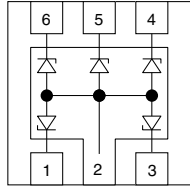
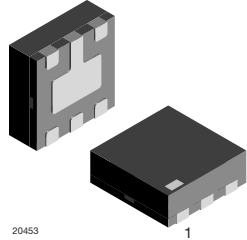


5-Line ESD-Protection Diode Array in LLP75



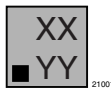
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MARKING (example only)



Dot = Pin 1 marking
XX = Date code
YY = Type code (see table below)

FEATURES

- Ultra compact LLP75-6L package
- Low profile < 0.6 mm
- 5-line ESD-protection
- Low leakage current $I_R < 0.1 \mu A$
- Low load capacitance $C_D = 13 pF$
- ESD-protection acc. IEC 61000-4-2
± 15 kV contact discharge
± 15 kV air discharge
- Working voltage range $V_{RWM} = 5 V$
- e4 - precious metal (e.g. Ag, Au, NiPd, NiPdAu) (no Sn)
- Compliant to RoHS Directive 2002/95/EC and in accordance to WEEE 2002/96/EC



| ORDERING INFORMATION | | | |
|----------------------|--------------------|--|------------------------|
| DEVICE NAME | ORDERING CODE | TAPED UNITS PER REEL (8 mm TAPE ON 7" REEL) | MINIMUM ORDER QUANTITY |
| VESD05A5A-HSF | VESD05A5A-HSF-GS08 | 3000 | 15 000 |

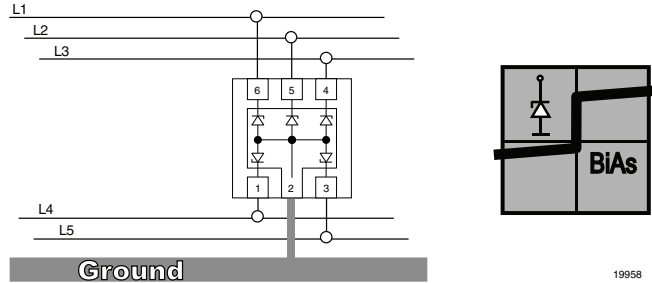
| PACKAGE DATA | | | | | | |
|---------------|--------------|-----------|--------|---|--------------------------------------|--------------------------|
| DEVICE NAME | PACKAGE NAME | TYPE CODE | WEIGHT | MOLDING COMPOUND FLAMMABILITY RATING | MOISTURE SENSITIVITY LEVEL | SOLDERING CONDITIONS |
| VESD05A5A-HSF | LLP75-6L | AR | 4.2 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |

| ABSOLUTE MAXIMUM RATINGS | | | | | | |
|--------------------------|--|--|--|-------------------|---------------|---------|
| PARAMETER | TEST CONDITIONS | | | SYMBOL | VALUE | UNIT |
| Peak pulse current | BiAs-Mode: each input (pin 1 - pin 6) to ground (pin 2); acc. IEC 61000-4-5; $t_p = 8/20 \mu s$; single shot | | | I_{PPM} | 2.5 | A |
| | BiSy-mode: each input (pin 1 - pin 6) to any other input pin. Pin 2 not connected. Acc. IEC 61000-4-5; $t_p = 8/20 \mu s$; single shot | | | I_{PPM} | 2.5 | A |
| Peak pulse power | BiAs-mode: each input (pin 1 - pin 6) to ground (pin 2); acc. IEC 61000-4-5; $t_p = 8/20 \mu s$; single shot | | | P_{PP} | 33 | W |
| | BiSy-mode: each input (pin 1 - pin 6) to any other input pin. Pin 2 not connected. Acc. IEC 61000-4-5; $t_p = 8/20 \mu s$; single shot | | | P_{PP} | 43 | W |
| ESD immunity | acc. IEC61000-4-2; 10 pulses BiAs-mode: each input (pin 1 - pin 6) to ground (pin 2) | | | Contact discharge | V_{ESD} | ± 15 kV |
| | | | | Air discharge | V_{ESD} | ± 15 kV |
| ESD immunity | acc. IEC 61000-4-2 ; 10 pulses BiSy-mode: each input (pin 1 - pin 6) to any other input pin. Pin 2 not connected. | | | Contact discharge | V_{ESD} | ± 10 kV |
| | | | | Air discharge | V_{ESD} | ± 10 kV |
| Operating temperature | Junction temperature | | | T_J | - 40 to + 125 | °C |
| Storage temperature | | | | T_{STG} | - 55 to + 150 | °C |

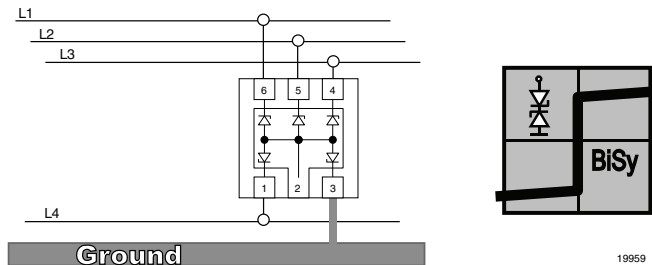
** Please see document "Vishay Material Category Policy": www.vishay.com/doc?99902

APPLICATION NOTE:

a. With the VESD05A5A-HSF 5 different signal or data lines can be clamped to ground. Due to the different clamping levels in forward and reverse direction the VESD05A5A-HSF clamping behavior is Bidirectional and Asymmetrical (BiAs).



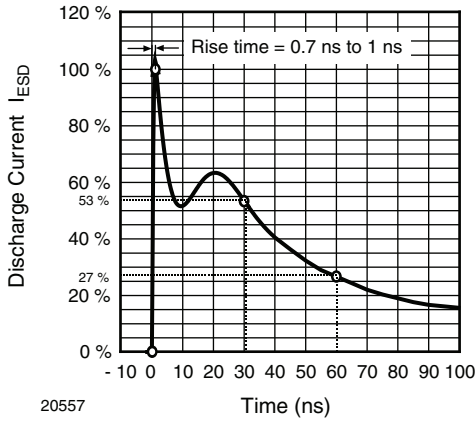
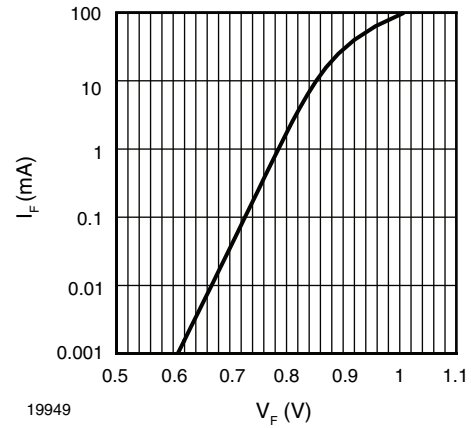
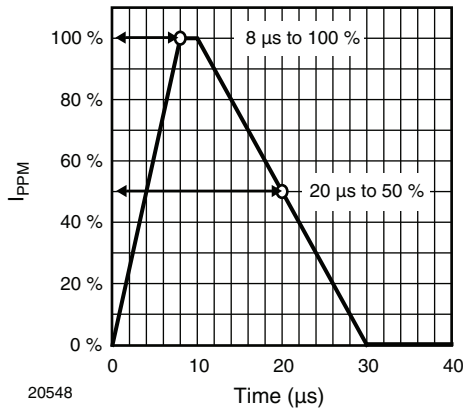
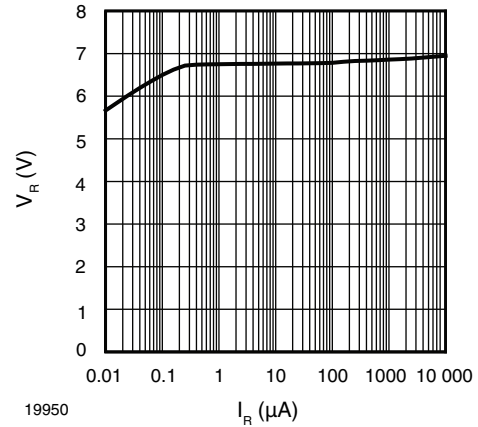
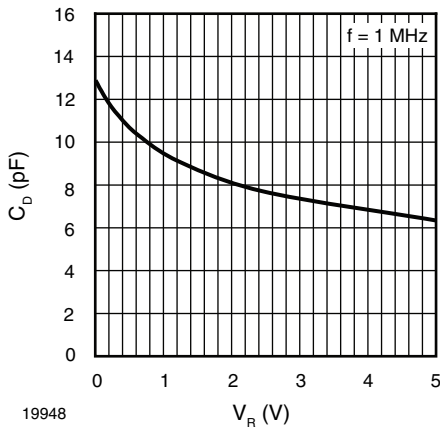
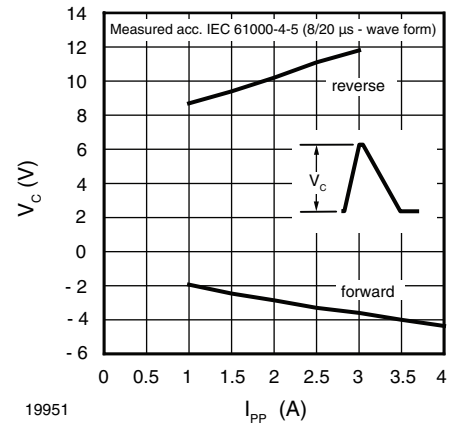
b. If symmetrical clamping behaviour is required the VESD05A5A-HSF can also be used as a Bidirectional Symmetrical protection device protecting up to 4 lines. In this case pin no. 2 must not be connected.



| ELECTRICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified) | | | | | | |
|---|--|-------------|------|--------|------|---------------|
| PARAMETER | TEST CONDITIONS/REMARKS | SYMBOL | MIN. | TYP. | MAX. | UNIT |
| Protection paths | Number of lines which can be protected | N_{lines} | - | - | 5 | lines |
| Reverse working voltage | at $I_R = 0.1\text{ }\mu\text{A}$ | V_{RWM} | 5 | - | - | V |
| Max. reverse current | at $V_R = 5\text{ V}$ | I_R | - | < 0.01 | 0.1 | μA |
| Reverse breakdown voltage | at $I_R = 1\text{ mA}$ | V_{BR} | 6 | 6.7 | 7.5 | V |
| Reverse clamping voltage | at $I_{PP} = 1\text{ A}$ | V_C | - | 9 | 10 | V |
| | at $I_{PP} = I_{PPM} = 2.5\text{ A}$ | V_C | - | 12 | 13 | V |
| Forward clamping voltage | at $I_{PP} = 1\text{ A}$ | V_F | - | 2 | 2.5 | V |
| | at $I_{PP} = I_{PPM} = 2.5\text{ A}$ | V_F | - | 3.2 | 4 | V |
| Line capacitance | at $V_R = 0\text{ V}$; $f = 1\text{ MHz}$ | C_D | - | 13 | 15 | pF |
| | at $V_R = 2.5\text{ V}$; $f = 1\text{ MHz}$ | C_D | - | 8 | - | pF |

Note

- BiAs mode (between pin 1, 3, 4, 5 or 6 and pin 2)

TYPICAL CHARACTERISTICS ($T_{amb} = 25\text{ }^{\circ}\text{C}$, unless otherwise specified)

 Fig. 1 - ESD Discharge Current Wave Form
acc. IEC 61000-4-2 (330 Ω /150 pF)

 Fig. 4 - Typical Forward Current I_F vs. Forward Voltage V_F

 Fig. 2 - 8/20 μs Peak Pulse Current Wave Form
acc. IEC 61000-4-5

 Fig. 5 - Typical Reverse Voltage V_R vs. Reverse Current I_R

 Fig. 3 - Typical Capacitance C_D vs. Reverse Voltage V_R

 Fig. 6 - Typical Peak Clamping Voltage V_C vs.
Peak Pulse Current I_{PP}

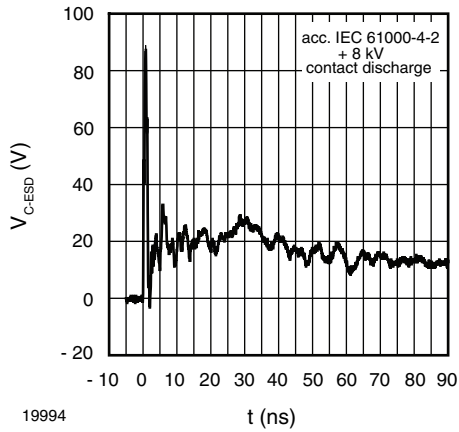


Fig. 7 - Typical Clamping Performance at + 8 kV Contact Discharge (acc. IEC 61000-4-2)

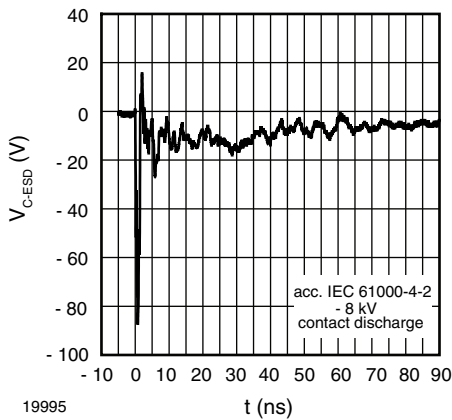


Fig. 8 - Typical Clamping Performance at - 8 kV Contact Discharge (acc. IEC 61000-4-2)

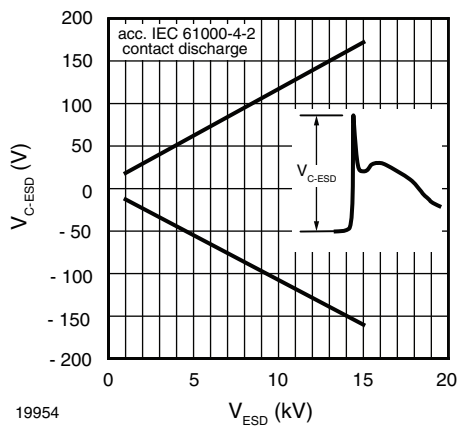
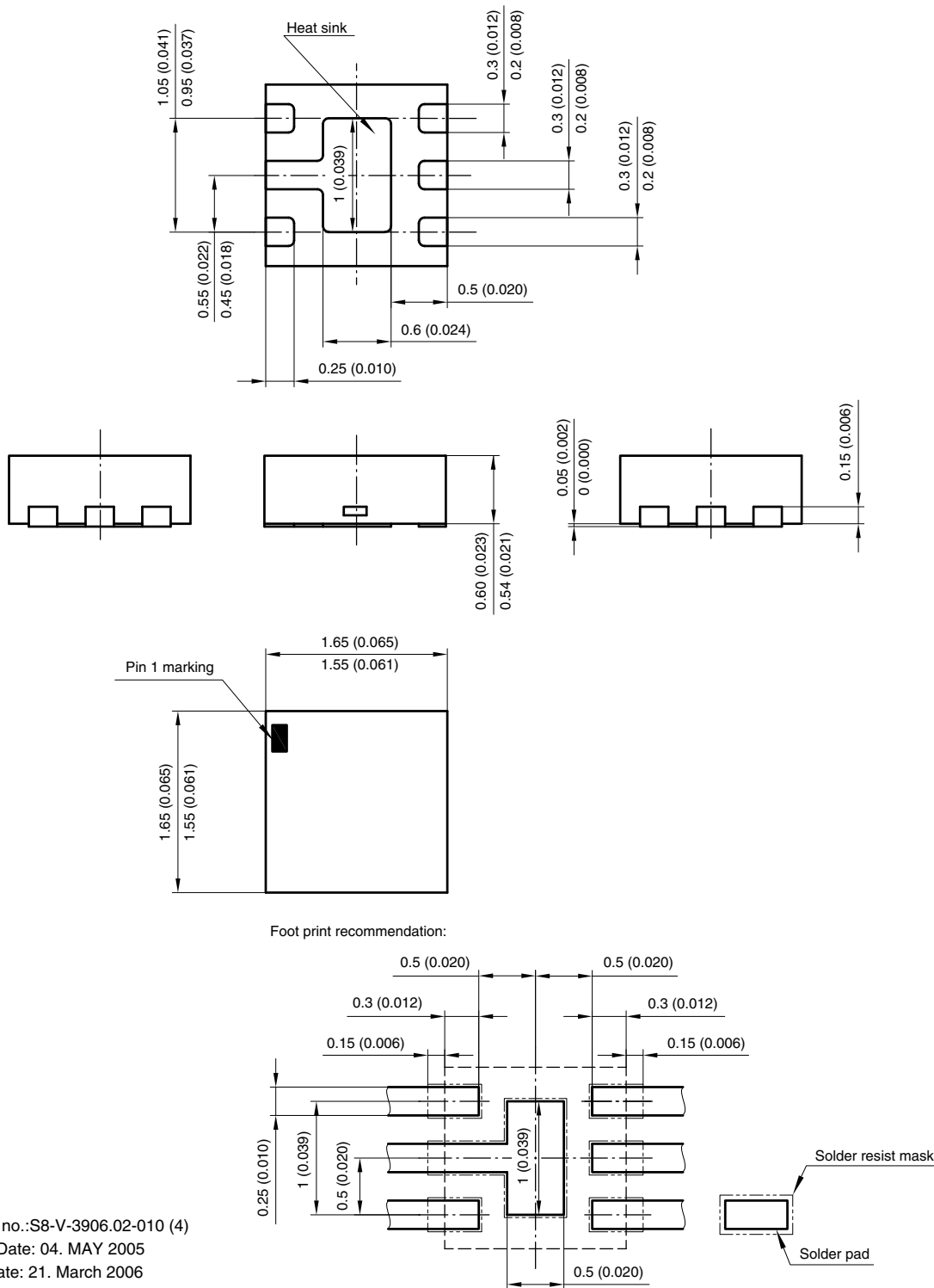


Fig. 9 - Typical max. Clamping Voltage at ESD Contact Discharge (acc. IEC 61000-4-2)



PACKAGE DIMENSIONS in millimeters (inches): **LLP75-6L**



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