

# VISHAY ESD Protection Devices

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VISHAY

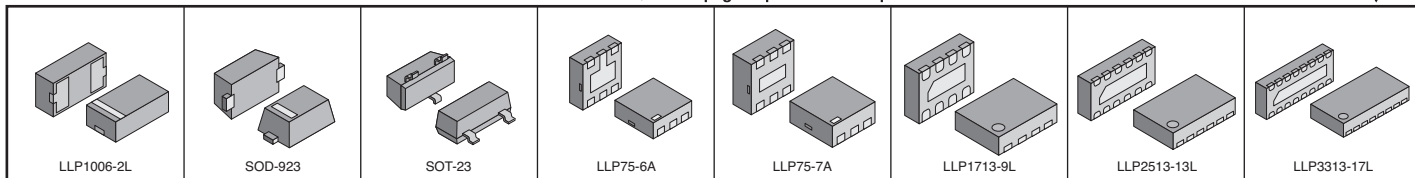
Transient Protection

Vishay Semiconductor

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### Surface Mount Device

With the increasing use of integrated circuits in mobile and wired communications devices and consumer products, it is more important than ever to protect sensitive electronics from high transient voltages or unintentional frequencies. High-voltage spikes with various wave forms and durations can damage or even destroy electronic circuits or the interference of unintentional frequencies can influence the system in a negative way. These transient voltages have various sources. One of the most common types is electrostatic discharges (ESD). For example, a person can inadvertently discharge accumulated static electricity on a phone merely by touching the device. A sudden power surge can also occur when lightning strikes a power line, potentially harming devices connected to the line. ESD protection diodes combined with an EMI filter network serve as a discrete but strong "bodyguard" against these hazards. Protection devices such as very fast Zener and Avalanche diodes draw a very low leakage current when placed in front of sensitive electronic gates. But above the defined voltage working range, any transient voltage that approaches the breakdown voltage will be short-circuited by the diodes so it cannot reach the gate.

## BIDIRECTIONAL ASYMMETRICAL (BiAs) SINGLE-LINE ESD PROTECTION DEVICES

For quantities of 2000 and up, call for quote.

MOUSER STOCK NO.	Vishay Part No.	Package	V <sub>RWM</sub> (V)	V <sub>BR</sub> @ I <sub>t</sub> =1mA (V)(Min.)	I <sub>R</sub> @ V <sub>RWM</sub> (μA)(Max.)	V <sub>C</sub> (Max.)		I <sub>PPM</sub> tp=8/20μS (A)	ESD Protection (IEC)	Price Each			
						I <sub>pp</sub> =1.0A (V)	@I <sub>ppm</sub> (V)			1	100	500	1000
◆ 78-VESD03A1B-HD1	VESD03A1B-HD1-GS08	LLP1006-2L	3.3	5	0.5	7.5	9	3.5	±30kV	.10	.08	.073	.061
◆ 78-VESD03A1C-02Z	VESD03A1C-02Z-GS08	SOD-923	3.3	5	1	7.5	10	9.5	±30kV	.13	.09	.088	.076
◆ 78-VESD05A1A-HD1	VESD05A1A-HD1-GS08	LLP1006-2L	5	6	1	8.5	12	16	±30kV	.10	.08	.073	.061
◆ 78-VESD05A1B-HD1	VESD05A1B-HD1-GS08	LLP1006-2L	5	6	0.1	9.5	11	3	±30kV	.10	.08	.073	.061
◆ 78-VESD05A1C-02Z	VESD05A1C-02Z-GS08	SOD-923	5	6	1	8	10	8	±30kV	.13	.11	.09	.076
◆ 78-VESD12A1C-HD1	VESD12A1C-HD1-GS08	LLP1006-2L	12	13.5	0.1	17	23	4	±30kV	.10	.085	.073	.061
◆ 78-VESD12A1C-02Z	VESD12A1C-02Z-GS08	SOD-923	12	13.5	0.1	17	23	4	±30kV	.13	.11	.091	.076

## LOW CAPACITANCE BIDIRECTIONAL ASYMMETRICAL (BiAs) SINGLE-LINE ESD PROTECTION DEVICES

**Features:**  
 • Low leakage current: <0.1 μA  
 • Low load capacitance: C<sub>D</sub> = 8.0pF  
 • AEC Q101 qualified (VCUT0714A-HD1-GS08 only)

For quantities of 2000 and up, call for quote.

◆ 78-VCUT0714A-02Z	VCUT0714A-02Z-GS08	SOD-923	14	14.5	0.1	27	---	5	±30kV	.10	.08	.073	.061
◆ 78-VCUT0714A-HD1	VCUT0714A-HD1-GS08	LLP1006-2L	14	14.5	0.1	13	17	5	±30kV	.09	.07	.065	.054

## LOW CAPACITANCE BIDIRECTIONAL SYMMETRICAL (BiSy) SINGLE-LINE ESD PROTECTION DEVICES

**Features:**  
 • Low leakage current: <0.1 uA  
 • Low load capacitance: C<sub>D</sub> = 18pF  
 • AEC Q101 qualified  
 • Soldering can be checked by standard vision inspection. No X-ray required.

For quantities of 2000 and up, call for quote.

◆ 78-VCUT0505B-HD1	VCUT0505B-HD1-GS08	LLP1006-2L	5	7	0.1	12	---	3.5	±25kV	.09	.07	.065	.054
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## LOW CAPACITANCE UNIDIRECTIONAL (UNI) ESD PROTECTION DIODES FOR HIGH-SPEED DATA INTERFACES

**Features:**  
 • Small package for use in portable devices  
 • High temperature soldering guaranteed: 260°C/10 sec. at terminals  
 • Low capacitance for multiple uses

**Key Applications:**  
 • High speed data lines  
 • Cellular handsets  
 • USB port protection  
 • LAN equipment  
 • Peripherals

For quantities of 2000 and up, call for quote.

◆ 78-GL05T	GL05T-GS08	SOT-23	5	6	20	9.8	11	17	15kV	.10	.08	.073	.061
◆ 78-GL12T	GL12T-GS08	SOT-23	12	13.3	1	19	24	12	15kV	.10	.08	.073	.061
◆ 78-GL15T	GL15T-GS08	SOT-23	15	16.7	1	24	33	10	15kV	.10	.08	.073	.061
◆ 78-GL24T	GL24T-GS08	SOT-23	24	26.7	1	43	55	5	15kV	.10	.08	.073	.061

## LOW CAPACITANCE BIDIRECTIONAL UNIVERSAL SYMMETRICAL (BUS) SINGLE-LINE ESD PROTECTION DEVICES

**Features:**  
 • Low leakage current: < 0.1 μA  
 • Low load capacitance: CD = 8.0pF  
 • AEC Q101 qualified  
 • Soldering can be checked by standard vision inspection. No x-ray required.

**Key Applications:**  
 • Mobile communication (mobile phones)  
 • Mobile consumer (MP3)  
 • HDMI applications  
 • Mobile computing

For quantities of 2000 and up, call for quote.

◆ 78-VBUS051BD-HD1	VBUS051BD-HD1-GS08	LLP1006-2L	5	6.9	0.1	16	----	3	±15kV	.10	.08	.073	.061
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## LOW CAPACITANCE BIDIRECTIONAL TWO-LINE ESD PROTECTION DEVICES

**Features:**  
 • AEC Q101 qualified

For quantities of 2000 and up, call for quote.

◆ 78-GSOT03C	GSOT03C-GS08	SOT-23	3.3	4	100	7.5	12.3	30	±30kV	.11	.09	.081	.068
◆ 78-GSOT04C	GSOT04C-GS08	SOT-23	4	5	20	9	14.3	30	±30kV	.11	.09	.081	.068
◆ 78-GSOT05C	GSOT05C-GS08	SOT-23	5	6	10	8.7	16	30	±30kV	.11	.09	.081	.068
◆ 78-GSOT08C	GSOT08C-GS08	SOT-23	8	9	5	13	19.2	18	±30kV	.11	.09	.081	.068
◆ 78-GSOT12C	GSOT12C-GS08	SOT-23	12	13.5	1	18.7	26	12	±30kV	.11	.09	.081	.068
◆ 78-GSOT15C	GSOT15C-GS08	SOT-23	15	16.5	1	23.5	28.8	8	±30kV	.11	.09	.081	.068
◆ 78-GSOT24C	GSOT24C-GS08	SOT-23	24	27	1	41	47	5	±30kV	.11	.09	.081	.068
◆ 78-GSOT36C	GSOT36C-GS08	SOT-23	36	39	1	60	71	3.5	±30kV	.11	.09	.081	.068

## BIDIRECTIONAL ASYMMETRICAL (BiAs) ESD PROTECTION EMI FILTERS

**Features:**  
 • Ultra compact packages  
 • Low leakage current  
 • EMI filter and ESD Protection

For quantities of 2000 and up, call for quote.

MOUSER STOCK NO.	Vishay Part No.	Package	Chan.	V <sub>RWM</sub> (V)	V <sub>BR</sub> @ I <sub>t</sub> =1mA (V)(Min.)	I <sub>R</sub> @ V <sub>RWM</sub> (μA)(Max.)	Clamping Voltage		I <sub>PPM</sub> tp=8/20μS (A)	ESD Protection (IEC)	Price Each			
							(V)(Max.)	Neg. (V)(Min.)			1	100	500	1000
◆ 78-VEMI255A-HS3	VEMI255A-HS3-GS08	LLP75-6A	2	5	6	1	7.8	-1.0	4	±30kV	.20	.17	.15	.12
◆ 78-VEMI35AA-HA3	VEMI35AA-HA3-GS08	LLP75-7A	3	5	6	1	7.8	-1.0	4	±30kV	.25	.21	.18	.15
◆ 78-VEMI45AB-HNH	VEMI45AB-HNH-GS08	LLP1713-9L	4	5	6	1	7.0	-1.0	4	±25kV	.27	.23	.19	.16
◆ 78-VEMI45AC-HNH	VEMI45AC-HNH-GS08	LLP1713-9L	4	5	6	1	7.0	-1.0	2	±12kV	.27	.23	.19	.16
◆ 78-VEMI65AB-HCI	VEMI65AB-HCI-GS08	LLP2513-13L	6	5	6	1	7.0	-1.0	4	±25kV	.34	.28	.24	.20
◆ 78-VEMI65AC-HCI	VEMI65AC-HCI-GS08	LLP2513-13L	6	5	6	1	7.0	-1.0	2	±12kV	.34	.28	.24	.20
◆ 78-VEMI85AB-HGK	VEMI85AB-HGK-GS08	LLP3313-17L	8	5	6	1	7.0	-1.4	4	±25kV	.41	.34	.29	.24
◆ 78-VEMI85AC-HGK	VEMI85AC-HGK-GS08	LLP3313-17L	8	5	6	1	7.0	-1.4	2	±12kV	.41	.34	.29	.24