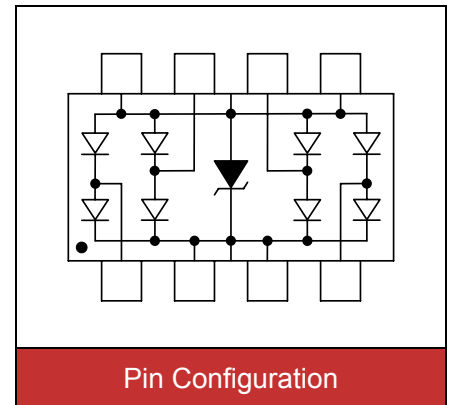


Contact : $\pm 8\text{kV}$
Air : $\pm 15\text{kV}$



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 8/20 μs waveform
- Working voltage: 5V
- 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 $^{\circ}\text{C}$
- Flammability rating UL 94V-0
- Meets MSL level 1, per J-STD-020
- Marking: B RA05-4



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

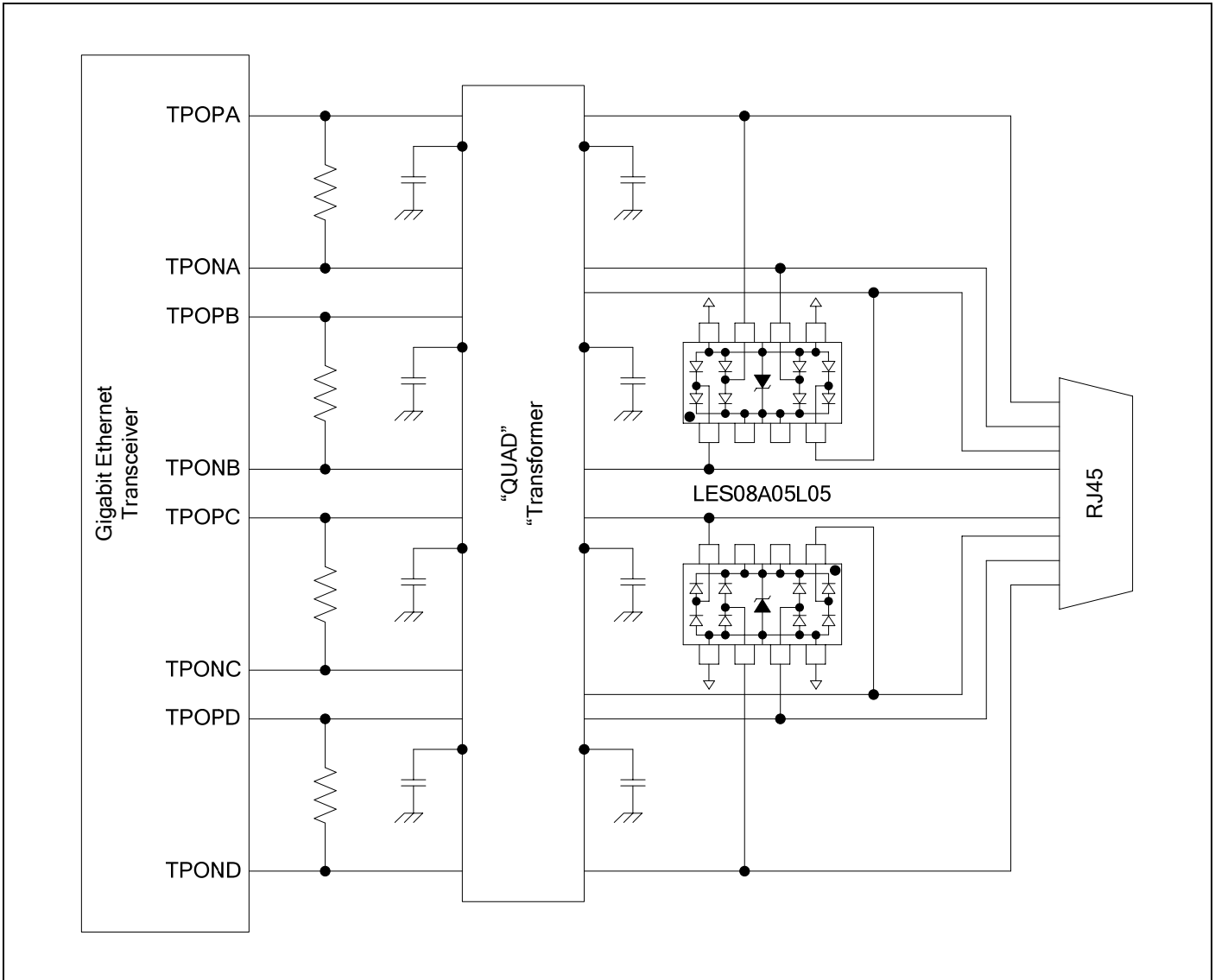
Maximum Ratings

Rating	Symbol	Value	Unit
Peak pulse power (tp=8/20 μs waveform)	P_{PP}	500	W
ESD voltage (Contact discharge)	V_{ESD}	± 8	kV
ESD voltage (Air discharge)		± 15	
Storage & operating temperature range	T_{STG}, T_J	-55~+150	$^{\circ}\text{C}$

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

Parameter	Symbol	Condition	Min.	Typ.	Max.	Unit
Reverse stand-off voltage	V_{RWM}				5	V
Reverse breakdown voltage	V_{BR}	$I_{BR}=1\text{mA}$	6			V
Reverse leakage current	I_R	$V_R=5\text{V}$ Each I/O pin			10	μA
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=1\text{A}$			9.8	V
Clamping voltage ($t_p=8/20\mu\text{s}$)	V_C	$I_{PP}=10\text{A}$			13.5	V
Off state junction capacitance	C_J	0Vdc, $f=1\text{MHz}$ Between I/O pins and GND			15	pF

Applications Information



Typical Characteristics Curves

Figure 1. Power Derating Curve

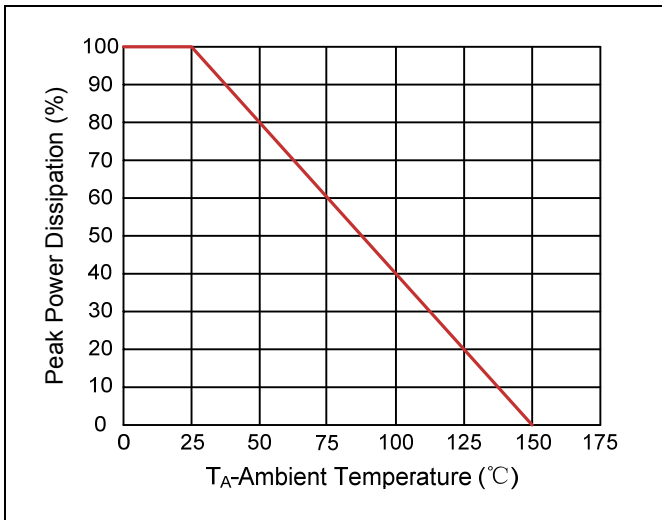


Figure 2. Pulse Waveforms

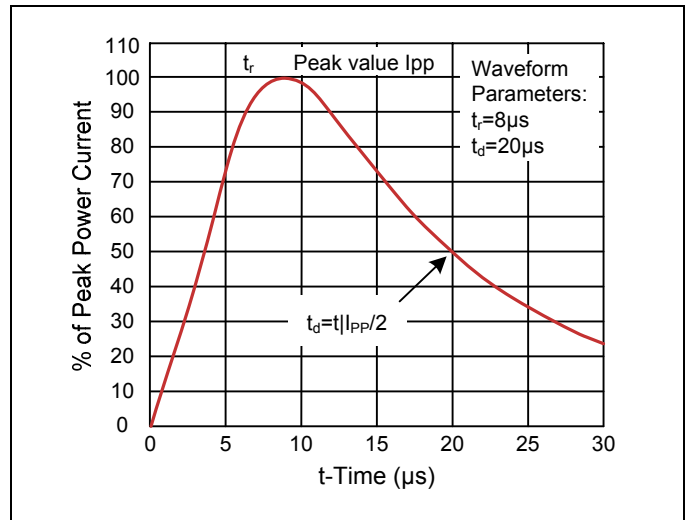


Figure 3. Non-Repetitive Peak Pulse vs. Pulse Time

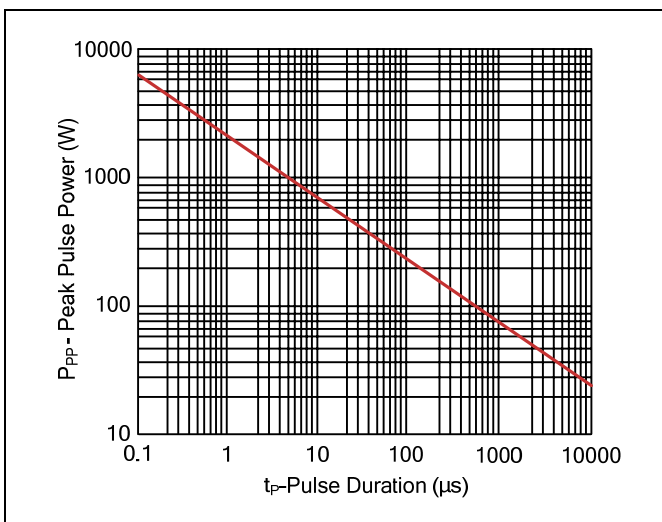
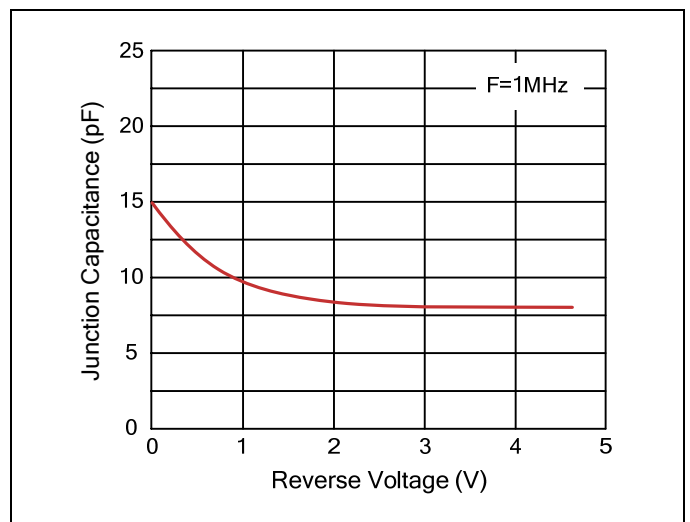
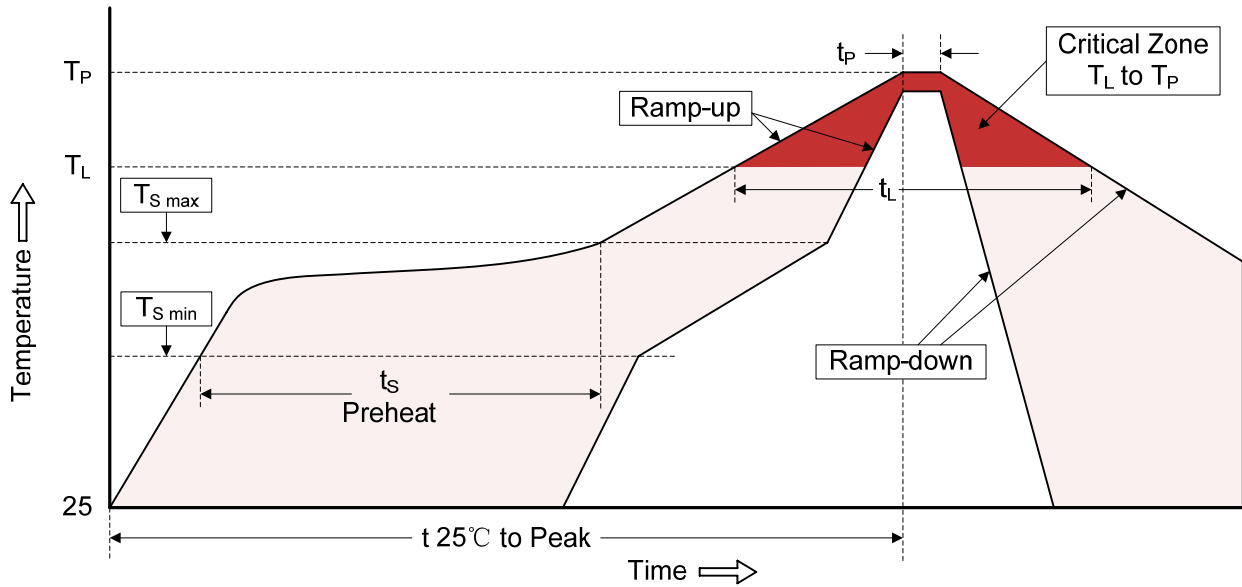


Figure 4. Capacitance vs. Reverse Voltage



Recommended Soldering Conditions

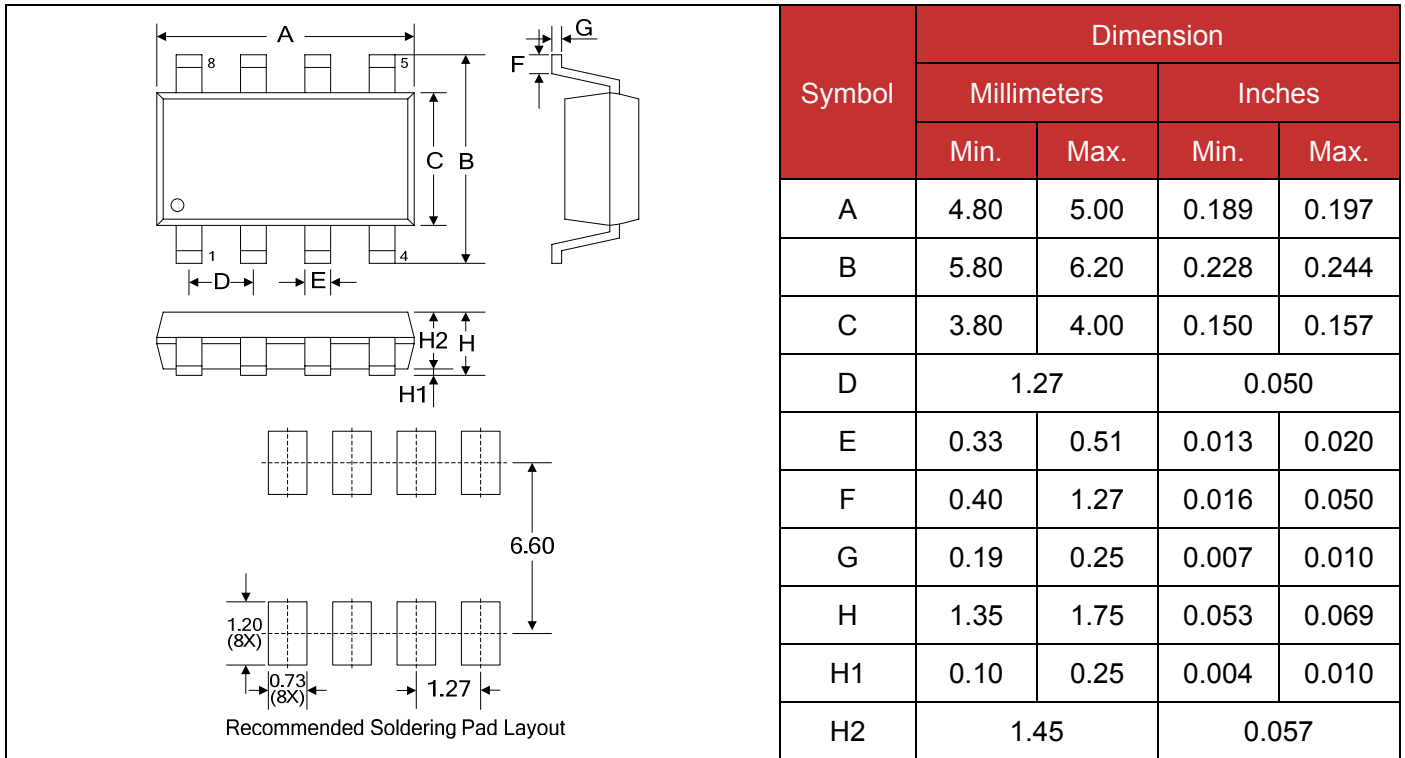
Reflow Soldering



Recommended Conditions

Profile Feature	Pb-Free Assembly
Average ramp-up rate (T_L to T_P)	3°C/second max.
Preheat -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-08)



Packaging

