



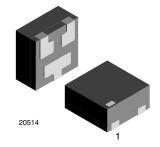
Vishay Semiconductors

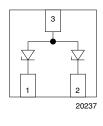
Two-Line ESD-Protection in LLP75

Features

- Two-line ESD-protection device
- ESD-immunity acc. IEC 61000-4-2
 ± 30 kV contact discharge
 - ± 30 kV air discharge
- Space saving LLP package
- Lead (Pb)-free component
- Lead finish = "e3" = matte tin (Sn)
- Non-magnetic
- "Green" molding compound
- Component in accordance to RoHS 2002/95/EC and WEEE 2002/96/EC







Marking (example only)



Dot = Pin 1 marking XX = Date code

YY = Type code (see table below)

Ordering Information

| Device name | Ordering code | Taped units per reel (8 mm tape on 7" reel) | Minimum order quantity |
|-------------|------------------|--|------------------------|
| GSOT03C-HT3 | GSOT03C-HT3-GS08 | 3000 | 15000 |
| GSOT04C-HT3 | GSOT04C-HT3-GS08 | 3000 | 15000 |
| GSOT05C-HT3 | GSOT05C-HT3-GS08 | 3000 | 15000 |
| GSOT08C-HT3 | GSOT08C-HT3-GS08 | 3000 | 15000 |
| GSOT12C-HT3 | GSOT12C-HT3-GS08 | 3000 | 15000 |
| GSOT15C-HT3 | GSOT15C-HT3-GS08 | 3000 | 15000 |
| GSOT24C-HT3 | GSOT24C-HT3-GS08 | 3000 | 15000 |
| GSOT36C-HT3 | GSOT36C-HT3-GS08 | 3000 | 15000 |

Package Data

| Device name | Package name | Marking code | Weight | Molding compound flammability rating | Moisture sensitivity level | Soldering conditions |
|-------------|--------------|--------------|--------|--------------------------------------|-----------------------------------|--------------------------|
| GSOT03C-HT3 | LLP75-3B | 03 | 5.1 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |
| GSOT04C-HT3 | LLP75-3B | 04 | 5.1 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |
| GSOT05C-HT3 | LLP75-3B | 05 | 5.1 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |
| GSOT08C-HT3 | LLP75-3B | 08 | 5.1 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |
| GSOT12C-HT3 | LLP75-3B | 12 | 5.1 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |
| GSOT15C-HT3 | LLP75-3B | 15 | 5.1 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |
| GSOT24C-HT3 | LLP75-3B | 24 | 5.1 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |
| GSOT36C-HT3 | LLP75-3B | 36 | 5.1 mg | UL 94 V-0 | MSL level 1 (according J-STD-020) | 260 °C/10 s at terminals |

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Absolute Maximum Ratings GSOT03C-HT3

| Rating | Test condition | Symbol | Value | Unit |
|-----------------------|--|------------------|---|------|
| Peak pulse current | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, t_P = 8/20 μ s; single shot | I _{PPM} | 30 | Α |
| reak puise current | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | 30 | А |
| Pook pulse power | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, t_P = 8/20 μ s; single shot | P _{PP} | 369 | W |
| Peak pulse power | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | 30 | W |
| ESD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | ± 30 | kV |
| L3D illillidility | Air discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | 30 30 369 504 ± 30 ± 30 - 40 to + 125 | kV |
| Operating temperature | Junction temperature | T _J | - 40 to + 125 | °C |
| Storage temperature | | T _{STG} | - 55 to + 150 | °C |

GSOT04C-HT3

| Rating | Test condition | Symbol | Value | Unit |
|-----------------------|--|------------------|---|------|
| Pook pulse current | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | 30 | А |
| Peak pulse current | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | 7 511 51 5 | Α |
| Pook pulso power | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, t_P = 8/20 μ s; single shot | P _{PP} | 429 | W |
| Peak pulse power | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | 30 30 429 564 ± 30 ± 30 - 40 to + 125 | W |
| ESD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | ± 30 | kV |
| L3D illillidility | Air discharge acc. IEC 61000-4-2; 10 pulses | V_{ESD} | 30 30 429 564 ± 30 ± 30 - 40 to + 125 | kV |
| Operating temperature | Junction temperature | T_J | - 40 to + 125 | °C |
| Storage temperature | | T _{STG} | - 55 to + 150 | °C |

GSOT05C-HT3

| Rating | Test condition | Symbol | Value | Unit |
|-----------------------|--|------------------|---|------|
| Dook pulse gurrent | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, t_P = 8/20 μ s; single shot | I _{PPM} | 30 | Α |
| Peak pulse current | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | | А |
| Deal rules rever | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | 30 30 480 612 ± 30 ± 30 - 40 to + 125 | W |
| Peak pulse power | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | | W |
| CCD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | ± 30 | kV |
| ESD immunity | Air discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | 30 30 480 612 ± 30 ± 30 - 40 to + 125 | kV |
| Operating temperature | Junction temperature | T _J | - 40 to + 125 | °C |
| Storage temperature | | T _{STG} | - 55 to + 150 | °C |



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GSOT08C-HT3

| Rating | Test condition | Symbol | Value | Unit |
|-----------------------|--|------------------|---------------------------------------|------|
| Peak pulse current | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | 18 | А |
| reak puise current | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | | А |
| Pook pulso power | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | | W |
| Peak pulse power | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | 400 | W |
| ESD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | ± 30 | kV |
| E3D IIIIIIIIIIIII | Air discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | 18 18 345 400 ± 30 ± 30 - 40 to + 125 | kV |
| Operating temperature | Junction temperature | T _J | - 40 to + 125 | °C |
| Storage temperature | | T _{STG} | - 55 to + 150 | °C |

GSOT12C-HT3

| Rating | Test condition | Symbol | Value | Unit |
|-----------------------|--|------------------|---|------|
| Pook pulse current | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | 12 | А |
| Peak pulse current | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | | А |
| Deals pulse payer | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | 312 | W |
| Peak pulse power | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P=8/20~\mu s$; single shot | P _{PP} | 12 12 312 337 ± 30 ± 30 - 40 to + 125 | W |
| ESD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | ± 30 | kV |
| L3D illillidility | Air discharge acc. IEC 61000-4-2; 10 pulses | V_{ESD} | 12 12 312 337 ± 30 ± 30 - 40 to + 125 | kV |
| Operating temperature | Junction temperature | T _J | - 40 to + 125 | °C |
| Storage temperature | | T _{STG} | - 55 to + 150 | °C |

GSOT15C-HT3

| Rating | Test condition | Symbol | Value | Unit |
|-----------------------|--|------------------|---------------|------|
| Peak pulse current | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | 8 | А |
| reak puise current | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | 8 | А |
| Deals pulse power | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | 8 | W |
| Peak pulse power | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | | W |
| ESD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | ± 30 | kV |
| E3D IIIIIIuliity | Air discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | ± 30 | kV |
| Operating temperature | Junction temperature | T_J | - 40 to + 125 | °C |
| Storage temperature | | T_{STG} | - 55 to + 150 | °C |

Vishay Semiconductors



GSOT24C-HT3

| Rating | Test condition | Symbol | Value | Unit |
|-----------------------|--|------------------|----------------------|------|
| Peak pulse current | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | 5 | А |
| reak puise current | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | 5 | А |
| Deals pulse power | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | 235 | W |
| Peak pulse power | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | 240 | W |
| ESD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | ± 30 | kV |
| E3D Illillidility | Air discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | 5 5 235 240 | kV |
| Operating temperature | Junction temperature | T_J | - 40 to + 125 | °C |
| Storage temperature | | T _{STG} | - 55 to + 150 | °C |

GSOT36C-HT3

| Rating | Test condition | Symbol | Value | Unit |
|-----------------------|--|----------------------|--|------|
| Deale mules accurant | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} | 3.5 | Α |
| Peak pulse current | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | I _{PPM} 3.5 | | Α |
| Deals nules neuros | Pin 1 to 3 or pin 2 to 3 Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | 248 | W |
| Peak pulse power | Pin 1 to 2 or pin 2 to 1; pin 3 not connected Acc. IEC 61000-4-5, $t_P = 8/20 \mu s$; single shot | P _{PP} | 3.5 | W |
| CCD immunity | Contact discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | ± 30 | kV |
| ESD immunity | Air discharge acc. IEC 61000-4-2; 10 pulses | V _{ESD} | 3.5 248 252 ± 30 ± 30 - 40 to + 125 | kV |
| Operating temperature | Junction temperature | T _J | - 40 to + 125 | °C |
| Storage temperature | | T _{STG} | - 55 to + 150 | °C |



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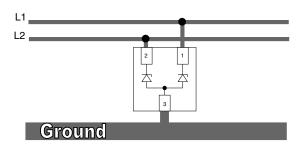
<u>BiAs-Mode (2-line Bidirectional Asymmetrical protection mode)</u>

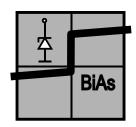
With the GSOTxxC-HT3 two signal- or data-lines (L1, L2) can be protected against voltage transients. With pin 3 connected to ground and pin 1 and pin 2 connected to a signal- or data-line which has to be protected. As long as the voltage level on the data- or signal-line is between 0 V (ground level) and the specified Maximum Reverse Working Voltage (V_{RWM}) the protection diode between pin 2 and pin 3 and between pin 1 and pin 3 offer a high isolation to the ground line. The protection device behaves like an open switch.

As soon as any positive transient voltage signal exceeds the break through voltage level of the protection diode, the diode becomes conductive and shorts the transient current to ground. Now the protection device behaves like a closed switch. The Clamping Voltage (V_C) is defined by the BReakthrough Voltage (V_{BR}) level plus the voltage drop at the series impedance (resistance and inductance) of the protection device.

Any negative transient signal will be clamped accordingly. The negative transient current is flowing in the forward direction of the protection diode. The low Forward Voltage (V_F) clamps the negative transient close to the ground level.

Due to the different clamping levels in forward and reverse direction the GSOTxxC-HT3 clamping behaviour is Bidirectional and Asymmetrical (BiAs).

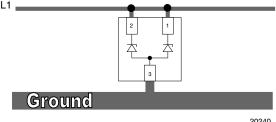




If a higher surge current or Peak Pulse current (I_{PP}) is needed, both protection diodes in the GSOTxxC-HT3 can also be used in parallel in order to "double" the performance.

This offers: • double surge power = double peak pulse current (2 x IPPM)

- halve line inductance = reduced clamping voltage
- halve line resistance = reduced clamping voltage
- double Diode Capacitance (2 x C_D)
- double Reverse leakage current (2 x I_R)



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Electrical CharacteristicsRatings at 25 °C, ambient temperature unless otherwise specified

GSOT03C-HT3

BiAs mode (between pin 1 to 3 or pin 2 to 3)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 2 | lines |
| Reverse stand off voltage | at I _R = 100 μA | V_{RWM} | 3.3 | | | V |
| Reverse current | at V _R = 3.3 V | I _R | | | 100 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 4 | 4.6 | | V |
| D | at I _{PP} = 1 A | V _C | | 5.7 | 7.5 | V |
| Reverse clamping voltage | at I _{PP} = I _{PPM} = 30 A | V _C | | 10 | 12.3 | V |
| Forward elemning voltage | at I _{PP} = 1 A | V _F | | 1 | 1.2 | V |
| Forward clamping voltage | at I _{PP} = I _{PPM} = 30 A | V _F | | 4.5 | | V |
| 0 | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 420 | 600 | pF |
| Capacitance | at V _R = 1.6 V; f = 1 MHz | C _D | | 260 | | pF |

GSOT04C-HT3

BiAs mode (between pin 1 to 3 or pin 2 to 3)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 2 | lines |
| Reverse stand off voltage | at I _R = 20 μA | V_{RWM} | 4 | | | V |
| Reverse current | at V _R = 4 V | I _R | | | 20 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 5 | 6.1 | | V |
| | at I _{PP} = 1 A | V _C | | 7.5 | 9 | V |
| Reverse clamping voltage | at I _{PP} = I _{PPM} = 30 A | V _C | | 11.2 | 14.3 | V |
| Faruard alamaina valtaga | at I _{PP} = 1 A | V_{F} | | 1 | 1.2 | V |
| Forward clamping voltage | at I _{PP} = I _{PPM} = 30 A | V_{F} | | 4.5 | | V |
| 0 " | at V _R = 0 V; f = 1 MHz | C _D | | 310 | 450 | pF |
| Capacitance | at V _R = 2 V; f = 1 MHz | C _D | | 200 | | pF |

GSOT05C-HT3

BiAs mode (between pin 1 to 3 or pin 2 to 3)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 2 | lines |
| Reverse stand off voltage | at I _R = 10 μA | V _{RWM} | 5 | | | V |
| Reverse current | at V _R = 5 V | I _R | | | 10 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 6 | 6.8 | | V |
| Deverse elemning veltage | at I _{PP} = 1 A | V _C | | 7 | 8.7 | V |
| Reverse clamping voltage | at I _{PP} = I _{PPM} = 30 A | V _C | | 12 | 16 | V |
| Forward alamaina valtaga | at I _{PP} = 1 A | V _F | | 1 | 1.2 | V |
| Forward clamping voltage | at I _{PP} = I _{PPM} = 30 A | V _F | | 4.5 | | V |
| Canacitanas | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 260 | 350 | pF |
| Capacitance | at V _R = 2.5 V; f = 1 MHz | C _D | | 150 | | pF |



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GSOT08C-HT3

BiAs mode (between pin 1 to 3 or pin 2 to 3)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 2 | lines |
| Reverse stand off voltage | at I _R = 5 μA | V _{RWM} | 8 | | | V |
| Reverse current | at V _R = 8 V | I _R | | | 5 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 9 | 10 | | V |
| Payaraa alampina valtaga | at I _{PP} = 1 A | V _C | | 10.7 | 13 | V |
| Reverse clamping voltage | at I _{PP} = I _{PPM} = 18 A | V _C | | 15.2 | 19.2 | V |
| Forward alamping voltage | at I _{PP} = 1 A | V _F | | 1 | 1.2 | V |
| Forward clamping voltage | at I _{PP} = I _{PPM} = 18 A | V _F | | 3 | | V |
| Capacitance | at V _R = 0 V; f = 1 MHz | C _D | | 160 | 250 | pF |
| Оараспанов | at $V_R = 4 V$; $f = 1 MHz$ | C _D | | 80 | | pF |

GSOT12C-HT3

BiAs mode (between pin 1 to 3 or pin 2 to 3)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 2 | lines |
| Reverse stand off voltage | at I _R = 1 μA | V _{RWM} | 12 | | | V |
| Reverse current | at V _R = 12 V | I _R | | | 1 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 13.5 | 15 | | V |
| Payaraa alampina valtaga | at I _{PP} = 1 A | V _C | | 15.4 | 18.7 | V |
| Reverse clamping voltage | at I _{PP} = I _{PPM} = 12 A | V _C | | 21.2 | 26 | V |
| Forward alamping voltage | at I _{PP} = 1 A | V _F | | 1 | 1.2 | V |
| Forward clamping voltage | at I _{PP} = I _{PPM} = 12 A | V _F | | 2.2 | | V |
| Canacitanas | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 115 | 150 | pF |
| Capacitance | at $V_R = 6 \text{ V}$; $f = 1 \text{ MHz}$ | C _D | | 50 | | pF |

GSOT15C-HT3

BiAs mode (between pin 1 to 3 or pin 2 to 3)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 2 | lines |
| Reverse stand off voltage | at I _R = 1 μA | V_{RWM} | 15 | | | V |
| Reverse current | at V _R = 15 V | I _R | | | 1 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 16.5 | 18 | | V |
| Reverse clamping voltage | at I _{PP} = 1 A | V_{C} | | 19.4 | 23.5 | V |
| neverse ciamping voltage | at $I_{PP} = I_{PPM} = 8 A$ | V_{C} | | 24.8 | 28.8 | V |
| Forward clamping voltage | at I _{PP} = 1 A | V_{F} | | 1 | 1.2 | V |
| r orward clamping voltage | at $I_{PP} = I_{PPM} = 8 A$ | V_{F} | | 1.8 | | V |
| Capacitance | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 90 | 120 | pF |
| Сараснанов | at $V_R = 7.5 \text{ V}$; $f = 1 \text{ MHz}$ | C_D | | 35 | | pF |

Vishay Semiconductors



GSOT24C-HT3

BiAs mode (between pin 1 to 3 or pin 2 to 3)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|---|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 2 | lines |
| Reverse stand off voltage | at I _R = 1 μA | V _{RWM} | 24 | | | V |
| Reverse current | at V _R = 24 V | I _R | | | 1 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 27 | 30 | | V |
| Reverse clamping voltage | at I _{PP} = 1 A | V _C | | 34 | 41 | V |
| neverse ciamping voltage | at I _{PP} = I _{PPM} = 5 A | V _C | | 41 | 47 | V |
| Forward alamaing voltage | at I _{PP} = 1 A | V _F | | 1 | 1.2 | V |
| Forward clamping voltage | at I _{PP} = I _{PPM} = 5 A | V _F | | 1.4 | | V |
| Canacitanas | at V _R = 0 V; f = 1 MHz | C _D | | 65 | 80 | pF |
| Capacitance | at V _R = 12 V; f = 1 MHz | C _D | | 20 | | pF |

GSOT36C-HT3

BiAs mode (between pin 1 to 3 or pin 2 to 3)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|---|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 2 | lines |
| Reverse stand off voltage | at I _R = 1 μA | V _{RWM} | 36 | | | V |
| Reverse current | at V _R = 36 V | I _R | | | 1 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 39 | 43 | | V |
| Reverse clamping voltage | at I _{PP} = 1 A | V _C | | 49 | 60 | V |
| neverse damping voltage | at I _{PP} = I _{PPM} = 3.5 A | V _C | | 59 | 71 | V |
| Forward alamaing valtage | at I _{PP} = 1 A | V _F | | 1 | 1.2 | V |
| Forward clamping voltage | at I _{PP} = I _{PPM} = 3.5 A | V _F | | 1.3 | | V |
| Canacitanas | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 52 | 65 | pF |
| Capacitance | at V _R = 18 V; f = 1 MHz | C _D | | 12 | | pF |



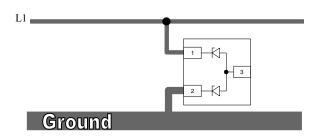
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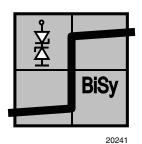
BiSy-mode (1-line Bidirectional Symmetrical protection mode)

If a bipolar symmetrical protection device is needed the **GSOTxxC-HT3** can also be used as a single line protection device. Therefore pin 1 has to be connected to the signal- or data-line (L1) and pin 2 to ground (or vice versa). pin 3 must not be connected.

Positive and negative voltage transients will be clamped in the same way. The clamping current through the ${\tt GSOTxxC-HS3}$ passes one diode in forward direction and the other one in reverse direction. The ${\tt Clamping}$ Voltage (${\tt V_C}$) is defined by the ${\tt BR}$ eakthrough ${\tt Voltage}$ (${\tt V_{BR}}$) level of one diode plus the forward voltage of the other diode plus the voltage drop at the series impedances (resistances and inductances) of the protection device.

Due to the same clamping levels in positive and negative direction the **GSOTxxC-HT3** voltage clamping behaviour is **Bi**directional and **Sy**mmetrical (**BiSy**).





Electrical Characteristics

Ratings at 25 °C, ambient temperature unless otherwise specified

GSOT03C-HT3

BiSy mode (between pin 1 to 2 or pin 2 to 1; pin 3 not connected)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 1 | lines |
| Reverse stand off voltage | at I _R = 100 μA | V _{RWM} | 3.8 | | | V |
| Reverse current | at V _R = 3.8 V | I _R | | | 100 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 4.5 | 5.3 | | V |
| Clamping voltage | at I _{PP} = 1 A | V _C | | 7 | 8.4 | V |
| Clamping voltage | at I _{PP} = I _{PPM} = 30 A | V _C | | 14 | 16.8 | V |
| Capacitance | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 210 | 300 | pF |
| Сараспансе | at $V_R = 1.6 \text{ V}$; $f = 1 \text{ MHz}$ | C_D | | 190 | | pF |

GSOT04C-HT3

BiSy mode (between pin 1 to 2 or pin 2 to 1; pin 3 not connected)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 1 | lines |
| Reverse stand off voltage | at I _R = 20 μA | V_{RWM} | 4.5 | | | V |
| Reverse current | at V _R = 4.5 V | I _R | | | 20 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 5.5 | 6.8 | | V |
| Clamping valtage | at I _{PP} = 1 A | V _C | | 7.5 | 9 | V |
| Clamping voltage | at I _{PP} = I _{PPM} = 30 A | V _C | | 15.7 | 18.8 | V |
| Consoitones | at $V_R = 0 V$; $f = 1 MHz$ | C_D | | 155 | 225 | pF |
| Capacitance | at V _R = 2 V; f = 1 MHz | C_D | | 135 | | pF |

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GSOT05C-HT3

BiSy mode (between pin 1 to 2 or pin 2 to 1; pin 3 not connected)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 1 | lines |
| Reverse stand off voltage | at $I_R = 10 \mu A$ | V_{RWM} | 5.5 | | | V |
| Reverse current | at V _R = 5.5 V | I _R | | | 10 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 6.5 | 7.5 | | V |
| Clamping voltage | at I _{PP} = 1 A | V _C | | 8.1 | 9.7 | V |
| Clamping voltage | at I _{PP} = I _{PPM} = 30 A | V _C | | 17 | 20.4 | V |
| Capacitance | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 130 | 175 | pF |
| Оараспанов | at V _R = 2.5 V; f = 1 MHz | C _D | | 100 | | pF |

GSOT08C-HT3

BiSy mode (between pin 1 to 2 or pin 2 to 1; pin 3 not connected)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 1 | lines |
| Reverse stand off voltage | at I _R = 5 μA | V _{RWM} | 8.5 | | | V |
| Reverse current | at V _R = 8.5 V | I _R | | | 5 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 9.5 | 10.7 | | V |
| Clamping voltage | at I _{PP} = 1 A | V _C | | 11.7 | 14 | V |
| Clamping voltage | at I _{PP} = I _{PPM} = 18 A | V _C | | 18.5 | 22.2 | V |
| Capacitance | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 80 | 125 | pF |
| Capacitarice | at V _R = 4 V; f = 1 MHz | C _D | | 60 | | pF |

GSOT12C-HT3

BiSy mode (between pin 1 to 2 or pin 2 to 1; pin 3 not connected)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|--|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 1 | lines |
| Reverse stand off voltage | at I _R = 1 μA | V _{RWM} | 12.5 | | | V |
| Reverse current | at V _R = 12.5 V | I _R | | | 1 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 13.5 | 15.7 | | V |
| Clamping valtage | at I _{PP} = 1 A | V _C | | 16.4 | 19.7 | V |
| Clamping voltage | at I _{PP} = I _{PPM} = 12 A | V _C | | 23.4 | 28.1 | V |
| Canaditanaa | at $V_R = 0 V$; $f = 1 MHz$ | C_D | | 58 | 75 | pF |
| Capacitance | at V _R = 6 V; f = 1 MHz | C _D | | 36 | | pF |

GSOT15C-HT3

BiSy mode (between pin 1 to 2 or pin 2 to 1; pin 3 not connected)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|---|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 1 | lines |
| Reverse stand off voltage | at I _R = 1 μA | V_{RWM} | 15.5 | | | V |
| Reverse current | at V _R = 15.5 V | I _R | | | 1 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 17 | 18.7 | | V |
| Clamping voltage | at I _{PP} = 1 A | V_{C} | | 20.4 | 24.5 | V |
| Ciamping voltage | at I _{PP} = I _{PPM} = 8 A | V_{C} | | 26.6 | 30.6 | V |
| Capacitance | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 45 | 60 | pF |
| Оараспансе | at V _R = 7.5 V; f = 1 MHz | C _D | | 25 | | pF |



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GSOT24C-HT3

BiSy mode (between pin 1 to 2 or pin 2 to 1; pin 3 not connected)

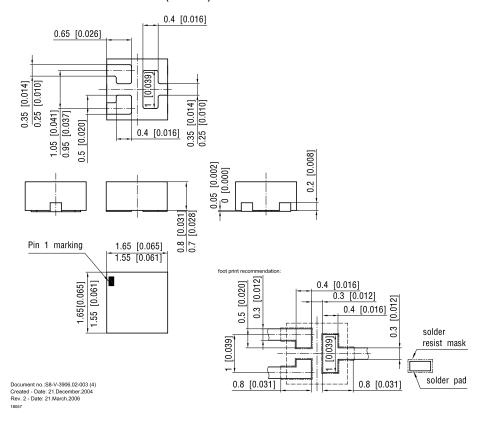
| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|---|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 1 | lines |
| Reverse stand off voltage | at I _R = 1 μA | V _{RWM} | 24.5 | | | V |
| Reverse current | at V _R = 24.5 V | I _R | | | 1 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 27.5 | 30.7 | | V |
| Clamping voltage | at I _{PP} = 1 A | V _C | | 34 | 41 | V |
| | at I _{PP} = I _{PPM} = 5 A | V _C | | 40 | 48 | V |
| Capacitance | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 33 | 40 | pF |
| | at V _R = 12 V; f = 1 MHz | C _D | | 18 | | pF |

GSOT36C-HT3

BiSy mode (between pin 1 to 2 or pin 2 to 1; pin 3 not connected)

| Parameter | Test conditions/remarks | Symbol | Min. | Тур. | Max. | Unit |
|----------------------------|---|--------------------|------|------|------|-------|
| Protection paths | Number of lines which can be protected | N _{lines} | | | 1 | lines |
| Reverse stand off voltage | at I _R = 1 μA | V_{RWM} | 36.5 | | | V |
| Reverse current | at V _R = 36.5 V | I _R | | | 1 | μΑ |
| Reverse break down voltage | at I _R = 1 mA | V_{BR} | 39.5 | 43.7 | | V |
| Clamping voltage | at I _{PP} = 1 A | V _C | | 50 | 60 | V |
| | at I _{PP} = I _{PPM} = 3.5 A | V _C | | 60 | 72 | V |
| Capacitance | at $V_R = 0 V$; $f = 1 MHz$ | C _D | | 26 | 33 | pF |
| | at V _R = 18 V; f = 1 MHz | C _D | | 10 | | pF |

Package Dimensions in millimeters (inches): LLP75-3B



Vishay Semiconductors



Ozone Depleting Substances Policy Statement

It is the policy of Vishay Semiconductor GmbH to

- 1. Meet all present and future national and international statutory requirements.
- 2. Regularly and continuously improve the performance of our products, processes, distribution and operating systems with respect to their impact on the health and safety of our employees and the public, as well as their impact on the environment.

It is particular concern to control or eliminate releases of those substances into the atmosphere which are known as ozone depleting substances (ODSs).

The Montreal Protocol (1987) and its London Amendments (1990) intend to severely restrict the use of ODSs and forbid their use within the next ten years. Various national and international initiatives are pressing for an earlier ban on these substances.

Vishay Semiconductor GmbH has been able to use its policy of continuous improvements to eliminate the use of ODSs listed in the following documents.

- 1. Annex A, B and list of transitional substances of the Montreal Protocol and the London Amendments respectively.
- 2. Class I and II ozone depleting substances in the Clean Air Act Amendments of 1990 by the Environmental Protection Agency (EPA) in the USA.
- 3. Council Decision 88/540/EEC and 91/690/EEC Annex A, B and C (transitional substances) respectively.

Vishay Semiconductor GmbH can certify that our semiconductors are not manufactured with ozone depleting substances and do not contain such substances.

We reserve the right to make changes to improve technical design and may do so without further notice.

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For technical support, please contact: ESD-Protection@vishay.com



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