HBL2020RP

1-Channel ESD Protector

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Product Description

The HBL2020RP provides robust ESD protection for sensitive parts that may be subjected to electrostatic discharge (ESD). The tiny form factor and single wirebond requirement enables it to be used in very confined spaces. The electrical ‘back−to−back zener’ configuration also provides ESD protection in cases where nodes with AC signals are present. This device is designed and characterized to safely dissipate ESD strikes of at least ±8 kV, according to the MIL−STD−883 (Method 3015) specification for Human Body Model (HBM) ESD.

Features

- Compact Die Protects from ESD Discharges
- Almost No Conduction at Signal Amplitudes Less Than ±4 V
- ESD Protection Over ±8 kV Contact Discharge per MIL_STD_883 International ESD Standard

Applications

- LED Lighting
- Modules
- Interface Circuits

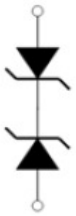

Figure 1. Electrical Schematic

ORDERING INFORMATION

See detailed ordering and shipping information in the package dimensions section on page 2 of this data sheet.

CURRENT/VOLTAGE GRAPH

Symbol	Description
I_{CL+}	Positive Clamping Current
V_{CL+}	Positive Clamping Voltage
I_{L2+}	Leakage Current at V_{L2+}
V_{L2+}	Voltage Condition: +14V
I_{L1+}	Leakage Current at V_{L1+}
V_{L1+}	Voltage Condition: +4V
I_{CL-}	Negative Clamping Current
V_{CL-}	Negative Clamping Voltage
I_{L1-}	Leakage Current at V_{L1-}
V_{L1-}	Voltage Condition: −4V

NOTE: The polarity in the above graph corresponds to the polarity convention shown in the application diagram.

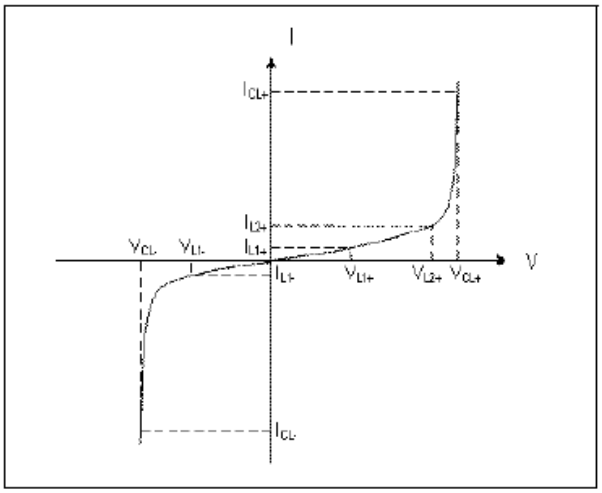

Figure 2.

ORDERING INFORMATION

Ordering Part Number	Topside Metal	Backside Metal	Thickness	Shipping Method
HBL2020RP	Al	LCBM	4 mils	Metal Frame

ABSOLUTE MAXIMUM RATINGS

Parameter	Rating	Unit
Operating Temperature Range	−40 to +150	°C
Storage Temperature Range	−65 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

STANDARD OPERATING CONDITIONS

Parameter	Rating	Unit
Operating Temperature Range	−40 to +150	°C

ELECTRICAL OPERATING CHARACTERISTICS (See Note 1)

Symbol	Parameter	Test Conditions	Min	Typ	Max	Unit
I_{LEAK}	Leakage Current	V = ±4 V, 150°C (Note 2) V = ±4 V, 25°C ($V_{L1±}$) V = +14 V, 25°C (V_{L2+})			4.0 0.3 ($I_{L1±}$) 0.5 (I_{L2+})	mA μA μA
V_{CL}	Signal Clamp Voltage Positive polarity on signal node (V_{CL+}) Negative polarity on signal node (V_{CL-})	T_A = 25°C; at 10 mA (I_{CL+}) at −10 mA (I_{CL-})	 +16 −9.0	 +19 −7.0	 +22 −5.0	V
V_{ESD}	ESD Protection − withstand voltage: Human Body Model (MIL−STD−883, Method 3015)	T_A = 25°C (Note 2)	±8			kV

1. Operating characteristics are over standard operating conditions unless otherwise specified.
2. This parameter is guaranteed by design and/or characterization.

MECHANICAL DETAILS

MECHANICAL SPECIFICATIONS

Parameter	Condition	Unit
Composition	Silicon wafer, p+ doped	
Die shape	Square	
Length (sawn)	200	μm
Width (sawn)	200	μm
Thickness	4	mils
Top pad length	125	μm
Top pad width	125	μm
Top pad composition	Al (Aluminum)	
Back metal (underside)	LCBM	

Dimensions Diagram

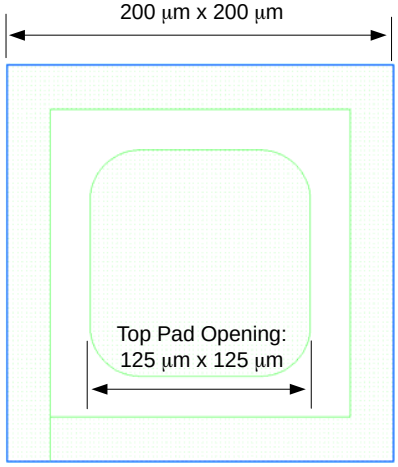

Figure 3. Die Dimensions

PUBLICATION ORDERING INFORMATION

LITERATURE FULFILLMENT:
Literature Distribution Center for ON Semiconductor
P.O. Box 5163, Denver, Colorado 80217 USA
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